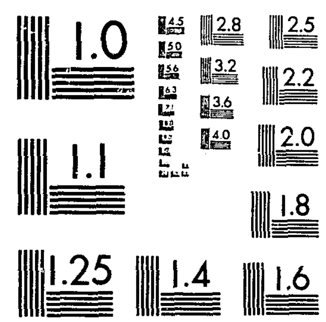


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

National Institute of Justice
United States Department of Justice
Washington, D.C. 20531

2/22/85

U.S. Department of Justice
National Institute of Justice

~~96020~~
82276

NIJ National Institute of Justice
Research Report

Calling the Police:

Citizen Reporting of Serious Crime

SNI

82276
1 of 3

About the National Institute of Justice

The National Institute of Justice is a research branch of the U.S. Department of Justice. The Institute's mission is to develop knowledge about crime, its causes and control. Priority is given to policy-relevant research that can yield approaches and information State and local agencies can use in preventing and reducing crime. Established in 1979 by the Justice System Improvement Act, NIJ builds upon the foundation laid by the former National Institute of Law Enforcement and Criminal Justice, the first major Federal research program on crime and justice.

Carrying out the mandate assigned by Congress, the National Institute of Justice:

- Sponsors research and development to improve and strengthen the criminal justice system and related civil justice aspects, with a balanced program of basic and applied research.
- Evaluates the effectiveness of federally funded justice improvement programs and identifies programs that promise to be successful if continued or repeated.
- Tests and demonstrates new and improved approaches to strengthen the justice system, and recommends actions that can be taken by Federal, State, and local governments and private organizations and individuals to achieve this goal.
- Disseminates information from research, demonstrations, evaluations, and special programs to Federal, State, and local governments; and serves as an international clearinghouse of justice information.
- Trains criminal justice practitioners in research and evaluation findings, and assists the research community through fellowships and special seminars.

Authority for administering the Institute and awarding grants, contracts, and cooperative agreements is vested in the NIJ Director. An Advisory Board, appointed by the President, assists the Director by recommending policies and priorities and advising on peer review procedures.

Reports of NIJ-sponsored studies are reviewed by Institute officials and staff. The views of outside experts knowledgeable in the report's subject area are also obtained. Publication indicates that the report meets the Institute's standards of technical quality, but it signifies no endorsement of conclusions or recommendations.

James K. Stewart
Director

~~96020~~
82276

Calling the Police:
Citizen Reporting of Serious Crime

William Spelman
Dale K. Brown

October 1984

U.S. Department of Justice
National Institute of Justice

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

National Institute of Justice
James K. Stewart
Director

This project was supported by Grant Number 78-NI-AX-0107, awarded to the Police Executive Research Forum, by the National Institute of Justice, U.S. Department of Justice, under the Omnibus Crime Control and Safety Streets Act of 1968, as amended. Points of view or opinions stated in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

FOREWORD

The most important function of our police forces, the most powerful demand we make of them is their response to calls from citizens for assistance. This need justified adoption of the central emergency number, 911, and the array of strategies and technical devices designed by vigorous, committed police departments during the 1970's to increase the rapidity of their response.

Research, however, demonstrated that speed of police response alone does not determine the quality of police service. The Kansas City Response Time Analysis Study, first published in 1977, taught us that in less than one-third of reported serious crimes could fast response make a difference, and then only in the case of certain crimes that were in progress or just completed and were reported quickly. The likelihood of arrest dwindles when the victim or witness reporting the crime delays seeking police help. Not all calls need be answered with the same degree of urgency; in times of personnel and budget constraint, police can best allocate their scarce resources by focusing them on cases in which a fast response can do the most good.

The research results surprised many. Policymakers were faced with the question whether the results from Kansas City applied to their own localities as well. To learn the answer, the National Institute of Justice awarded funds to the Police Executive Research Forum to replicate the citizen crime reporting aspect of the Kansas City study in four dissimilar jurisdictions. The findings reported here support the results of the Kansas City research and, in fact, go considerably further than the original researchers in examining the reasons behind reporting delays and in identifying possible remedies.

The report presents a picture of citizen delay in reporting crime that is very often rational and thus probably very difficult to change. It makes clear, however, that if we cannot greatly modify citizen behavior, we can use our knowledge of it to significantly improve police field service delivery. By setting priorities for police service in a manner similar to those of hospital emergency rooms or operating rooms, we can make the public safer.

These findings and conclusions were originally published by the Police Executive Research Forum in 1981. Demand for this document from police departments attempting to improve the allocation of their resources to meet citizen needs has exhausted the Forum's supply. Because of both the quality of work and the continued interest in it, the National Institute is pleased to reissue the volume.

Even though several years have passed, I want to express the thanks of the National Institute of Justice to Director of Public Safety Allen Andrews of Peoria, Chiefs William Kolender of San Diego, Thomas Hastings (retired) and Delmar Leach of Rochester, and Sheriff Dale Carson of Jacksonville-Duval County for their critical assistance in making the 1970-80 study possible.

Because of these administrators' commitment to increase our understanding of policing, research has made an important policy-relevant contribution to police effectiveness. We encourage policymakers and practitioners who read this document and who follow or modify its recommendations to tell us the results in their communities so that we can effectively continue our research in this area.

James K. Stewart
Director
National Institue of Justice

PREFACE

When first released in 1977, the findings of the Kansas City, Missouri, Police Department's Response Time Analysis were received skeptically by the police. Many in the police community believed that the findings of the study were true only for Kansas City; that is, they did not believe that, in their communities, citizens' delays in reporting crimes precluded the police, in most cases, from making rapid-response-related arrests.

But their skepticism about the study's findings masked the reaction that, if these findings held true for other cities, then a basic tenet of policing would be in grave doubt. That time-honored tenet holds that police departments must send patrol cars immediately to all crime calls because the chances of making arrests are good. But if this tenet were not true, then police departments' resources, long focused toward rapid response to all crime calls, would have to be reallocated to other, attainable objectives.

So a fundamental question was raised: If responding rapidly to citizens' reports of crime was not to be the primary operating objective of police departments, what was? The answer to this question was not immediately apparent. Several possible answers were suggested. One answer was to adopt a strategy of community policing in which the police spend more time cementing relationships with the residents of neighborhoods. Another strategy was for the police to take on an enhanced crime-fighting role including intensified directed patrols, investigations by patrol officers and increased crime prevention efforts. But these strategies required untested and untried changes in current methods of police department operations. No one knew if they would work. Each of these changes meant significant, even radical, revisions of standard operating procedures. The organizational implications of instituting such changes were enormous, the results unknown, and the risks extremely high. What public administrator, particularly a police chief whose position is held so tenuously, would embark on such a risky journey? For these reasons, little change in police operations occurred. Also, regretably, little debate over the findings and implications of the Response Time Analysis study ensued. So, many members of the police community shielded themselves by labeling the findings unique to Kansas City.

This study's confirmation of the Kansas City findings invalidates that argument. Equally important is the new knowledge gained from this four-site study about why citizens delay in reporting crimes to the police. The findings refute one of the simplistic and reflexive police responses to the Kansas City study, i.e., that police departments should orchestrate a massive public effort to get all citizens to call the police immediately. The study concludes that, in some cases, trying to change citizen reporting behavior can be unproductive; that some elements of reporting behavior are virtually unchangeable; and, that although there exist programs that can reduce the time it takes for citizens to report crimes, the benefits will be small and will accrue only over extended periods of time. The police community

must now face reality--it is they and their operations that must change.

This process of change has already begun. It was not precipitated by a sudden realization of the validity of the Kansas City response time findings, but, rather, by the hard realities of economic and municipal fiscal austerity. Police departments are finding that with fewer resources and increasing demands for service, they cannot provide rapid police response to all calls for service. They are beginning to look for, and find, alternative responses.

An earlier study published by the Police Executive Research Forum and the Birmingham, Alabama, Police Department suggested one system of alternative responses. The study, Differential Police Response Strategies, indicates that a number of police departments have been, and currently are, successfully engaged in providing alternative but comprehensive responses to calls for service. No doubt, a more extensive and comprehensive program must be tested and evaluated before final conclusions can be drawn. Such a project is underway under the auspices of the National Institute of Justice. But the police community should not again wait for the results of this field test before acting. Police departments should develop and test their own alternative response systems. Moreover, instituting an alternative response strategy is just one implication derived from the findings of this study. There are many others, some suggested in Chapter 6, and many more that exist in the creative minds of police administrators. Police managers now have an unqualified opportunity to try new ways to carry out the police function and achieve their basic objectives. Using the findings of research, expertise born of experience, and the wisdom of our managers, the police field should be able to generate creative and more effective strategies to serve the public.

Freed from the burden of rushing to all calls, the police can stop being harried report takers and provide more of the kinds of service the public wants and expects. Similarly, by not sending police cars immediately to all calls for service, departments will have more police officers available to respond immediately to those calls that do require fast action. So rather than having police officers respond immediately in person to take an auto theft report, they can be responding quickly to a report of a prowler. This could, in fact, make the citizens safer and happier.

Police practices have improved tremendously over the last two decades. Nevertheless, most of these improvements have occurred within a longstanding, traditional framework of unquestioned operating assumptions. Consequently, though the changes have been significant, they have not had profound effects on our ability to achieve basic goals. We now have an opportunity to make fundamental changes which will allow the police to serve the public better and more effectively.

Gary P. Hayes
Executive Director
Police Executive Research Forum

PROLOGUE

In 1977, police managers were jolted by the results of a Kansas City Police Department study of response time: citizens' crime reporting delays were so long, they reported, that fast police response could only affect the chances of arrest for a very small percentage of serious crimes. A year later, the National Institute of Justice commissioned the Police Executive Research Forum to pick up where Kansas City left off, examining how long citizens take to report a crime and what, if anything, the police can do about it. As the chief police executives in four major cities, we volunteered wholeheartedly to cooperate with their research.

When the results of the Kansas City Police Department's Response Time Analysis were announced, we were skeptical as to whether their findings would apply to our own cities. Frankly, we hoped that they would not apply, that citizens of Jacksonville, Peoria, Rochester and San Diego reported crimes more quickly than citizens of Kansas City. This report--the Forum's final report of a three-year study--has convinced us that they do not. In fact, we are convinced that citizens throughout the country sometimes choose to delay and sometimes are unavoidably delayed for substantial amounts of time before they report crimes to the police. Most of the time, the delays are so substantial that even our fastest response to the crime will be ineffective in producing arrests. In short, we have focused on using high technology dispatching equipment and sophisticated deployment schemes to reduce police response time, when we should also have focused on reducing citizen delays. Police chiefs have heretofore not perceived the significance of the citizen's decision to delay reporting.

The Forum's report also shows that the remedies to reporting delay proposed during the last ten years--"911" in particular--will not cut citizen reporting time to a significant degree. The problems of finding a phone, a number, and an open line to the complaint taker are still important: but we now find that they are not nearly as important as the citizen's free choice to delay reporting. The longest and most disturbing of citizen delays occur because the police throughout the country have not convinced the public that the police and the rest of the criminal justice system can deal with the crime without causing undue inconvenience or embarrassment to the citizen. Convincing citizens that the police response to a crime is as convenient, as free from chances of reprisal, and as reassuring as possible has got be a high priority for police in the next few years.

A final note. Even if we could achieve the best of worlds where citizens always report immediately and where police always respond quickly, only five or six percent of serious crimes are likely to result in response-related arrest. Can we continue to devote most of our resources to responding to crime in a reactive mode when all we can hope for is a relatively small return? If the police are to control the crime problem, they must act before the crime happens-- through increasingly directed patrol efforts, and by enlisting the aid of the citizens who are the potential

victims. Citizen mobilization for crime prevention deserves the same kind of concerted effort throughout the '80s that we gave to response time in the 1960s and '70s.

The Forum has conducted a very thorough analysis of the problem. Facing the facts presented in this report should be an urgent priority for police managers and all others interested in what the police can do--and cannot do--to stop crime by making arrests as a result of rapid response. Clearly, the citizenry can do much more to increase the rate of response-related arrests than the police agency can do--even a police agency with a well-managed patrol force.

Allen H. Andrews
Superintendent, Peoria Police Department

Dale Carson
Sheriff, Jacksonville-Duval County Sheriff's Office

William Kolender
Chief, San Diego Police Department

Delmar Leach
Chief, Rochester Department of Police

ACKNOWLEDGMENTS

Any research study of the length and scope of that discussed in this report can only result from the contributions of many people. The authors owe a deep debt of gratitude to all those who contributed in many ways to the successful completion of this effort.

Our first thanks must go to the citizens of Jacksonville, Florida; Peoria, Illinois; Rochester, New York; and San Diego, California. Without their cooperative and thoughtful response to the time-consuming and difficult questions asked of them, this research would simply have been impossible.

Perhaps more than most surveys, this research also owes a special debt to the chief executives of the police agencies in the cities studied. Superintendent Allen Andrews of Peoria, Sheriff Dale Carson of Jacksonville, Chief Thomas Hastings of Rochester and Chief Del Leach who succeeded him, and Chief William Kolender of San Diego, all made department records freely available to our research staff, and gave encouragement and thoughtful advice throughout the project. Their research and analysis commanders--Mr. Gary Higgins, Captain Robert Latham, Captain Terrence Rickard, and Sergeant Richard Skrak--were immensely helpful to the Forum staff in Washington and to those in the field by providing access to crime and arrest reports and communications tapes, and bridging the sometimes difficult gap between police and researcher priorities. We also thank

Preceding page blank

Chief Charles Strobel of Alexandria, Virginia, where our data collection pretest took place.

Mr. William E. Saulsbury of the Police Division at the National Institute of Justice has been the ideal project monitor. Bill has that all-too-rare knack for knowing when and how to intervene with timely advice and useful recommendations, and when to let the research staff go off into uncharted territory, trying innovative approaches which have no guarantee of payoff. Our debt to him is enormous.

The original research design which guided the entire course of the study was singlehandly written by Akiko Y. Swabb. Ms. Swabb, who served as the first Project Director for the study directed the planning for and the implementation of the data collection effort, and is largely responsible for the high quality of the data on which the analyses described here are based.

Thanks are also due Dr. Deborah M. Galvin, who succeeded Ms. Swabb as Project Director and who played a key role in planning for the data analysis. Other members of the Forum's staff to whom we extend our sincere thanks are Michael T. Farmer and John E. Eck, who made continuing contributions to the study from the time the original proposal was prepared until the last report draft had been reviewed. Their detailed and thoughtfully conceived suggestions on analysis, policy implications and editorial style are greatly appreciated.

Special thanks are due Steven P. Gibson, who edited the report. Steve spent countless hours in his dedicated efforts to translate our initial drafts into readable form and beyond, to their present state. It is

a credit to Steve's professionalism that he didn't throw up his hands at sight of the earlier drafts, and to his editorial skill that he was able to put our rambling narrative into a meaningful form of communication.

Field Research Assistants Glen Cournoyer, Patricia Dill, Ivar Paur, Brian Szott, and Margaret Wolff did a uniformly excellent job in the painstaking work of sampling and coding the 4,000 crimes included in the study. Interview Supervisors Geraldine Potosky, Joanne Gibson, Ethel Poole, and Earl Hamilton administered the grueling task of interviewing, monitoring, and quality control. In addition, Mr. Hamilton's comprehensive reviews of previous research in citizen time estimation and victim and witness decisionmaking was most helpful in structuring the analysis and identifying policy implications. Raphael Marrone's efficient data processing support was most welcomed when workloads were high and deadlines near. Our thanks also go to Dr. Michael Wiatrowski for his review of victomology research and his extensive contributions to the statistical work at an early stage of the analysis.

Dr. Lee Sechrest, at the University of Michigan's Institute for Policy Studies, Dr. Stephen Pollock, chairperson of the Industrial Engineering department at the University of Michigan, Dr. Kevin Clancy, with the Boston University Political Science department, and former chief of police Bruce Baker of Portland, Oregon, all served as members of the project's advisory board, and provided valuable assistance by reviewing and criticizing the research design and analysis results. William Bieck, with

the Reading, Pennsylvania, Police Department, was particularly helpful. Drawing from his experience as the Principal Analyst of the Kansas City <u>Response Time Analysis</u>, he effectively restructured and rewrote the survey questionnaire, making the study both more nearly error-free and more efficient.

If anyone deserves recognition for patience and forbearance it is the members of the Forum's support staff, who typed innumerable pages of copy from longhand drafts which ranged from barely comprehensible to absolutely ludicrous. Jennifer Brooks, who served as project secretary through most of the study deserves special credit. She was ably assisted in the final stages by Linda Cary, Mary Grace, and Bonnie Meyers, all of whom received support--moral and otherwise--from Sydney West, the Forum's Office Manager.

The largest share of our gratitude and appreciation must be reserved for Gary P. Hayes, the Forum's Executive Director who, through judicious use of such motivational forces as threats, promises, sympathy, cajoling and active participation caused us to put forth our best efforts. Gary's dedication to the increased professionalism of policing is reflected in the fact that this report is addressed to practitioners in the police field for their benefit and that of their profession, and not directed solely to the research community. To the extent we have been successful in reaching the police audience, Gary is responsible.

William Spelman
Dale K. Brown

EXECUTIVE SUMMARY

Rapid police response may be unnecessary for three out of every four serious crimes reported to police. The traditional practice of immediate response to all reports of serious crimes currently leads to on-scene arrests in only 29 of every 1,000 cases. By implementing innovative programs, police may be able to increase this response-related arrest rate to 50 or even 60 per 1,000, but there is little hope that further increases can be generated.

These are the major findings of the Forum's three-year study of citizen-reporting and police response. These outcomes unequivocally support conclusions reached by the Kansas City (MO) Police Department in its 1977 study of police response to serious crimes: that citizen-reporting time, and not police response time, most affects the possibility of on-scene arrest; and, that, when citizens delay in reporting crimes, efforts to reduce police response times have no substantial effect on arrest rates.

The Forum's study is based on interviews with over 4,000 victims, witnesses and bystanders in some 3,300 serious crimes of the following six types: aggravated assault, auto theft, burglary, larceny, rape and robbery. The study was conducted in four American cities: Jacksonville, Florida; Peoria, Illinois; Rochester, New York; and San Diego, California. These cities were selected because of their differences; each represented a singular mix of populational, regional and police agency characteristics. Nonetheless, the outcomes from city to city were almost identical, which would tend to indicate that the findings apply to other cities across the nation.

The results of this study and the related implications for police department policy concerning rapid response to citizen calls for service must be kept in proper perspective. The findings of this study focus only on citizen delays in the reporting of serious crimes (Part I crimes except homicide and arson) and the effect these delays have on on-scene, response-related arrests by the police. The effect of rapid police response on less serious crimes was addressed in the aforementioned Kansas City study. Also, previous studies have examined the effects of rapid police response on citizen satisfaction, availability of witnesses and crime scene evidence, and the handling of medical emergencies. These related issues are considered in the literature review but are not the subject of empirical analysis in this study. The effects of rapid police response on other types of citizen calls for police service, including non-crime calls, calls to maintain order, and calls which can prevent crime, have not been studied here. All of these issues must be taken into consideration along with the

findings concerning response-related arrests when reviewing a police department's general policy on responding to citizens' calls for service. It would be consistent with the results of this study, for example, to have a policy requiring rapid response in a "suspicious person" call while providing for less than immediate response in a burglary discovered after the fact.

Some details of the major findings of the study are summarized in the next few pages, but a thorough understanding can only be gained by reading the full report. The page numbers listed in the margins indicate those sections of the report which relate to the findings described only briefly in this summary. (Analytic methods are described in the separate Technical Appendixes.)

Reporting Time, Response Time and Arrest

For at least half a century, police have considered it important to cut to a minimum their response times to crime pp.47-48 calls. The faster the response, they have reasoned, the better the chances of catching a criminal at or near the scene of the crime. In the cities we studied, however, arrests that could be attributed to fast police response were made in only 2.9 percent of reported serious crimes.

Why is the response-related arrest rate so low? The major reason is that about 75 percent of all serious crimes re-

pp.61, 66-68

ported are discovery crimes--crimes that are discovered after they have been completed, and in which offenders have had time to escape without police interference. The remaining 25 percent are involvement crimes--those in which the victim is directly confronted by the offender. In this study, citizen reporting time for discovery crimes averaged between ten minutes and ten-and-one-half minutes in the four cities, or between 40 to 60 percent of total response time, which includes citizen reporting time, police dispatch time and police travel time. Consequently, because "suspect get-away time" even before the crime is discovered is likely to be long, and citizen reporting time after discovery of the crime is also long, there is virtually no chance that discovery crimes will result in response-related arrests. This common sense conclusion is verified by previous research and is confirmed by the results of this study. Therefore, in only about 25 percent of all reported serious crimes, namely those that are not discovery crimes but, rather, are involvement crimes, can fast response make a difference.

But how fast does response to these involvement crimes have to be to make a difference? Since the late 1930's, police scientists have asserted that fast response can lead to arrest only if the police arrive while the crime is still happening or

within two to three minutes after it has been completed. In

pp.68-72

this study, average citizen reporting time for involvement crimes ranged between four minutes and five and-one-half minutes or between 28 and 47 percent of total response time. Thus, even for involvement crimes the likelihood of response-related arrest is relatively low. When citizens delay even a few minutes, the suspect has usually left the crime scene and no on-scene arrest is likely. This was found to be true in each of the four cities surveyed.

Of all involvement crimes reported to police, 54 percent were reported within five minutes of their occurrence.

- Thirteen precent were reported while still in-progress. Under these circumstances, the chances of response-related arrest were very good: about 35 percent.

pp.61-76

- An additional 14 percent were reported within the first minute after the crimes had been committed. When reported within a few seconds, the chances of response-related arrest were about 18 percent; if reported 60 seconds after the crime, the chances were only about 10 percent.
- For the remaining 27 percent reported between one and five minutes after the crimes had been committed, the chances of response-related arrest were about seven percent.

Regarding the remaining reports of involvement crimes, when citizens delayed for a full five minutes, they might as well have delayed for an hour: the chances of arrest were no better for five-minute delays than for 60-minute delays.

So it is not surprising that only three percent of all reports of serious crimes led to response-related arrests: only about 25 percent of these reports were likely to be reports of involvement crimes in which fast response could make a difference; and, what is more, only 54 percent of these reports of involvement crimes were likely to be made in time enough, that is within five minutes, to afford police a reasonable opportunity to make on-scene arrests.

The findings are clear. Most serious crimes reported to the police are discovery crimes for which there is virtually no chance for response-related arrests. For the remaining crimes, those in which there is citizen involvement, the citizen must call the police within one minute, or the likelihood of response-related arrest drops dramatically.

What can police do to cut reporting times and increase the opportunities for arrest? They must focus their efforts on addressing the reasons for delay.

Why Citizens Delay

When citizens do not report crimes immediately, it is either because they decide to call the police only after they

have taken some other action in response to the crime, or because they have trouble in communicating their reports to police after they have decided to call--or both.

There are three basic reasons for not deciding immediately to report crimes:

pp.95-102

- Citizens sometimes want first to verify that a situation does indeed involve a crime, that is, they try to resolve ambiguity in the situation. To do this they take actions, some of which include:
  - Observing the situation and/or investigating the crime scene. Such actions delayed reporting in just over 25 percent of the crimes studied, resulting in an average delay of two minutes.
  - Telephoning someone not at the scene to acquire additional information, or seeking such information by talking to another person at the scene. One or the other of these actions was taken in about 6.6 percent of crimes studied, resulting in an average delay of three minutes for a telephone call or 90 seconds for a face-to-face conversation.
- Sometimes citizens take actions to help themselves cope with problems the crime has created for them. Such actions include:
  - Leaving the scene of the crime. This occurred in over 19 percent of the cases studied, resulting in an average delay of about 90 seconds.

pp.111-117

  - Speaking with or telephoning someone to obtain assistance or support. One or the other of these occurred in 16.5 percent of our crime sample, resulting in average delays of about 90 seconds and three minutes, respectively.

- Chasing or restraining a suspect. Such actions occurred in about 6.4 percent of crimes studied and delayed reporting, on average, by 30 seconds.

- Caring for physical injury. This occurred so infrequently in our sample (just over one percent of all cases) that no reliable estimate of delay is possible.

- Many citizens experience conflict as to whether or not to call the police, and they
pp.123-129 try to avoid making immediate decisions. In such cases citizens may:

  - Procrastinate, hopeful that the decision will become easier. This occurred in 9.5 percent of the sample of serious crimes and caused delays that averaged 11 minutes.

  - Talk to someone at the scene or telephone someone to get advice that may help in resolving the conflict. Face-to-face conversations occurred two percent of the time for an average delay of 90 seconds; telephoning occurred in only slightly above one percent of our sample, resulting in an average delay of about three minutes.

Most citizens who delay in making decisions do so for reasons they believe are very good: they may want to avoid the consequences of their calling the police about suspicious events that turn out not to involve crime; for some, coping with emotional trauma or with personal conflict may seem more urgent
pp.130-131 than reporting crime. To prevent these decisionmaking delays, police must offer to citizens good reasons to report immediately, reasons that will override citizens' inclinations to delay.

In undertaking to meet this objective, it is important to distinguish the three basic causes of decisionmaking delays; because of the distinctions, the methods police use in attacking the causes will necessarily differ.

When citizens do decide to report crimes, problems in communicating their reports to police sometimes arise. In our study, three such communications problems led to reporting delays.

- A phone was not readily available. This problem presented itself in only seven percent of our crime sample, resulting in
pp.140-149 an average delay of about 45 seconds.

- The caller did not know the police telephone number and had to look it up or call directory assistance. This problem touched 23 percent of our respondents, resulting in delays that averaged
pp.150-159 about one minute and forty-five seconds if the telephone directory was used but only a few seconds if the call was placed through the telephone company operator. Regarding the most urgent cases, the majority of people who did not know the police number dailed "0" rather than searching the directory.

- The caller has trouble communicating with the police complaint taker. This problem gave rise to reporting delays in 10 to 12 percent
pp.164-166 of the cases in our sample, resulting in an average delay of about 35 seconds.

People occasionally encountered other problems: a pay phone may have been out of order; the caller may have had no change for a pay phone; the caller may have dialed the wrong

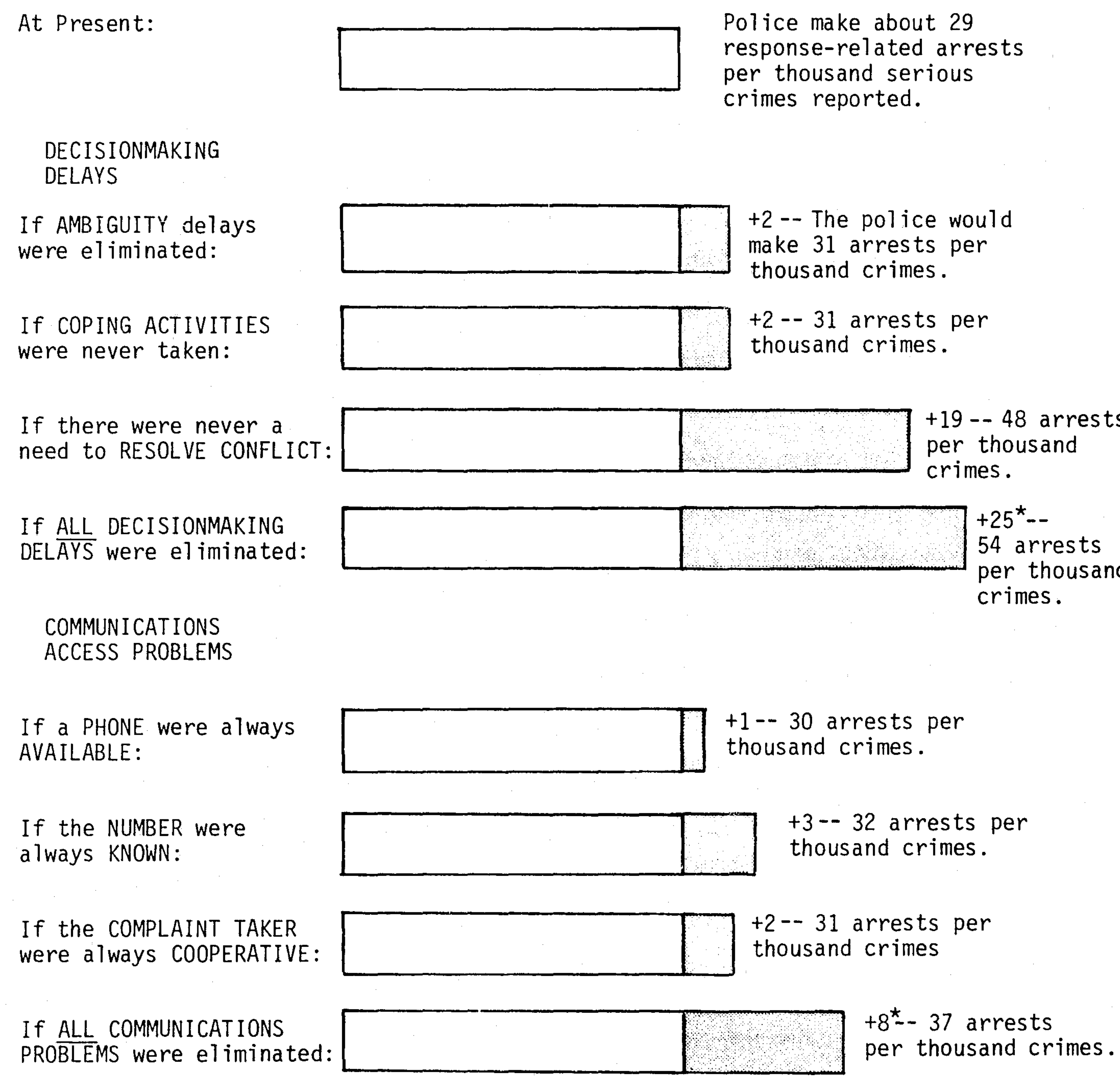
pp.149-150 agency by mistake; but these problems arose so infrequently
163-164 that, if somehow they all were eliminated, still, few, if any additional arrests would ensue.

Of the six important causes of citizen-reporting delay reviewed above (three involving decisionmaking problems and three involving communications problems), on which should police focus to trim the most minutes from reporting time and to make the most arrests? To find out, we estimated the number of additional on-scene, response-related arrests police would make if each cause of delay were eliminated. To actually eliminate any of these causes of reporting delays is probably impossible; in general, they are susceptible to alleviation, not to elimination. Our purpose in using this method is to identify those causes of delay that have the greatest potential for increasing arrests.

The results, shown in Figure A, indicate that causes of decisionmaking delays hold significantly greater potential for increasing arrests than do causes of communications delays. Moreover, it is abundantly clear that the chief cause of reporting delay--the cause which, if removed, would have the greatest potential for increasing response-related arrest rates--is conflict as to whether or not to call the police. A program completely successful in relieving such conflict would increase the number of response- related arrests from 2.9 to 4.8 percent, an

Figure A

Potential Increases in Response-Related Arrests As a Result of Removing Each of Several Important Causes of Delay



Even if all REPORTING DELAYS could be eliminated, no more than 70 crimes per thousand could result in response-related arrest.

*The total is more than the sum of the individual savings because of the non-linear nature of the relationship between reporting time and arrest.

increase of 19 arrests per thousand serious crimes. Much smaller but still significant increases would be made if other causes of delay were eliminated.

What can police and local governments do to alleviate these decisionmaking and communications problems?

Programs That Probably Will Reduce Citizen Reporting Time

pp.118-129, 180-184

Cut the Cost of Reporting a Crime. Citizens experience conflict because they believe, whatever they do, there will be high costs, either emotional or financial. On the one hand, reporting crimes may be inconvenient; victims may fear that police will hold them responsible for precipitating the crimes; victims may fear that offenders will take reprisals against them. On the other hand, not reporting crimes greatly reduces the chances that citizens will ever recover their property or see offenders brought to justice. Citizens in conflict feel they cannot win, so they avoid making decisions about reporting crimes: they procrastinate or ask others to make decisions for them.

In any efforts to root out this cause of delayed reporting and non-reporting, police must examine their procedures to ensure that costs of reporting are kept to a bare minimum.

The inconvenience of reporting might be mitigated by offering to victims and witnesses assistance in getting to police stations and, when necessary, to court houses. Patrol officers could be trained to educate victims and witnesses in crime prevention techniques and to emphasize to these citizens the benefits that can accrue to them as a result of their implementing these practices. Then, too, citizens who fear reprisals deserve protection and reassurance; some police departments have instituted victim-witness protection units to prevent reprisals.

Because delays caused by conflict turn less on the actual costs, of reporting than on potential, often unknown, costs, it is possible that some gains can be made simply by advertising how infrequently offenders take reprisals against victims and witnesses and how convenient police procedures already are.

pp.150-161, 191

Distribute Phone Stickers Displaying the Police Department's Emergency Number. In the four cities we studied, most people distinguished emergency and non-emergency situations relatively well, but many people called phone company operators or dialed police administrative numbers because they did not know police emergency numbers. If stickers for telephones were distributed (perhaps along with monthly phone or electric bills), and people were encouraged to post the stickers on or near their personal and work phones, more people would use correct numbers. Regarding citizens who do not post numbers on their phones or who use phones beyond the reach of sticker distribution systems, they should be encouraged to dial phone company operators in emergencies and to refrain from searching directories. Though most people who do not know emergency numbers follow this procedure already, it should be encouraged for the benefit of the few who do not.

Implement Community-Based Neighborhood Anti-Crime Programs. Additional, but less considerable, increases in numbers of quickly reported crimes and response-related arrests can be realized by alleviating delays caused by ambiguity. If citizens are to recognize crimes while the crimes are being committed, citizens need to know what a crime looks like and where it is likely to occur: to provide such knowledge is the goal of programs like Neighborhood Watch. When Neighborhood Watch works, it is because citizens share information about each other's habits and activities. A man who sees a woman rummaging in a neighbor's house may think little of it; but, if he knows that his neighbor is on vacation he may recognize that a burglary is in progress and call the police. Neighborhood Watch programs in several jurisdictions have been shown to be effective in reducing delays due to ambiguity and in increasing the number of in-progress calls and response-related arrests.

pp.88-102, 187-189

Train Police Operators to Screen Calls for Service.

One possible consequence of training police operators to screen calls would be a reduction in the occurrence of communications problems between complaint takers and reporting citizens; this reduction represents a potential gain of two arrests per thousand crimes. Nevertheless, other potential consequences have more significance.

pp.193-200

If all the programs reviewed thus far were implemented, and they were to work perfectly, the maximum possible gain in response-related arrests would be no more than about 30 arrests per thousand. Though this would amount to a doubling of the respone-related arrest rate, it is important to maintain perspective: the vast majority of crimes will continue to be discovered after they have been committed and will not require immediate police response.

No matter what else the police departments do, they can realize immense efficiency gains by screening calls for service: prioritizing them according to seriousness and how urgently police response is needed. Some kinds of calls will demand simply that reports be taken by phone; civilians can be sent to cold burglaries. In turn, this will free patrol resources to conduct more comprehensive on-scene investigations; it will make way for increased use of surveillance, decoy and other directed patrol activities; it will permit utilization of suspect "escape route blocking" tactics in cases of quickly reported crimes; it will allow officers to peform duties they are now unable to discharge because at present they must go back into service to handle non-urgent calls.

The programs surveyed to this point are all likely to result in reductions in citizen reporting times and increases in arrest rates. In contrast, our analysis shows that certain other programs, though frequently proposed, will probably not work.

Programs That Probably Will Not Reduce Citizen Reporting Time

911. In the cities we studied, one of which had an
pp.161-162,operational 911 system, there was nothing to show that install-
189-191 ing 911 results in significant cuts in citizen reporting times. Where 911 is available, people who use it do so in situations in which they would otherwise dial police departments' seven-digit emergency numbers or call phone company operators. When people call operators instead of 911, delays increase by only about 10 seconds: not a significant figure within the general context of typical reporting times of five minutes or more. A 911 system would cut reporting times if people would not look up numbers in phone books when they should be using 911, but ironically, 911 seems to encourage people to look up numbers in phone

books. This is because departments, in their attempts to keep the number of 911 calls under control, encourage people to use 911 only for emergencies; in our sample, a few people in every city mistook in-progress crimes and crimes in which a victim had been injured--very urgent situations--to be non-emergencies and, so, looked up numbers in phone books. This happened most frequently in Peoria, the only city in our study which had installed 911. Extensive publicity accompanying 911 there may have backfired, causing slower reporting times.

More Pay Phones and "Dime-Free" Pay Phones. Some delays in reporting occur because phones are not available. Small
pp.149-150,increases in numbers of arrests could be expected if phones were
191-192 always available to people who want to call police. Installing more pay phones, however, or allowing citizens to use police call boxes will not significantly alleviate this cause of delay. Moreover, to cut by one-half the number of delays that derive from this cause would require between two and four times the number of pay phones currently in place--clearly a very expensive proposition. Only nine of over 3,300 crimes studied involved delays owing to callers' having no change for pay phones, and such callers were rarely delayed for more than a few seconds. Permitting citizens to call police numbers or phone company operators for free may be useful with respect to public relations and may contribute to arrests in a few extraordinary

cases but will not cause perceptible changes in arrest rates.

Mass Media Advertising. Finally, there is no evidence whatever that television and radio advertising, urging people to
pp.177-180 call the police immediately because "it's the right thing to do," will have any effect on reporting delays or arrest rates. When people delay, they do so for what they see as being good reasons. If the police hope to encourage faster reporting, they will have to give the public good reasons not to delay.

TABLE OF CONTENTS

LIST OF TABLES

Preceding page blank

LIST OF FIGURES

Preceding page blank

CALLING THE POLICE:
CITIZEN REPORTING OF SERIOUS CRIME

CHAPTER 1
INTRODUCTION AND OVERVIEW

For decades police believed that they should respond to calls for service as quickly as possible. It was reasoned that the faster the response to calls for service, the more likely that patrol officers would encounter offenders at or near the scene and make arrests.

Beginning in the late 1960's, however, researchers began to question this notion. New studies began to indicate that many factors could detract from the benefits of fast police response to calls for service. Most recently, a National Institute of Justice study in the Kansas City (Missouri) Police Department, published under the title Response Time Analysis (1977), indicated that the time taken by a citizen to report a crime, and not the speed of the police response, was the major factor in determining whether or not an on-scene arrest would be made. It was found that as much as one-half of the time between completion of a crime and the arrival of an officer on the scene was taken by actions of the citizen who reported the crime. In short, although police response time was found to be a significant factor in the apprehension of suspects in a few crimes of specific types, the benefits of quick police response were usually negated by the time it took citizens to contact police and report that a crime had been committed.

Because the results of the Kansas City Response Time Analysis had profound implications for departmental policies regarding police

Preceding page blank

response to Part I crimes, the National Institute of Justice determined that parts of the Kansas City study would be replicated to determine whether those findings were applicable to other localities and departments. As a result, in 1979, the Institute awarded a research grant to the Police Executive Research Forum to replicate those parts of the Kansas City Police Department's Response Time Analysis which dealt with the time taken by citizens to report Part I crimes to the police. The results of this replication are reported here. The major questions addressed are as follows:

1. What proportion of the time between the commission of a crime and police arrival at the scene is taken by citizen reporting?
2. What actions do citizens take before calling the police and what impact do these actions have on total response time?
3. What problems do citizens encounter, and with what frequency, in attempting to contact the police by telephone?
4. What impact does citizen reporting time have on the probability of police making an on-scene arrest?
5. Do the answers to these questions vary from one city to another and, if so, to what degree?
6. How applicable are the results of the Kansas City study to other law enforcement agencies?
7. What can police departments do in terms of policy and practice to minimize the detrimental effects of citizen reporting time?

Organization of the Report

This report is directed at police executives who are concerned primarily with the findings of the research rather than the methods used. For this reason the main body of the report is written in a non-technical style. Wherever possible, comments concerning methods of data collection and analysis are relegated to notes included at the end of each chapter. More detailed technical discussions of methods are included in a separate technical report. Whenever it was necessary to choose between writing for researchers and writing for practitioners, the decision was made in favor of practitioners.

The findings of the report are presented as follows:

Chapter 2. Response Time and Arrest--A Synthesis of the Literature

A review and analysis of previous research concerning the benefits of rapid police response to calls for service.

Chapter 3. Citizen Reporting Time

A presentation of findings on the role citizen reporting time plays in delaying police responses to calls for service.

Chapter 4. The Decision to Report a Crime

A presentation of findings on the actions people take before deciding to call the police.

Chapter 5. Placing the Call: Communications Access Problems

A presentation of findings on the problems citizens encounter when calling the police after the decision to report has been made.

Chapter 6. Policy Implications

An analysis of efforts designed to reduce citizen reporting delays, identifying those efforts most likely to succeed.

Overview of Study Methods

Data were collected between April 21, 1979 and January 15, 1980. Four cities were selected for study: Jacksonville, Florida; Peoria, Illinois; Rochester, New York; and San Diego, California. As in Phase One of the Kansas City study, data collection was confined to the Part I crimes of burglary, robbery, aggravated assault, motor vehicle theft, larceny, and, in three of the cities, rape. (Rape was excluded from consideration in San Diego because of the possible impact this research might have had on a rape victim assistance program operating in San Diego at the time.)

A sample of the Part I crimes named above was drawn in each of the four cities. Within each of these samples, a distinction was made between involvement and discovery crimes. Involvement crimes were defined as those in which a victim or witness saw, heard, or knew of the crime as it was taking place; discovery crimes were defined as those which were noticed after the crime had been completed. A further distinction was made between cases in which an on-scene arrest was made and those which did not result in an on-scene arrest. Cases were randomly sampled within each of

these categories. Involvement crimes and crimes resulting in on-scene arrests were oversampled to insure that enough of these cases were available for statistical analysis. This means that these crime types were deliberately included in the sample more often due to this stratification than if a simple random sample had been drawn. When the samples from the four cities were combined, the resulting stratified random sample included a total of 3,332 cases for analysis. Table 1 shows the number of crimes of each type in the sample for each city.

The period of time from the commission of a Part I crime until an officer begins on-scene investigation is illustrated schematically in Figure 1. Here the total response time continuum is portrayed as consisting of several components. The definitions of components examined in this study are as follows:

- Citizen Reporting Time--the period between the earliest time police could have been contacted and the time they were contacted.
- Police Dispatch Time--the period from when initial contact was made between the reporting citizen and the police operator until a patrol officer was contacted and assigned to respond to the incident.
- Police Travel Time--the period between the dispatching of a patrol officer and the time that the officer began on-scene investigation.
- Total Response Time--the sum of all three components defined above.

The definitions employed here are the same as those employed in the Kansas City Response Time Analysis. Some overlap of these periods may

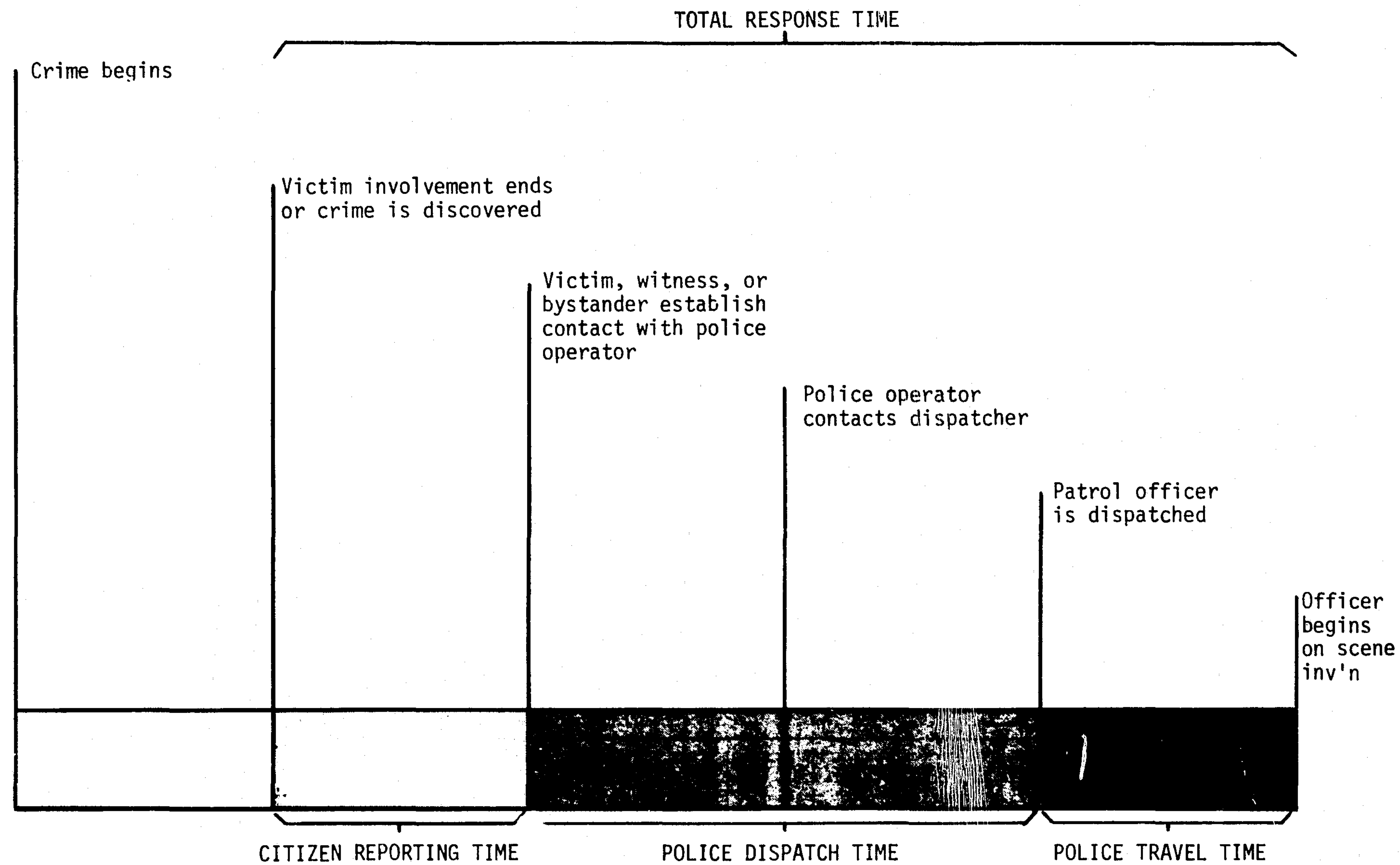
Table 1
The Sample of Part I Crimes

Crime Type	City	On-Scene Arrest	No On-Scene Arrest	Total
Involvement Rape	Jacksonville	12	32	44
	Peoria	5	31	36
	Rochester	1	28	29
	San Diego	*	*	*
Involvement Robbery	Jacksonville	33	117	150
	Peoria	7	89	96
	Rochester	13	99	112
	San Diego	47	105	152
Involvement Aggravated Assault	Jacksonville	125	96	221
	Peoria	27	88	115
	Rochester	42	115	157
	San Diego	83	83	166
Involvement Burglary	Jacksonville	120	112	232
	Peoria	24	90	114
	Rochester	43	121	164
	San Diego	101	106	207
Involvement Larceny	Jacksonville	89	113	202
	Peoria	27	105	132
	Rochester	16	130	146
	San Diego	87	76	163
Involvement Motor Vehicle Theft	Jacksonville	10	54	64
	Peoria	3	12	15
	Rochester	0	6	6
	San Diego	11	66	77
Discovery Crimes (Burglary, Larceny, and Motor Vehicle Theft)	Jacksonville	39	103	142
	Peoria	2	89	91
	Rochester	13	114	127
	San Diego	30	142	172
TOTAL	All Sites	1010	2322	3332

*Rape was not included in the sample in San Diego.

Figure 1

Components of Total Response Time for Part I Crimes



occur. For example, an officer may begin travel to the incident scene before the dispatcher has completed the message. Such factors were found to be of no significant consequence, however.

Our analysis focused on reports received by telephone, although approximately two percent of the incidents in the sample were reported by walking into a police station or by manually-operated alarm. Because offenses "reported" by an automatic alarm are almost always false alarms, and because there is no reporting delay when an alarm is involved, these cases have not been considered. In Kansas City, they comprised less than two percent of the crimes sampled. Crimes called to the attention of the police when a citizen flagged a patrol car were also not considered, since these events did not occur often and were not included in the Kansas City study.

For each Part I incident included in the sample, data were acquired from several sources:

- crime reports filed on the incidents;
- arrest reports;
- recorded telephone communication tapes;
- dispatch cards and printouts; and
- interviews with people involved in the incidents.

The data obtained from police archival records were abstracted by field research assistants employed by the Forum to work full-time on the study, one in each of the four study sites. Most interviews were conducted by Washington-based staff over the telephone, although a few were conducted in person or by local telephone call, either by the field research assistant or by a part-time personal interviewer. Table 2 shows the number of interviews of each type for each city.

An interview was conducted with the person in each incident who contacted the police; in cases where the call was made by someone other than the victim, the victim was interviewed as well. The four categories of survey respondents, then, were victim-callers, witness-callers, bystanders who were neither victims nor witnesses but who placed the call to police, and non-caller victims. Table 3 shows the number of interviews conducted with each respondent type. For about one-fourth of the cases sampled, two interviews were conducted: one with the victim and another with the person who reported the crime.

To increase the likelihood that respondents would remember the details of an incident, they were contacted soon after the incident was reported: initial contact was established within 16 days and all interviews included in the analysis were completed within six weeks. Numerous quality control checks on interview procedures (described in Appendix A) were implemented to insure high data quality.

Table 2

Number of Telephone and Personal Interviews
Conducted in Each Study Site

		Type of Interview		
		Telephone	Personal	Total
Jacksonville	n	1151	152	1303
	%	88.3%	11.7%	
Peoria	n	639	71	710
	%	90.0%	10.0%	
Rochester	n	811	75	886
	%	91.5%	8.5%	
San Diego	n	1166	30	1196
	%	97.5%	2.5%	
Total	n	3767	328	4095
	%	92.0%	8.0%	

Table 3

Number of Interviews Completed in
Each Respondent Category for Each Study Site

		Respondent Type			
		Victim-Caller	Witness-Caller	Bystander Caller	Victim Non-Caller
Jacksonville	n	593	145	191	374
	%	45.5	11.1	14.7	28.7
Peoria	n	365	53	72	220
	%	51.4	7.5	10.1	31.0
Rochester	n	379	71	104	332
	%	42.8	8.0	11.7	37.5
San Diego	n	523	154	157	362
	%	43.7	12.9	13.1	30.3
Total	n	1860	423	524	1288
	%	45.4%	10.3%	12.8%	31.5%

The questionnaire used in the interviews was a synthesis of the four questionnaires used by the Kansas City Police Department in the Response Time Analysis study (see Appendix G). A few questions differ in form and substance from those used in Kansas City and some new questions were added on the basis of discussions held with the Kansas City analysts who brought to light certain problems they had encountered with specific items or data types.

CHAPTER 2
RESPONSE TIME AND ARREST--A SYNTHESIS OF THE LITERATURE

Although police have believed rapid response to be advantageous for close to half a century, that belief has only been systematically tested over the last fifteen years. Recent research has cast doubt on the effectiveness of fast police response. Unfortunately, most researchers make the unrealistic assumption that police response time determines the chances of arrest. A more realistic view, that taken by the Kansas City Police Department in its 1977 study of response time, is that the chances of arrest depend not on the amount of time it takes police to respond, but on the amount of time suspects have to get away.

This "suspect getaway time" is generally equal to total response time, the latter of which comprises citizen reporting time, police dispatch time, and police travel time. Only when police response time is viewed in this context can the true benefits of rapid response be determined. The review and synthesis of literature presented here is designed to put police response time into perspective within this total response time continuum.

Origins of the Effort to Reduce Police Response Time

In the early part of this century, before radios were installed in patrol cars, there were three ways for victims and witnesses to get police help: they could wait for the beat officer to walk by; they could wait to flag down a patrol car when, or if, it passed; or they could call the police department on a telephone (at the time a relatively new and rare form of technology).

On receiving an emergency call, the central dispatcher would signal the officer nearest the scene by sounding a bell or siren, or flashing a series of lights installed on call boxes or lamp posts placed throughout the beat. The beat patrolman would then respond by returning to, or telephoning, the stationhouse to get the information necessary to respond to the call. Street noise and other distractions, and the need to respond to flaggings and other calls made the recall system erratic: Leonard (1938) reported that the average time taken to recall and dispatch an officer to an emergency was four to seven minutes.

The development of car radios allowed for much faster dispatch times. For the first time on-scene arrests became a regular occurrence. First used experimentally by the Detroit Police Department in the late 1920s, the police radio drew an enthusiastic reception:

> Murderers have been caught at the scene of the crime before they had a chance to dispose of their weapons... burglars have been captured while still piling up their loot in homes. Bewildered auto thieves have gasped as the police cruiser roared alongside of them a few minutes after they had stolen a car...(I)f time permitted...I would probably relate to you the most spectacular series of criminal apprehensions in the history of our profession (Rutledge, 1929).

The Wickersham Commission--in 1931, a forerunner of the 1967 President's Commission--concluded that "the radio in police work is assured a brilliant future" (Monroe and Garrett, 1968).

As more departments began to use the radio, and experience with the new dispatch system increased, enthusiasm was tempered somewhat. Police managers found that fast response times did not always lead to arrests. In 1938, the author of the first modern police communications text noted the importance of rapid citizen reporting:

> The time interval between the commission of a crime and the moment that the telephone receiver is lifted from the hook is an extremely significant one. It may vary from a few minutes to days or months. Some crimes are never reported to the police. Occasionally, they receive almost instant notification, and on such occasions, the law enforcement process has a reasonable opportunity to function effectively (Leonard, 1938).

Leonard went on to note that even in those cases which were reported immediately, response times of three minutes or more were almost certain to result in the escape of the offender. "At the moment that the average running time goes beyond this limit, the investment in radio communication equipment tends to become unprofitable." In other words, if the total response time was greater than three minutes, the radio was no more effective than the old recall method.

Today, the conventional wisdom concerning optimum response time remains virtually unchanged. Recent textbooks still cite three minutes as the limit of effectiveness for police response (Wilson and McLaren, 1977;

Folley, 1978). Police managers still point to average police response time as a measure of patrol effectiveness, and the National Commission on Criminal Justice Standards urges that response times be used to measure the productivity of police departments (National Advisory Commission, 1973).

But the opinions of police managers on the subject, although grounded in experience, are imprecise and have little empirical support. Different conditions may exist in different cities, or even in different districts of the same city. For this reason, when research into police activities began in the 1960s, analysts were confronted with a number of questions:

- Do the chances of arrest always increase as total response time is shortened? If so, by how much?
- What can police do to insure the highest chances of arrest for the most cases?
- Are efforts to reduce response times cost effective? If police invest in high technology dispatch equipment or more patrol officers, for example, will the chances of arrest increase enough to make the investment worthwhile?

These very questions were among those considered by the President's Commission on Law Enforcement and Criminal Justice in 1967.

The 1967 Task Force Report

By 1967 the importance of police response time in effecting on-scene arrests was generally accepted. A study conducted by the President's

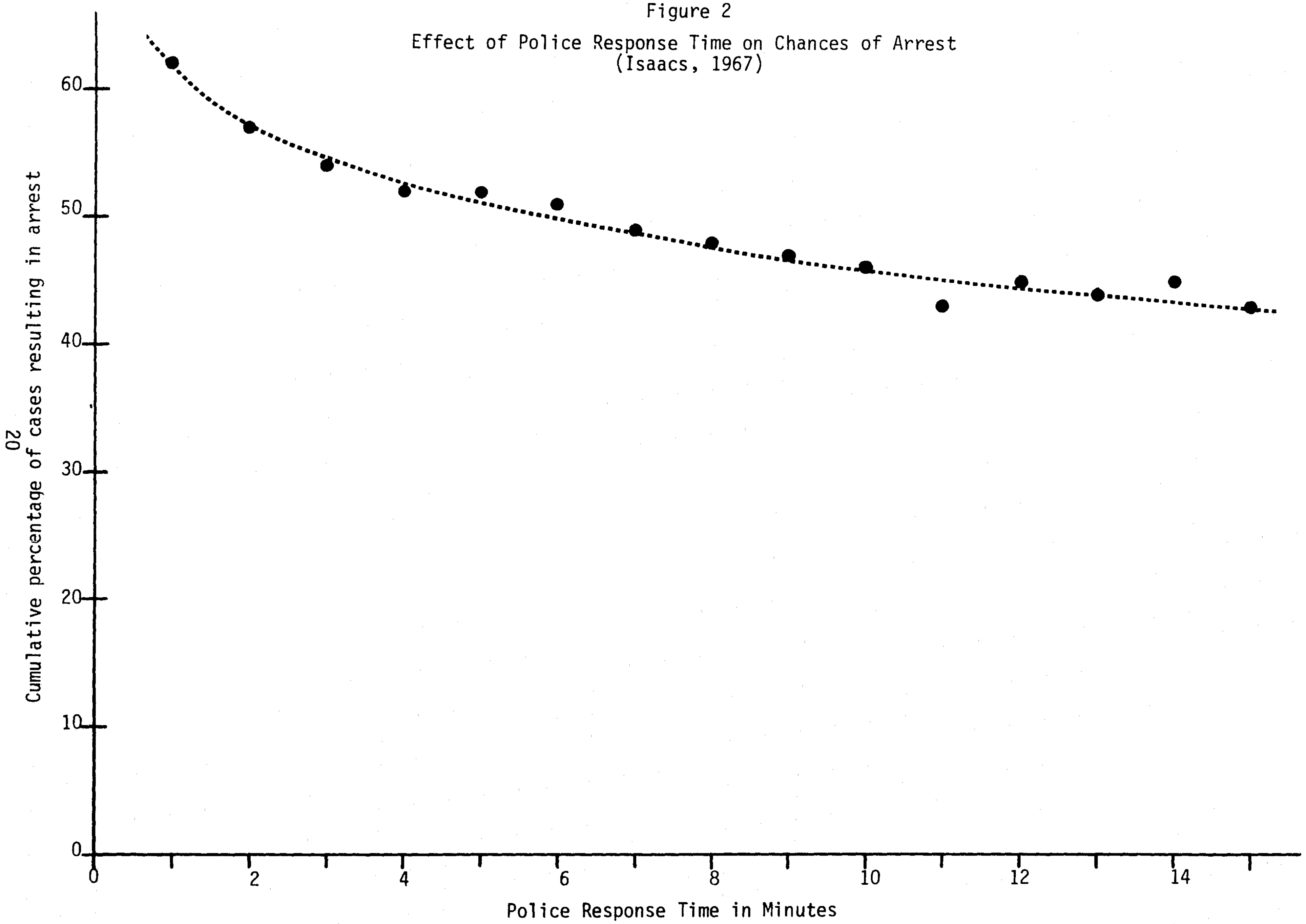
Commission on Law Enforcement and Criminal Justice was the first systematic attempt to measure this relationship. In addition to measuring the effect of response time, the study used existing records from the Los Angeles Police Department to examine other factors thought to influence case clearances such as patrol officer's on-scene activities, investigation by detectives, and citizen reporting time (Isaacs, 1967).

Herbert Isaacs, a consultant to the Commission's Task Force on Science and Technology, collected information on police responses to some 4,500 calls for service, including both crime calls and non-crime service calls. Police response times were measured from information contained in the dispatch card for each call; but response times could only be calculated for a small number of calls, those in which the patrol officer notified the dispatcher when he arrived at the scene. Arrest information was taken from the patrol officers' crime reports and investigative follow-up reports.

Isaacs found a moderate relationship between fast response times and increased arrests. He demonstrated this in a graph that has since been reproduced in nearly every response time study, and is included here as Figure 2. This graph shows the relationship between police response time and probability of arrest. Isaacs' results indicated that small decreases in police response times had a significant impact on arrest only when response times were already rather short. For example, the difference between a three- and four-minute response might have an important effect on

Figure 2

Effect of Police Response Time on Chances of Arrest
(Isaacs, 1967)



arrest; but the difference between a 10- and 11-minute response would matter little, if at all.[1]

Although the Isaacs study is well-known and widely cited, there are several reasons why it provides less information on the relationship between response time and arrest than one would hope for. A discussion of the weaknesses of that study follows.

Aggregated Results

Issacs did not differentiate among crime types. I.. so doing, he implicitly assumed that the arrest-response time relationship would be the same for all types of crimes. If the relationship were different for different crime types, this could have been shown by simply analyzing the data separately for each crime type and comparing the results.

Non-Response Related Arrests

Issacs treated all arrests alike although many would have been made no matter what the police response time. A non-response related arrest would occur, for example, when a shoplifter was apprehended by a security guard, or when the victim knew the name, address, or location of the suspect. To realistically assess the effect of police response time, response-related arrests should have been distinguished from other types of arrests.

Two-Directional Effects

It was unclear from Isaacs' work whether the probability of arrest affected response times, or vice versa. Officers on patrol may respond more quickly if they believe there is a good chance of producing an arrest and less quickly where there seems less chance of an arrest. Again, it was unclear from Isaacs' work which of these was the more frequent occurrence, and what role each of the two played in producing on-scene arrests.[2]

Uncertain Data

Isaccs, by making use of existing records in measuring police response times, assumed that officers notify dispatchers of their arrival as soon as they reach the scene. Because radio channels are frequently unavailable, however, officers do not always contact the dispatcher when they arrive. On some calls, contact is made before reaching the scene (particularly when the incident is serious and in progress and the officer doesn't want to waste time waiting for an open channel after arrival). On other calls the notice might be given long after the officer reaches the scene, or not at all. This can occur when the officer decides not to wait for an open radio channel, when the officer simply forgets, or when an officer is concerned that his response will look slow.[3] This problem could have been avoided in two ways: by putting observers with stopwatches

in cars, directly timing responses (as did Kansas City in its report); or, by using an unobtrusive electronic monitoring device--automated vehicle locating--which computes exact police response times without relying on officers' self reports.[4]

Too Few Cases

The biggest problem with the Isaacs study, however, lay in the failure to collect enough data. Of the 4,500 cases sampled, police response times were calculable for only 265; of these, only 70 were crimes. Hence, the entire analysis of response times rested on these 70 cases. Moreover, these incidents were by no means an unbiased sample of all cases considered: 30 of the 70 were cleared by on-scene arrest (a 43% arrest rate), while only 14% of the total crime sample were cleared by on-scene arrest.[5]

Despite the technical problems he encountered and the scarcity of data with which he worked, Isaacs's contribution to the study of arrest-response time relationships is important for two reasons: first, the graphical representation of his results gave later researchers a starting point; second, even though he was unable to measure it from police records, Isaacs stressed the importance of citizen reporting time in determining the chances of arrest. Both the Kansas City Police Department's Response Time Analysis and the present study bear out the overriding effect of reporting delay. Later studies about the effect of response time on arrest can be looked at as attempts to replicate Isaacs's basic technique, while controlling some of the problems he encountered. Two large studies of the Seattle Police Department, and smaller-scale efforts in Ottawa and New York City produced very similar results.

Replication of the Isaacs Study

The first test of the generality of the 1967 findings was conducted by Clawson and Chang (1977), in a study involving the Seattle Police Department. The authors examined 6,000 crime calls for service. The police response time could be measured for some 2,500 of these calls. The large sample used allowed for stratification by crime type. Thus, Clawson and Chang were able to show that the response-arrest relationship varied for different crimes.

In addition to replicating the Isaacs analysis, the authors looked at the independent effects of dispatch time and travel time. The idea was to see which of these two components had the greater impact on arrests. Dispatch delay was found to be unrelated to arrest; the relationship of travel time to arrest was small (though statistically significant) for most crime types. However, when dispatch and travel time were added, the resulting total police response time showed a much larger effect on the probability of arrest for most crimes than did either individual component. (Similarly, when citizen reporting time is added to police response time, we should expect to see a larger relationship with arrest than for either individual component. This notion is developed further below.)

Clawson and Chang's analysis was replicated by Tarr (1978), with a larger and more recent sample from Seattle. The results were similar: small effects on probability of arrest for dispatch and travel time separately, and a larger impact for police response as a whole. Tarr also found different relationships for different crimes: a fast response appeared more likely to increase the probability of arrest for burglaries and assaults than for other crimes. Like Isaacs and Clawson and Chang, Tarr found that the favorable effects of rapid police response diminished rapidly with the passing of time, and that the greatest impact on arrest probabilities occurred when response times were <u>two minutes</u> or less.

Although both Seattle studies employed large samples stratified by crime type, some of the problems encountered by Isaacs were still present. For example, Clawson and Chang felt that two-directional effects were a major problem, saying:

> It is feasible that, to a certain extent, both police dispatchers and responding patrol officers are able to instinctively sense which calls have a high probability of resulting in arrest and thus react quicker to these calls. (p.66)

The accuracy of officers' notification times again remained an unresolved issue. In addition, response-related and non-response-related arrests were not considered separately. This sometimes produced odd results: arrest rates for burglary were high for both very short and very long response times, indicating that the patrol officer had either caught the suspect on the scene due to fast response, or off the scene due to information supplied by the victim.

Despite these problems, the Seattle studies added credence to the common-sense view that very short response times (two minutes or less) were more likely to result in arrests. Although the studies conducted by Brown (Ottawa) and Holiday (New York City) appeared to contradict the Seattle findings, they, in fact, were quite consonant. Brown (1976) found that response times were not consistently shorter for crimes in which an arrest was made than for non-arrest cases. He noted, however, that the effect of citizen reporting time (which he could not measure) could be so large as to wash out any relationship, particularly given the small sample size. Moreover, Brown's sample included only a few cases with response times under three minutes--thus limiting his ability to draw conclusions about fast response times.

Holliday (1974) found that, in New York City, travel times were not significantly shorter when arrests were made than when they were not. He did not, however, measure dispatch times, and for travel times relied on questionnaires completed by responding officers (which were probably even less reliable than dispatch records). Although it is possible that response-arrest relationships were different in Seattle, Ottawa, and New York City, it seems more likely that differences in the research designs produced the appearance of differences in the relationships.

The Isaacs study, although flawed by problems in data collection and sample size, set the pattern for most future work in the response time field. The Seattle studies and the analyses of Brown and Holliday represented the best that could be done with existing police records (and available funds), and indicated what appears to be a fairly reliable

relationship between response time and arrest. In order to confirm this relationship, it was necessary to overcome some of these problems. In particular, researchers needed to collect more accurate police response data and distinguish between response-related and non-response-related arrests. To this end, the Kansas City Police Department began a carefully-controlled response time study in 1976.

The Kansas City Response Time Analysis

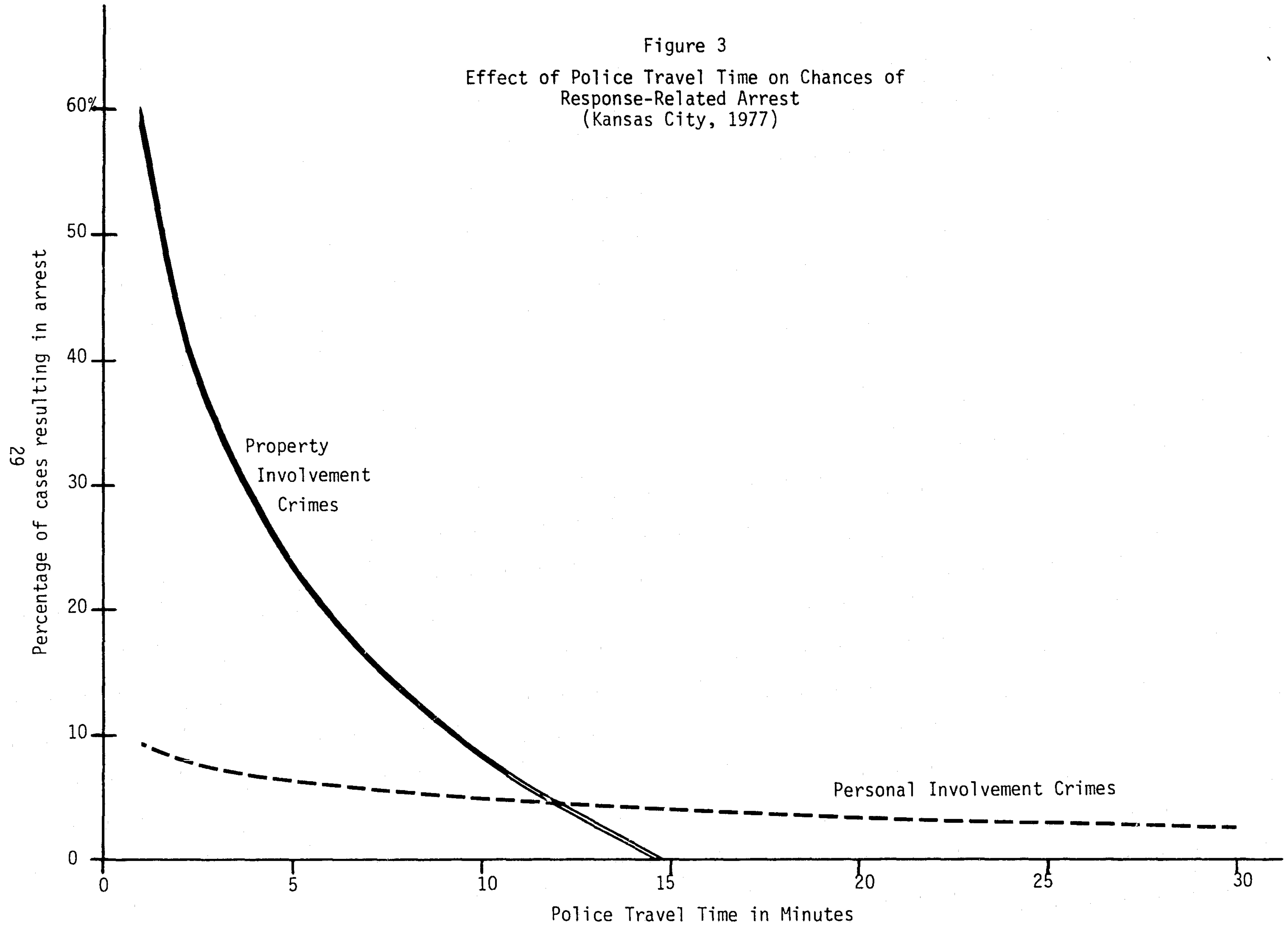
The <u>Response Time Analysis</u> was the most extensive and exhaustive study available on this topic. Various shortcomings of previous efforts were addressed. The Kansas City study researchers differentiated between response-related and non-response-related arrests and validated response times through direct observation. Two crime groups were examined separately. <u>Involvement</u> crimes were defined as incidents in which a victim or witness heard, saw, or knew about the crime as it was taking place; <u>discovery</u> crimes as crimes that became known only after they had been completed. In addition, victims and witnesses were interviewed after each incident, and provided estimates of citizen reporting time. Thus, the authors were able to conduct a more thorough analysis than had been possible previously.

The Kansas City study measured the relationship between police response time and arrests, first for all types of arrests, and second for arrests that could be attributed to response time. As expected, very few discovery crimes (1%) led to an arrest, and of those only one (0.2%) could be attributed to rapid police response. On the other hand, nearly 30 percent of involvement crimes led to an on-scene arrest. Response-related arrests comprised 7 percent of these cases. Because a large majority of Part I crimes committed were discovery crimes, however, rapid police response led to an arrest in only 3.0 percent of Part I crimes.

The relationship between police response time and response-related arrests differed for different kinds of involvement crimes. In violent involvement cases--rapes, robberies and assaults--the speed of police response had almost no impact on the probability of arrest. However, for non-violent involvement cases--larcenies, auto thefts, and particularly burglaries--the probability of arrest was nearly 60 percent for very short response times, but decreased rapidly after only a few minutes (see Figure 3). The authors explained this result by noting that, in a violent crime, the suspect realized he had been seen, and was likely to begin his flight immediately. For non-violent involvement crimes, the crime was more frequently noticed by a next-door neighbor or passer-by, and the suspect did not know he had been discovered. Thus he did not begin his flight immediately, and was more likely to be caught.[6]

In addition to measuring the impact of police response on arrests, the Kansas City Response Time Analysis determined the impact of citizen reporting time on arrest. The results were the same as those found by measuring the effect of police response: for non-violent involvement

Figure 3
Effect of Police Travel Time on Chances of
Response-Related Arrest
(Kansas City, 1977)



crimes, the probability of response-related arrest was almost 60 percent for crimes reported immediately, but dropped to less than 10 percent for reporting delays of more than five minutes. For violent crimes, the effect of reporting time on arrests was much less pronounced.

On the assumption that police response times would be meaningless for long report times, the Kansas City analysis measured the relationship of police response to arrest for three different reporting time categories: fast reporting (up to two minutes); moderate reporting (three to nine minutes); and slow reporting (ten minutes or more). Generally, the chances of arrest were found to be higher when reporting and police response were both fast. For reporting times of ten minutes or more, there was no relationship found between police response and arrest. The Kansas City Police Department concluded that a fast police response would affect the chances of arrest only for nonviolent, involvement cases in which the crime was reported within ten minutes of its commission.[7] These cases comprised about nine percent of all Part I crimes reported.

Although better conceived than prior studies, the Kansas City study was confronted by two problems Isaacs encountered: a scarcity of data,[8] and a failure to control for directionality of the relationship.[9] Despite these difficulties, however, it seems probable that the major results of Kansas City are fairly reliable. It is doubtful that either a larger sample size or a control of directionality would produce a relationship that would be strikingly different. If anything, the relationship would be weaker.[10]

As with most good research studies, the Kansas City study, in the process of answering a few specific questions, raises a host of others: If police response times matter only for "short" citizen reporting times, how short is "short"? If it is true that very fast police response times have an impact on arrest, how fast a response time should police departments strive for--two minutes, four minutes?

Although all studies seem to indicate the same results in general terms, they differ on the answers to these more precise questions. Tarr (1978) indicates that a fast response time would be two minutes; Kansas City finds anything up to six minutes to be a "fast" response for some cases. Those differences may be the result of dissimilar cities, samples, or data-collection methods; on the other hand, they may simply reflect the uncertainty of the data available. To answer questions about police response time, and from these answers derive useful policies, researchers must distill from the many studies that have been conducted a single perspective--one that takes into account the problems of two-directional effects and the impact of citizen reporting.

A Response Time Synthesis

What generalizations can be drawn concerning the characteristics and effects of the total response time continuum regarding on-scene arrest?

First, consider the stakeout, a patrol activity that at first glance seems to have little to do with response time. A stakeout of a likely crime target is based on the idea that police can pinpoint probable crime scenes and stop crimes in progress. In the ideal scenario, the police are at the scene as the crime begins (response time is zero), and the suspect does not know he has been detected. As a result there is almost no opportunity for the criminal to escape and the probability of arrest is very high.

Preventive patrol is another activity that can be viewed in the same way. Like the stakeout, preventive patrol is partly based on the chance that a patrolling officer will intercept a crime in progress. If the officer detects the suspect before he detects the officer, the suspect will have little opportunity for flight and will probably be arrested. If, on the other hand, the suspect sees the patrol car as it approaches, he can flee. Although the officer may realize that a crime has just been committed, the probability of arrest will be slightly less because the suspect has a head start.

As illustrated in these two cases, the likelihood of arrest depends on the size of the suspect's head start. We would expect the criminal to have a much longer head start when an officer responds to an in-progress call for service than in the case of a stake-out, and an even longer one when there has been a time lag between the crime and the call. Thus, with all else being equal, the chances of arrest are generally less for call responses than for stakeouts and patrol interceptions. The question is--how much less? To determine the answer, one must consider three distinct cases: very short delays, such as a few seconds; fairly

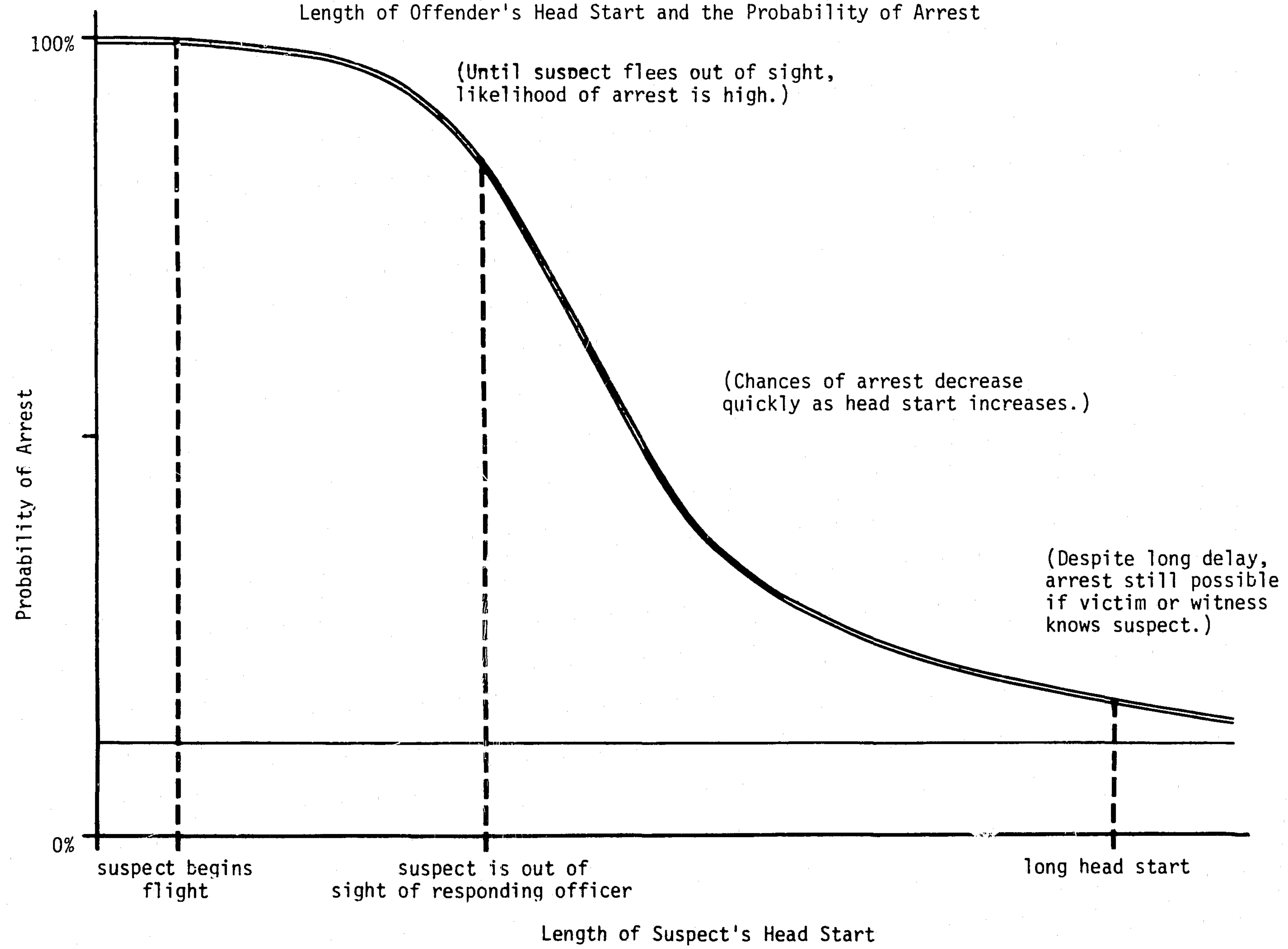
short delays, perhaps a minute or two; and longer delays of five minutes or more.

If the delay is very short, an officer will most likely see the suspect in flight as he arrives at the scene and be able to follow. (Officers typically respond to calls by proceeding to the scene of the crime.) As the head start increases, the likelihood of arrest diminishes slowly. When the suspect's head start is so long that the responding officer can no longer see the suspect in flight, the probability of immediate arrest is very low.

A one-minute head start probably provides enough time for the suspect to flee out of sight. In such cases, a responding officer must obtain a description of the offender and the direction of flight, then conduct a search. The search could well be successful if the suspect is slow and the description adequate. But the chances of a successful search drop quickly to zero as the suspect's head start increases--there are simply too many hiding places available for even several units to cover.

Although the chances of arrest are slim for long delays, immediate apprehension is still possible if the suspect can be immediately identified by a victim or witness or through evidence present at the crime scene. Thus, the likelihood of catching the offender levels off to some small percentage for long delays. (These arrests are not the result of fast police response, of course. If only response-related arrests are considered, the likelihood will level off to zero.) Figure 4 is a schematic representation of the "headstart"-arrest relationship.[11]

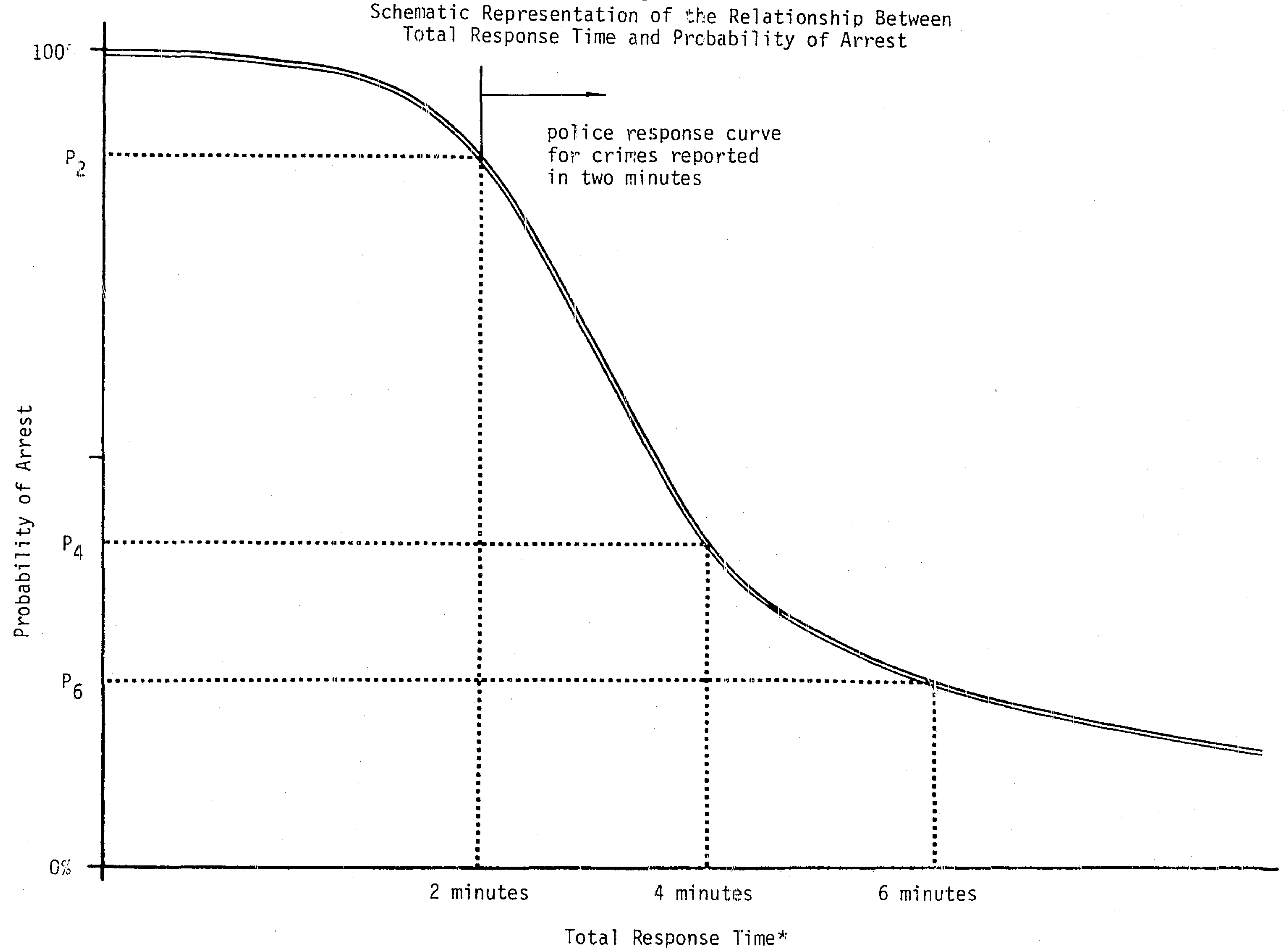
Figure 4
Schematic Representation of the Relationship between
Length of Offender's Head Start and the Probability of Arrest



The length of the suspect's head start, of course, depends on the length of time between when the suspect begins flight and when the officer begins to give chase. For stakeouts and patrol interceptions, this time is very small. For crimes reported to the police over the phone, the delay is much larger and more difficult to measure. Because police delay is easier to measure and control, it has been examined closely by researchers and police managers; but the discussion above predicts that arrests do <u>not</u> depend on police response alone, but rather on the sum of police response time and citizen reporting time. Thus, the chances of arrest should be the same for all cases with the same <u>total</u> delay. All else being equal, it should not matter that reporting delay was four minutes and police response time one minute, or that reporting was immediate and the police delay five minutes.

By measuring separate components of total response, previous researchers have seen only part of the response time picture. When a citizen delays two minutes in <u>reporting</u> a crime, the actual relationship of police response time to arrest for this case is represented by that part of the Figure 5 response curve to the <u>right</u> of two minutes. The probability of a response-related arrest drops off sharply from this point on. If a unit is just around the corner and responds in a few seconds, the probability of arrest is still high, as illustrated by the point tabled P_2 in Figure 5. If the unit arrives two minutes after the call, the predicted probability of arrest corresponding to four minutes is considerably less,

Figure 5
Schematic Representation of the Relationship Between
Total Response Time and Probability of Arrest



*Total response time = length of head start perhaps falling at the point marked P_4, and so on. In the same way, the relationship of police response time to arrest for crimes reported within two, four, or six minutes of their occurrence are those parts of the total curve to the right of the two, four, and six minute marks, respectively.

When the effect of police response time on the probability of arrest is looked at without considering the other components of total response time, as has been done in past research, the relationship is misleading. It fails to account for the time which has passed before the police response began. As a result, those who expect to see a very high probability of arrest with what appears to be a short response time are consistently disappointed. A more realistic view is obtained by adding all the components of response time, that is, combining citizen reporting time with police response time. This predicts the probability of arrest far more accurately than if a single component were studied out of context.

Similar distortions occur when dispatch and travel times are artificially separated: since the actual relationship is between arrest and total delay, the true relationship is masked. This was verified by Clawson and Chang, Tarr, and the Kansas City Police Department when they measured--first separately, then jointly--the effects of dispatch and travel time.

The relationship will vary according to crime type as well. In domestic assaults, for example, the suspect does not typically flee even when detected. And, clearly, the relationship varies when circumstances vary: suspects are harder to see at night than during the day, for example. Therefore, the probability of arrest for night crimes drops off more quickly than for daylight crimes. The aggregate result lies somewhere between the two.

To estimate how sharply the probability of arrest drops off as a function of total delay, it is necessary to collect information not normally collected by police. Since data are required on reporting delay (a citizen action), suspect flight (a suspect action observed by a citizen), and response time (a police action), it is impossible to adequately determine the relationship based solely on police department records: information only available from citizens must be collected. Citizens were interviewed by the Kansas City Police Department for Response Time Analysis, and by the Police Executive Research Forum for this study.[12]

Police Response Time and Other Outcomes

Arrest is but one of many outcomes that police response time affects. Fast responses might also result in higher rates of witness availability and citizen satisfaction, and may be important in preventing the aggravation of citizens' injuries.[13] The relationship between police response and these outcomes is more definitive than for arrest, however.

Citizen Satisfaction

The link between police response time and citizen satisfaction was also questioned in Kansas City's Response Time Analysis. The Kansas City researchers found that citizen satisfaction depended not on the length of police response time itself, but on the difference between police response time and the citizen's prior expectation of what the response time would be. When police arrived later than expected, citizens were dissatisfied with police response; but when citizens expected police to arrive when they did--no matter how long after the call it was--their satisfaction was found to be consistently high. These results have proved consonant with those studies conducted in such diverse locales as Birmingham, Alabama (Farmer, 1981), Wilmington, Delaware (Tien, Simon and Larson, 1977), and St. Louis, Rochester and Tampa Bay (Percy, 1980). Moreover a recent evaluation indicates that if the police complaint taker informs the citizen of how long it will be before the police arrive, citizens are satisfied with response times of up to 30 minutes for nonemergency calls (Cahn and Tien, 1981).

Citizen Injury

Handling injuries is not the primary responsibility of police: in most places, medical emergencies are handled by the fire department or an independent agency. Nevertheless, police cars are more numerous and maneuverable than ambulances, and can usually arrive at the scene of crimes and accidents more quickly (Pittman, 1977). Rapid police response can make a difference if the police administer necessary first aid or take the victim to a hospital before the ambulance arrives. This is because, for the most serious emergencies, first aid can be vital to the recovery of the victim: aid must typically be given within five minutes of the time breathing or heartbeat stops, or severe bleeding begins in order for the patient to survive (Montgomery, 1971; Committee on Cardiopulmonary Resuscitation, n.d.).

Although responding quickly to medical emergencies is necessary, police administrators must consider the following factors:

- As with arrest, the degree of citizen injury will depend on citizen reporting time as well as police response time. Frequently, citizen reporting time is so long that marginal cuts in police response have no effect.[14]
- Most police officers are not rigorously trained in first aid. Even when well trained, studies indicate that most use it only in life-threatening situations. (Myrick, et al., 1978)
- Less than one-half of one percent of the calls received by the typical police department concern life-threatening, medical emergencies.[15]

Because medical emergencies happen so seldom, the Response Time Analysis did not include enough injury cases to test the relationship between police response and injury severity. Even without empirical proof, it is reasonable to assume that rapid police response has beneficial effects in a few emergencies if police are trained in first aid and prepared to use it.

Witness Availability

Like citizen injury and arrest, the likelihood that a witness to a crime will be available depends on citizen reporting time as well as police response time. Since witnesses do not typically flee after witnessing a crime, however, whether they stay at the scene until the police arrive will probably depend more on the actions of other witnesses and victims, and other chacteristics of the situation (such as location and time of day) than on the length of time it takes the police to arrive.[16] Kansas City found that the probability that a witness would be available for a violent, involvement crime decreased between one percent and three percent for each additional minute of police response.[17] Thus, short delays in police response do not seriously affect the chance that witnesses will be available, but delays of more than five or ten minutes result in significantly decreased chances. Although a rapid police response probably increases the number of available witnesses, a more effective policy in view of these very small effects may be to influence witness activities through public education or community involvement programs. Programs such as these are considered in more detail in Chapter 6: Policy Implications.

In summary, then, previous research suggests the following:

- The chances of arrest depend on total response time, but only when it is fairly short.
- Total response time influences the extent of citizen injuries in a few cases, and police response time affects witness availability slightly.

• Unfulfilled citizen expectations of police response time are important causes of dissatisfaction, but people are satisfied with slow response times if they are notified in advance by the complaint taker.

When citizen reporting time is more than a few minutes in length, it seems clear that a response-related arrest cannot be made, no matter how quickly the police respond. How long, then, do citizens take to call the police? How does citizen reporting delay compare to dispatch and travel delays? Does the time needed to report a crime differ from one city to another? These questions are considered in Chapter 3.

NOTES

1. Notice that the curve shown in Figure 2 does not indicate the chances of arrest for each response time up to fifteen minutes. Instead, it shows the accumulated chances of arrest for each response time. That is, 52 percent is not the probability of arrest when response time is three minutes; it is the average probability of arrests for all cases in which police response took three minutes or less. Isaacs apparently graphed his results in this way to make the curve smoother and easier to read; later researchers used regression to estimate a curve, and were able to show the chances of arrest for each individual response time.

2. To control for these two-directional effects, two methods may be used: (1) monitor the information available to the responding officer, group cases together in which the information provided was the same, and measure the arrest-response relationship for each group; (2) control for the two-directional relationship statistically, using the econometric techniques of two and three-stage least squares. The Kansas City Response Time Analysis (1977), found several variables to be good predictors of travel times. When the effects of travel time were taken into account, these variables did not predict arrests. These variables included: the distance traveled to the scene; whether or not the officer was in the beat of the incident when dispatched, and whether the officer was in or out of his own beat; the priority of the call assigned by the dispatcher; and whether or not the call was "busted"--another officer arriving at the scene before the dispatched officer did.

3. Maltz (1975) cites these problems in criticizing the use of response time as a performance measure.

4. Larson, et al. (1979) have proposed using automated vehicle locating (AVL) to monitor police preventive patrol activities to avoid the expense of using participant observers. Although there is no evidence that participant observers have any effect on police activities (and patrol officers insist that there is no effect), it would be very difficult to show that an effect existed. Use of AVL would eliminate any question of bias resulting from the presence of an observer.

5. For our purposes, "on-scene arrests" are arrests made by a responding patrol officer at or near the scene of the crime. The actual number of crimes for each category is given in the following table:

CONTINUED

1 OF 7

	Crimes resulting in on-scene arrest	Crimes resulting in no arrrest	Total
Crimes with calculable police response times	30	40	70
Crimes without calculable police response times	197	1347	1544
Total	227	1387	1614

Chi-square for this table is 47.73. The probability that crimes with calculable response times are an accurate reflection of all crimes sampled is approximately one in 200 billion.

6. This explanation was offered by the Principal Analyst of the Kansas City study, William Bieck, in a presentation at the Police Executive Institute in Dallas, Texas, on February 11, 1978.

7. Although this is one way of taking citizen reporting time into account, it doesn't use all the information available, since very different reporting times (three and nine minutes, for example) are aggregated together. In addition, Kansas City took the reciprocal of travel time in order to explain the largest possible percentage of the variance in response-related arrest. Hence, Kansas City got some results which are difficult to explain: some probabilities of arrest are negative, while the probability of arrest is higher for one- or two-minute travel times when reporting is moderate (three to nine minutes) than when citizens report very quickly (within one to two minutes).

8. Only 35 calls, about 5 percent of the sample, resulted in response-related arrests. Although this small number will not affect the size of response-time arrest relationships, it will affect the significance of these relationships and the reliability of the slopes. With a larger sample of response-related arrests, relationships Kansas City found to be statistically insignificant (likely to be due only to chance), might be found to be significant. In addition, the small sample size means that the range within which it is fairly certain the "real" slope lies will be very large. For example, one can be 95 percent certain only that the "real" slope of the travel time/response-related arrest curve for one- or two-minute reporting times is somewhere between -.0169 and -.4203. This is equal to

$$-.2186 \pm (1.96)\ (.1029)$$

where -.2186 is the observed slope, 1.96 is the value of Z corresponding to 95 percent confidence limits, and .1029 is the standard error of the observed slope. The slope for all reporting times is -.1724, well within the confidence range. Thus the relationship between travel time and response-related arrest for fast reporting times is not significantly different from the relationship for all reporting times. Although the 95 percent intervals are only strictly correct when the dependent variable (here, arrest) is normally distributed and homoskedastic with respect to the independent variable (travel time), the example indicates the low precision of the estimated slopes.

9. This problem is made worse by the lack of control for two directional effects. Since Kansas City was able to accurately predict police response time from information that should have no impact on arrest (distance traveled, patrol workload, whether the officer was in or out of the car at the time of dispatch), a reanalysis could control these by using a two or three-stage least squares technique. Since dispatchers' delays and patrollers' driving speeds are likely to depend on some of the case characteristics Kansas City examined (crime type, length of citizen reporting times, and so on), it is likely that the size of the "second directional effect," the effect of police perceptions of the likelihood of an arrest on response time, will depend on case characteristics. The slopes will be particularly unreliable, or "unstable," for small sample sizes.

10. This is because most factors predicting low response times tend to predict high probabilities of arrest, even when response time is taken into account. Although only a few of these effects are significant, they would slightly dampen the apparent effect of police response time if taken into account.

11. The curve in Figure 4 closely resembles a "logistic decay function." A logistic is particularly useful for estimating the effects of response time since it is mathematically easy to work with, and because it meets statistical assumptions required to fit any curve. The relationship between the logistic and a similar distribution developed from search theory is developed further in Appendix C.

12. The self-reported police response data collected by the present study are undoubtedly less accurate than the Kansas City police response data obtained by observers in patrol cars using stopwatches.

13. The importance of on-scene arrest is reinforced by recent findings that arrests made within 30 minutes of the occurrence of the crime (that is, on-scene arrests) are more likely to result in convictions than other arrests. This is because witnesses and physical evidence are more often available when arrests are made quickly (Frost, 1981).

Arrest is not universally recognized as the most important of these outcomes, however. For another view, see Wilson (1970).

14. Moss, Wyner and Goldstein (1969) found that heart attack victims delay over three hours on the average before reporting their symptoms to a doctor or emergency hospital, while Hackett and Cassen (1969) found delays averaging four hours. In its Response Time Analysis the Kansas City Police department found no relationship between severity of crime-related injury and citizen

reporting time. As the analysis in Chapter 4 bears out, the speed at which people seek help (medical or police) depends only slightly on how badly they need it.

15. A study of 24 police departments found a fairly constant two to three percent of calls received to be requests for medical assistance (Antunes and Scott, 1981). According to an earlier study of emergency medical requests, "the proportion of critical patients for whom survival appears to be highly sensitive to the treatment delay may represent less than 15 percent of all critical patients. The subpopulation of highly time-critical patients, therefore, may be as small as 1/10 of 1 percent of all emergency department patients" (Andrews, 1978). If people contact the police only for critical emergencies, the percentage of police calls for service that are time critical medical emergencies is less than one-half of one percent. Given that no car was dispatched to one-third of calls received in the 24-department study, it is likely that many of these calls were not critical, and that the real figure is much less than one-half percent.

16. Bystander and witness behavior is considered in more detail in Chapter 4.

17. The relationship for nonviolent crimes was insignificant, but it is 95 percent certain that one-minute decreases in response time would not decrease the chances of witness availability by more than one percent.

    When a witness to the crime is available, there is a chance that the witness will know the name of the suspect, or will be able to cause the suspect's arrest in some other way. Thus availability of a witness has some indirect effect on the chances of arrest. Given the very small relationship between response time and witness availability, however, it seems clear that the relationship is of negligible importance.

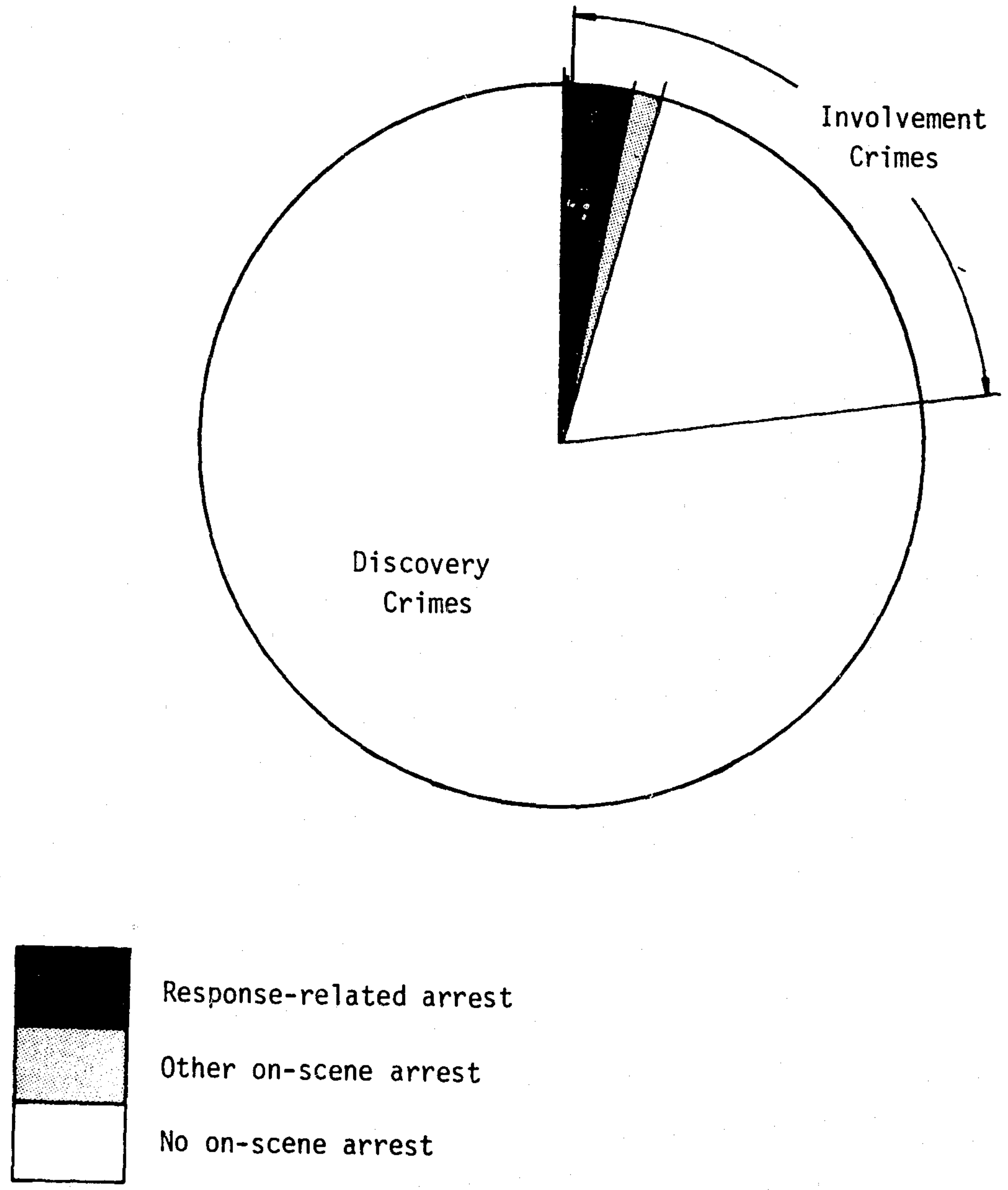
CHAPTER 3
CITIZEN REPORTING TIME

Although police dwell on the importance of arrests made because of fast response, in fact, they seldom occur. Figure 6 shows the percentage of Part I crimes that resulted in any type of arrest (both shaded areas), and those that resulted in response-related arrest (the dark shaded area) for the Forum sites. Fewer than five percent of the Part I cases that occurred during the study period resulted in any kind of on-scene arrest, and only 2.9 percent resulted in an arrest attributable to fast police response. In Kansas City only 3.0 percent of citizen-reported cases resulted in response-related arrest.[1]

Despite this fact, a traditional method of attempting to increase the number of arrests has been to cut police response time, whether by increasing the number of patrol officers, changing beat boundaries, or installing sophisticated computer dispatching equipment. Since the probability of arrest depends on total response time--citizen reporting time plus police response time--decreasing police response time may have little effect on arrest rates if citizen reporting times are long. On the other hand, it may also be possible to shorten citizen reporting time and increase the number of response-related arrests in that way. The Kansas City Police Department found citizen reporting times to be the biggest single contributing element to total response delay; citizen reporting times were, on average, longer than either dispatch or travel times.

Figure 6

Percentage of Reported Part I Crimes that Result in On-Scene Arrest



- Less then 5% of Part I crimes result in on-scene arrest
- Less than 3% result in an on-scene response-related arrest

In this chapter the Kansas City analysis is replicated using data from the Forum sites to see if this finding holds true for other cities. Focus is then shifted to those cases that were reported most quickly, to determine the number of cases that could presumably have been cleared by a response-related, on-scene arrest. In this way the potential benefits of reducing police response and citizen reporting times can be evaluated.

Response Time Components

In the context of this report, total response time comprises citizen reporting time, police dispatch time, and police travel time. Each part is defined as follows:

- Citizen reporting time--the period between the earliest time the police could have been contacted and the time they were contacted.
- Police dispatch time--the period from when initial contact was made between the reporting citizen and the police operator until a patrol officer was contacted and assigned to respond to the incident.
- Police travel time--the period between the dispatching of a patrol officer and the time that the officer began on-scene investigation.[2]

These are the same definitions used by the Kansas City Police Department in its 1977 response time study.

The precise nature of the activities included within each of these components will vary, depending on a number of factors. For example, a citizen's action during the reporting time period might include deciding to contact the police, locating a telephone, finding a telephone number with which to contact the police, and placing the call. In this study, the length of the reporting time period was estimated by the person who placed the call, and, when the caller was not involved in the incident personally, by the victim, as well.[3]

Police dispatch time activities will vary depending on the communications system used. For example, in some departments the police complaint taker is also the dispatcher, whereas in other departments the two jobs are performed by different people.[4] Police dispatch time generally includes the time consumed in taking information about the incident from the caller, transferring information to the dispatcher where necessary, waiting for an available car in non-emergency cases, and contacting, assigning, and dispatching an officer. Dispatch time information was obtained in this study from police communications records and measured as the difference between the officially logged time the call was received and the logged time of dispatch.

Police travel time includes anything the officer does after receiving an assignment and before beginning to travel to the crime scene, plus actual travel time to the scene. Travel time also was recorded from dispatch records, and measured as the time between the logged dispatch time and the time at which the officer radioed the dispatcher that he had arrived at the incident scene.[5]

Descriptive Analysis of Response Times

With this as background, let us look at the three components of response time in terms of their average duration and the proportion which each component represents of total response time. Descriptive statistics for citizen reporting times, police dispatch times, and police travel times are given in Table 4 for each Forum study site and for Kansas City. Data are presented separately for involvement crimes and discovery crimes.[6] There is a marked similarity between the median response times for the Forum study sites and the Kansas City results.

Figure 7 compares total response time medians for the five cities for discovery crimes and involvement crimes. As found in Kansas City, median total response time was considerably longer for discovery crimes than for involvement crimes.

Median total response times for discovery crimes were very similar for Kansas City, Peoria, and Rochester, but somewhat longer for Jacksonville and San Diego. For involvement crimes of both types there was remarkably little variation between the sites, with median total response times ranging from 12 to 15 minutes. If a suspect needed only three minutes or so to escape, then, for most of the involvement crimes in every site, a response-related arrest was very unlikely.

Table 4

Descriptive Statistics for Reporting, Dispatching and Travel Time Components of Total Response Time for Five Cities

Involvement Crimes

Citizen Reporting Time	Kansas City	Jacksonville	Peoria	Rochester	San Diego
. Median	5.15	4.73	5.01	5.41	4.10
. Mean	41.63	185.60	141.17	532.84	109.99
. Std. Deviation	247.47	2945.34	929.93	5186.86	822.70
. Minimum	1.06	0.02	0.02	0.02	0.02
. Maximum	2880.88	79342.00	10200.	91220.	14400.
. % of Total Response Time	44.5	36.3	43.5	47.3	28.0
. Number	338	758	393	450	645
Police Dispatch Time					
. Median	2.27	3.90	3.00	3.28	5.97
. Mean	3.63	5.76	4.69	5.57	27.39
. Std. Deviation	4.82	7.81	5.83	8.66	294.38
. Minimum	0.27	0	0	0.	1.
. Maximum	43.52	133	46	91.	5782.
. % of Total Response Time	22.3	29.4	29.6	25.4	42.2
. Number	344	829	380	467	673
Police Travel Time					
. Median	4.00	4.42	2.82	3.77	4.56
. Mean	4.93	6.95	3.88	5.39	14.17
. Std. Deviation	3.43	8.98	4.21	8.40	91.77
. Minimum	0.1	0.	0.	0.	0.
. Maximum	30.21	115.	35.	102.	1579.
. % of Total Response Time	33.2	33.5	25.9	27.3	29.8
. Number	352	760	430	443	615

Discovery Crimes

Citizen Reporting Time	Kansas City	Jacksonville	Peoria	Rochester	San Diego
. Median	10.18	16.50	12.82	9.68	13.83
. Mean	334.55	1075.67	402.70	380.55	1109.99
. Std. Deviation	2877.12	3979.83	1401.27	1362.00	8111.05
. Minimum	1.08	0.02	1.00	0.02	.05
. Maximum	29940.12	21600.	10755.	10710.	93900.
. % of Total Response Time	50.2	59.2	50.8	51.3	39.2
. Number	580	124	81	109	141
Police Dispatch Time					
. Median	3.32	5.33	5.75	5.00	19.75
. Mean	5.70	9.62	19.59	8.11	80.23
. Std. Deviation	7.05	10.95	84.17	8.96	374.92
. Minimum	0.53	0.	0.	0.	2.
. Maximum	53.8	50.	663.	48.	3020.
. % of Total Response Time	20.2	18.5	29.2	23.5	35.8
. Number	587	128	61	100	102
Police Travel Time					
. Median	6.23	8.30	4.85	5.83	11.00
. Mean	6.93	11.58	6.53	8.05	28.15
. Std. Deviation	3.95	10.81	7.14	7.14	70.40
. Minimum	0.43	0.	0.	1.	1.
. Maximum	30.12	61.	40.	41.	559.
. % of Total Response Time	29.6	22.2	20.4	25.3	24.9
. Number	586	107	67	104	86

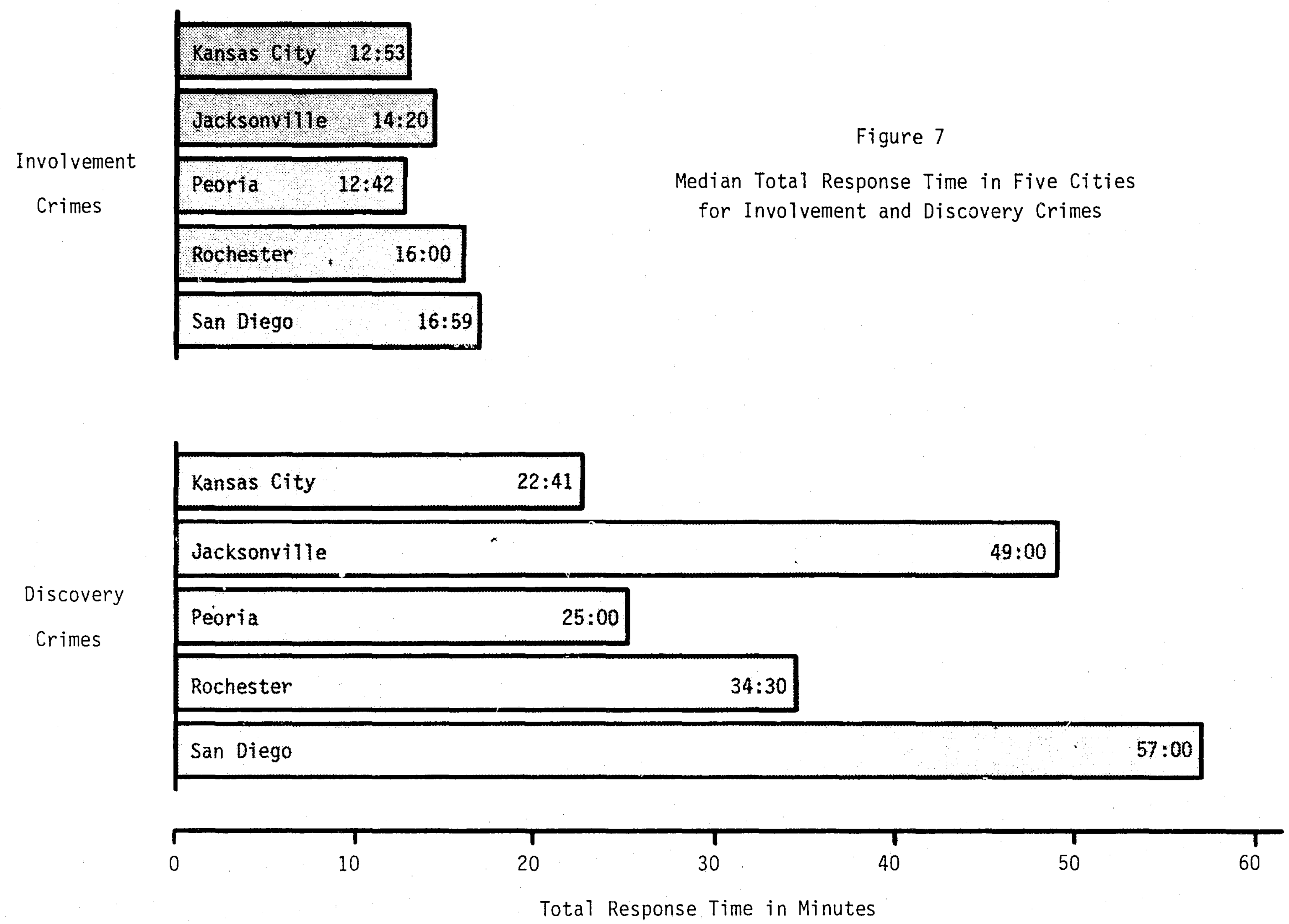


Figure 7

Median Total Response Time in Five Cities for Involvement and Discovery Crimes

To understand the implications of these findings one must look at the relative sizes of the components as well as at the total median response time. For example, if most of the total response time were taken by the communications unit in dispatching calls, some changes in dispatch procedures may be called for. In contrast, if travel time were the largest component, increasing the number of or reallocating patrol units might be a better strategy. If reporting time were the largest segment of the total response, a program aimed at reducing these delays might yield the greatest benefits.[7]

Figure 8 illustrates the relative lengths of the three components of response time for the same five cities for discovery and involvement crimes. The median of each component is shown. Reporting, dispatch, and travel times all appeared to be larger for discovery crimes than involvement crimes, indicating that neither the public nor the police considered these crimes to be as urgent. As expected, dispatch and travel times differed from one site to another, reflecting such things as different dispatch procedures, patrol workloads and beat sizes. Despite these differences, a greater amount of time was taken by citizen reporting than police dispatching or travel activities for most crimes and sites. From these estimates of the average of each component's distribution, it appeared that citizen reporting time contributed more to delay than did either dispatch time or travel time.

Perhaps even more telling, in terms of overall trends, is Figure 9, which shows the percentage of total response time accounted for by each

Figure 8
Median Time for Reporting, Dispatch, and Travel, in Five Cities for Discovery and Involvement Crimes

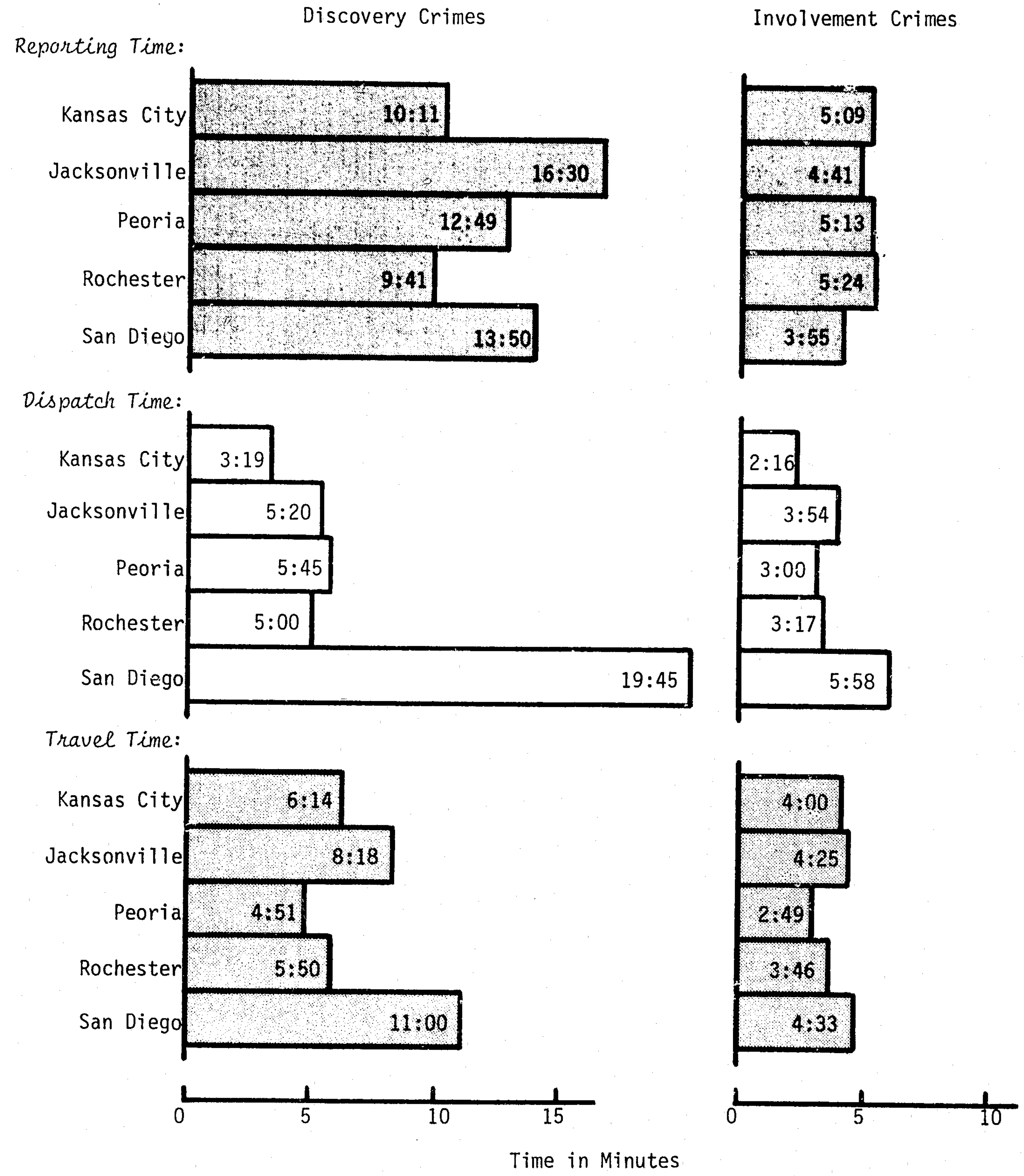
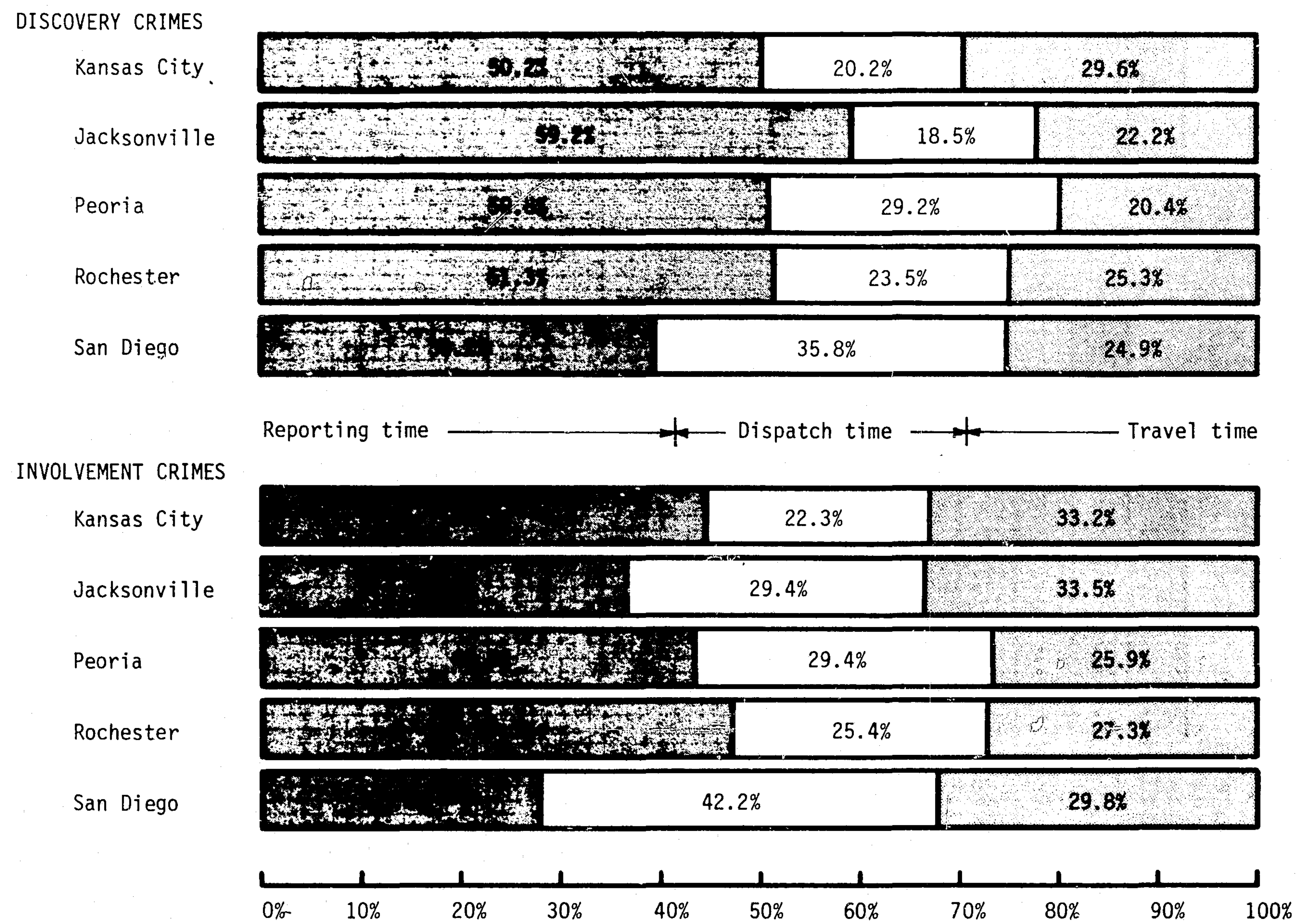


Figure 9

Average Percentage of Total Response Time Accounted for by Each Component in Five Cities, for Discovery and Involvement Crimes



component for discovery and involvement crimes. Here we see that reporting time accounts for the largest proportion of total response time for both discovery and involvement crimes, with the single exception of involvement offenses in San Diego.[8]

The results of this section indicated that, far from being an exception, the Kansas City citizen reporting and police response times were well within the range of the four Forum cities.

Comparison of Reporting Times

Generally, then, total response times seemed to be longer for discovery crimes than for involvement crimes, and did not seem to differ much among sites. The applicability of these results to citizen reporting time was tested by addressing the following questions:

- Do citizen reporting times vary with crime type? That is, will some crimes benefit more from rapid police response than others?
- Are there differences in citizen reporting times across sites? If so, how large are these differences?

The method used was to compare citizen reporting times for involvement and discovery crimes in each site; then reporting times for various crime categories; and finally reporting time differences between sites. Details of the analysis are presented in Appendixes D-3 and D-4.

Crimes

Analysis of citizen reporting times by crime type (involvement/discovery and UCR category) showed that there were four groups of crimes which should be examined separately. For all cities, reporting times were virtually identical within each group, but differed significantly between groups. The groups identified were as follows:

- Discovery crimes--burglary, larceny, and motor vehicle theft;
- Involvement property crimes--burglary, larceny, and motor vehicle theft;
- Aggravated assault and robbery; and
- Rape.

Sites

The sites did not cluster so consistently. For involvement property crimes, reporting times were so close in two groups of cities that they could not be effectively separated: The reporting time for Jacksonville, Peoria, and San Diego averaged about one minute shorter than that for Kansas City and Rochester. Robberies and assaults were reported about 1-1/2 minutes faster in Jacksonville, San Diego, and Kansas City than in Peoria and Rochester. There were no reporting time differences across sites for either discovery crimes or rape.

What was important here was not so much which sites clustered together, but how closely they clustered. If the range of average reporting times across the five cities were found to be very wide, it would

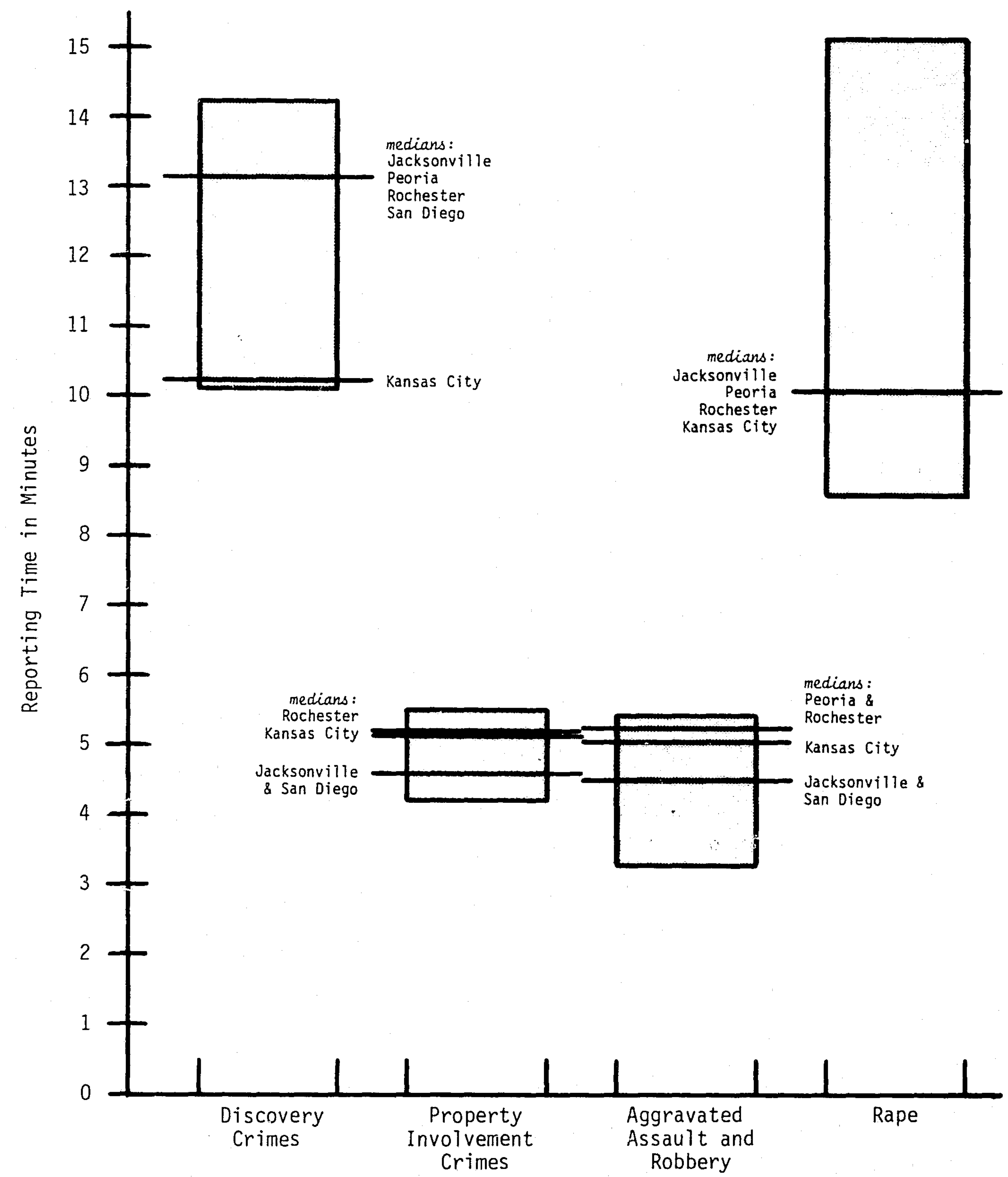
be difficult to apply the results to other cities with confidence. If, however, that range were found to be fairly narrow, it would be reasonably certain that similar results would be found in other cities. In fact, the range of median times was rather narrow, as illustrated in Figure 10: less than one minute for property involvement crimes, and within 90 seconds for personal involvement crimes. We can be quite confident that medians for the four Forum cities, as well as for Kansas City, fell within the following ranges:[9]

- the average aggravated assault or robbery was reported between three and six minutes after the victim or witness was free from involvement in the crime;
- the average involvement burglary, larceny, or auto theft was not reported until four to seven minutes after the victim or witness was free to call the police;
- the average discovery crime was reported within 10 to 15 minutes of discovery;
- the average rape was reported 10 to 15 minutes after the victim or witness was able to report it.

These results lead us to draw two important conclusions. First, the time taken by people to report crimes depends more on the type of crime than on the city in which they live. Second, no matter what the crime type, and no matter how fast the police response time, the chances of a response-related arrest in the average case have been drastically reduced by citizen reporting delay. As we show in the next section, involvement crimes must be reported either while they are happening, or, at most, three to five minutes after their commission in order for the police to stand a reasonable chance of making a response-related arrest.

Figure 10

Medians and Confidence Intervals for Four Crime Groups



Reporting Time and Arrest

In Chapter 2 we showed that the chances of making a response-related arrest ought to depend on the length of the suspect's head start, that is, the amount of time the offender has to flee the scene of the crime before police arrive. Unfortunately, citizen reporting time does not necessarily begin at the same time the suspect begins to flee. We illustrate this by looking at three groups of crimes: discovery crimes, involvement crimes that are reported after they occur, and involvement crimes that are reported "in progress." These three groups include all crime calls received by the police.

Because discovery crimes are, by definition, not noticed until after they have occurred, the suspect has had time to flee. This time period frequently spans hours or days; but, even when short, poses problems for police because it is difficult to link the perpetrator with the crime scene when no one has seen him commit the crime. In these situations neither reporting time nor police response time should have much effect on the chances of arrest.[10]

When an involvement crime is reported after it occurs, it is likely that the suspect has fled before police begin to respond. For these crimes, if reporting time and police response time are both short, a response-related arrest should be possible.

When an involvement crime is reported in-progress, the suspect has probably not begun to flee when the police begin to respond. In these cases, the length of time the citizen delays in reporting should not matter, as long as the suspect is still at the scene when the call is made. However, police response time should be very important, especially if the suspect realizes he has been seen and runs after the report is made. Here, short police responses should lead to increased chances of arrest.

As noted in Chapter 2, the police response times we collected from dispatch records are probably less accurate than the times Kansas City collected through direct observation. For this reason, we confine ourselves to testing the citizen reporting time relationships for the three groups listed above. The results are summarized below, and presented in detail in Appendix D-5.

As predicted, citizen reporting time was not found to be related to response-related arrest for discovery crimes. Very few arrests were made in discovery cases, and fewer still could be classified as response-related arrests. What response-related arrests there were, were not made in cases reported particularly quickly.

Also as predicted, citizen reporting time was not related to response-related arrest for involvement crimes that were reported in-progress. That is, the length of reporting delay did not affect the probability of arrest in cases in which the crime was still happening when the police began to respond. As shown by the upper line in Figure 11, arrests were made in roughly 35 percent of these cases.

Finally, reporting time showed a strong relationship to the chances of response-related arrest for involvement crimes not reported in-progress. As shown in Figure 11, nearly 20 percent of cases resulted in response-related arrest when they were reported immediately after they had been committed.[11] After one minute of delay, the chances of response-related arrest were only 10 percent, and after two or three minutes the chances of arrest remained nearly constant. In fact, there was no significant difference between the probability of response-related arrest for three-minute reporting times and the estimated probability of response-related arrest for reporting times of 60 minutes. Thus, if people delayed reporting any more than three minutes, they might as well have delayed an hour.[12]

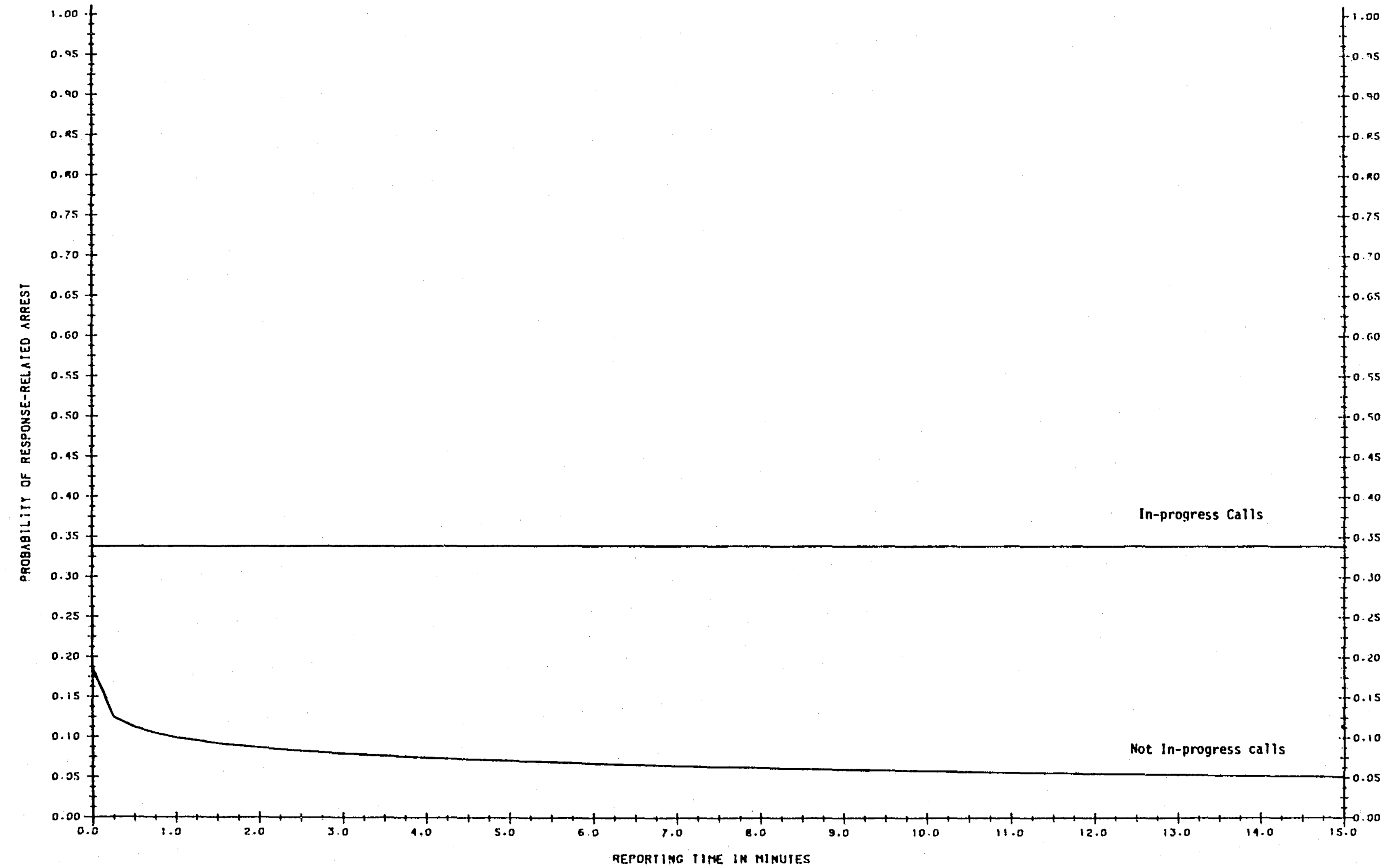
These findings correspond closely to the earlier Kansas City results and confirm that response-related arrest is very unlikely unless the crime is reported either in-progress, or else within three to five minutes after it has been committed--and then, of course, only for involvement crimes.

Analysis of Short Reporting Times

Because response-related arrests were only likely when reporting time was very short, it made sense to pay special attention to the cases that were reported quickly. More than anything else, we needed to know how many of these quickly-reported crimes there were. If a large proportion of all reported crimes were reported in-progress or very quickly afterward,

Figure 11

Effect of Citizen Reporting Time on the Probability of Response-related Arrest for In-progress and Not In-progress Calls



it would make good sense to allocate patrol resources, to structure beats and shifts, and to use expensive equipment in such a way as to reduce police response time: such actions should result in a substantial increase in arrests. If, however, only a small percentage of crimes were reported quickly, reducing police response time in all cases should have almost no effect on arrest rates.

Unfortunately, no single statistic will tell us all we need to know about the shortest total response time (that is, citizen reporting plus police dispatch and travel times) that could produce a response-related arrest. Although three minutes is the value usually cited as the longest effective total response time (and the value that looks most obvious from Figure 11), the cutoff probably depends, at least, on the type of crime, time of day, residential or commercial character of the neighborhood, and other factors. In addition, as emphasized earlier, the reporting time data collected are not precise enough to estimate an exact cutoff, even if one does exist. Therefore, instead of estimating the average percentage of calls that are reported within one arbitrarily-chosen time, the percentage of calls reported within all time periods up to ten minutes has been calculated. Both the literature and our data, as well as common sense, confirm that cases reported more than ten minutes after they occur almost never lead to response-related arrests.

The percentage of calls to police placed between zero and ten minutes after occurrence of a crime is best viewed in the form of a cumulative distribution curve. This type of graph displays the relationship between elasped citizen reporting time and the proportion of cases reported. To make the results easier to read, crimes reported in-progress have been considered to have zero reporting time.[13] Thus, as a hypothetical example, if 5 percent of all crimes were reported in-progress, an additional 8 percent within one minute, and another 3 percent between one and two minutes, the cumulative proportion of cases reported within one minute would be 13 percent (5 percent plus 8 percent), and at two minutes would be 16 percent (5 percent plus 8 percent plus 3 percent). A curve of this type was developed for each of the six groups of crime types and cities described earlier.

Because they comprised about three-fourths of major crimes reported to the police, discovery crimes were considered first. Then, after considering involvement crimes, the proportion of all Part I crimes reported shortly after they occur was estimated.

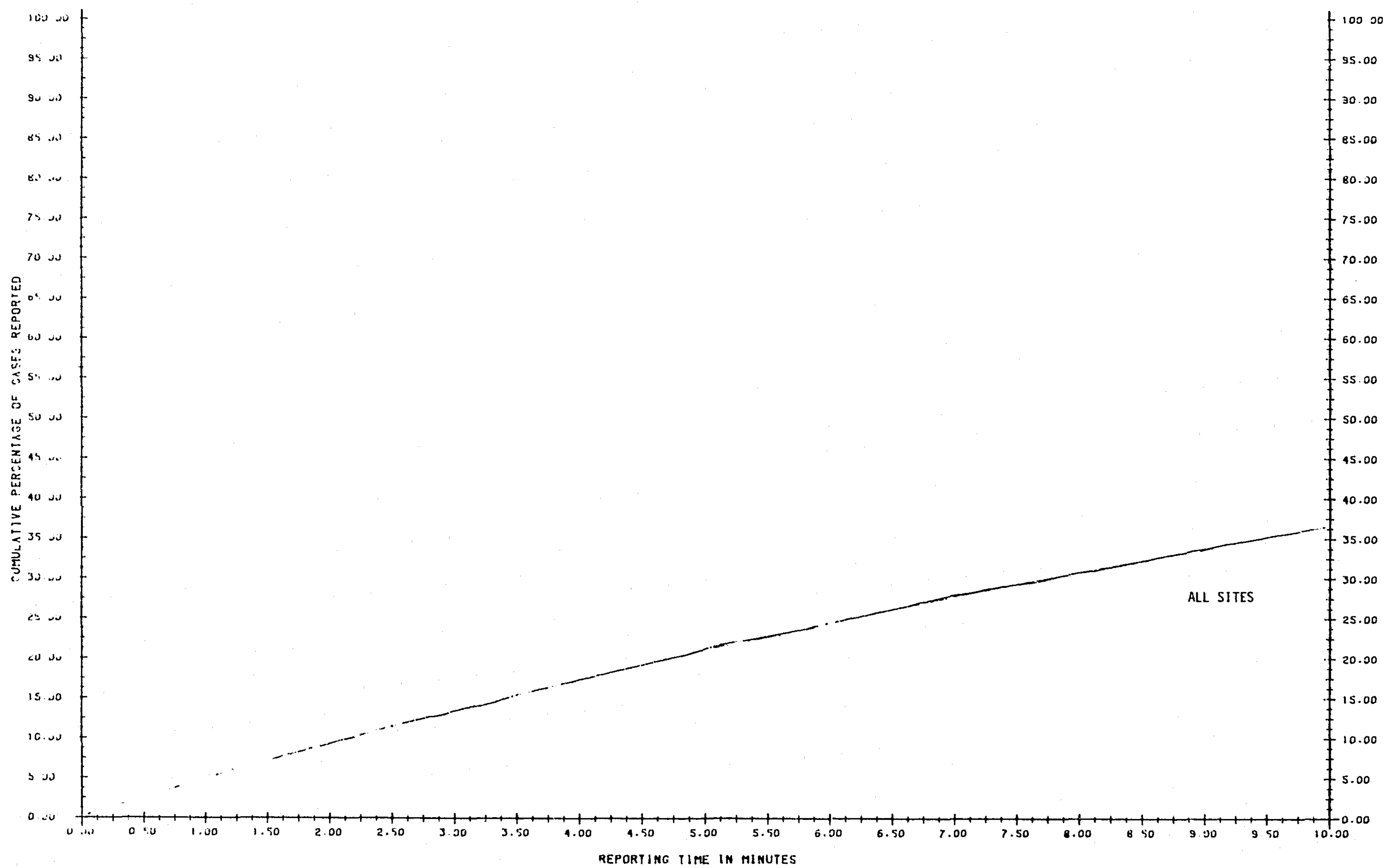
Discovery Crimes

Although citizen reporting time was found to be unrelated to arrest for discovery crimes, discovery crimes were included simply as a point of comparison for involvement crimes. Figure 12 shows the cumulative percentage of cases reported for each time after discovery up to 10 minutes. The median reporting time for all discovery crimes was about 14 minutes. In addition:

- By definition, no discovery crimes were reported while in-progress (at zero delay).

Figure 12

Shortest Reporting Times: Discovery Crimes



- Only 5 percent were reported within one minute of their discovery.
- About 15 percent were reported within three minutes, and just over 20 percent within five minutes of their discovery.[14]

Since there were no significant relationships between discovery reporting time and arrest, even the largest reduction in delay would not perceptibly affect the number of arrests for these crimes.

Involvement Crimes

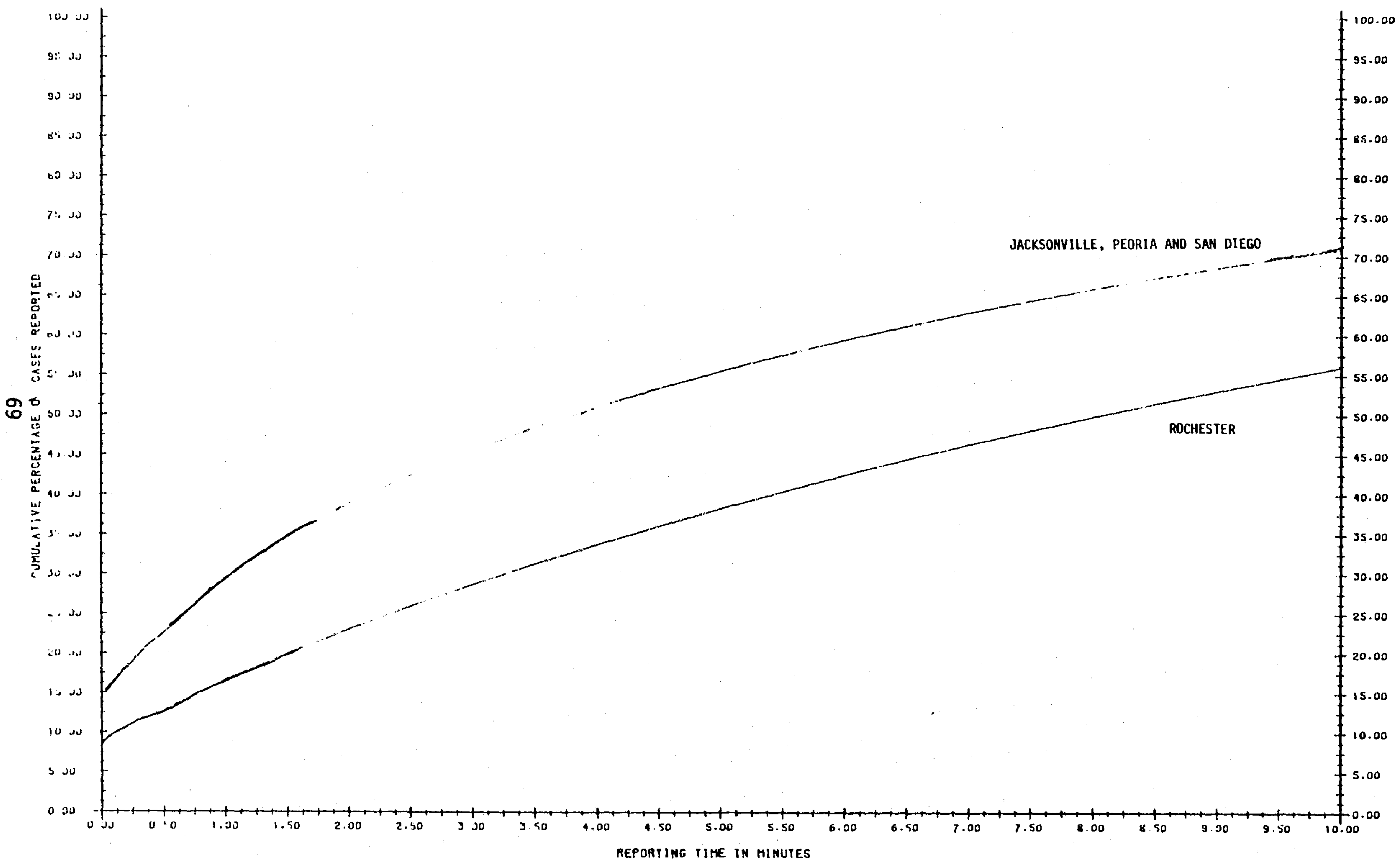
The distribution for involvement crimes reinforced earlier findings that these crimes were reported roughly twice as quickly, on average, as discovery crimes. Results for involvement property crimes are presented below, followed by those for personal involvement crimes and rape.

Involvement Property Crimes (Figure 13) were the cases that the Kansas City response time study identified as most likely to result in response related arrests, and most likely to be influenced by fast reporting time and police response:

- Between 10 percent and 20 percent of involvement property crimes were reported in-progress. For these crimes, chances were excellent of effecting a response-related arrest if police response was prompt.
- Fifteen to 30 percent of these crimes were reported within one minute. These crimes might result in response-related arrest for fast response times--up to two or three minutes.

Figure 13

Shortest Reporting Times: Involvement Property Crimes



- Thirty to 45 percent of involvement property crimes were reported within three minutes of their occurrence, and up to 55 percent within five minutes. The balance of involvement burglaries, larcenies, and auto thefts were very unlikely to result in response-related arrest.

At least 45 percent, and perhaps as many as 70 percent of these crimes would not be cleared by response-related arrest, no matter how quickly the police respond. Involvement property crimes comprised between 10 and 15 percent of Part I crimes reported in the Forum cities.

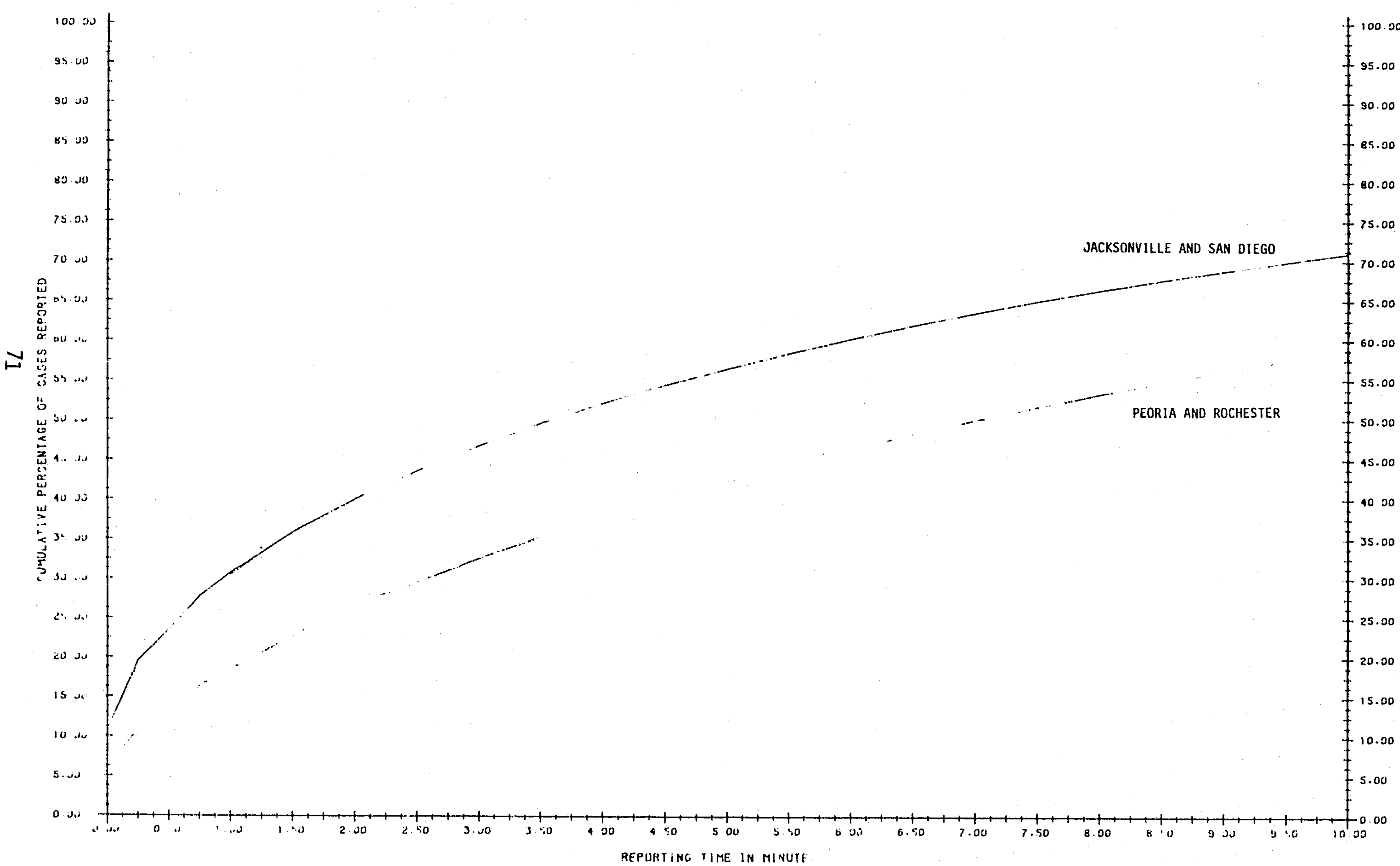
Although Aggravated Assaults and Robberies (Figure 14) were not reported while in-progress as often as involvement property crimes, about as many of them were reported quickly enough to conceivably result in response-related arrest.

- Five to 10 percent of robberies and aggravated assaults were reported while still in progress. For these crimes, fast police response would very likely result in arrest.
- Between 20 percent and 30 percent of these crimes were reported within one minute. By this time, the chances of arrest have diminished greatly.
- Thirty to 45 percent of personal crimes were reported within three minutes, and up to 55 percent within five minutes of their occurrence. By this time, the chances of arrest are remote.

Like involvement property crimes, at least 45 percent, and perhaps as many as 70 percent of robberies and assaults could not not be cleared by response-related arrest, even if the police responded instantly. Between 6

Figure 14

Shortest Reporting Times: Involvement Personal Crimes



and 14 percent of Part I crimes were aggravated assaults and robberies.

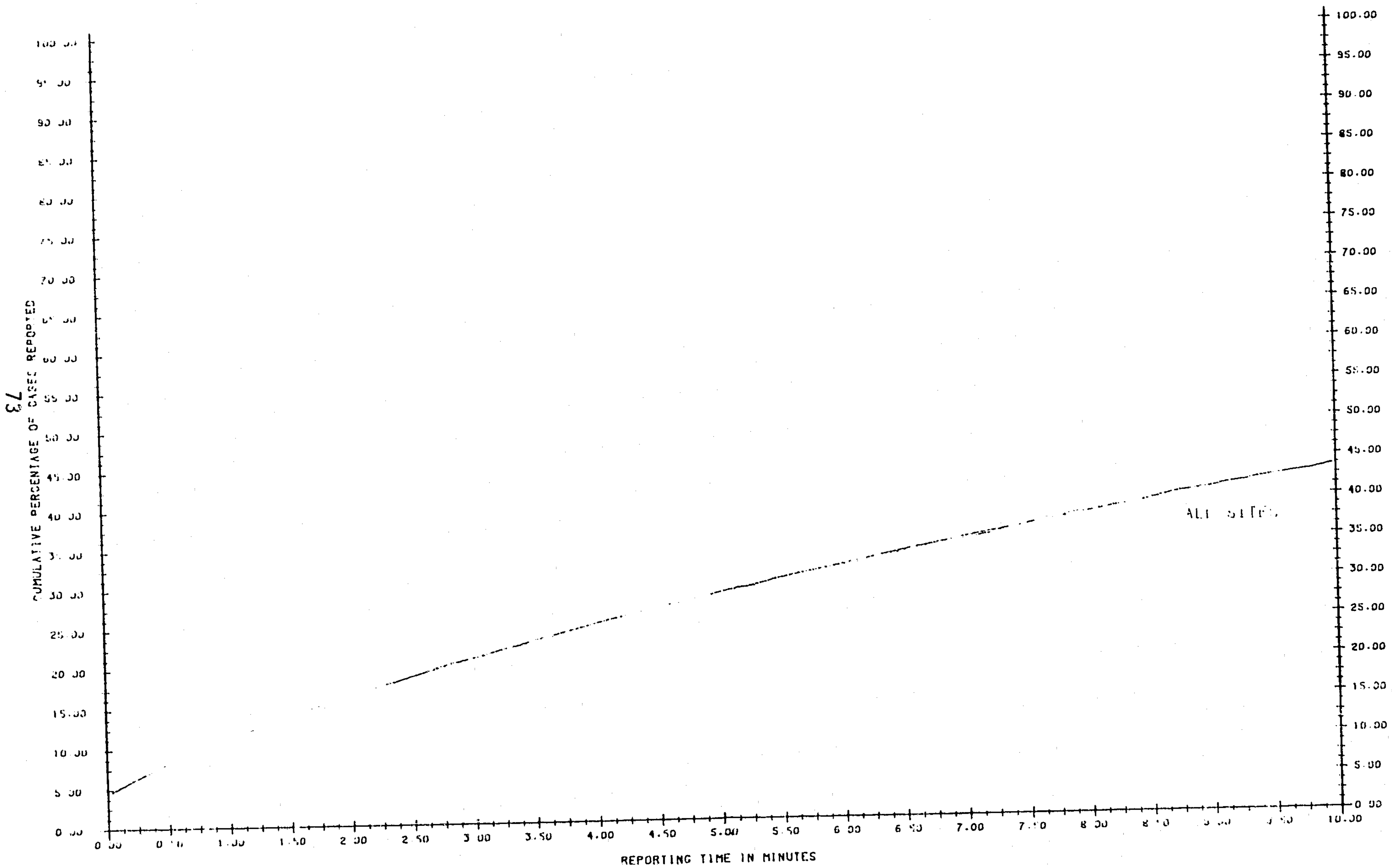
Rapes (Figure 15), were reported more slowly than other involvement crimes: less than 5 percent were reported while in progress, and only 10 percent within one minute. After five minutes, fully 70 percent of rapes had not been reported to the police. Thus, in two out of three rape cases, rapid police response would not increase the chances of arrest. Rapes comprised only one to two percent of all Part I crimes.

Reporting Time and Part I Crimes

Depending on whether we take one, three, or five minutes as the practical cutoff value for rapid police response, between 20 percent and 50 percent of involvement crimes were reported quickly enough to result in response-related arrest. Although these figures may sound rather high, it is important to remember that relatively few Part I crimes were involvement crimes. In the four Forum cities, between 70 percent and 85 percent of Part I offenses were discovered after they have been committed. As shown previously, short citizen reporting times and police response times were no more likely to lead to arrests than long reporting and response times for discovery cases. Thus, police response time had no effect on the chances of on-scene arrest in 70 to 85 percent of Part I crimes because they were discovered after they had occurred, and had no effect on 50 percent to 80 percent of the rest because they were reported too slowly.

Figure 15

Shortest Reporting Times: Rapes



These results did not differ substantially or significantly between sites (see Appendix D-6 for results). Figure 16 summarizes these results with a cumulative distribution for all Part I crimes.

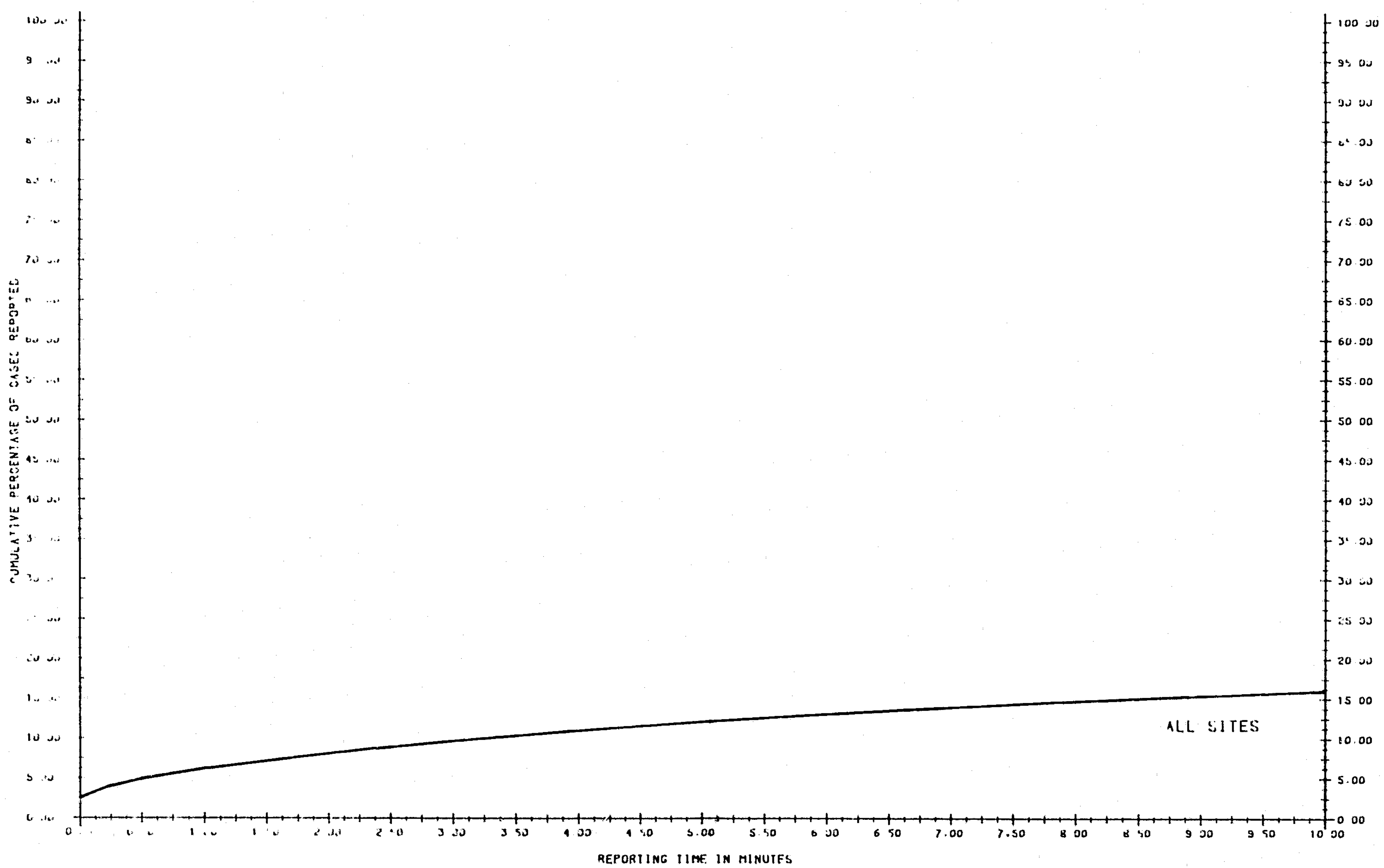
- Less than 3 percent of all Part I crimes were reported while they are still happening. There was some reporting delay in 97 percent of Part I crime calls.
- Six percent of Part I crimes were reported within one minute of their occurrence. The chances of arrest have been greatly diminished by reporting delay in 94 percent of cases reported.
- Ten percent of Part I crimes were reported within three minutes, and 12 percent within five minutes of their occurrence. At this point, the likelihood of arrest is very small.

Therefore, between 88 and 90 percent of serious crimes reported to the police were reported too slowly for a response-related arrest to be made, even if the police response time was zero. It should not be surprising, then, that only three percent of Part I crimes resulted in response-related arrest: the police had a reasonable opportunity to make arrests in only one-tenth of these crimes.

The main finding of the Kansas City reporting component--that citizens frequently delay a significant length of time before they report crimes--is confirmed by results in the four cities sampled. Far from being an anomaly, the Kansas City results are generalizable to cities with greatly differing police departments. Faced with these results, the police manager who wishes to make most effective use of departmental resources has

Figure 16

Shortest Reporting Times: All Part I Crimes



two basic alternatives: cope with reporting delay as it now exists, or try to influence citizens to report more quickly. In Chapters 4 and 5 of this report, we examine the reasons for citizen reporting delay, as a first step toward determining what--if anything--the police can do to reduce reporting delays.

NOTES

1. Here, as in Kansas City, response-related arrests were defined as on-scene arrests made by a police officer, not including those which resulted from the suspect surrendering voluntarily or being immobilized due to injury, those in which the victim was able to provide the name or address of the suspect, and those in which the suspect was caught and subdued by the victim or a witness.

2. In the present study, the time required for the officer to locate someone at the scene of the incident is not included. Data from the RTA indicate that this interval is typically short, averaging less than 30 seconds.

3. Appendix B shows the results of tests conducted to determine the accuracy of citizen time estimates. Briefly, the following results were obtained: citizen reported time estimates are frequently wrong, but most of the errors were due to rounding times to the nearest minute, or the nearest five minutes; for the most relevant range of estimates (a few seconds to about 20 minutes) the estimates were as likely to be too high as too low, thus the median will be very close to the actual median, especially for large sample sizes; the arithemetic mean will not be a good representation of the distribution, due both to the "floor" effect discussed in Footnote 6, below, and to the fact that citizen estimates that are too high are more likely to be very wrong than estimates that are too low.

   When two respondents gave different estimates of the same reporting time, we followed Kansas City's lead and choose the smaller one. Usually only one of the two respondents was able to estimate reporting time, or each was able to estimate only one part of it. These discrepancies had very little effect on the distribution of reporting times, in that they were infrequent and small.

4. In Jacksonville, Rochester, and San Diego, the operator and dispatcher are different people, and information is relayed by computer or conveyor belt. In Peoria the person who answers the phone also dispatches the car.

5. Like our citizen reporting time data, neither the dispatch times nor the travel times we collected will always be correct. Our dispatch data were coded from CADSI printouts or dispatch cards, and are only accurate to the degree that complaint takers and dispatchers record the correct time when required to do so. In some cases, they may be too short, in others too long. Similarly, travel time may be too short (if the responding officer reports arrival at the scene before he arrives, to save time or to insure access to an open communication channel) or too long (if no channel is open when he arrives, or if emergency action is required when he reaches the scene). In addition, a car other than the one assigned by the dispatcher may be the first to arrive on the scene. It is almost impossible to specify how accurate individual recorded

response times are likely to be. However, there is no reason to suspect that they are biased (that more recorded times are too long than too short, or vice versa), thus for large sample sizes the median ought to be approximately correct. Accordingly, only medians are used in our analysis of police response time.

6. The median is a much better indicator of a "typical time" than the mean. This is because for each response time component, a few cases show very long times which cause the means to distort in that they were considerably higher than the majority of the times: as a result, both the means and the standard deviations are inflated. For this reason, and because for citizen time estimates the median is more likely to be valid than the mean, we compare medians instead of means, where possible.

   The number of cases varies from cell to cell in the table because, in some cases, respondents were unable to provide estimates of particular times and because dispatch and travel times were occasionally missing from departmental records.

7. Which programs should actually be implemented is a cost-efficiency question, of course. The exact answer depends on the cost of reducing each of the three time components, and may differ from one city to another.

8. San Diego, in fact, was the only site where citizen reporting time was not the largest contributor to total response: Although citizen reporting times were about the same as elsewhere, police dispatch and travel times were considerably longer than in the other four cities. This was due to the policy of "call stacking" applied to most non-emergency calls in San Diego: calls that did not require an immediate response were often delayed to even out the workload among officers, or to allow the officer assigned to the beat to respond.

   Although some calls are stacked in most departments, San Diego is unique in that all not-in-progress felony cases are assigned a relatively low priority, and responding officers are told to respond "as soon as practical." Like the other sites, in-progress felonies and medical emergencies are assigned urgent status by the San Diego operator. Thus slower dispatch and travel times in this site reflect differentiation between urgent and non-urgent calls, rather than an exception to the rule that citizen reporting times makes up the largest part of total response time in urgent situations. (Because relatively few calls require an immediate response, call screening and stacking can increase efficiency greatly. In Chapter 6, we recommend that all departments stack and screen calls.

   As in Appendix D-3, discovery cases are reported at the same rate in San Diego as in the other sites. San Diego citizens report other involvement crimes at the same speed as people in Jacksonville.

9. The upper and lower edges of the gray boxes in Figure 10 represent 95 percent confidence limits for the sample medians in the Forum cities. Confidence limits for Kansas City could only be obtained by reanalyzing the Kansas City data set.

   There are about five chances in one hundred that the average for one of the five sites actually falls outside the 95 percent confidence range used in interpreting these results. In the unlikely event that one of the sites is larger or smaller, it will probably be slightly outside the region.

10. At least theoretically, a discovery crime may result in a response-related arrest if the range of time over which the crime may have been committed is very small. In one of the cases sampled, for example, a secretary left her desk, and returned two minutes later to discover that her typewriter had been taken by a stranger, presumably for "repairs." She alerted the police, who caught the thief elsewhere in the building five minutes later. Only about two-tenths of one percent of discovery crimes result in an arrest attributable to fast police response; however, as shown in Appendix D, they are no more likely to occcur when reporting time is short than when it is long. They may indicate that some of these arrests were actually due to other factors not explained in the crime or arrest reports.

11. These responses correspond to citizens who said that they called the police without any delay, or who contacted the police using a manually operated alarm as the suspect began to flee. These shortest times were arbitrarily coded as one second reporting times.

12. In no site was the difference between personal and property involvement crimes statistically significant or substantial. Although the Kansas City researchers found a significant difference, this is almost certainly due to the fact that they coded crimes reported in-progress as having a reporting time of one minute, and did not consider these crimes separately from crimes that were reported one minute after they had been committed. Since a greater proportion of involvement property crimes were reported in-progress than involvement personal crimes (it was usually impossible for the victim of a personal crime to report it while it was happening), the relationship between reporting time and arrest appeared to be larger for property cases. Kansas City also found that fast police response was more important for property than for personal crimes; for the same reason, this finding is also probably spurious.

13. In addition, the reporting time distributions have been smoothed, so people's tendencies to round estimates to the nearest five minutes will not bias the results. See Appendix D-5 for details.

14. 95 percent confidence intervals for each cumulative distribution are shown in Appendix D-5. Each case has been weighted, so that the oversampling of arrest cases described in Chapter 1 will not bias the results.

CHAPTER 4
THE DECISION TO REPORT A CRIME

Since citizen reporting times constitute the largest component of total response time delay, it follows that reducing citizen reporting times will have the greatest impact on reducing total response times. There are two basic ways to increase the number of quickly reported crimes: change people's reporting behavior; and make it easier for them to call the police. The following case, taken from our sample, demonstrates that both deciding to report a crime and implementing that decision are important sources of delay:

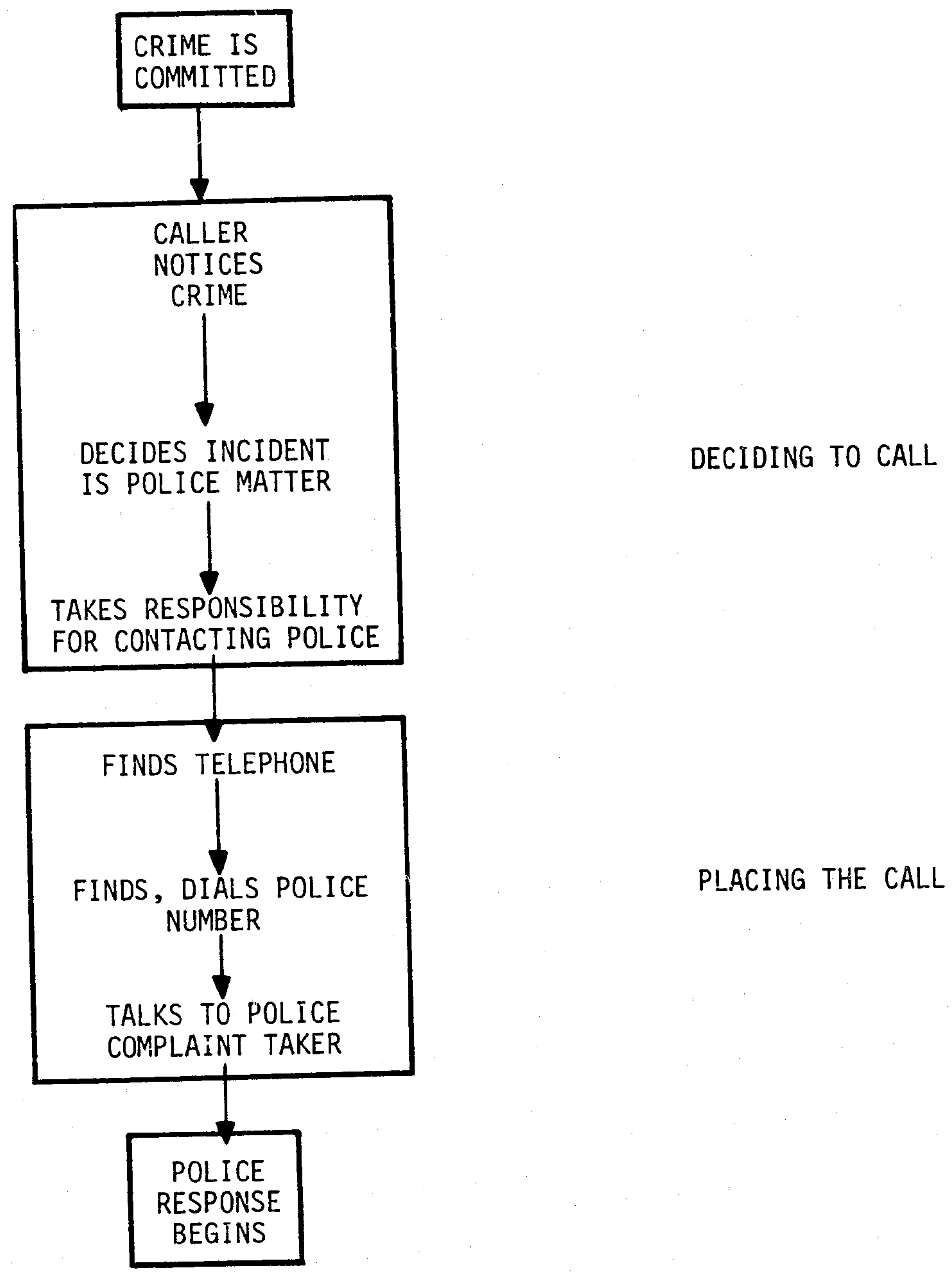
> While watching television at home one evening, Mrs. Smith noticed two unfamiliar people inside the house of her vacationing next-door neighbor, Mr. Jones. After watching their actions and discussing the situation with her husband for a few minutes, she decided to call the police when the suspects carried Jones' expensive stereo to their car and drove off. Hurriedly leafing through the phone book, she found the appropriate emergency number, dialed the number, and explained the situation to the police complaint taker. The police arrived three minutes later.

In this crime, as in all crimes, someone first had to notice that something out-of-the-ordinary was happening, decide that it was a police matter, and take responsibility for calling the police (see Figure 17). The decision then had to be carried out: Mrs. Smith had to find a phone, find and dial the police number, and inform the police operator.

Ten minutes elapsed between the time Mrs. Smith noticed the crime and the time she called the police. Although the police arrived after only

Figure 17

Schematic Representation of Citizen Reporting Activities



three minutes, the call was placed too late for an on-scene arrest to be made. Nevertheless, an on-scene arrest might have been possible if one of two things had happened:

- Had Mrs. Smith decided to call the police more quickly, they might have arrived while the crime was still in progress;
- Had she contacted the police more quickly after making her decision, they might have found and arrested the suspects in the vicinity of the crime.

For years, police departments and local governments have encouraged citizens to call the police immediately after noticing a crime. Citizen crime reporting programs such as Neighborhood Watch are aimed at increasing the first of these possibilities--driving home to citizens the importance of their decision to report a crime quickly. Other programs, such as equipping commercial buildings with silent, manually-operated alarms, making police call boxes available for public use, or installing 911 systems, are geared toward the second of these possibilities--providing a way for citizens to contact the police quickly. The objective of this analysis is to estimate how large an effect (if any) these policies and programs are likely to have on citizen reporting.

Because citizen reporting delays result from two related but distinct problems--the decision to report, and the ability to report--these problems are dealt with separately. Chapter 4, The Decision to Report a Crime, focuses on the decisionmaking process citizens go through when deciding to report a crime. In this section an effort is made to determine the causes of decisionmaking delays and the degree to which each cause contributes to citizen reporting delay.

Chapter 5--Placing The Call: Communications Access Problems--enumerates and describes problems citizens encounter when contacting the police after they have decided to call, such as finding a phone, looking up the number, and contacting the correct agency. In this section an effort is made to determine how much delay each problem encountered by the reporting citizen causes in the placing of a call. This is done so that an assessment can be made of the possible benefits and probable effectiveness of programs designed to eliminate these problems.

The implications of these findings--what the police should and should not do in order to increase the number of quickly reported crimes--are detailed in Chapter 6, Policy Implications.

The Decisionmaking Process

Before a crime can be reported to the police, the potential caller must notice that a crime is being, or has been, committed; assess the situation; and decide to take action.

The Crime Must Be Noticed

If a victim is directly involved in a crime, he will certainly notice it while it is in progress. Because crimes seldom are conspicuous

(and because criminals take pains to keep them inconspicuous), it is possible that a potential caller may not notice a crime being committed even when in a position to witness it while in progress or to discover it afterward.

The Crime Must Be Defined as a Crime

Once the criminal situation has been noticed, someone has to label it a police matter before the police will be called.[1] A burglary victim may notice that his house is disheveled as soon as he comes home from work, but may not define the problem as a police matter until it is realized that the family stereo and silverware are missing. Alternatively, a victim or witness may define a situation as criminal, but not call the police because they consider it a private matter: this reason accounts for a substantial number of cases that are never reported to the police (Ennis, 1966; National Criminal Justice Information and Statistics Service, 1977).

The Benefits of Calling the Police Must Be Higher Than the Costs

When a decisionmaker chooses between alternative courses of action, he evaluates each choice on the basis of costs and benefits. If victims, witnesses, or bystanders believe that calling the police will cost them (in terms of inconvenience, or in higher chances of reprisal by the offender) more than it benefits them (in terms of higher chances of recovering property, getting revenge on the offender, and so on), then the call will not be placed. The assessment made may be erroneous, the weighing of costs and benefits done subconsciously, but a decision will be made.[2] The following passages deal specifically with how citizens make such decisions.

Three Reasons Citizens Delay in Reporting Crimes

Based on this view of victim, witness, and bystander decisionmaking, we identify three general reasons for taking delaying actions before calling the police.

First, citizens may take actions that help define the situation better in their minds. If it is not certain that the situation is criminal, or if it is not apparent how serious the crime is, the victim, witness, or bystander may collect more information before deciding what to do. This may take the form of searching the scene, observing the crime as it takes place, or soliciting information about the event from other people.

Second, the situation may be perceived as a crime, and calling the police recognized as an alternative or even necessary action--but the citizen may decide that other actions will yield greater benefits or involve fewer costs, or both. The victim of a purse snatch may chase the suspect with the hopes of recovering her property; the witness to an assault may give first aid; the rape victim may seek the emotional support

of a friend before facing authorities. In short, a variety of activities may seem, and be, more important at the time to victims, witnesses, and bystanders than calling the police immediately.

Finally, a victim, witness, or bystander may have a conflict over whether or not to call the police. For example, battered spouses may not wish to report their partners; witnesses may fear reprisals; some may simply fear "getting involved." For these reasons, and others like them, citizens sometimes avoid making painful decisions. This may take the form of procrastinating or shifting the responsibility for decisionmaking to another by asking for advice.

The following sections of this chapter focus on the three reasons for reporting delay. Previous research on delays due to each reason, and the number of people in the Forum cities who delayed reporting for each reason are discussed. Particular attention is paid to the impact of each reason on crime reporting time and arrests.

Reason One: Defining the Situation

When people are certain a crime is being, or has been, committed, they usually take actions that help them cope with the problems created by the crime. Frequently, however, the situation or what needs to be done is unclear. In these cases, citizens need more information to define the situation adequately. Previous research indicates that undefined situations are frequent causes of delay, particularly in certain types of cases; in Forum cities, these delays resulted in moderate increases in reporting times and moderate decreases in the number of response-related arrests.

Previous Research

The most important reason for ambiguity cited by earlier researchers is that people assume they and others around them are invulnerable, and will not be touched by crime. It is not unusual for citizens to actually witness crimes being committed, yet fail to define them as crimes, because they consider crimes to be events that happen to others. There are two probable explanations for this. First, crimes do not happen very often: victimization surveys indicate that the average person can expect to be personally victimized about once every 20 years.[4] Thus, people who think they are unlikely to be victimized at any given time are generally right. Second, psychologists have found that people who feel secure in their surroundings feel less everyday stress, and are, therefore, more

able to cope with things that are likely to happen (Milgram, 1970). Thus, people usually think of their neighborhood, and particularly their home and workplace, as invulnerable--even if they believe that crimes are likely to occur elsewhere. Even if people did not feel invulnerable, the fact that crimes are fairly rare events for most people suggests that they may not recognize a crime when they see it.[5]

Coping with Ambiguity

Because crimes are not often apparent and because people do not think crimes will be perpetrated on or around them, they resist defining some ambiguous events as crimes. In ambiguous situations citizens often seek to assure themselves that what they are seeing is not a crime, and try, where possible, to classify the event in some way that does not threaten their view of the world. When faced with an ambiguous event, citizens characteristically do several things:

- Ignore the event or pretend it did not happen. Although little research has been conducted on criminal situations, there is much evidence to suggest that people deny that medical emergencies they witness or are victim to are in fact emergencies (Clark and Word, 1972; Hackett and Cassem, 1969). Even victims of such unambiguous crimes as rapes and muggings try to ignore the offender and deny that a crime is being committed, for the first few moments the crime is in progress (Bard, 1980; Lejeune and Alex, 1973).

- Redefine the crime as a private or personal matter that is not the business of the police. About five percent of people who do not report a crime at all cite this as a reason for non-reporting (NCJISS, 1979).

- Suspend judgment and gather more information.

Of these, only the last is likely to lead to a crime report. Crimes that are ignored or defined as private matters may be reported, however, if victims or witnesses talk to someone who advises them to call the police. This is discussed in greater detail later in this chapter.

Two Sources of Information

Thus, when the situation is uncertain but may be a crime, people sometimes suspend judgment and obtain more information to be sure they can either safely ignore the event or take the correct action in response. This information can come from two sources--either the situation itself or other people.

When others have witnessed the crime and what is happening or has happened is unclear, the most obvious way for citizens to obtain information is to ask someone else. Victims and witnesses use others to define such disparate ambiguous events as heart attacks (Hackett and Cassem, 1969), shopliftings (Bickman and Green, 1977) and household accidents (Clark and Word, 1974). When many people witness an emergency, the extent to which they look to one another for information can be disastrous: witnesses look at each other for guidance; each misinterprets the uncertainty and inaction of the others as reassurance that the situation is not an emergency; no one helps the victim. This phenomenon, called diffusion of responsibility, is, perhaps, the major reason for witness inaction in emergencies (Latane and Darley, 1970).

Even when people are not at the scene of the crime, they can define the situation for victims and witnesses of ambiguous events. This can happen in two ways. The first is through previous commitment. When witnesses are told in advance that a crime or emergency may occur, and commit themselves to taking action (for instance when people are asked to watch their vacationing neighbor's house) they are more likely to recognize a crime when it occurs and take appropriate action (Moriarty, 1975; Bickman, 1976; Stewart and Cannon; 1977). Others can also define the situation if they can provide information that resolves the ambiguity. For example, a victim of an apparent auto theft may call a spouse or friend to confirm that the car has been stolen and not borrowed. Research has shown that victims and witnesses will contact others who provide information, even when they are not at the scene (Bickman, 1975).

The primary source of information about an ambiguous situation, and frequently the only source, is the crime scene itself. Even when other people offer information, it is, at best, second hand. Thus, people can also be expected to gain information about the situation by checking the crime scene or observing the crime as it happens.

Defining Characteristics of the Situation

The situational characteristics that best define what is happening seem to be the seriousness of the crime, the location of the crime, and the identity of the suspect and his relationship to the victim.

Seriousness is probably the most important defining characteristic of a situation. The more serious the crime the less ambiguous the situation. This includes whether or not someone is physically threatened by the crime (Ellison, 1978), and whether someone is injured (Feldman-Summers, 1976). Thus, personal crimes, and to a lesser degree property crimes in which the victim is involved and perhaps threatened, are the least ambiguous, and therefore, the least likely to require definition before the decision to call the police is made. Because ambiguity is best resolved by observing the crime as it happens, discovery crimes should be more ambiguous than involvement crimes.

Location of the crime is another piece of information victims and witnesses used to resolve ambiguity. When crimes occur where crimes are expected to occur--dark alleys, secluded places, and so on--people are more likely to construe them as crimes. As noted previously, crimes are least expected when people feel safest--at home, and, to a lesser degree, at work. Thus, crimes that happen at home and at work are the most ambiguous, and, as a result, require more time to define (Cann, 1977; Miller, 1977).

The identity of the suspect and his relationship to the victim are other possible cues to the situation. There is some evidence that the situation is less ambiguous when the apparent suspect is poorly dressed and

has been drinking (Stewart and Cannon, 1977; Block, 1974). In addition, researchers have found that ambiguous situations are more likely to be considered crimes when the offender is a stranger (Scarpitti and Scarpitti, 1977; Block, 1974); this is reinforced by findings that show police to be more likely to make arrests, and prosecutors more likely to bring cases to court, when the suspect is a stranger (William, 1978; Banton, 1964). On the other hand, people already have more information on the activities of friends and acquaintances than on those of strangers. For this reason, they are likely to try to gather more information about the situation when a stranger is committing an apparent crime than when an ambiguous action is being taken by an acquaintance.

In any case, the actions the suspect takes seem to be much more important than his appearance or relationship to the victim or witness (Bickman and Green, 1973).

Frequency of Delays due to Defining the Situation

Most previous studies of ambiguity are laboratory studies based on an experimental design, and it is difficult to estimate how often people will act to define real-life situations. The only non-experimental study that collected information on these actions for serious crimes was the Kansas City Response Time Analysis.[6] In Kansas City, as many as 36 percent of cases may have been delayed when citizens talked with someone else after the crime, either in person or by phone, to get information about the crime, or when they took the time to investigate the scene or to observe the situation. This figure represents an upper bound, however, and the actual percentage is probably closer to 25 or 30 percent.[7] It is certain, though, that the number of people who took these actions is substantial, and that a significant number of crimes were delayed in reporting for the reasons mentioned.

Summary of Previous Research

Victims, witnesses, and bystanders frequently delay before reporting a crime because they are not certain that the situation they perceive is a matter for the police. When the individual does not have enough information to classify a situation as criminal or non-criminal, he gathers information by observing it, investigating the scene (if the crime has already occurred), or by phoning or talking to others to get information about what has happened. Ambiguity is greatest--and thus an important cause of delay--in the following situations:

- When a crime is discovered after it occurs, and, to a lesser degree, whenever the crime is against property and not a person;
- When the crime occurs in a familiar (and presumably "safe") place, such as at home or at work;
- When the perpetrator is a stranger, rather than an acquaintance, friend, or relative.

Finally, because ambiguity is more a characteristic of situations than observers, it is unlikely that delays caused by the need to clarify

situations are much affected by social characteristics of the observer such as age, race, or social status.[8]

Defining the Situation in Forum Cities

In accordance with previous findings, we classify actions people take when gathering information--observing the situation, investigating the crime scene, and talking or phoning someone for information about the situation--as actions precipitated by ambiguity. Such actions were taken by 17 percent of respondents in Forum cities; the percentage did not differ significantly from one city to another. As shown in Table 5, most people gathered information they needed by investigating the scene. Talking with another person at the scene was also a frequent source of information.

Defining Characteristics of the Situation

Three situation characteristics--type of crime, location of the crime, and relationship of the respondent to the suspect--ought to be the best indicators of ambiguity-resolving actions in criminal situations.[9] The effects of these characteristics on the chances of taking information-gathering activities are shown in Figure 18 and explained below.

Crime Type

Previous researchers found that discovery crimes were the most ambiguous crime type, followed by other property crimes. Offenses involving injury or threat of injury--personal crimes--were more obviously

Table 5

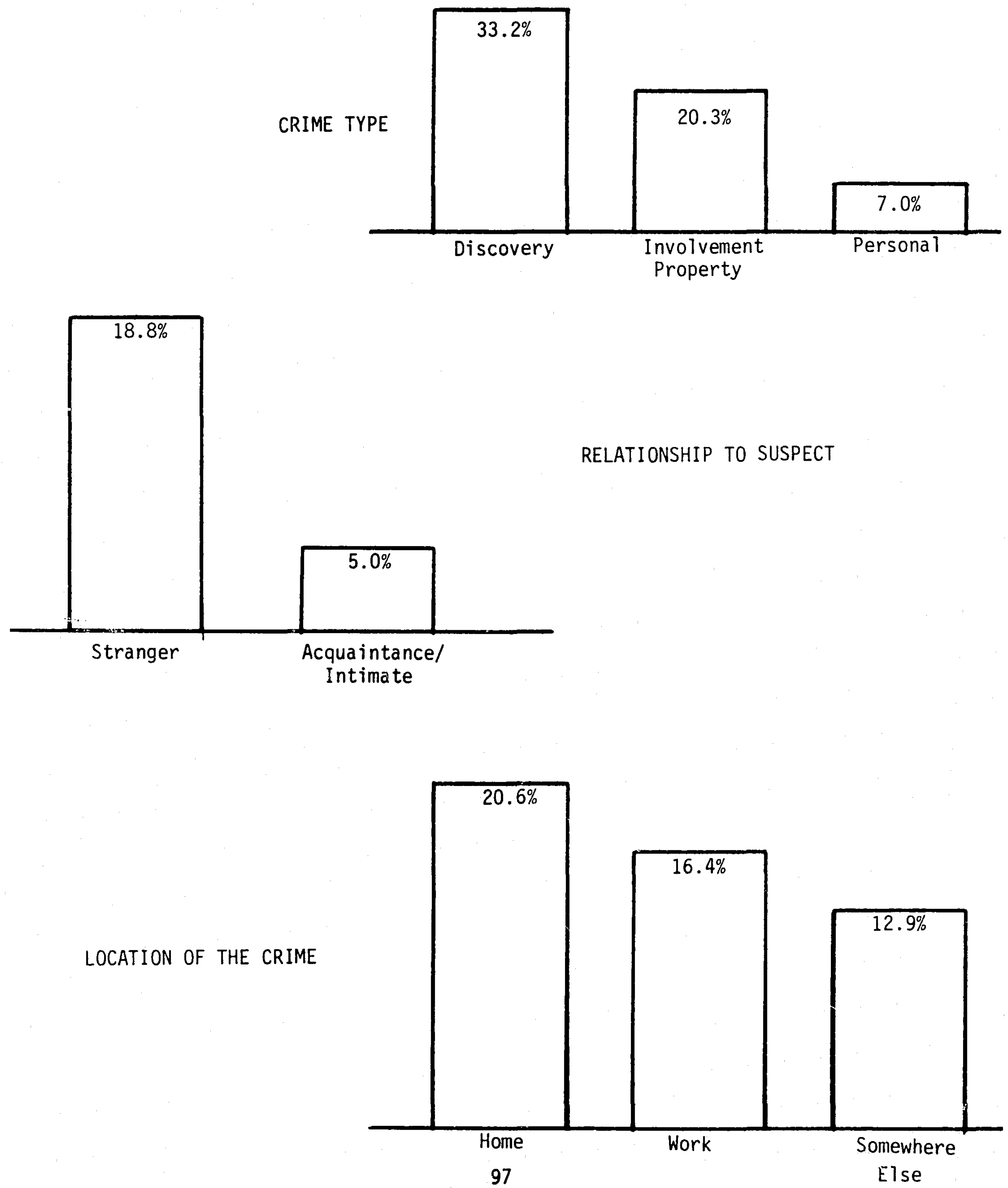
Percentage of Respondents Who Took Action to Define the Situation

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Observed the Situation	1.5%	1.0%	1.5%	2.5%	1.7%
Investigated the Crime Scene	12.4%	14.6%	12.6%	15.2%	13.7%
Talked to Someone and Asked for Information	7.0%	3.9%	7.1%	5.4%	6.0%
Phoned Someone and Asked for Information	0.9%	0.3%	0.8%	0.3%	0.6%
TOTAL*	15.5% (202)	16.6% (118)	16.5% (146)	19.1% (228)	16.9% (694)

*Numbers do not sum to total because respondents frequently took more than one action to define the situation

Figure 18

Effect of Situational Characteristics on the Proportion of Cases Requiring Information-Gathering Activities



criminal and did not require as much information gathering on the part of victims and witnesses. In the Forum cities, over 30 percent of discovery respondents, and over 20 percent of involvement property respondents delayed reporting because of observing, investigating, or asking another person for information. By contrast, only 7 percent of the victims, witnesses, and bystanders of personal crimes were delayed by these actions.[10]

Location

Crimes that occur in familiar locations will be more ambiguous than crimes in unfamiliar locations, since people do not expect crimes to occur in places they consider "safe." For the Forum cities, 21 percent of respondents in crimes that happened at home and 16 percent of respondents in crimes that happened at work delayed in order to clarify the criminal nature or seriousness of the situation, but only 13 percent of respondents did so when the crime happened elsewhere.

Relationship to the Suspect

Because respondents have little information about suspects who are strangers, they are likely to gather more. Nineteen percent of respondents took time to gather information about the incident when the crime was committed by a stranger, but only five percent of respondents did so when an acquaintance, friend, or relative committed the crime.

As expected, social characteristics were much poorer (and probably spurious) indicators of the chances that these actions would be taken. Although there was some indication that victims were more likely to take action to resolve ambiguity than witnesses or bystanders, the difference was neither significant nor large.[11]

Effect of Delay due to Defining the Situation

The amount of time taken by citizens to resolve ambiguities depends on the actions they take. On average:

- When a respondent phones someone to acquire additional information, the report is delayed by three minutes;
- When a respondent observes the situation or investigates the scene, reporting is delayed by approximately two minutes;
- When a respondent asks someone at the scene for information, the report is delayed one and one-half minutes.[12]

If respondents did not need to observe or clarify the situations, they would presumably report crimes to the police a few minutes faster. If the numbers of crimes reported within five minutes increased, the police would make more response-related arrests.

Quickly Reported Crimes

To determine the maximum possible impact of reducing situation-defining delays on the number of crimes reported within ten minutes of their occurrence, we calculated what the cumulative distribution of Part I crimes reported within ten minutes or less would have been had these actions never been taken. The results are compared to the present cumulative distribution (presented in Chapter 3) in Figure 19. Again, results did not differ greatly or significantly between sites.[13] As the figure shows, if delays due to ambiguity did not occur:

- The number of in-progress calls would increase by about 4/10 of 1 percent. Thus, 3.0 percent of all Part I crimes would be reported in progress, instead of the present 2.6 percent.
- The number of Part I crimes reported within one minute of their occurrence would increase by 2.0 percent. A total of 8.2 percent of crimes would be reported within one minute or less, and for these crimes a response-related arrest is quite possible if police response is rapid.
- The number of cases reported within three minutes would increase by 2.8 percent, and the number reported within five minutes would increase by 2.9 percent.

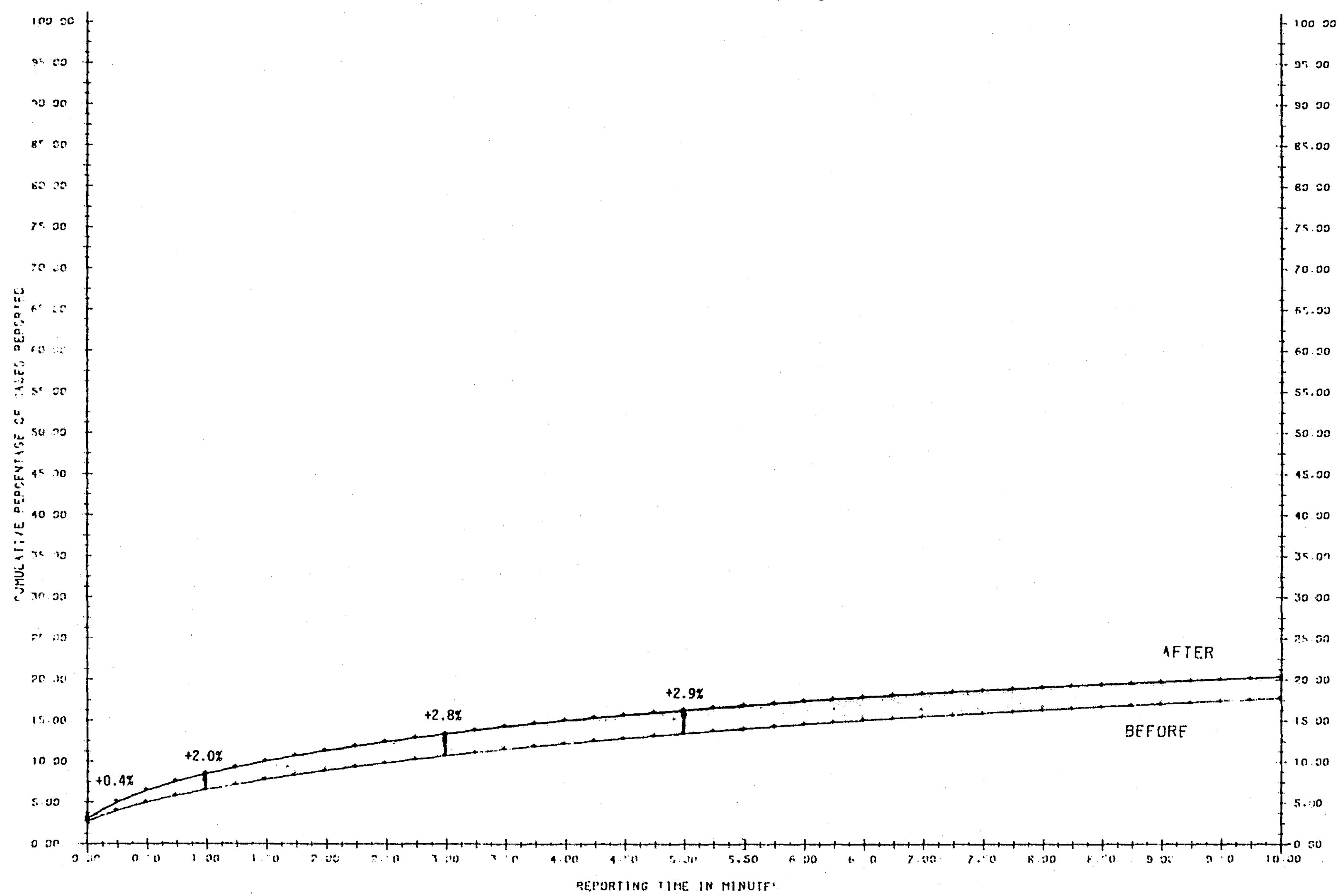
Thus, even if no respondents were delayed by having to define the situation, only 15.0 percent of Part I crimes would be reported quickly enough to make a response-related arrest likely. For the remaining 85 percent of cases, a fast police response would be no more likely to result in arrest than a slow response.

Number of Arrests

If citizens eliminated situation-defining delays and increased the numbers of quickly reported crimes by three percent, police would make more arrests. Exactly how many more they would make depends on how quickly

Figure 19

Short Reporting Time: If Delays Due to Ambiguity Were Eliminated



the department responds to calls, and on the kind of crimes reported to the police, characteristics of the neighborhoods served, and so on. In the cities sampled, the percentage of crimes resulting in response-related arrest differed slightly, from 2.5 to 4.0 percent. On average, however, the number of cases resulting in response-related arrest would increase from 2.9 percent to 3.1 percent--an increase of two arrests per thousand Part I crimes--if delays due to ambiguity could be completely eliminated.[14]

Reason Two: More Beneficial Actions

Once citizens define a situation as criminal, they must decide that the benefits of calling the police outweigh the costs. Unfortunately, most citizens decide otherwise: approximately two-thirds of all crimes classified by victims as matters for the police are not reported either because the benefits of calling are too low, or the costs involved too great (NCJISS, 1979). Many victims do not consider calling the police beneficial at all: 26 percent of those victimized did not report the crime, and cited that the police could do nothing about it or would not want to be bothered as the reason.[15] Given these results, one would expect that many, if not most, citizens would find other actions to be more beneficial or less costly than calling the police. About one-third of victims, witnesses, and bystanders in the Forum cities indicated that they took actions associated with needs the police could not satisfy, and a moderate number of response-related arrests were lost for this reason.

Previous Research

People report crimes to the police for many reasons. The most frequently cited reasons are also the most obvious: people report out of a sense of duty, a desire to prevent similar crimes in the future or to recover property, a need to fulfill insurance requirements, and so on (Skogan, 1976; Ziegenhagen, 1976). Psychologically-oriented researchers have noted that people also call in order to gain power over or to take revenge on the offender and diffuse some of their anger toward him (see, for example, Meyer, 1974; Ernest, Jodry and Friedsam, 1978; Waller and Okihiro, 1978). Although reporting the crime will meet some of the citizen's needs, these are by no means the only needs citizens feel they must satisfy.

Crimes Create Needs

Knudten, et al. (1974), found that crimes created many needs in the minds of victims, witnesses, and bystanders that they did not believe could be satisfied by the police or other public service agencies.

- Fifty-seven percent of victims and witnesses suffered some emotional or mental suffering; 27 percent called their suffering "very serious."
- Fifty-one percent said the crime caused them to be inconvenienced, and 23 percent said the loss of time was very serious.
- Forty-two percent lost property; 19 percent called the losses very serious.
- Thirty-one percent were physically injured; 16 percent very seriously.

Although citizens knew that a hospital would treat their injuries, only one-fourth knew that services also were available to help them with their emotional suffering and problems with family and friends that resulted from the crime. The vast majority did not associate calling the police with receiving help for any of these difficulties. These results are mirrored by other studies of victims and witnesses in different cities, which found

that emotional suffering, injury, financial loss and inconvenience were universal, and were important causes of delay in reporting crimes. We consider these studies below.

Stress

The most widespread--though least tangible--effects of crime are emotional suffering and stress. After a crime has been committed the people involved often find themselves disorganized and anxious. They undergo a "vulnerability conversion":

> Uniformly, and without exception in our sample, one effect of the (crime) is to raise to a significant degree the victim's sense of vulnerability and mistrust (Lejeune and Alex, 1973).

Although Lejeune and Alex refer only to the effects of muggings, others have noted that the same phenomenon occurs, to some degree, in all victims and witnesses (Bard, 1980; Sheleff and Shichor, 1978).

In order to relieve the anxiety caused by a crime, people usually talk to others about the event (Lejeune and Alex, 1973). Support from others allows citizens to feel less helpless, and to dissipate some of the anger they feel toward the offender. In addition, talking to others helps citizens regain their composure, thereby enabling them to carry on with business as usual.

Because many people do not consider calling the police to be particularly beneficial, one would expect that relieving stress and anxiety by talking to someone would often be more important to victims and witnesses than calling the police immediately. Researchers have found that stress is highest--and the need for emotional support greatest--when serious crimes have been committed. In support of this contention, Bard found rape to be the crime causing the greatest stress, followed by assault and robbery (Bard, 1980; Kansas City, 1977). In addition, people will be traumatized most when the crime is committed by someone emotionally close--a friend or relative. Emotional needs are less important when the offender is an acquaintance, and, less important still, when the offender is a stranger (but see DuBow, McCabe and Kaplan, 1979).

Injury

Physical injury is another problem frequently encountered by victims of crime. In a comprehensive study of citizen injuries, 25 percent of personal crime victims were injured in some way in the course of the offense. Although most injuries were minor, such as cuts and bruises, eight percent of the injured victims suffered knife or gunshot wounds, and seven percent received internal injuries or were knocked unconscious (Gottfredson and Hindelang, 1976). In Kansas City the injury rates were higher, since cases with injury were much more likely to be reported to the

police. Nearly half of the personal crimes reported resulted in injury, and nearly 30 percent required hospitalization of one or more victims (Kansas City, 1977).

When an injury occurs, particularly a serious one, many victims, witnesses, or bystanders will consider taking care of the injury to be more important than calling the police. In some cases the victim may be injured and unable to summon help for a time: a witness or bystander may then delay reporting to give first aid, call an ambulance, or drive the victim to the hospital before reporting the crime. Such actions delayed the reporting of about six percent of Part I crimes in the Kansas City sample.

Injuries are most likely to occur, and most often result in reporting delay, when the crime is a rape, although they also occur frequently in cases of assault and robbery (Kansas City, 1977). Injury also is more likely when the crime occurs at home rather than elsewhere, and when the offender is a stranger rather than a friend or relative of the victim. A victim's social characteristics are relatively unimportant predictors of injury, however (Gottfredson and Hindelang, 1976; BJS, 1980). By definition, of course, only victims can be injured--not witnesses or bystanders.

Recovery of Property

People sometimes see a chance to <u>recover their property</u> without the intervention of authorities. For example, victims and witnesses of purse-snatchings and other contact larcenies frequently chase the suspect.

When this happens, the chances are good that the offender will be caught: in Kansas City, suspects were chased in about seven percent of cases; when a suspect was chased, he was caught four times out of ten (Kansas City, 1977).[15]

Avoiding the Suspect

A complementary need of a victim or witness may be to avoid the suspect by leaving the scene. In about 25 percent of personal crimes (rape, assault, and robbery), victims try to protect themselves by running away from the offender (NCJISS, 1979). And, after the crime has been committed, citizens can be expected to leave the scene before the suspect comes back, especially if the crime has taken place somewhere other than at home or work (Lejeune and Alex, 1973).

Company Policies

Company policies are a final cause of delay. In many businesses, the person who discovers a crime is required to contact a supervisor or security guard before calling the police. This is particularly likely to be the case in discovery larcenies (Kansas City, 1977).

If people thought that calling the police would help to alleviate problems such as emotional trauma or stress, physical injury, recovery of property, apprehension of the suspect, and so on, they would probably be inclined to phone the police quickly. However, as mentioned previously, most victims and witnesses do not think calling the police will lead to

recovery of property and apprehension of the suspect. Moreover, people seem to perceive police priorities as differing from their own: of the 949 victims, witnesses, and bystanders questioned in the Response Time Analysis, only 49--or six percent--expected the responding officer to counsel them or otherwise relieve their trauma or stress-related problems. By contrast, 44 percent expected the officer to take a report, 26 percent expected him to check the scene for evidence, and 22 percent thought he would take fingerprints (Kansas City, 1977a). Similar results have been obtained in other cities (Gourley, 1954; Goldsmith, 1978), and even in other countries (Heal and Ekblom, forthcoming; Waller and Okihiro, 1978).

If people seldom relate receiving assistance for their emotional trauma with calling the police, do they look to other agencies that provide counseling and victimization services? Judging from the percentage of victims and witnesses who use them, apparently not. Knudten found that just over 10 percent of victims and witnesses made use of some public or non-profit assistance program. One reason for the low service rate was that two-thirds of the people interviewed did not know about the services. Even of those who knew, 66 percent chose not to seek help for their needs: 41 percent felt the service to be too inconvenient or not worth the trouble, and 16 percent did not qualify or could not afford the services.

Summary of Previous Research

To summarize, all crimes create problems for the people involved. All crimes create emotional stress. Personal crimes often result in physical injury, whereas property crimes, by definition, result in financial loss. Although the police were eventually called for all crimes in our sample, victims and witnesses often dealt with other problems before deciding to call the police. These problems are particularly likely to result in delays because most people realize that the police are unlikely to help with problems such as emotional stress.

These other needs are determining factors, and actions other than calling the police are judged to be more beneficial, in a wide variety of situations. Trauma and injury are the most common and important of these problems, however, and trauma and injury most often cause delays in the following situations:

- Crimes of violence, especially rapes;
- Crimes committed by someone familiar to the respondent, especially a friend or relative;
- Crimes committed somewhere other than at home or work;
- When the respondent also is the victim.

Stress, unlike ambiguity, probably affects different people in different ways. Still, there is evidence to suggest that social characteristics have little effect on the amount of stress a crime creates or the likelihood that an individual will act to relieve the stress in some way

other than calling the police. Moreover, social characteristics have no direct effect on the likelihood of injury, leaving the scene, or chasing the suspect.

More Beneficial Actions in the Forum Cities

As shown in Table 6, about one-third of the respondents in each of the four cities sampled took actions to meet needs created by the crime. Most people delayed because they turned to others at the scene in search of support or assistance, or because they left the scene of the crime before placing the call. It is interesting to note that, although only six percent of respondents chased suspects, one-third of these pursuits resulted in apprehension. Although the differences between sites in the percentage of people who took more beneficial actions were statistically significant, the largest difference across sites--between Jacksonville and Rochester--was less than six percent.[17]

Indicators of More Beneficial Actions

According to previous research, characteristics of the situation and of the respondent's relationship to the situation should be the best indicators of action taken to resolve other needs. They include the role of the respondent in the incident, the relationship of the respondent to the suspect, the location of the crime, and the type of crime committed. The effect of each is shown in Figure 20 and explained below.

Table 6

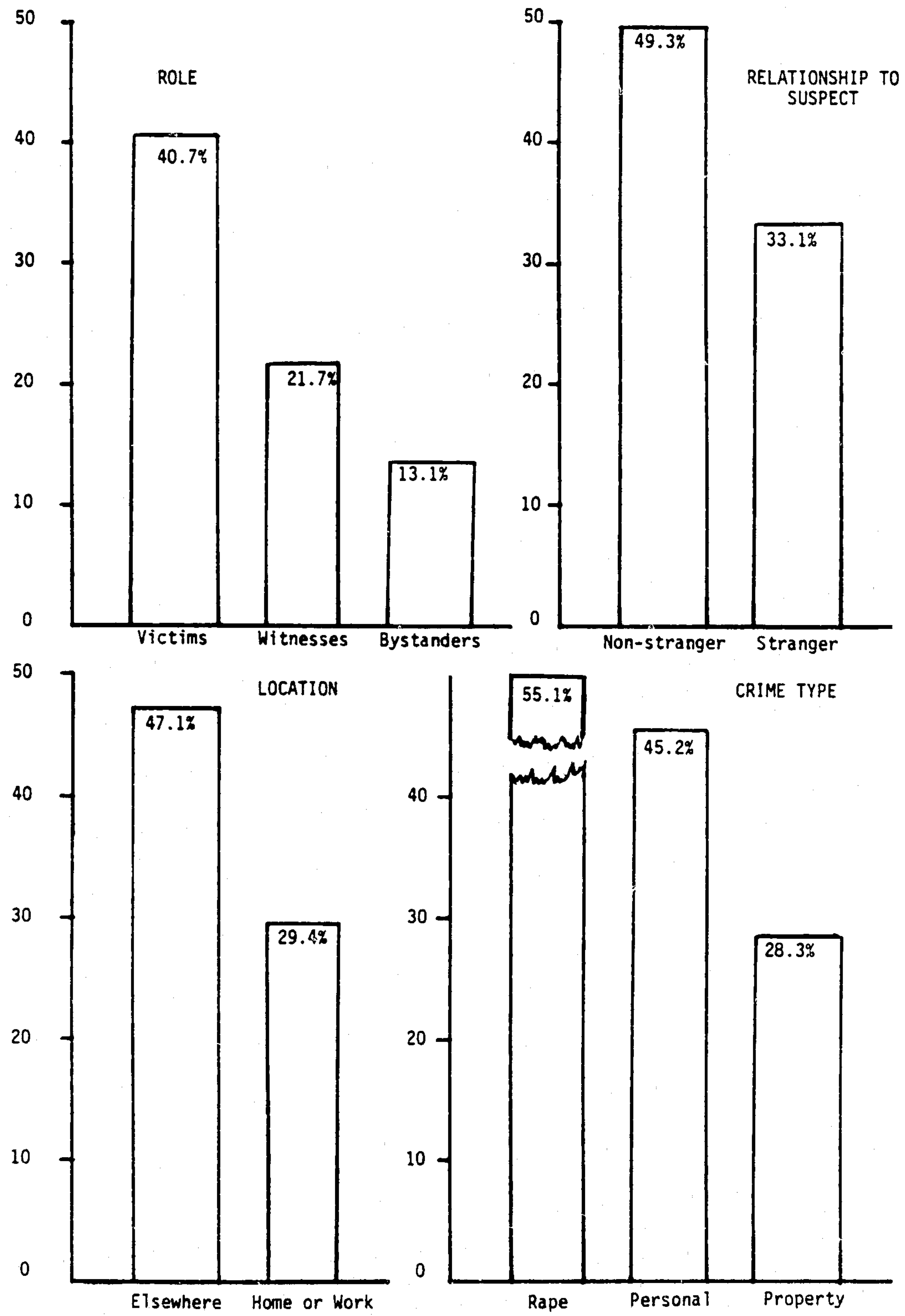
Percentage of Respondents Who Took Actions They Considered More Beneficial

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Talked to Someone to Get Assistance or Support	11.1%	13.2%	14.6%	14.2%	13.1%
Phoned Someone for Assistance or Support	2.8%	4.9%	2.5%	3.9%	3.4%
Injury, First Aid, Transport to Hospital, Knocked Unconscious	1.5%	1.0%	1.7%	0.9%	1.3%
Chased or Restrained Suspect	4.8%	6.1%	8.4%	6.9%	6.4%
Left Scene of Crime	18.6%	20.1%	22.7%	12.1%	19.3%
TOTAL*	33.1% (431)	36.6% (260)	38.8% (344)	34.2% (409)	35.3% (1444)

*Numbers do not sum to total because respondents frequently took more than one actions.

Figure 20

Effect of Situational Characteristics on Incidence of Delays Due to Taking More Beneficial Actions



Role. As expected, victims were far more likely to act to meet other needs than were witnesses and bystanders. Forty-one percent of victims took such actions, whereas only 22 percent of witnesses and 13 percent of bystanders did. Since bystanders did not see, hear, or know of the crime as it was happening, it was logical that stress, economic loss, and the threat and presence of injury would be less important causes of delay to them than to witnesses.

Relationship to Suspect. Again, as previous research predicts, crimes committed by friends, relatives, and acquaintances were more likely to lead to actions resolving other needs than crimes committed by strangers. However, there was no difference between crimes committed by friends and relatives on the one hand, and by acquaintances on the other.

Location. When a crime happens somewhere other than at home or work, victims frequently leave the scene to avoid the offender. Only 29 of every 100 respondents involved in crimes committed at home or work took actions they judged to be more beneficial, whereas 47 percent did when the crime happened elsewhere.

Crime Type. Rape respondents delayed reporting most often because of emotional stress, injury, and so on, followed by people involved in the other types of personal crimes (aggravated assault and robbery). Only 28 percent of respondents delayed to take these actions in property

cases, and the figure was the same for discovery as for involvement property survey respondents.

Social Characteristics. Finally, social characteristics of respondents had only minimal effects on the likelihood that actions to resolve other needs would be taken. Without exception, social characteristics were poor predictors of reporting delay when compared to the effects of the situation or the respondent's relationship to it.

Effects of Delays due to More Beneficial Actions

Like actions aimed at resolving ambiguity, the time required to resolve other needs depends on what actions the respondent takes to resolve them. The following was found to hold true in all Forum sites:[18]

- Taking care of an injury took about a minute on average. However, very few injury cases were sampled, and due to sampling fluctuations the time required may have been as much as five and one-half minutes on average.
- Phoning someone for assistance or support delayed reporting by an average of three minutes.
- Talking to someone at the scene and leaving the scene of the crime each resulted in crime reporting delays averaging one and one-half minutes.

Actions such as those mentioned above were taken because the victim, witness, or bystander believed resolving some other need was more important than calling the police. Therefore, programs aimed at eliminating these delays would probably have to focus on either convincing people that arrest and return of stolen property were their most important needs, or

CONTINUED

2 OF 7

changing police response services so that police could help to relieve emotional trauma and injury.

If such programs were 100 percent successful--if all victims, witnesses, and bystanders of a crime considered reporting the crime to be the most beneficial action they could take--the increase in the number of quickly reported crimes would be that shown in Figure 21. Compared to the present situation, eliminating citizen actions taken to resolve other needs would have the following effects:

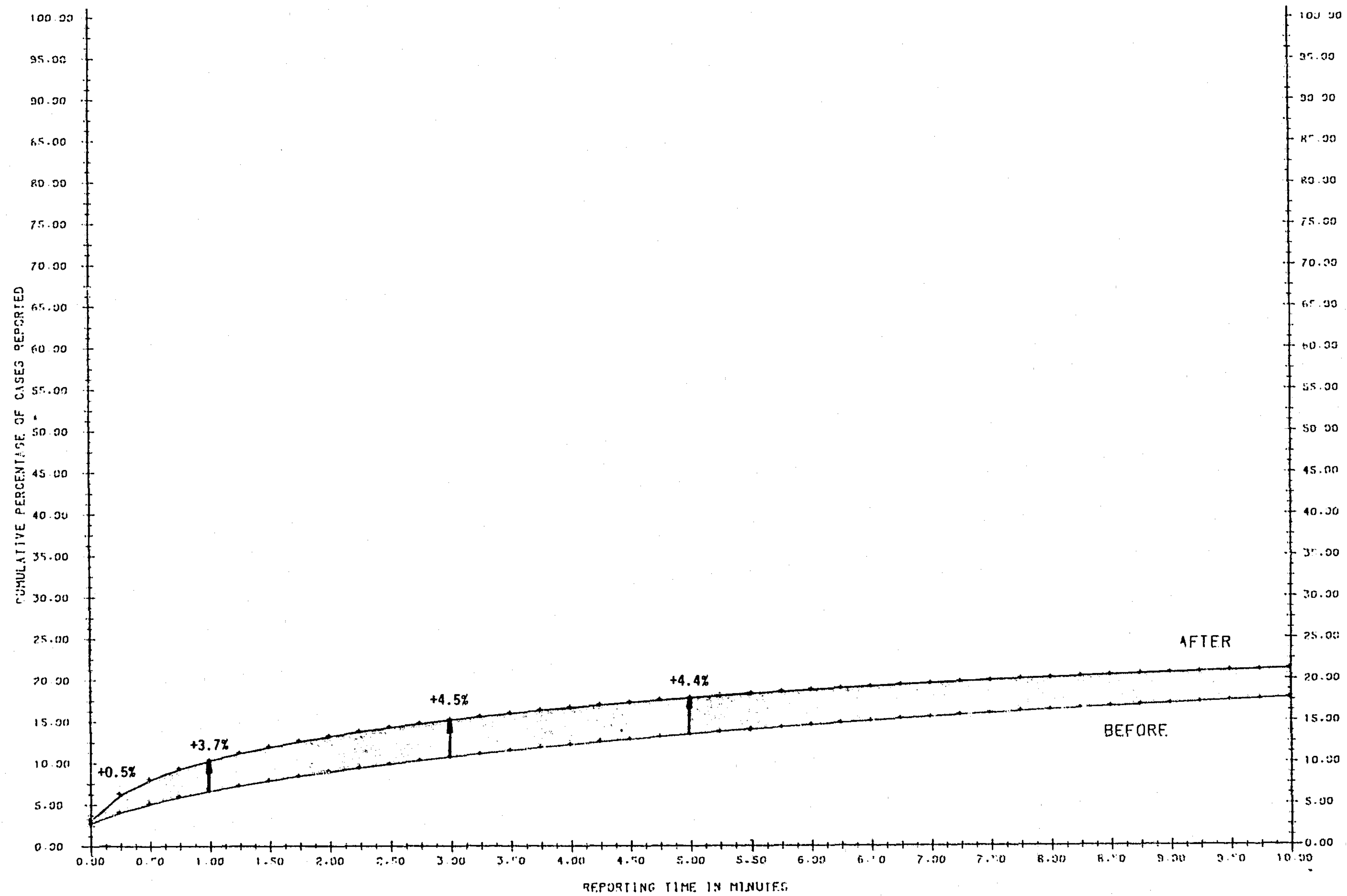
- It would increase the number of in-progress calls by 1/2 of 1 percent. Thus 3.1 percent of Part I crimes would be reported in-progress, instead of the present 2.6 percent.
- The number of crimes reported within one minute would increase by 3.7 percent. A total of 9.8 percent of crimes would be reported within one minute or less, instead of the present 6.1 percent.
- The number of cases reported within three to five minutes would increase by about 4.5 percent. Thus, up to 16.6 percent of crimes would be reported quickly enough to potentially result in response-related arrests.

Again, for the remaining 83.4 percent of cases, the speed of police response would not affect the chances of arrest.

For the average of the four departments sampled, this gain in quickly reported cases translates into an increase of about 0.2 of one percent of Part I crimes resulting in on-scene arrest. That is, the proportion of Part I crimes that lead to response-related arrest would increase from 2.9 percent to 3.1 percent, if people made calling the police their first priority.

Figure 21

Short Reporting Time: If Other Needs Were Eliminated



Reason Three: Avoiding a Decision

The delays detailed in the previous section occurred because citizens perceived other activities as being more beneficial than calling the police. Although phoning the police need not necessarily be costly, there are instances where calling the police involves a definite cost, in terms of physical inconvenience, embarrassment, and perceived safety. When citizens perceive reporting a crime as costly, but not reporting a crime as equally costly, they may delay by procrastinating or asking someone else for advice. These conflict situations are the third and most important cause of reporting delay. If conflict delays could be eliminated, the number of response-related arrests would increase by almost two percent.

Previous Research

The most obvious costs associated with reporting a crime are inconvenience and loss of time. When police respond to calls for service, they must spend anywhere from a few minutes to several hours questioning victims and witnesses, checking the crime scene, writing up a report, and so on. This "service time" typically averages about 30 minutes (Brown, 1974; Larson, 1971). If the suspect is caught and the case brought to trial, victims and witnesses stand to be inconvenienced far more--they will probably lose time from work and have to incur costs of transportation and parking (Knudten, et al., 1976). About 30 percent of the crimes not reported can be attributed to inconvenience: they include cases where the

victim "does not want to take the time" and those judged "not important enough" to report (NCJISS, 1979). Victims cite inconvenience more often for property crimes than for personal crimes, and for discovery property crimes more often than for involvement cases.

In addition to being inconvenienced, victims and witnesses who report crimes can leave themselves vulnerable to reprisals by offenders. Although fewer than one percent of non-reported crimes went unreported for this reason, fear of reprisal accounted for a substantially larger percentage of personal offenses: 11 percent of unreported rapes, for example, went unreported due to fear of reprisal (NCJISS, 1979).

Reporting a crime may also result in threats to the victim's and witness's reputations, and problems within the family. It is well demonstrated that rape victims frequently fail to report the offense because they fear others will not believe that the offense was, in fact, committed or insist that the victim precipitated the rape (Gates, 1975; Notman and Nadelson, 1976). Research shows that these victims are often right, not only with regard to rapes but also regarding assaults, robberies, and even property crimes (Ryan, 1970; Ellison, 1976; Cann, 1978). Problems can also result when crimes committed by friends and relatives are reported. In addition to incurring higher chances of reprisal, the victim may feel guilty at turning in a family member, become isolated from the rest of the family, and (when the offender is a spouse) suffer a loss of income. Knudten found that over 20 percent of victims and witnesses cited problems with reputation, friends, and family. Only 34 percent knew that government or private programs were available to help with these problems (Knudten, _et al._, 1976).

Conflict and Reporting Delays

If there were only costs associated with calling the police, the decision to call would be a simple one: people would decide without hesitation not to report the crime. However, calling the police usually _does_ have benefits, and, moreover, _not_ calling the police has costs. Citizens realize that they are supposed to call the police when a crime has been committed--a sense of duty is the most frequent reason for deciding to call in the first place (Block, 1974; Skogan, 1976). They also know that if they do not report the crime, their property will not be returned and the offender will not be arrested.

Thus, _both reporting and not reporting crimes can be costly._ When benefits clearly outweigh costs--for example, when the citizen is fairly certain that higher chances of arrest are worth the personal inconvenience--the decision to call will usually be made quickly. Similarly, when the costs clearly outweigh the benefits--when the citizen is certain that the police will not solve the crime, but will cause inconvenience and embarrassment, for example--then the decision _not_ to report will also be made quickly. When the costs and benefits are not clear, however, the citizen will be caught in what psychologists call a "double avoidance," or _conflict_ situation. In such cases, any decision made can be

costly, and because the costs are unknown, the potential caller tends to overestimate them for both choices.

Research indicates that people in conflict situations typically respond in one or more of the following ways:

- They may try to _bolster_ the choice they perceive as less costly by _asking other_ people for advice on what to do.
- They may try to _shift responsibility_ for the decision to someone else, _by presenting others_ with the situation and asking them to decide.
- They may _procrastinate,_ by putting off making a difficult decision _with the hope_ that either someone else will make the decision, or that the choice will become clearer later.

Thus, when both reporting the crime _and_ not reporting are expected to be costly, the victim, witness, or bystander will talk to someone in person or by phone and ask for advice about what should be done or wait and take no action at all.

Frequently, people in conflict will not report the crime. They may be advised not to by others, or they may simply procrastinate so long that the decision "makes itself." If they _do_ report, it is because they eventually decide the benefits of reporting to be higher than the costs: others may remind them of the benefits, or they may decide the costs are not so large after all (see Janis and Mann, 1977). The important point is, although the benefits of calling the police influence the victim, witness, or bystander to report the crime, _costs_ cause the delay.

Frequency of Conflict Delays

When asked why they delayed in calling the police, citizens involved in seven percent of the Kansas City Part I crimes replied that they were "apathetic": they did not think the incident was important enough to warrant a call, they did not want to get involved or take responsibility, and so on. These citizens--all of whom eventually called the police or had someone else call--were apparently in conflict. This cause of delay contributed more to total reporting delay than any other cause identified by Kansas City. In addition, the Kansas City researchers identified other causes that partially fit the definitions of confict, including "being unsure of police assistance," "waiting-observing," and "fear-emotional upset." Unfortunately, these definitions all included some causes that were not related to conflict situations, and thus neither the total number of cases in which citizens were delayed by conflict, nor the amount of time they delayed could be determined. It is clear, however, that people were often delayed by "double avoidance" situations, and that these crimes were reported relatively slowly.

Summary of Previous Research

Conflict, then, leads to delay when citizens believe that reporting crimes will be costly. To avoid making difficult decisions, citizens often place the responsibility for making the decision on others, or procrastinate and take no action whatever. Citizens are likely to believe

that calling the police will cost something and avoid making decisions in the following situations:

- When a crime is committed by a friend or relative, rather than an acquaintance or stranger;
- When a crime is discovered after it has occurred, or is a personal crime such as rape, assault, or robbery.

In addition, although victims feel conflict as often as witnesses and bystanders, they are probably more likely to eventually report the crime since reporting the crime is likely to be more beneficial to the victim than to others. As with actions taken to meet other needs, the chances that actions will be taken to avoid conflict depend somewhat on the personality of the respondent. Again, however, there is no evidence to suggest that social characteristics have much effect on the likelihood that these actions will be taken.

Conflict Delays in the Forum Cities

A citizen calling the police has probably anticipated that some cost will be incurred and has tried to avoid making a decision, when he takes the actions listed in Table 7. Of these activities--waiting, asking someone for advice in person, and phoning for advice--waiting is by far the most frequent. About one respondent in ten delayed in calling the police by taking one or more of these three actions; the proportion is about the same in each of the four cities sampled.

Table 7

Percentage of Respondents Who Took Actions to Resolve Conflict

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Talked to Someone to Get Advice	2.0%	3.1%	2.5%	1.5%	2.1%
Phoned Someone to Get Advice	1.2%	0.6%	1.1%	1.6%	1.2%
Waited to Took No Action	8.7%	11.5%	8.1%	10.2%	9.5%
Total*	10.1% (132)	12.4% (88)	9.3% (82)	11.8% (141)	10.8% (443)

*Numbers do not sum to total because respondents frequently took more than one action of this type.

Indicators of Conflict Delays

The best predictors of conflict delay are the role the respondent plays in the incident, the relationship of the respondent to the suspect, and the type of crime. The effects of each are shown in Figure 22.

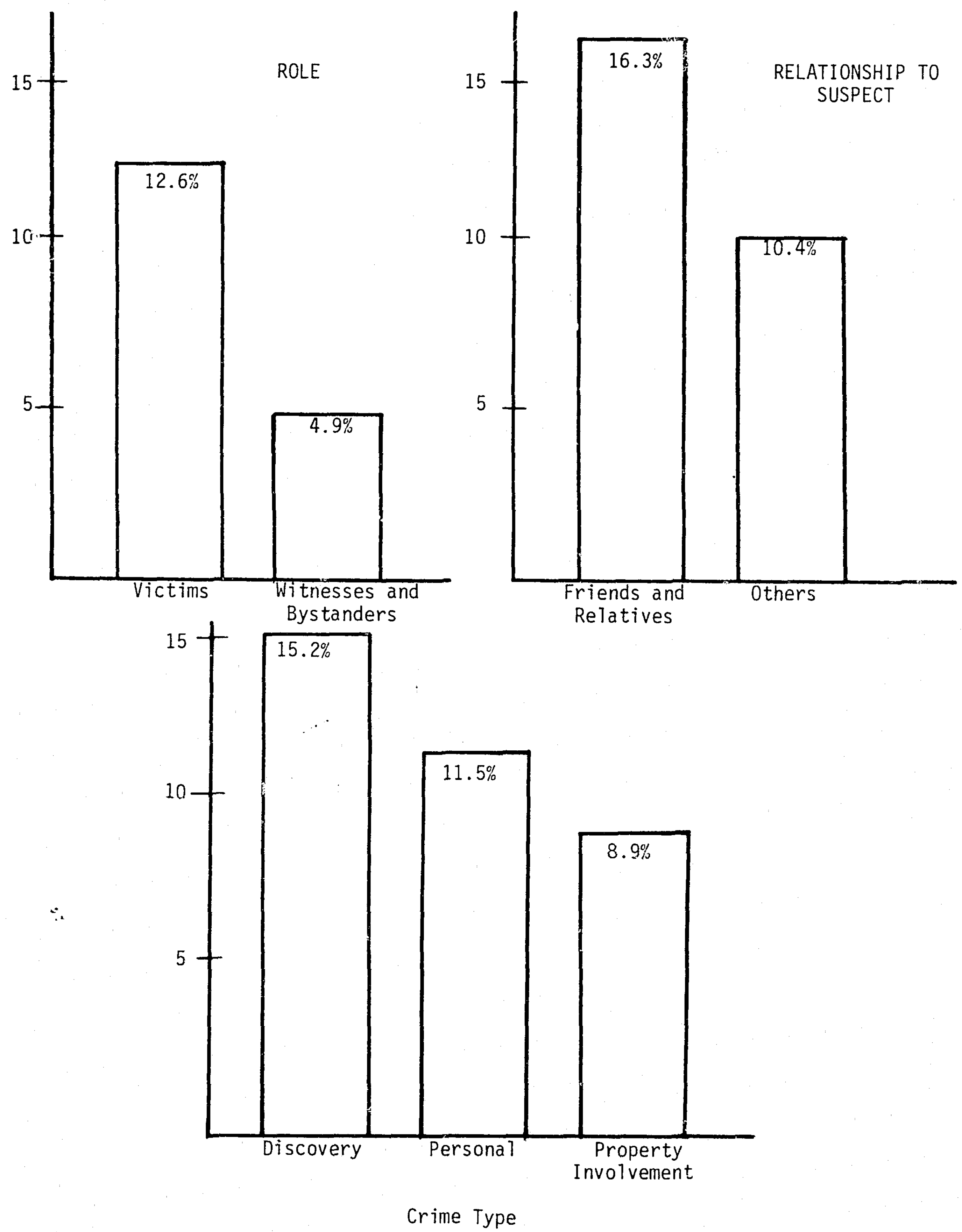
Role. Victims in conflict are probably more likely to eventually call the police than witnesses and bystanders, because reporting crime will be more beneficial to them. This was verified by the respondents in our sample: 13 percent of victims, but only 5 percent of witnesses and bystanders were delayed by taking such actions.

Relationship to Suspect. Involving a family member or friend with the police will be an emotionally traumatic decision for many people, even when the family member or friend is guilty of a crime. This was borne out by respondents in the four cities: when the suspect was a friend or family member, 16 percent of respondents delayed by waiting or asking for advice; when the suspect was only an acquaintance or stranger, these actions delayed 10 percent of respondents.

Crime Type. Although calling the police may be costly in all types of crime, only in discovery crimes will the benefits be particularly low and the costs predominant. Just over 15 percent of respondents in discovery cases were delayed due to conflict, more than for any other crime type. Respondents involved in personal crimes were slightly but

Figure 22

Effect of Situational Characteristics on Incidence of Actions Taken to Resolve Conflict



significantly more likely to procrastinate or ask for advice than people involved in involvement property crimes.

Location of the crime was not an important or statistically significant predictor of conflict delays, while social characteristics had insubstantial effects.

Effects of Conflict.

Like the other reasons for delay--ambiguity and meeting other needs--the length of time needed to resolve conflicts depended on how respondents resolved them.

- When respondents put off making a decision and took no action, the report was delayed over 11 minutes, on average;
- When respondents phoned someone for advice, reporting was delayed by three minutes;
- When respondents asked someone at the scene for advice, reporting was delayed one and one-half minutes.

The police may dramatically increase the number of quickly reported crimes by preventing conflict delays--particularly if people can be prevented from procrastinating. The key to achieving this gain, as discussed earlier, would be to decrease the costs that the victim or witness is likely to incur in calling the police, and make this fact known to the public.

Quickly Reported Crimes. If reporting costs could be <u>entirely eliminated,</u> and every potential caller knew about it, the percentage of calls reported within ten minutes of the crime's occurrence would be as pictured in Figure 23. As before, the present distribution of cases reported up to ten minutes is also shown for comparison. As the figure shows, if costs were eliminated and everyone knew it:

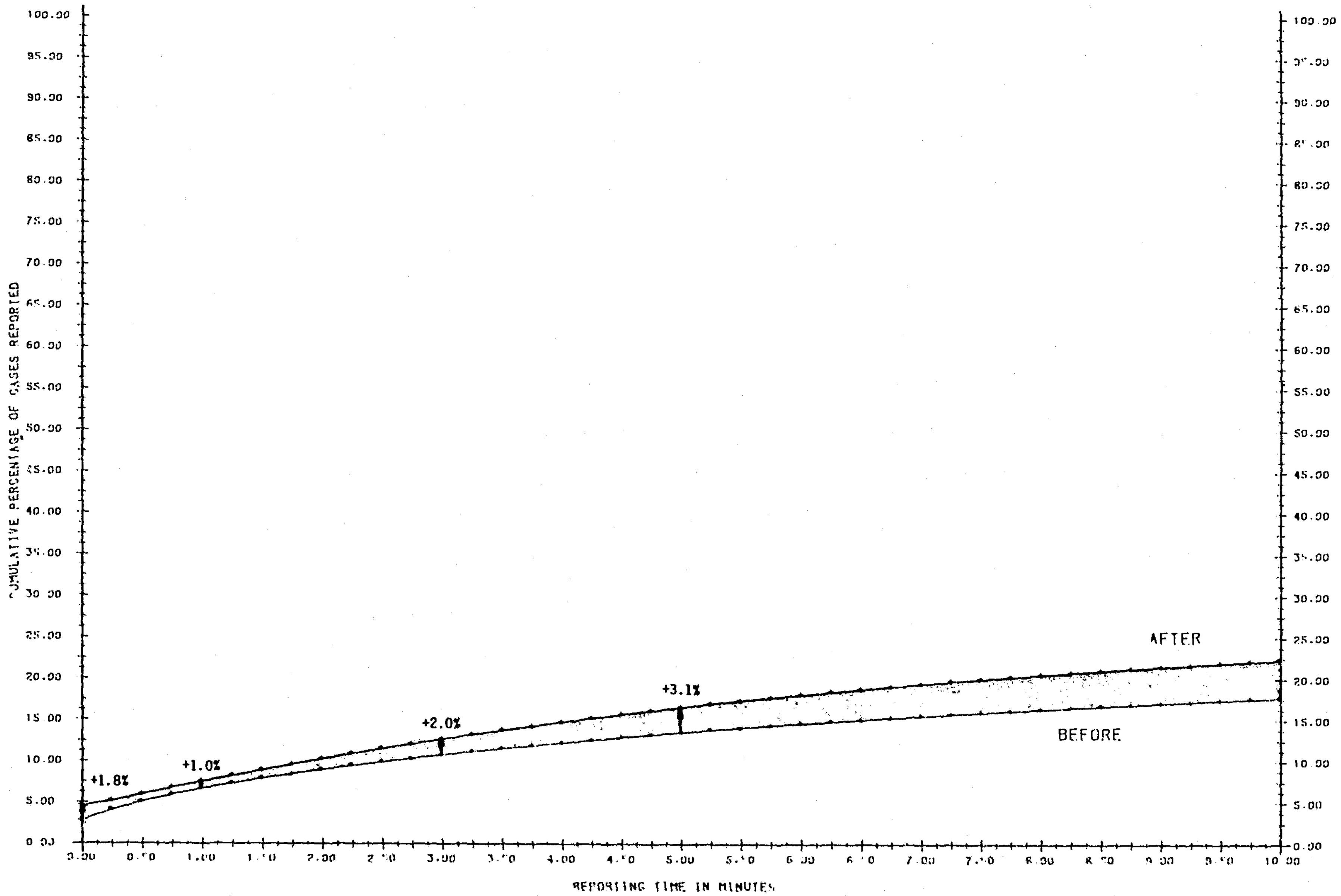
- The number of in-progress calls would increase by 1.8 percent. Instead of the present 2.6 percent, 4.4 percent of all Part I crimes would be reported in-progress.
- The number of cases reported within one minute would increase by 1 percent. Thus, 7.1 percent of crimes would be reported within one minute, instead of the present 6.1 percent.
- Cases reported within three to five minutes would increase by 2.0 percent and 3.1 percent, respectively. Thus up to 15.3 percent of serious offenses could potentially result in response-related arrest.

For the remaining 85 percent of cases, fast police response would not affect the likelihood of making an arrest.

Number of Arrests. This two to three percent increase in quickly-reported crimes would lead to a substantial increase in the number of arrests. This is because, even though conflict delays are relatively infrequent, they are by far the largest contributor to citizen reporting time delay. As a result, response-related arrests would increase from 2.9 percent to 4.8 percent--an increase of 19 arrests per thousand crimes--if a citizen crime reporting program could completely eliminate conflict delays.

Figure 23

Short Reporting Time: If Conflict Delays Were Eliminated



Effects of Faster Decisionmaking

In summary, three basic reasons for delay in reporting a crime were identified: having to define the situation; taking actions judged to be more beneficial than calling the police; and trying to avoid making a decision due to the costs involved. Elimination of any of these causes of delay would decrease citizen reporting times, and increase arrests.

Defining the Situation

If people never delayed reporting crimes to distinguish between criminal and noncriminal events, an additional three percent of Part I crimes would be reported within three to five minutes of their commission. The percentage of these crimes resulting in response-related arrest would increase from 2.9 percent to about 3.1 percent.

More Beneficial Actions

If calling the police were so beneficial that it was the first priority of everyone who reported a crime, the number of crimes reported quickly enough to result in response-related arrest would increase by over four percent. This would increase response-related arrests from 2.9 percent to approximately 3.1 percent of reported Part I crimes.

Avoiding a Decision

If the costs of reporting crimes were so decreased that no one delayed to avoid making a decision, the number of quickly reported crimes

would increase by about three percent. The number of Part I crimes resulting in response-related arrest would increase from 2.9 percent to 4.8 percent--an increase of 19 arrests per thousand Part I crimes reported.

All Decisionmaking Delays

Although the effects of eliminating any single source of delay in deciding to report a crime are substantial, the effect of eliminating all of them would be somewhat larger. If everyone decided to call the police as soon as they knew about a crime, the number of crimes reported quickly enough to result in response-related arrests would nearly double. Now, about half of involvement crimes are reported within five minutes of their commission; if all decisionmaking delays were eliminated, virtually all involvement crimes--22 percent of all Part I crimes--would be reported this quickly. This would increase the response-related arrest rate from 2.9 percent to 5.4 percent, an increase of 25 arrests per thousand crimes.

Making the decision to call the police is only half of the reporting process, however. The decision must still be implemented--the call must actually be placed. As we show in the next chapter, many citizens are delayed by having to look for a phone, find a number, and explain the situation to the police operator. Efforts to combat these sources of delay may also have small positive effects on the number of quickly reported crimes and response-related arrests.

NOTES

1. These first two parts of the decisionmaking process are typically referred to in the psychological literature as "information processing." Although the decision itself cannot be made until the crime has been noticed and labeled, psychologists consider noticing and labeling the situation to be a decision in itself. For more information on information processing, see Broadbent (1971). Information processing has been extended to criminal and medical emergencies by Latane and Darley (1970) and others who have replicated their work. Applications and specific results are explained in detail in a later section of this chapter.

2. This is an extremely simple summary of the "subjectively expected utility" (SEU, or decision analysis) model of decisionmaking. The SEU model is by far the most influential and widely-cited theory of decisionmaking, and has been used extensively as a prescriptive as well as descriptive device (Raiffa, 1972; Rapoport and Walsten, 1972). Although the SEU model is not universally accepted, alternative models (such as additive difference and risk minimization models (Tversky, 1969; Pollatsek and Tversky, 1970), and the information integration and correlational approaches (Anderson and Shanteau, 1970; Slovic and Lichtenstein, 1968), contradict the SEU model only in their definition of what is being evaluated (single-dimension utility, risk, or multidimensional utility) and how (by subjective probabilities, or by more general "weight values"). What is common to all approaches is that: (1) people look at the possible results of each available choice; and (2) subject to constraints of available information and processing capability, people pick the choice that gets them what they want. Stress, physical injury, and other inhibiting factors may change the assessment of each result, the expectation that it will occur, and the ability to work the answer out to six significant digits--but citizens will still pick the choice that gets them what they want. A simplified SEU approach has been applied to citizen reporting and intervention behavior frequently, most notably in Piliavin, Rodin and Piliavin (1969), and Latane and Darley (1970).

3. As we show later in the chapter, in the section on conflict, people who are in conflict do not wait, bolster and shift responsibility because the costs outweigh the benefits. On the contrary, they may believe the benefits to be greater than the costs, but still try to avoid the decision because it is risky, because they are uncertain as to what the costs are, or because the benefits occur much later while the costs are paid in the short run. See Janis and Mann (1977) for a detailed explanation of this phenomenon.

4. This estimate is derived from the eight-city victimization survey analyzed by Gottredson (1976). In addition, the victimization rate for households indicates that a crime will be committed about once every 4.3 years (NCJISS, 1979). However, this estimate is based on the

Preceding page blank

victimization rate (the number of crimes per population at risk), rather than the percentage of households victimized. Since many households are victimized more than once a year, this estimate overstates the crime risk to the average household.

5. In one typical experiment, a researcher walked up and down the aisles of a big city supermarket, placing items in her purse in full view of another shopper. Although the researcher did nothing to disguise her (apparently criminal) intentions, and in fact tried to make the theft as obvious as possible, nearly 30 percent of the shoppers later insisted that they did not believe the researcher's act to be a shoplifting (Brickman and Green, 1977).

6. A recent study of British citizens who called the police in a north English suburb for all services (including serious crimes, misdemeanors, and a variety of other problems) showed that some 20 percent delayed reporting the problems because they had not defined the situation. Three primary reasons were given by the citizens: they were unsure of what they had observed; they knew what they had observed, but were not sure it was a crime; they knew it was a crime but were not certain that it was important enough to report (Heal and Ekblom, forthcoming).

7. The 36 percent figure is too high, since people frequently took more than one action, and since Kansas City categorized "observing the situation" with "waited, or took no action" (Kansas City, 1977).

8. This was shown by Latane and Darley (1970), and confirmed by Clark and Ward (1972, 1974), and many later studies.

9. A fourth set of characteristics, the physical appearance of the suspect, is also probably a good indicator. However, a description of the suspect provided by the victim, witness, or bystander would have been biased by subsequent events such as the suspect's running away or the police making an arrest (Loftus, Altman, and Geballe, 1975; Loftus, 1976). An unbiased description was usually only available when the suspect was arrested, which occurred in a small proportion of cases even in our stratified sample. In any case, the information was not collected in this study.

10. In Figure 18 and the accompanying text, the percentage of respondents who took action to define the situation for each crime type is given for all sites aggregated, without controlling for other situational characteristics. The percentages occasionally differ slightly between sites, as shown in Appendix E-2; however, in each site the form of the relationship--that discovery crimes are most ambiguous, followed by involvement property and personal crimes for example--is precisely the same. Thus we aggregated all sites together to make the results easier to read for Figures 18, 20, and 22.

    A potentially more serious problem arises from the fact that the situational characteristics are correlated. For example, discovery crimes are very likely to be committed by strangers. Thus it seemed possible that some of the uncontrolled effects were overestimates, or even entirely spurious. In Appendix E-3 we use a statistical technique called logistic regression to control for all situational characteristics at once. Only variables that are statistically significant predictors at the .05 level are included. With little exception, these are the variables that previous research indicated to be the best predictors of ambiguity delays. The same procedure was followed for more beneficial actions and conflict--the other two reasons for delay.

11. See Appendix E-3 for the effect of the respondent's role on actions taken to define the situation, and Appendix E-4 for the effect of role and social characteristics on the likelihood that each action would be taken.

12. These are conservative estimates; due to the estimation method used, in most cases the time taken to complete each action will be greater. The times did not differ significantly between sites or types of crime, however. See Appendix E-4 for details.

13. Details for this analysis and for similar analysis of the other two causes of delay--more beneficial actions and conflict--are shown in Appendix E-4.

14. Despite small differences in the speed with which departments respond to calls and the proportion of crimes resulting in response-related arrest for each reporting time, the predicted increase in arrests does not differ significantly from one site to another. This analysis, and similar analysis for more beneficial actions and conflicts delays, is detailed in Appendix E-4.

15. An additional 29 percent of victims of non-household crimes did not report the crime, citing that the crime was "not important enough," or they reported it to some other authority. It seems likely that many of these victims saw no benefits to reporting the crime as well. The percentage of victims of household crimes who do not report for these reasons is very similar. All figures are taken from the 1977 National Crime Study (NCJISS, 1979).

16. Interestingly, this 40-percent apprehension rate does not differ significantly from the police response-related arrest rate for crimes reported in progress from the Forum cities. This suggests the citizens are about as successful when they chase the suspect as the police. Had the victim or witness decided to call the police first rather than chase the suspect, the crime would no longer have been in progress and the chances of arrest would be much lower. Thus encouraging people <u>not</u> to chase the suspect will cause a decrease in the apprehension rate for these approximately seven percent of crimes.

17. The chances that a chase will result in apprehension of the suspect, and a comparison of between-site differences, are shown in Appendixes E-1 and E-2.

18. Victims and witnesses chased and restrained the suspect in too few cases to permit reliable estimation of the time required.

CHAPTER 5
PLACING THE CALL: COMMUNICATIONS ACCESS PROBLEMS

When victims or witnesses decide to call the police, they may still encounter problems when attempting to contact the police operator. It may be that a phone is not available, or the citizen may not have change for a pay phone. Even if a telephone is available and can be used, the would-be caller may need to look for the police number; and, in places with confusing jurisdictional boundaries, may call a police agency serving a different jurisdiction by mistake. To counter these problems, researchers and police managers have suggested allowing citizens the use of police and fire call boxes, advertising police emergency numbers, and implementing a single emergency number, 911. The need for these and other programs to increase the speed of citizen reporting depends on how these problems affect citizen reporting time--that is, on how often these problems occur, and how long it takes citizens to solve each of them when they do occur.

The Communication Process

To understand the literature on citizen-police communications, one must look at what citizens attempting to call the police go through. There are three main parts to the process: (1) finding a telephone; (2) finding a number to call; and (3) getting the information to the correct agency.[1] If citizens are unable to complete any one of these actions, they may simply give up, wait until calling is more convenient, or try to contact the police in some other way (by flagging a patrol car or walking into the station).

Even under ideal circumstances--a phone is immediately available, the citizen knows the correct police emergency number, and the phone is answered immediately--contacting the police will take some time, perhaps 30 seconds at a minimum. Any deviation from the best possible case--any problem encountered by the caller--will increase contact time above this minimum practical point. In our sample, citizens encountered five kinds of problems in calling the police:

(1) no telephone was available;

(2) the closest pay telephone did not work;

(3) the citizen did not know the police telephone number;

(4) the citizen called the wrong agency;

(5) the citizen had trouble communicating with the police complaint taker once the call was completed.

These problems and the actions citizens took to solve them are given in Table 8.

In order to determine the effect these problems have on reporting time, two questions are addressed for each of the five problems:

- How often did the problem occur?
- When the problem occurred, how long did it take citizens to solve it?

Answering these questions will tell us by how much reporting time could be reduced if the problem could be eliminated. Such reductions in citizen

Table 8

Communications Access Problems and Solutions

PROBLEMS the citizen may have in calling the police.	What the citizen does to solve the PROBLEM.
1. No telephone is readily available.	Find a pay phone. Borrow someone else's phone.
2. Pay telephone does not work. • out of order • already in use • citizen does not have change	Find another phone. Get correct change.
3. Citizen does not know the police phone number.	Dial "0." Look number up in phone book. Call directory assistance.
4. Citizen calls wrong agency	Get correct number and try again. Wait while call is transferred.
5. Citizen has trouble communicating with police • no answer or busy signal • citizen doesn't speak English • Complaint taker rude or uncooperative	Call back and try again. Wait for complaint taker who speaks correct language.

reporting time will not necessarily increase the chances of arrest, however. For example, reducing reporting time in discovery cases, or reducing 15 minute reporting times to 10 minutes, will not increase the number of response related arrests. Therefore, it is also important to know:

- How many additional cases would have been reported quickly enough for response-related arrests to be possible if the communication access problem had not occurred?
- How many more response-related arrests would have been made had the problem not occurred?

Where appropriate, findings are compared to those of earlier researchers. Almost all previous work has focused on the problem of finding the right phone number, and on evaluating the obvious solution to that problem, 911. The Response Time Analysis was the first comprehensive attempt to look at the process as a whole, and provided the best source of information about the problem of finding a phone.

Problem One: No Phone Available

In analyzing indicators and effects of the problem of finding a telephone, we first examined whose phone was used to call the police, then turned to whether the phone was readily available or not.

Indicators of the Phone Used

Common sense indicated that the most important predictor of phone availability would be the location of citizens when they decided to place

the call. As noted in Chapter 4, most people decided to call the police before leaving the scene of the crime.[2] Thus, it was reasoned that where crimes occurred would largely determine whether a phone would be readily available and whether or not it would be a pay phone. Although the Kansas City researchers did not examine the location of the crime, location of the crime proved to be the best predictor of which phone was used for all four Forum cities studied.

Table 9 shows which phone was used for each of several crime locations for all sites aggregated.[3] When a crime occurred at home, chances were about eight in ten that the reporting citizen (usually the victim) called from a phone in that home. When the crime occurred at work, the likelihood was almost as high that a business phone would be used--although many of these crimes were reported from a pay phone, which was sometimes the most accessible. When the crime occurred elsewhere, whether in a public place or in someone else's residence, a substantial number of people--over 60 percent--left the scene and called on a home or work phone.

Place of occurrence of a crime far outweighed all other apparent determinants of the phone used. Most of the apparent determinants, social characteristics in particular, were related indirectly to the phone used, since the location of the crime depended substantially on one's social characteristics. For example, business ownership was related to race, age, and income. Thus, it was not surprising that people who called from

Table 9

Relationship Between Place of Occurrence of a Crime and Telephone Used to Call Police--Aggregate

Location of the Crime

Phone Used		Home	Work	Elsewhere	TOTAL
Home Phone	n %	836 79.2	35 5.6	271 47.6	1142 51.8
Work Phone	n %	35 3.3	472 75.8	83 14.6	590 26.3
Someone Else's Phone	n %	95 9.0	19 3.0	127 22.3	241 10.7
Pay Phone	n %	89 8.4	97 15.6	88 15.5	274 12.2
TOTAL N		1055	623	569	2247

Chi-square = 1371.6, df = 6
$r = .553$
$R^2 = .305$

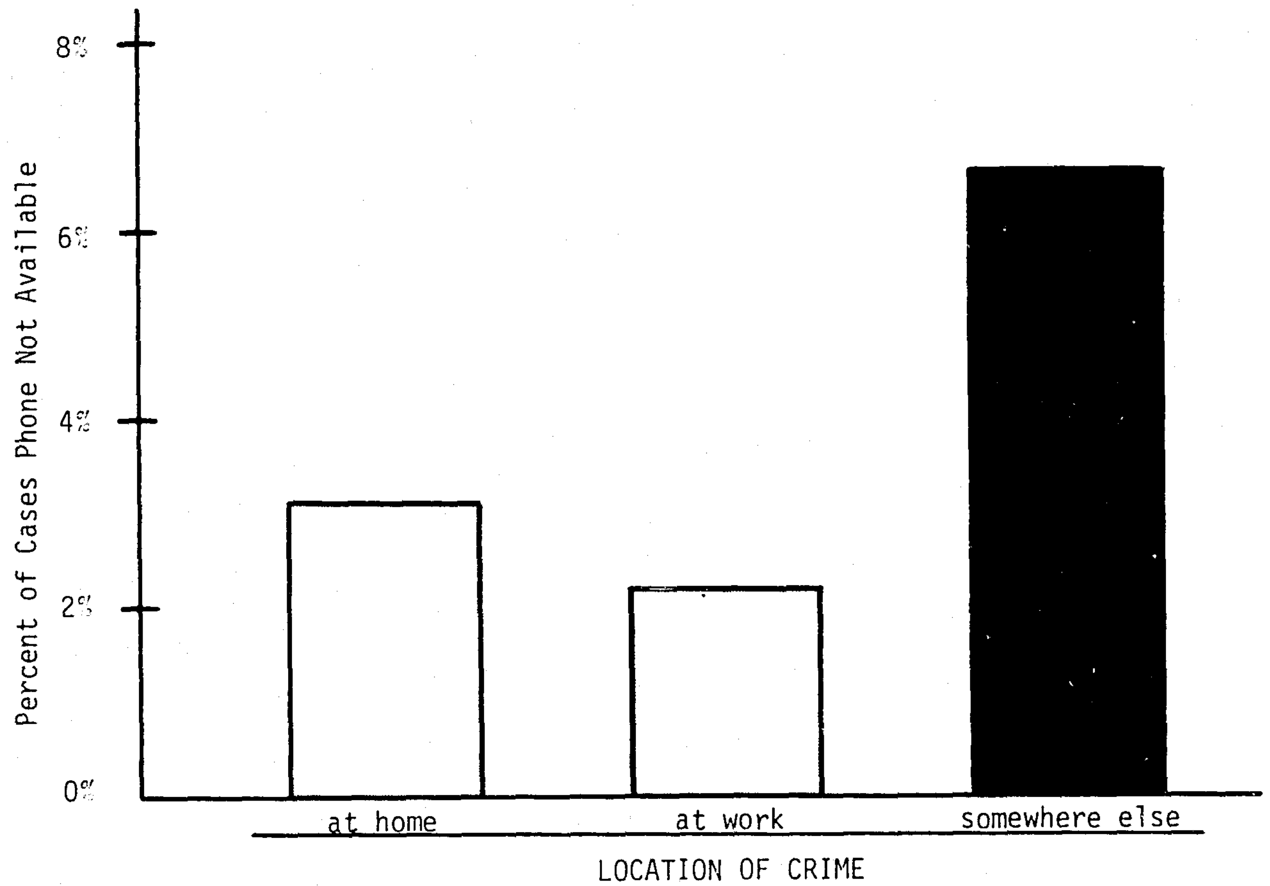
business phones tended to be white, of higher income, and older than other callers, on the average.

Problems in Locating a Telephone

Most crimes occurred at home or at work where a phone was typically readily available.[4] When a phone was not available, and the decision had been made to call the police, the obvious course of action was to search for a telephone. Lack of immediate access to a phone caused reporting delays in about five percent of cases. The percentage of cases did not differ significantly between sites. This figure was considerably and significantly less than the 16 percent of cases found by Kansas City. This difference was probably because our questions were more precise than those used in the Kansas City research, however, and not due to any basic underlying difference in the sites.[5]

Since location of the crime was the best predictor of which phone would be used, it might also have been assumed that location would be the best predictor of whether the reporting citizen had to search for a phone, as well. When a crime does not occur at home or at work a phone may not be handy. This supposition was borne out by Figure 24: crimes that did not occur at home or at work were more than twice as likely to result in phone-finding problems. Even so, a phone was readily available in 93 of every 100 cases.

Figure 24
Relationship Between Phone Availability and Location of Crime



Because crime location related to crime type, one would expect victims and witnesses of certain crimes to have more trouble finding phones than victims of other crime types. As shown in Figure 25, people did have more trouble finding phones when crimes were against persons than in either involvement property crimes or discovery crimes. Thus, any reduction that could be achieved in this delay could be expected to especially benefit reporting times for personal crimes. Even then, reporting was delayed by non-availability of a telephone in only six percent of the aggravated assaults, robberies, and rape cases sampled.

Although people had to search for a phone more often after personal crimes than property crimes, the amount of time required to find a phone did not differ between crime types or sites. On average, it took victims or witnesses approximately 45 seconds to find a phone when one was not immediately available. Because the time required to find a phone averages less than a minute, it seems unlikely that the policies and programs designed to prevent this problem--installing more pay phones, or making police call boxes available for public use--will have much effect on reporting time. These solutions are designed to cut the time required to find a phone rather than eliminate it: an enormous number of phones would have to be installed to cut the time much below 45 seconds.[6]

Effects of Problems in Locating a Telephone

Even if those problems could be completely eliminated, however, the gain in fast reporting times would be slight. This is shown in Figure 26.

Figure 25

Relationship Between Phone Availability and Type of Crime

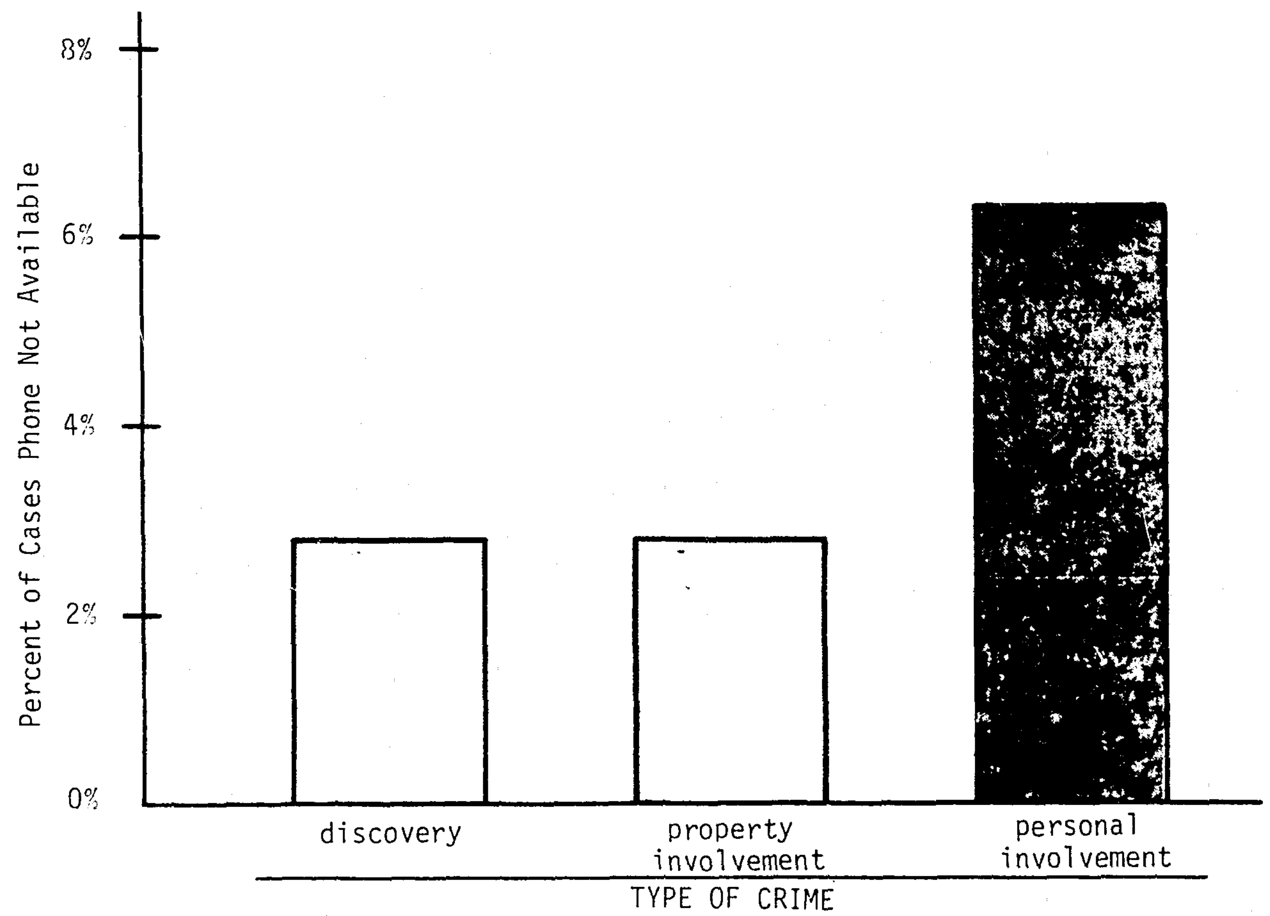
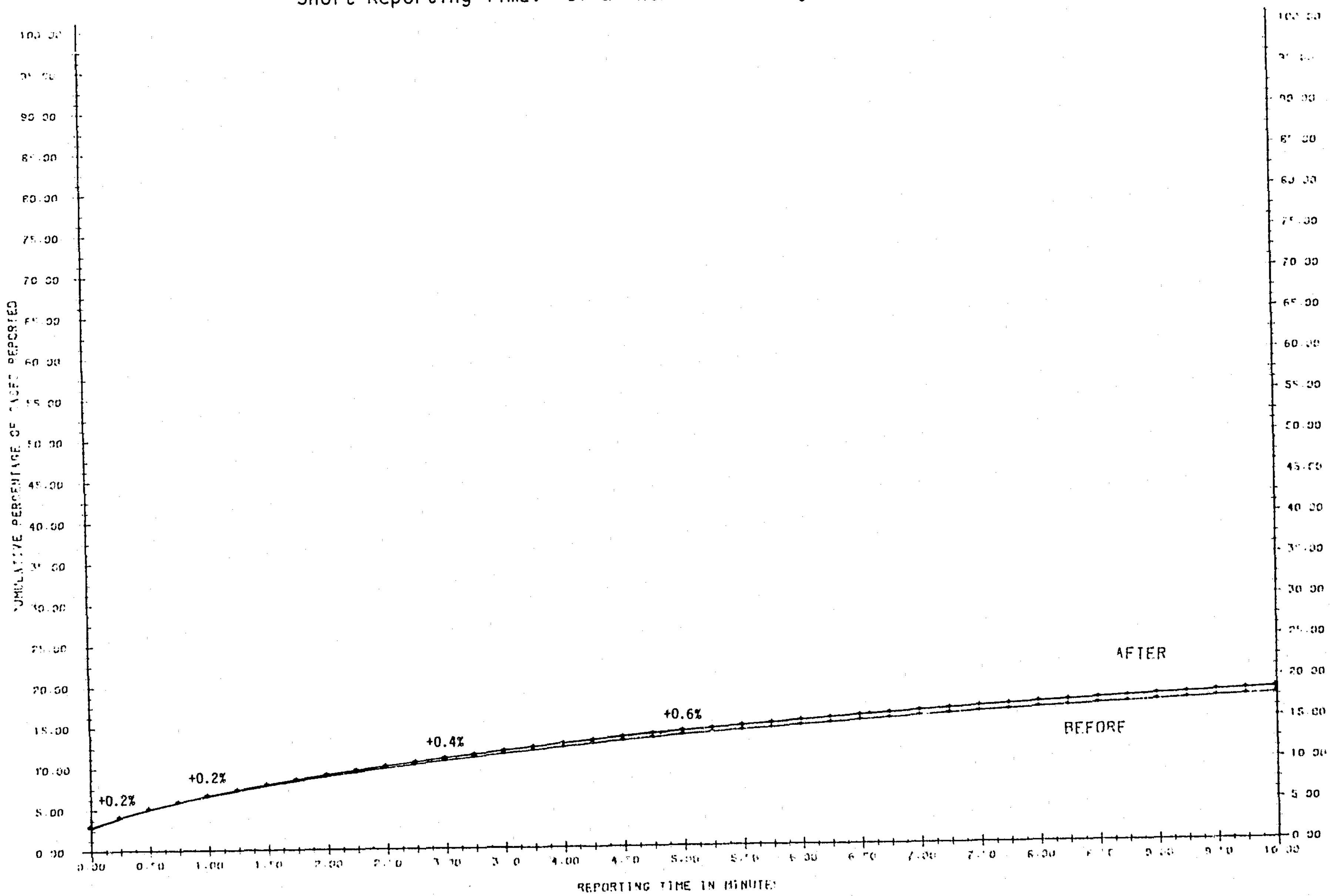


Figure 26

Short Reporting Time: If a Phone Were Always Available



Here, the lower line is the proportion of Part I crimes reported within each time period up to ten minutes after the crime's occurrence; this is the same line shown in Figure 26, and holds for all sites. The upper line is an estimate of what the proportions would look like, if no victims or witnesses were delayed by having to find a phone; it, too, does not differ significantly from site to site. As in Chapter 3, crimes reported in-progress were considered to have zero reporting time. The graph indicates that:

- 2.8 percent of crimes would be reported in-progress if no one had to search for a phone, an increase of two-tenths of one percent over the present situation;
- 6.9 percent of crimes would be reported within one minute of their occurrence, an increase of two-tenths of one percent;
- 10.3 percent of crimes would be reported within three minutes, and 12.6 percent within five minutes of the commission of the crime.

Even if some governmental action could completely eliminate the problem of unavailable phones, only 13 percent of Part I crimes could conceivably be reported quickly enough to result in response-related arrest--an increase of six-tenths of one percent over the present situation.

Most of these quickly-reported crimes will not result in response-related arrest. If the relationship between citizen reporting time and the chances of response-related arrest remains the same (that is, if police do not respond any more quickly or slowly than they do now), approximately 3.0 percent of crimes would result in response-related arrest if delays due to locating a phone could be completely eliminated. This represents an

increase of one-tenth of one percent. Thus, although the gain in quickly reported crimes may be enough to justify the cost of the program, it will not have a large effect on the percentage of cases resulting in arrest.

Problem Two: Pay Telephone Does Not Work

When a victim or witness tries to use a pay telephone, any of a multitude of problems might occur: the caller might not have correct change; the phone might already be in use; the phone might be out of order, and so on. In Kansas City, these problems occurred in only four of 949 cases, or four-tenths of one percent. In three of the four problem cases, the caller did not have change; in the fourth, the phone was out of order. These problems were relatively easy to solve: callers either got change or found another phone.

These problems did not occur more often in Forum cities than in Kansas City. Only nine cases of the 3,332 studies were delayed for these reasons, a total of three-tenths of one percent. In those cases where the problem occurred, it was solved almost immediately.[7] Finally, if all problems with using a phone were eliminated, the percentage of crimes reported in progress, and the percentage reported within one, three and five minutes of the crime's occurrence would increase by less than one-tenth of one percent. The resulting increase in the number of response-related arrests is simply too small to be measurable. Neither the proportion of cases delayed, nor the time required for solution, nor the potential increase in short reporting times and response-related arrests differed significantly among sites.

For these reasons, measures aimed at making pay phones more convenient--fixing them more quickly when they are out of order, rewiring them so that change is not required to dial the operator, and so on--can be expected to have negligible effects on the number of short reporting times and response-related arrests.

Problem Three: Citizen Does Not Know Correct Police Telephone Number

Previous Research

More research has been conducted on the problem of finding the correct police telephone number than on any other part of the emergency communications process. The bulk of the research is directed at evaluating "911," which is intended, eventually, to be a nationwide emergency number.[8] Because the costs of rewiring the switches and establishing centers to answer the calls are generally borne by the cities and counties served (Legislative Analyst, 1979), much of the research has been conducted or funded by local governments considering implementation of 911 systems. These studies show that having to look up the police number can take a considerable amount of time, but that these delays are more likely to occur in non-emergency cases than in time-critical emergencies.

There are four common ways in which a citizen may find a number which will connect him with the police:

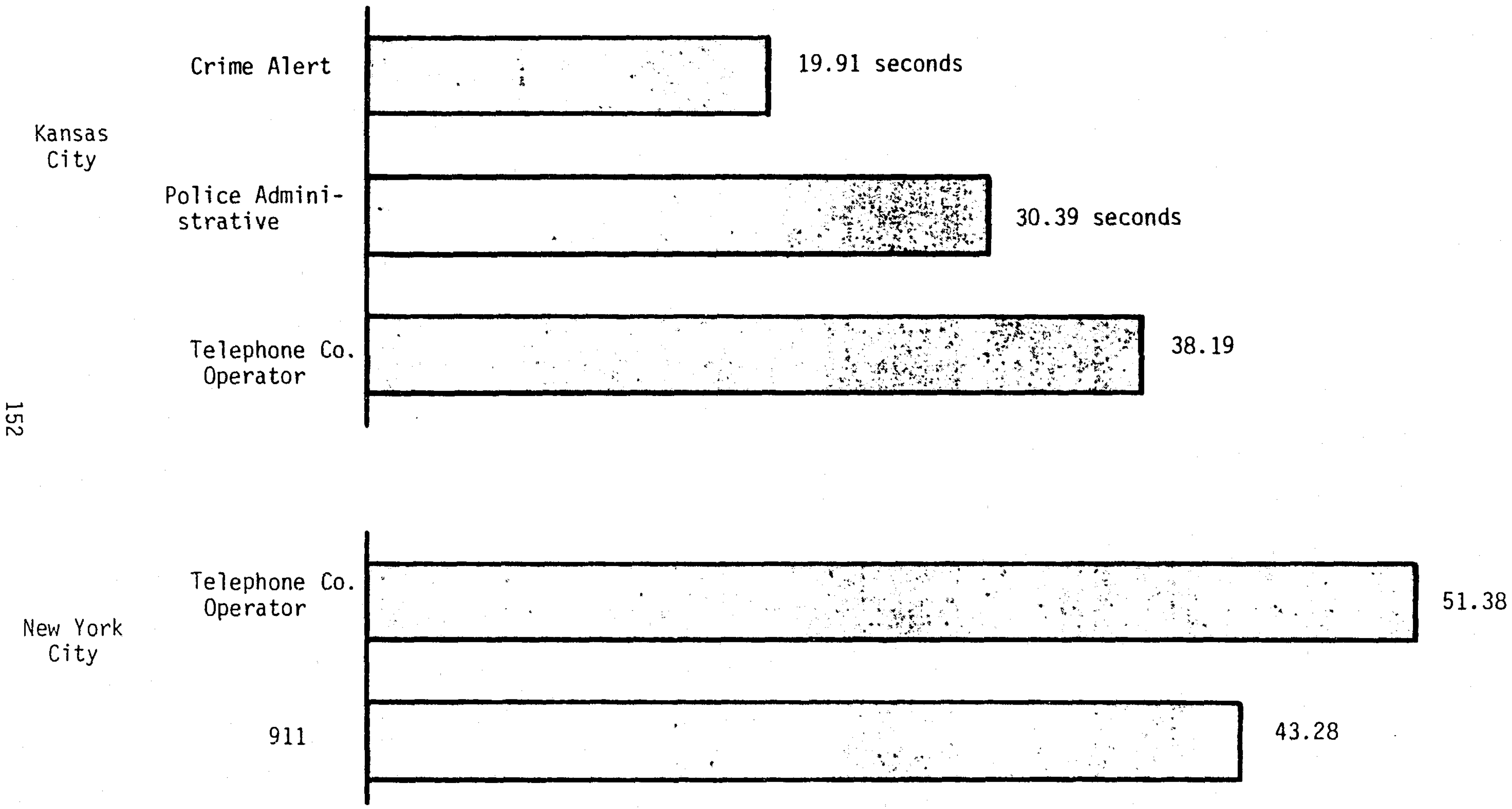
- He may have memorized the department's telephone number (either 911 or a seven-digit number);
- The police number may be posted near the telephone;
- The citizen may look through the phone book or dial the directory assistance operator ("411") to get the number;
- The citizen may dial the telephone company operator and ask to be connected directly to the police.

Of the four, the first two are not likely to cause delay in connection time. Looking through the phone book might substantially delay reporting, however, as might dialing the operator. The delay caused by these two methods of getting in touch with the police complaint taker have been estimated by several researchers.

When people dial "0"--the phone company operator--the call is delayed slightly. This is because the operator must determine the jurisdiction from which the call was made and transfer the call to the appropriate police department. Researchers have measured the time required to transfer calls in New York City following 911 installation in 1970, and in Kansas City as part of the Response Time Analysis. Results from each of these studies are pictured in Figure 27. In New York, dialing 911 was compared to calling the operator, and resulted in faster connections; however, the difference, eight seconds on average, was not large (Police Department News, 1970). Kansas City compared its seven-digit crime alert number to its administrative number and the telephone operator. Again, the operator,

Figure 27

Comparison of Test Call Experiments in New York and Kansas City



Bars represent the mean length of time between the end of dialing and answer by the police dispatcher (Kansas City, 1977; New York City, 1970).

"lost," this time by about 18 seconds. However, Kansas City began timing at the point dialing was completed, and it takes a minimum of six to eight seconds to dial the extra six digits.[9] Thus, the average difference is closer to ten seconds. At eight to ten seconds, then, the additional delay caused by dialing the operator is negligible when viewed in the context of total response time.

Looking through the phone book is a more serious cause of delay. The time required for a citizen to find the number, place the call, get the right agency and explain the situation to the police complaint taker was collected by researchers working in Santa Clara County (San Jose), California, and Portland, Oregon. The time averages between one-and-one-half and four minutes, depending on the agency (Dayharsh, et al., 1974; Ivy, et al. 1975). If between 20 and 50 seconds are required to make the connection, and 20 to 35 seconds are needed to give the information to the dispatcher,[10] then one to three minutes are required to find a number to call and transfer a call made to the wrong agency. The authors of these studies later concluded that 90 seconds were needed on average to look through the phone book (Dayharsh et al., 1976). Although the figures are speculative,[11] they do suggest that finding a number may be a serious cause of delay.

If looking up the number in the book can delay reporting by 90 seconds or so, it is important to know how frequently people have to look up the number. The proportion of people who find the number through each of the four methods--memory, posting, dialing the operator, or looking in the phone book--is shown in Table 10 for Santa Clara, Portland, Kansas City, and a fourth urban area--Orange County (Orlando), Florida. As the table shows, the percentages of people who knew the numbers from memory and posting, and from dialing the operator varied greatly from city to city, from just over one-third to nearly two-thirds of callers. This substantiated earlier findings that the percentage of people who memorized a seven-digit number depended on what the seven digits were, and that the chances that the number would be posted depended on local phone company and local government programs (Franklin Institute, 1970). The percentages of citizens who had to look in the book, on the other hand, differed much less, roughly ranging from 20 percent to 30 percent.

Moreover, Kansas City found that cases in which the caller found the number in the book were less urgent (that is, less likely to be personal crimes or crimes reported in-progress, and more likely to be crimes discovered after they had occurred) than those in which the number was posted or memorized or the operator was dialed. This suggested that, in emergency cases, people tried to contact the police without delay: if they had not memorized or posted the number, they dialed "0," rather than looking through the phone book.

In summary, previous researchers found that a fairly constant proportion of callers looked through the phone book for the police number, and that the callers took roughly 90 seconds to find the number. However, in an emergency situation, callers who did not know the emergency number were much more likely to dial the operator than to look in the book. In such cases, delay was minimal, averaging around ten seconds.

Table 10

Source of Phone Number to Call Police--Previous Research

	Orange County Florida (Felperin, 1974)	Portland Oregon (Ivy, 1975)	Santa Clara County California (Dayharsh, 1974)	Kansas City Missouri (Kansas City, 1977)
Memory, or Posted Near Phone	113 36.3%	88 46.6%	94 63.5%	301 49.4%
Dialed Operator 911 not available	97 31.2	37 19.6	24 16.2	190 31.2
(TOTAL NO DELAY)	210 67.5	125 66.1	118 79.7	491 80.6
Unknown Delay - Looked in Phone Book	101 32.5	64 33.9	30 20.3	118 19.4
TOTAL	311 100.0	189 100.0	148 100.0	609 100.0

Looking up the Number in the Forum Sites

Again the results in the cities surveyed in the present study are nearly identical to the results of earlier studies. The source of the number used to call the police--through memory, posting, looking in the book, or dialing the operator--is shown for the Forum cities in Table 11. Although the proportion of callers who had memorized, posted, and called the operator differed greatly from city to city, the proportion of callers in each site who looked the number up varied much less (between 17 and 28 percent).

Previous researchers estimated the delay due to looking in the book at about 90 seconds. In the Forum cities the average delay was about 105 seconds and did not differ significantly between sites. Thus, it appears that looking through the phone book can delay reporting substantially--by nearly two minutes.

When the call is urgent, however, people who do not know the number usually dial the operator rather than look in the phone book. Figure 28 shows that the proportion of callers who either memorized the number or found it posted by the phone was about the same for the most urgent calls (those made while the crime was in-progress, or where someone was injured), as for the least urgent Part I crimes (those that were discovered after they had occurred). In the 55 percent or so of cases in which the caller did <u>not</u> know the number, whether he looked in the book (delaying the call about 1:45) or dialed the operator (delaying the report only a few

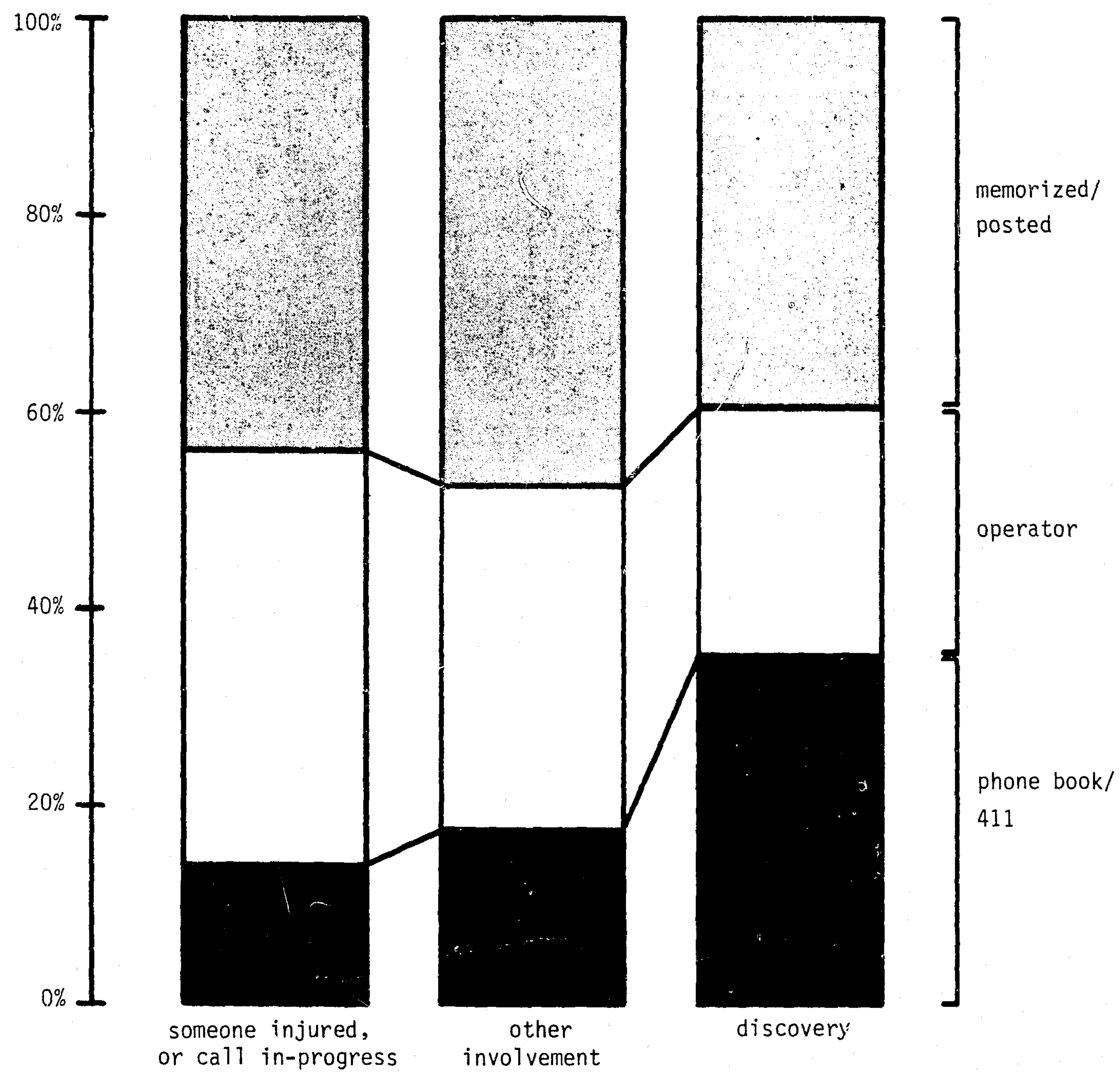
Table 11

Source of the Number Used to Call the Police

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Written by Phone	17.6%	10.3%	16.3%	19.3%	16.6%
Memorized/Had Handy	26.7%	48.3%	23.6%	15.5%	26.2%
Someone Else Knew the Number	2.1%	4.5%	2.3%	2.6%	2.7%
Dialed Operator, "0"	29.8%	8.2%	34.4%	42.6%	31.2%
Asked Directory Assistance	2.1%	1.0%	2.8%	3.4%	2.4%
Looked in Phone Book	21.7%	27.7%	20.6%	16.6%	20.9%
Total	100% (774)	100% (379)	100% (471)	100% (704)	100% (2,333)

Figure 28

Relationship of Urgency to Source
Police Number Used



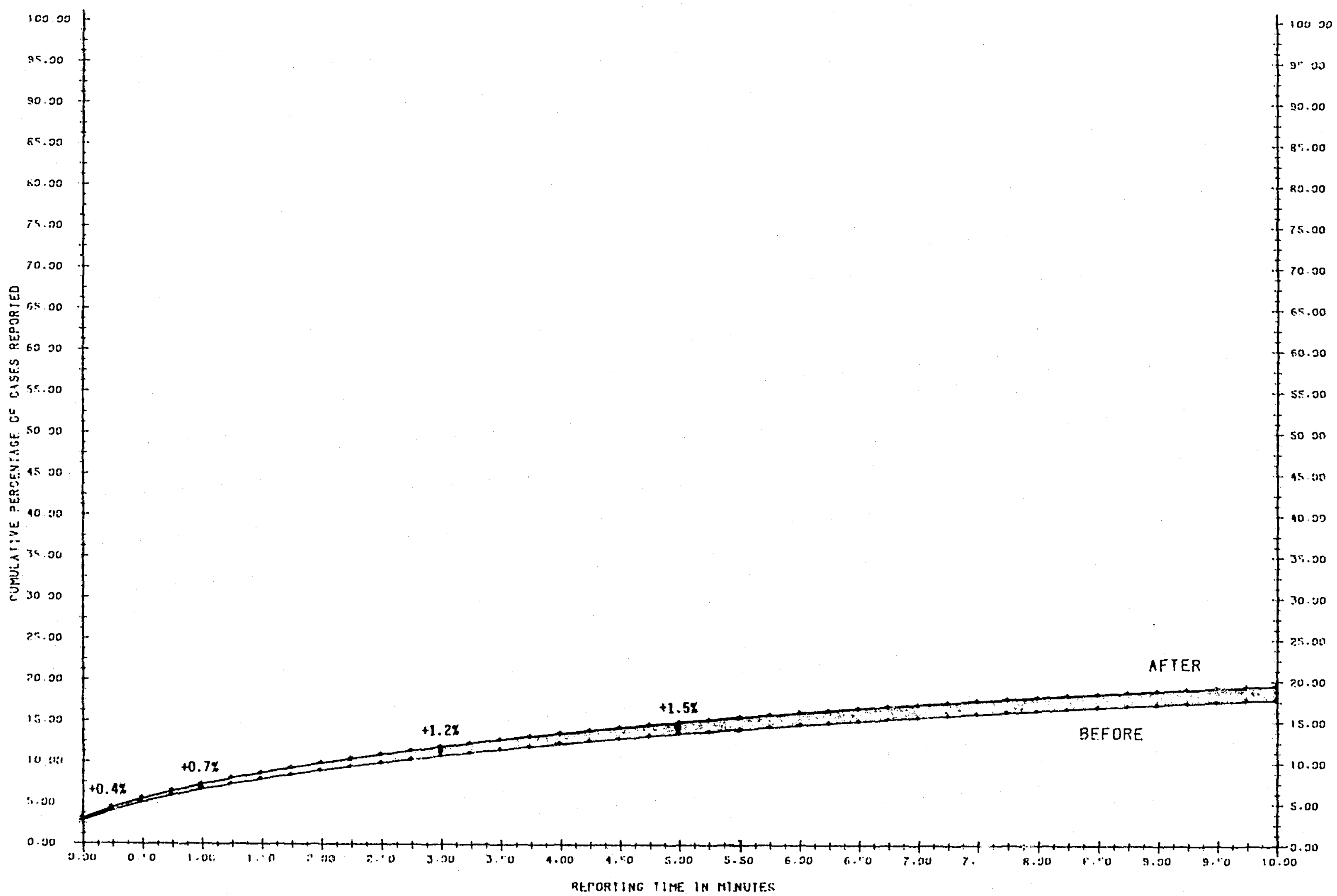
seconds) depended greatly on how urgent the situation was. Fully 75 percent of the callers who did not memorize or use a posted number chose to call the operator in cases where the crime was still in progress or someone was injured. The proportion dropped to 66 percent for other involvement crimes. Only when the crime was discovered after it occurred did most callers who did not know the number look it up. For such calls, the additional reporting delay did not affect the chances of arrest. <u>In short, people were unlikely to waste time looking in the book when reporting times mattered, and dialed the operator instead</u>.

Therefore, even though 25 percent of Part I crimes sampled were delayed nearly two minutes when citizens looked through the phone book, the beneficial effects of eliminating this cause of delay would be fairly small. This is borne out by Figure 29, which shows the effect of completely eliminating these delays. A completely effective program to prevent this problem would increase <u>only slightly</u> the percentage of cases reported quickly enough to produce response-related arrests. As the graph illustrates:

- The proportion of Part I crimes reported in progress would increase by four-tenths of one percent, from 2.6 percent to 3.0 percent;
- The percentage of cases reported within one minute would increase by seven-tenths of one percent, from 6.7 percent to 7.4 percent;
- The percentage of cases reported within three and five minutes would increase by slightly over one percent.

Figure 29

Short Reporting Time: If Citizens Always Knew the Police Number



Thus, even if 911 or a similar program completely eliminated delays due to looking through a telephone book or calling the information operator, the number of quickly-reported crimes would not increase by more than 1.5 percent: less than 14 percent of all Part I crimes would be reported quickly enough to have any real chance of resulting in response-related arrest.

If police responses were no faster or slower than they are now, but delays due to looking up the number were eliminated, then 3.2 percent of Part I crimes would result in response-related arrest. <u>This would be an increase of three-tenths of one percent over the present situation</u>.

Effectiveness of 911

Even if a three-tenths of one percent increase in the number of crimes resulting in response-related arrest were significant enough to warrant further attention, it is not clear that 911--the policy usually recommended to prevent this cause of reporting delay--would be particularly effective. Earlier researchers found that, even when 911 was available, many people did not know about it or use it.[12] How effective 911 is in preventing delays (due to looking through the phone book) obviously depends on how much publicity the system gets. It also depends on whether people are encouraged to use 911 for all calls, or just for emergencies.

In one of the cities sampled, Peoria, a well-publicized 911 system has been in use since 1976. Citizens are encouraged to use 911 for emergency calls only, and to use the police administrative number for calls that are not time-critical. If 911 were completely effective in eliminating these delays, fewer people should look through the phone book in Peoria than elsewhere. On the contrary, citizens were more likely to delay the call by looking through the book in Peoria. Moreover, this relationship held true even for the most urgent cases: 20 percent of callers in Peoria looked through the book even when someone had been injured or the crime was still in progress, a higher percentage than any other site. There are two possible explanations for this:

- These people did not memorize the three-digit emergency number.
- These people knew 911 was available, but did not consider the in-progress or injury cases they reported to be emergencies.

In short, it is possible that the widespread 911 publicity has backfired. Present policies require that citizens differentiate between emergencies and non-emergencies. Although many citizens are likely to classify calls differently than emergency service agencies would, previous writers have always assumed that people will err only by misclassifying non-critical calls as emergencies.[13] It seems quite likely that some people are doing the opposite--misclassifying in-progress and injury cases as non-emergencies and unnecessarily delaying reporting time.

Problem Four: Citizen Calls the Wrong Agency

A caller may be connected to the wrong agency by a mistake on his part or the operator's, or through confusion of jurisdictional boundaries. This happened in 10 percent of emergency cases studied in Santa Clara County, California, and 10 percent of all dispatched cases studied in Orange County, Florida[14] (Felperin, 1974; Dayharsh, 1974). As a reviewer of these studies noted, this was particularly likely to occur in fast-growing places like the San Jose and Orlando metropolitan areas:

> San Jose has incorporated irregular sections of the county for years; its city limits are complex. In addition, the city has grown rapidly in population. Many citizens were confused about whether they lived in (Santa Clara) County or in San Jose. There were some reported instances where neither jurisdiction would claim a particular street block (Ivy, 1979).

In a more stable jurisdiction--the south side of Kansas City--only one caller (one-tenth of one percent of all cases) called the wrong agency by mistake. Several patrol beats included in the Kansas City study bordered on other jurisdictions; however, all but one of these bordered on the state of Kansas. Because it is unlikely that even the most shocked and fearful caller would forget he lived in Missouri, one can only conclude that the proportion of incorrect connections lies somewhere between one-tenth of one percent and 10 percent for most police departments.

The four Forum study sites tended to be more stable than San Jose and Orlando: only nine cases--three-tenths of one percent--were delayed when the caller contacted the wrong agency. Because this problem occurred so seldom, a precise estimate for the amount of time needed to transfer the call to the correct agency could not be obtained. It is very unlikely, however, that it averages much more than one minute. If some program could be instituted that would prevent callers from ever contacting the wrong agency (for example, a 911 program with selective routing), the increase in cases reported in progress, and those reported one, three, and five minutes or less after they had occurred would all be less than one-tenth of one percent. Like the problem of inability to work a pay phone, elimination of calls to the wrong agency would increase the number of response-related arrests by an amount too small to be measurable. Again, neither the proportions of people who encountered the problem, nor the time required to solve the problem, nor the increases in quickly reported cases and response-related arrests differed significantly between sites.

At least for stable areas, then, preventing the problem of calling the wrong agency will have a negligible effect on Part I arrests.

Problem Five: Citizen Has Trouble Communicating with the Police

Once the would-be reporting citizen has found a phone that works, dialed a number, and been directed to the correct agency, he must still explain the situation to the police operator. Particularly in emergency situations, people may be under such stress that they have difficulty communicating quickly and clearly with the operator. In some cases, too, the caller does not speak English, and a complaint clerk must be found who speaks the caller's language. The category also includes a variety of more technical difficulties: the line is busy, no one answers the phone

immediately, and so on. In Kansas City, this wide variety of problems delayed reporting in six percent of the cases surveyed.

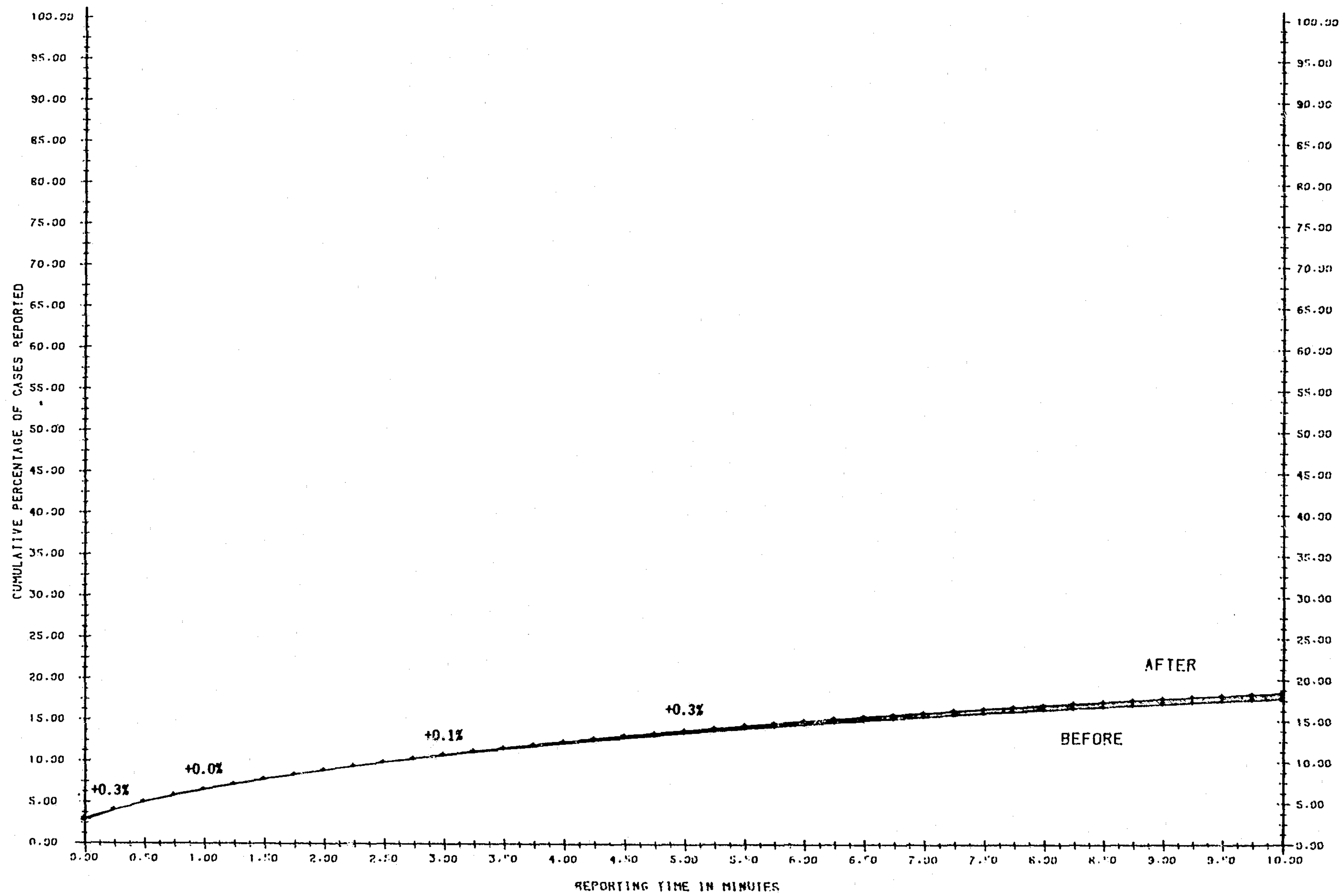
In Forum cities, police communications problems caused delay in 10 percent to 12 percent of cases, and the average time needed to solve the problem and communicate with the complaint taker was about 35 seconds.[15] Again, there were no significant or substantial differences between sites. In all cities, a few more cases would be reported quickly enough to result in response-related arrest if the problem were eliminated. As Figure 30 shows:

- The percentage of crimes reported in-progress would increase by about three-tenths of one percent, to 2.9 percent;
- No more cases would be reported within one minute or less, for a total of 6.7 percent;
- An additional three-tenths of one percent of cases would be reported within five minutes or less, for a total of 12.3 percent of all Part I crimes.

If the police emergency lines were never busy, the phones were always answered promptly, and complaint takers were multilingual and never misunderstood a call for service, more than 85 percent of Part I crimes would still be reported too long after they had occurred to result in response-related arrest. This increase of less than one percent in quickly-reported crimes translates to an increase of about two-tenths of one percent in the number of cases that result in response-related arrest. Although this increase may be enough to justify additional training or more phone lines, it is clearly not very large.

Figure 30

Short Reporting Time: If Police Communications Problems Were Eliminated



Conclusions

In the Forum cities, some 27 percent of citizens reporting Part I crimes had problems placing the call to the police after they decided to report. Although this represented a substantial percentage of calls, the delays associated with these problems were largely overshadowed by the time required to make the decision to call at all. Even if the programs recommended to prevent these problems from occurring were 100 percent effective, the increases in quickly reported cases and response-related arrests would be small.

- If a phone were always available, the percentage of crimes reported within five minutes would increase by six-tenths of one percent, and the proportion of response-related arrests would increase from 2.9 to 3.0 percent.
- If pay telephones always worked and did not require change for an emergency call, both the percentage of crimes reported quickly enough and the percentage resulting in response-related arrest would go up by amounts too small to measure.
- If everyone memorized or had posted the correct police telephone number, quickly reported crimes would increase by one percent, while response-related arrests would increase from 2.9 to 3.2 percent of all Part I crimes.
- If people always contacted the correct agency, both the percentage of crimes reported quickly and the percentage resulting in response-related arrest would go up by amounts too small to measure.

- If the police emergency phone lines were never busy, were always answered promptly, and were staffed by complaint takers who never misunderstood a call for service, the percentage of crimes reported within five minutes would increase by three-tenths of one percent, and the proportion of response-related arrests would increase from 2.9 to 3.1 percent.

The cumulative effect of eliminating all communications access delays is slightly larger. If none of these problems ever occurred, the number of crimes reported quickly enough to result in response-related arrest would increase by less than one percent. The number of response-related arrests would increase by 8 per thousand Part I crimes, moving from 2.9 to 3.7 percent of all crimes reported. Compare this with an increase of 19 arrests per thousand if decisionmaking delays caused by conflict could be eliminated.

Of the two basic causes of citizen reporting delays, deciding to call and communication access problems, decisionmaking delays are decidedly more important. If all decisionmaking delays could be eliminated, the proportion of Part I crimes resulting in on-scene, response-related arrest would increase by some 88 percent, nearly doubling the present response-related arrest rate. Despite this vast potential for increased arrests, it may not be possible to change citizen reporting behavior or eliminate communications access problems. The prospects for effecting these changes are considered in the final chapter, Policy Implications.

NOTES

1. There are, of course, other methods of contacting the police. Of the 3,332 cases sampled in this study, 60, or about two percent, were reported to the police by a victim or witness walking into the police station or setting off an electronic alarm connected to the station. Finally, a few cases in each site were reported to the police when someone flagged a patrolling police cruiser; these were not included in the sample, however, since police response time is nearly zero for these cases. Well over 90 percent of crimes reported to the police are called in on a telephone, and these probably include more than 90 percent of opportunities for Part I arrests. Thus, we consider only telephone-reported cases in the analysis that follows.

2. As shown in Table 6, only 19.3 percent of victims, witnesses, and bystanders left the scene of the crime before reporting the crime.

3. The relationship differs slightly between sites, but the differences are very small. A table showing the relationship between phone used and crime location for each site is included in Appendix F-1.

4. The number of crimes that occur at each location for each site is shown in Appendix A.

5. Kansas City's information was based on responses to an open-ended question, and it is likely that many of the people who were delayed in calling the police due to having to find a phone were delayed only a few moments. It is also possible that the figure is large because the Kansas City survey was conducted in a primarily lower-income neighborhood where households were less likely to have telephones. Finally, the Forum questionnaire was more pointed in asking how long the respondents were delayed by having to find a phone after they had decided to call the police. People who left the scene without having made a firm decision as to whether to call the police may be willing to cite "finding a phone" as a cause of delay if the Kansas City questionnaire were used; we asked them to delineate the point of decision more exactly.

6. One might assume that, in order to cut this problem in half, the local phone company or city government must double the number of pay phones or call boxes. In fact, however, the amount of time required to find a phone is relative not the number of phones per square mile, but to the square root of phones per square mile. (If crimes and phones are roughly randomly distributed throughout a city, the distance between any crime and the nearest phone will be Rayleigh-distributed; see Larson and Odoni, 1981.) Thus the number of pay phones must be quadrupled in order to cut delays from 45 seconds to 22 seconds. The problem is obviously much more complicated than this, but it is clear that the expense would be incredible.

7. As shown in Appendix F-3 it is extremely unlikely that getting a pay phone to work takes longer than ten seconds, on average.

8. Following the example of many European countries, the President's Commission on Law Enforcement and Criminal Justice in 1967 recommended that a single emergency telephone number be established nationwide (President's Commission, 1967). Shortly afterwards, AT&T announced that the digits 9-1-1 had been set aside for this purpose. As of January 1980, 911 systems served about 25 percent to 30 percent of of the country in 800 systems (Dayharsh, et al., 1979).

9. On a dial telephone it is necessary to let the dial return to its original position before dialing the next digit. The "dial return time" for the Kansas City crime alert number (421-1500) is eight seconds; because most callers will not know the number well, the actual dialing time will be greater.

10. Kansas City estimated that 23 seconds of conversation were required on average before the dispatcher had enough information to be able to make a decision and call a car to the scene. Total conversation time was certainly larger, but not measured (Kansas City, v2, 1977).

11. Connection times and information-giving times are estimates from Kansas City and New York, but not from Portland and San Jose. The one-to-three-minute average may be high due to people's rounding times that are less than five minutes up to five minutes.

12. For example, a statewide California poll found that 22 percent of people living in 911 jurisdictions did not know that the number was available. Another 13 percent knew that a three-digit emergency number existed, but could not remember the three digits (Field, 1979). On the other hand, an earlier study in Springfield, Massachusetts found 92 percent of residents able to use 911 within three months of installation (Office of Telecommunications Policy, 1973).

13. In its "911 Handbook," for example, the U.S. Office of Telecommunications Policy asserts that "911 should not be used as a general number to reach the police...(and the police) should not make a practice of accepting non-emergency calls." Among the alternatives they suggest for dealing with non-emergency is this one: "Inform the caller that his problem is not an emergency and, therefore, cannot be handled through 911. No referral or additional information is provided" (Office of Telecommunications Policy, 1973). It seems likely that at least a few callers will use the administrative number when they are uncertain, just to avoid this kind of response.

14. Another study, conducted in the Portland, Oregon, metropolitan area, gave impossible results when the percentage of people calling the telephone operator was accounted for. The problem lay in the wording of the question: "How many agencies did you have to talk to <u>before</u>

finding the correct one? Count the operator as one." Apparently five to ten percent of respondents did <u>not</u> include the agency they reported the crime to (Ivy, 1975).

15. Again, the difference between the Kansas City results and our own is probably due to a difference in the questionnaires. The Forum questionnaire was likely to uncover more police communications problems because it included a direct question on the subject, while Kansas City relied on the respondents to volunteer the problem.

CHAPTER 6
IMPLICATIONS FOR POLICE POLICY AND PROCEDURE

The foregoing sections of this report have focused on the subject of rapid police response as it relates to making on-scene arrests. The findings reported in the three immediately preceding chapters show conclusively that the citizen reporting component of total response time is the most important factor limiting the ability of police to make on-scene, response-related arrests for Part I crimes. Before discussing the implications of these findings as they relate to police policy and operational procedure, however, we should put citizen reporting delays in context.

First, we must keep in mind that arrest is only one reason for rapid response. Results of prior research into rapid response in cases of injury to crime victims were addressed briefly in Chapter 2 and cannot be ignored. Although such calls are relatively infrequent and suffer from most of the same causes of delay as non-injury calls, they must still be considered in designing police response strategy.

Citizen satisfaction is another goal of rapid response to service calls; it too cannot be ignored. All other things being equal, the police executive wants to please his constituency in delivering services. Unfortunately, rapid response can be a very costly way to enhance citizen satisfaction with police services, and might not even be a necessary component of citizen satisfaction. The evidence indicates that citizen expectations,

Preceding page blank

not actual police response times, constitute the major factor affecting citizen satisfaction. Police departments may themselves have created unrealistically high citizen expectations. To the extent that they have done so, and are striving to meet the impossible standards they have set, they are playing a losing game. The days have passed when police chiefs could ask for and expect to receive, without question, additional resources to apply to the quest for such goals. A far superior strategy now would be to change the police procedures that create unrealistic citizen expectations. The result should be that citizen expectations will then be more realistic.

Witness availability is another factor discussed briefly in Chapter 2. Here again we must raise the question of whether or not a difference of a few seconds, or even a few minutes, in police response time will have any practical effect with respect to the availability of witnesses to crimes. We would suggest, however, that rapid response to insure witness availability is more a factor in involvement crimes than in discovery crimes, and it is involvement crimes, especially those which are reported in progress, to which rapid response is to be encouraged under virtually any circumstances. For discovery crimes, improved investigative procedures, including canvassing an area for witnesses, will be more effective than rapid response.

A second contextual condition for viewing response time is that citizen reporting time, although it usually constitutes the largest component of total response time, is not extremely long in absolute terms. This

is especially true in the case of involvement crimes, in which average reporting delay is on the order of four to five minutes. Delays of such duration obviously give perpetrators an advantage in terms of get-away time. Yet, when one considers the emotional trauma experienced by victims of involvement crimes, neither the actions taken by reporting citizens nor the length of time consumed by those actions seem unreasonable. When we consider how successful we can reasonably expect to be in reducing these delays in the types of crimes for which rapid response is most crucial, our findings are not encouraging. The police will be much better off in getting witnesses to in-progress crimes to report those events quickly than in attempting to get victims to set aside their personal needs and call police sooner; this we shall see in the ensuing pages.

What things within the control of police agencies can be done to reduce total response time? Some aspects of police policy and operational procedure show potential, although they are almost exclusively after-the-fact aspects of responses to calls for service. Computer-assisted dispatching and automated vehicle location are examples. While these approaches can be valuable in many ways, not the least of which is administrative control over field operations, their value for improving response time to bring about more on-scene arrests is quite limited. Other steps agencies can take to improve their internal operations for this purpose are discussed below but are also limited in their probable impacts on arrest rates.

All in all, the citizen actions and communication problems that result in citizen reporting delays are so complex and varied that no single-focus program of change will have a significant impact. Rather, a multi-faceted approach aimed both at citizen behavior and at departmental procedure is needed if any appreciable improvement is to be realized. A number of efforts aimed at making improvements of this type are discussed in the remainder of this chapter.

Influencing Citizens to Call More Quickly

Perhaps the most important of the findings reported in Chapters 4 and 5 is that citizens delay in reporting crimes because they choose to do so, not because circumstances beyond their control prevent them from calling. In fact, unavoidable problems, such as injury, unavailability of a phone, lack of coins for a pay phone, and problems communicating with the police complaint taker, delayed reporting in fewer than 10 percent of the cases sampled. On the other hand, over half of the citizens sampled chose to take some delaying action before deciding to call the police, and the actions they took accounted for some 85 perent of the delay in involvement crimes. Clearly, if police are to cut citizen reporting times substantially, they must encourage citizens to decide to call more quickly.

To develop a citizen crime reporting program that will influence faster decisionmaking, the police must answer two kinds of questions.

- What methods should be used to reach the public? Is it enough to distribute pamphlets or advertise on television or radio, or is some kind of personal contact required to change citizen decisionmaking?
- What messages will persuade people to report crimes more quickly? Should the program emphasize the benefits of fast reporting, or the convenience, or the costs to the community and the citizen of not reporting a crime?

The relative effectiveness of the various methods and messages available is considered below.

Methods Available for Modifying Citizen Reporting

In the past, most citizen crime reporting programs have relied on group presentations, distribution of pamphlets, and extensive mass media advertising to influence citizens to call the police. Although few of these have been definitively evaluated (Bickman, Green, et al., 1976), research indicates that most will have limited or negligible effects on reporting delays. As a reviewer of these programs states:

> Based on research on learning and perceptual processes, it is questionable to expect that any project can adequately accomplish education by merely presenting the information in a movie, lecture, pamphlet or advertisement. At most, these media approaches may affect knowledge but it is doubtful they can affect actual behavior (Bickman and Lavrakas, 1976).

Advertising and information campaigns can succeed, however, if they aim to strengthen people's predispositions, instead of trying to change their attitudes. That is because people are more likley to act as the advertisement or pamphlet asks if they are already predisposed to act that way. However, citizens are not particularly inclined to eliminate pre-reporting actions: of the citizens we surveyed, 75 percent of those who delayed indicated that they would delay again given similar circumstances. Because people are more inclined not to take some actions than others, the effectiveness of a media campaign will depend greatly on its message.

Projects that rely on extensive personal contact among citizens, such as programs that set up continuing block organizations, are broader in scope than mass media efforts. Although projects of this kind are more expensive and difficult to administer, there is solid evidence that they effectively reduce delays caused by citizen actions. Evaluators of the Seattle Community Crime Prevention Program found that the percentage of burglaries reported in progress increased 2.5 percent in neighborhoods where block organizations had been initiated. This was accompanied by a small but significant increase in the percentage of crimes resulting in arrest. In addition, there were fewer burglaries in these areas and a higher proportion were reported than before the program was initiated (Cirel, et al., 1977). Like mass media campaigns, however, the effectiveness of the program will depend on its message. One reason the Seattle program was successful was because it was aimed squarely at preventing one

important cause of delay: the need to define the situation and resolve ambiguity. The focus of that program was on making people more aware of the normal state of affairs in their neighborhoods, and on fostering close personal contact among neighbors, so that ambiguous situations could be defined more clearly without undue delay.

In general, then, two methods may be used to influence people to report quickly. Mass media efforts are unlikely to cause large changes in citizen behavior, although such efforts may have some effect when aimed at causes of delay people are already predisposed to eliminate, such as procrastinating or seeking advice before calling police. Projects that emphasize much personal contact, though they are more expensive to administer, are much more likely to be beneficial; particularly if people are persuaded to eliminate the greatest sources of delay, such as those involving resolution of conflict and ambiguity in the situation.

Messages to Be Conveyed to the Public

Because people delay for reasons they believe are good, it is important that the police give them good reasons not to delay. Thus, a project that focuses only on encouraging people to call immediately because "it's the right thing to do" will have but a minimal effect on reporting time and arrest; a program that attempts to convince people that police will respond quickly even if the citizen is unsure that the situation is a crime (such as the Seattle program) may have much more of an effect. The resultant increase in calls for service, however, will undoubtedly require increased departmental resources, or, at best, more efficient use of the resources now available. This is an extremely important factor because many departments already find their resources stretched by heavy workloads. (Information about ways to improve departmental efficiency is presented on page 193 and following.) Four common sources of delay accounted for over 90 percent of reporting time:

- Resolving conflict over whether or not to call the police;
- Meeting needs that the police could not meet, such as relieving stress or running away from the suspect;
- Resolving ambiguity as to whether or not the situation is a crime;
- Looking up the police number in the phone book.

As shown in Chapters 4 and 5, eliminating any of these causes of delay would have some measurable impact on the percentage of cases resulting in response-related arrest. Despite this potential for cutting reporting times and increasing arrests, complete success, as we shall see, is unlikely.

Programs to Help the Caller Resolve Conflict over Calling the Police

The most important cause of crime reporting delay is conflict. Ten percent of victims of and witnesses to involvement crimes procrastinated or asked someone else what to do because they felt that calling the police would be emotionally or financially costly. If conflict delays could be eliminated, the percentage of Part I crimes resulting in

response-related arrests could increase from 29 per thousand to around 48 per thousand--if people could only be persuaded that calling the police would not cost them anything.

Clearly, the potential for persuading people that police intervention will not cost them depends on what people perceive to be the costs. The most important costs people associate with calling the police are these:

- Inconvenience. Talking with police, viewing mug shots or a lineup, appearing in court, and so forth, can be time-consuming and financially costly.
- Fear of reprisal. Especially if the offender is a relative or acquaintance of the victim or witness, there may be a fear that calling the police may cause the offender to take reprisal against the caller.
- Embarrassment and culpability. Others, including the police, may not believe that a crime has actually occurred, or will think that the victim precipitated the offense in some way. Reporting the crime will publicize it, which may make the caller think the publicity will be embarrassing.

Everyone has heard of cases in which these things have happened, and there is a chance that they will happen when almost any crime is reported. To prevent conflict delays, the police must either convince people that it will not happen to them, or that they will be compensated for their costs.

To obtain necessary information about the crime, the police will have to inconvenience victims and witnesses at least slightly. Because inconvenience cannot be entirely prevented, police can do two things to prevent it from causing reporting delay in very many cases. First, they may try to cut the inconvenience of reporting to a bare minimum, by taking crime reports over the phone, or responding to calls at the convenience of the caller. Alternatively, the police may seek to reimburse citizens for such financial costs as time lost from work, and transportation to and from the police station and courtroom. Victim compensation programs are already mandated in several states, and might be easily adapted to meet this need.

Offenders do not retaliate against victims and witnesses very often. Moreover, there is much evidence to suggest that callers who most fear retaliation--spouse abuse victims--are safer if they report the crime than if they do not, because police action may be the only method of preventing further attacks. Informing the public of these facts--and making clear that the police will help to prevent recurrence of a crime, even though they were unable to prevent its commission in the first place--may help to alleviate this problem.

Nevertheless, citizens who still fear reprisal deserve protection and reassurance, and some police departments have instituted victim-witness protection units to prevent reprisals. These units insure anonymity for witnesses, provide "hotline" services and increased patrol, educate victims and witnesses as to personal security, and, in extraordinary circumstances, provide emergency relocation, full-time residence watch, and phone taps and traces. The use of victim-witness protection units has been documented

more fully by the American Bar Association's Criminal Justice Section (1981).

Common complaints from victims of personal crimes, particularly from rape and family assault victims, are that police are hostile, or do not believe the victims' charges. Many departments have initiated programs to head off the source of such complaints by training officers in victim psychology, or requiring officers to refer victims and witnesses to social service agencies. These efforts do not aim to <u>relieve</u> trauma and fear itself, but to prevent police actions from making trauma and fear worse. If the police officer can realistically be expected to temper a detached, objective professionalism with some sensitivity to assuaging citizen concerns, some indirect benefits concerning citizen reporting time can be expected in the long run, based on the department's reputation for performance in this area.

There is evidence to suggest that publicizing these facts will help citizens to resolve their conflicts and will cause them to call the police sooner; more respondents in this study expressed a willingness to change their procrastinating behavior than to change any other behavior that causes delays. There is, however, no way to estimate reliably how much of an actual effect the efforts suggested here will have on reducing citizen delay or on increasing the number of response-related arrests, even though the potential improvements are significant.

Moreover, to the extent that such efforts are successful, they may have the effect of inducing some people who otherwise would not report a particular incident to call the police. These are the citizens who would not ordinarily be identified as victims except by means of victimization surveys designed to enumerate unreported crimes. The obvious result is that the number of reported crimes would increase. This increase would require either the more efficient use of existing resources or an addition of resources. The agency's chief executive must, of course, be prepared to explain the increase when it comes to the public's attention, as well.

Programs to Remove Delays Incurred While Attending to Needs Which the Police Cannot Meet

In Chapter 4 we reported that the proportion of Part I calls resulting in response-related arrests could be increased from 29 per thousand to about 31 per thousand if all delays caused by the caller's desire to attend to needs such as that for emotional support, care for injuries or escape from the crime scene could be eliminated.

The effectiveness of programs designed to remove these causes of delay will, of course, be greatly dependent on the factors behind the delaying actions. For example, in many cases it is undoubtedly a very rational behavior to attend to an injury incurred during a crime before calling the police. The general public should be made aware that a single call to the police can result in the dispatching of an ambulance, as well

as a patrol car, to the scene; police complaint operators should be trained to inquire about injuries, particularly in certain types of crimes. Nevertheless, the frequency of injuries that result in calls to police being delayed is so low that this is not likely to be a fruitful area for heavy investment aimed at increasing response-related arrests.

Instances in which the reporting delay is largely due to a victim's or witness's chasing the suspect in the hope of making an apprehension presents something of a dilemma for police agencies. Although chasing suspects causes significant reporting delays, about one-third of these cases result in apprehension of offenders. Had the victims and witnesses called the police immediately instead of chasing the suspects, the number of arrests would almost certainly have <u>decreased</u>. On the other hand, because there is a chance that the offender may injure a victim or witness who gives pursuit, it would be risky for a police department to encourage this practice. Agencies considering the development of policy in this area should recognize the negative impacts as well as the positive ones. The best solution may well be not to attempt to influence citizen behavior, i.e., neither to encourage nor discourage citizen apprehension of suspects. Because we did not analyze our data to identify the characteristics of crimes that result in successful apprehensions by victims, we cannot be more definitive here as to what should be the best policy for a police agency to espouse.

This leaves for our attention reporting delays caused by emotional stress, including the desire to escape or avoid the offender. What approaches are available to affect reporting delays that arise from this source? The most obvious approach would be to try, in some way, to hasten the individual's recovery from the emotional trauma experienced. Unfortunately, previous research indicates that there is little hope of hastening the process of recovery from this kind of emotional shock. It has been found, in fact, that a premature attempt to talk an individual out of a traumatic state may itself cause long-term emotional damage (Bard, 1980; Brownmiller, 1975). Even if such actions could be taken without harm, their usefulness would depend on the availability of another person to do the persuading and to calm the victim. The intent of callers in telephoning or seeking out other persons to provide support or assistance is, in fact, to calm themselves: calls of this type are made in some 16 percent of Part I crimes. As mentioned earlier, however, an investment of departmental resources aimed at training officers to provide some solace to victims, or, at least to prevent exacerbating trauma, might pay off in increased citizen satisfaction with police services. Impacts on citizen reporting time would, however, be only indirect, and the process would dictate that radical changes in both police officer behavior and the public's perceptions of the police be achieved in most agencies.

All in all, the likelihood of making a significant impact on citizen reporting time through efforts to remove people's needs for emotional support and assistance for psychological or physical trauma is very small indeed.

Efforts to Help the Caller Remove Ambiguity from the Situation

A final area that also has some potential for payoff is defined by actions that would help citizens remove ambiguity from situations more quickly, and cause them to call the police sooner. Regarding Part I offenses resulting in response-related arrests, an increase from the present 29 per thousand to an estimated 31 per thousand could be realized if all such delays were eliminated. We include here delays caused by callers' observing or investigating crime scenes or talking, in person or by phone, with other persons to gather additional information before calling the police.

The most straightforward way to prevent these delays is to encourage people to report all suspicious incidents to the police, without delaying to investigate them first. Citizens could be reassured that the police would respond to all calls, including possible false alarms. A mass media campaign emphasizing this message would probably be ineffectual, however, because people are not predisposed to change this type of behavior: in the cities we studied, nearly <u>80 percent</u> of respondents who acted to resolve ambiguity said that, if similar situations were to occur, they would take the same actions again. On the other hand, the success of the Seattle program (mentioned earlier) indicates that people may be influenced to call without investigating by a program emphasizing close personal contact among neighbors.

Programs that are effective in preventing ambiguity-resolving actions create undesirable side effects that will, at least partially, offset the positive effects of faster reporting (Bickman and Lavrakas, 1976; Cirel, et al., 1977). People who act to resolve ambiguities try to avoid calling the police or taking other emergency actions when unnecessary. Thus, a witness to an apparent burglary may observe the ambiguous situation and discover that a burglary is not, in fact, taking place; a victim of an apparent auto theft may call a family member or friend and discover that the car has been borrowed. Had these people phoned in reports based on their first impressions, the police would have responded unnecessarily. Because only actual crimes were included in our sample, there was no way to calculate, from the data, the number of unfounded reports police could expect to receive if a successful reporting program were implemented. However, the cost of unfounded reports must be considered before implementing such a program.

Taking all of these factors into consideration, the best approach to reducing delays caused by actions taken to clarify an observed situation would probably be a well-designed program of the "neighborhood watch" type. The success of such a program would appear to depend not on encouraging citizens to report every incident no matter how ambiguous but, rather, on making them more aware of what is and what is not "normal" for their particular neighborhoods. By encouraging citizens to be more aware of their surroundings, we work toward the objective of having citizens learn to reduce the ambiguity in a situation more rapidly. For example, if those individuals who are at home during daytime hours on weekdays know who is not ordinarily home during those hours, such individuals are more likely to react quickly to the presence of strange persons or vehicles at homes that

are usually unoccupied. Thus, they can take more rapid action, including calling the police while the event is still in progress. Promoting closer contact among neighbors so that one knows when another is expecting a delivery or a visitor or when a neighbor will be on vacation will serve to reduce ambiguity and will quite likely be of real benefit to police in reducing reporting delays and in limiting the number of unfounded reports.

Increasing the Public's Knowledge of the Police Agency's Telephone Number

The next area where there should be some potential to decrease citizen reporting time and increase the probability of arrest involves removing delays caused by callers' not knowing the police telephone number. If fully effective, a program aimed at removing these delays could bring about an increase from the current 29 per thousand to a predicted 32 per thousand Part I crimes resulting in response-related arrests. Several approaches to solving this problem have been recommended.

Use of a 911 System. The installation of a 911 system, with its substantial costs, would apparently have relatively little impact on the speed of citizen reporting, even for the most urgent calls for service, compared to placing the call through the telephone company operator. All indications point to the conclusion that only about 10 seconds in reporting time will be saved by using 911 instead of dialing "0." The benefits of

CONTINUED

3 OF 7

911 would be fewer for political subdivisions that are stable and served by a single police agency than for areas that are changing rapidly or where jurisdictional boundaries for police agencies are confusing. In the latter case, an enhanced 911 system with selective routing insures that a 911 emergency call will go to the agency that serves the location of that telephone, eliminating not only the need for the caller to look up the police number (our data from Peoria indicate, however, that many people still looked up the number) but also eliminating any delay caused by a telephone company operator's error in contacting the wrong agency. In any case, the amount of time saved and the effects of such savings on arrests must be expected to be quite small.

Even where a 911 system exists, not all delays due to looking up the numbers would be eliminated, as was demonstrated earlier. Citizens sometimes underestimate the urgency of the situation, losing valuable reporting time while they look up non-emergency numbers. One way to prevent this is to urge citizens to place all police calls for service (except routine requests for information, etc.) on the 911 line, leaving it to a trained, experienced professional to distinguish between urgent and non-urgent calls. This would probably not reduce the effectiveness of 911. At worst, it should require only the reallocation or re-assignment of complaint takers from non-emergency administrative telephones to the 911 telephones. It would also increase the burden on the department of training personnel and would require the staff members who screen calls to make many more decisions.

Approaches Other Than 911. To report emergencies in cities where 911 is not available, citizens should be encouraged to call phone company operators instead of looking up numbers in the phone books. Some of the pressure may be taken off phone company operators by widely publicizing a department's seven-digit emergency number. In Jacksonville, where phone stickers displaying the police emergency number were distributed with every phone bill, the emergency number was significantly more likely to be posted or memorized than in the other two cities without 911 service.

A more comprehensive approach, applicable whether or not 911 is in operation, would be to require that both the police emergency number and a non-emergency number be posted near every phone. A concerted effort to insure that this information was posted on all telephones would, at a minimum, provide for citizens' being exposed to the information and insure that the vast majority of telephones, if not all, would carry the information.

Efforts to Reduce Delays Caused by Unavoidable Problems

Only about three percent of citizen reporting delays can be attributed to problems that the reporting citizen could not avoid: not having a phone available, having difficulty working a pay phone, or having trouble communicating with the police complaint taker. Even if these problems could be eliminated, citizen reporting time would decrease by an amount so small as to be imperceptible; moreover, eliminating the problems could be expensive. For example, to cut by one-half the time required to find a phone would require approximately four times the number of pay telephones now available. On the other hand, the increased convenience to citizens of allowing pay phone calls to an emergency number or the operator without charge may be worth the cost; having more bilingual operators, or training operators to be more patient and perceptive, may be useful for public relations purposes as well. These programs, however, will not help much in decreasing citizen reporting time and increasing chances of arrest.

The Potential for Reduced Citizen Reporting Time

Although some police efforts will probably decrease citizen reporting time slightly, it is highly unlikely that citizen reporting delay can be eliminated as a result of such efforts. Even if this delay were eliminated and all involvement crimes were reported while in-progress or very shortly after they had been committed, some 70 to 85 percent of crimes would not be discovered until some time after they had been committed. In these cases neither fast citizen reporting nor fast police response will have any effect on the chances of arrest. Many departments still try to respond to these discovery crimes immediately, using patrol resources that might better be used in other ways. If these crimes can be identified by complaint takers and responded to at the mutual convenience of the citizen and the department, an impressive gain in efficiency--and a consequent gain in police effectiveness--can be achieved.

Call Screening and Alternative Responses

The screening of calls for service is recommended for several reasons, not the least of which is that changes in call handling procedures are totally within the control of the department and can be implemented without great infusions of additional resources. Call screening can greatly increase the efficiency with which a department's patrol resources are used in response to calls for service, and, when used appropriately, can help the department make the best use of response time, even in cases in which citizen reporting time is already longer than desired.

The purpose of screening calls for service should be to sort out those calls that require immediate response from those that do not: reports of injuries, shots fired, suspicious persons, and crimes still in-progress would require immediate response; calls that would not require an immediate response would include those to report discovery crimes, other non-urgent crimes and non-crime incidents. From the perspective of response-related, on-scene arrests, the most important calls will be those to report crimes still in progress, followed by those in which reporting delay after completion of the crime has been minimal and a patrol car is immediately available. Calls to report prowlers, suspicious persons, and dangerous situations might also deserve quick response because quick response in such cases might help in preventing crimes or serious injuries.

It should rarely, if ever, be necessary to respond rapidly to reports of discovery crimes. If we follow the call classification system suggested in one recent publication on call screening and differential response (Farmer, ed., 1981), the in-progress or other urgent call would receive an "immediate mobile response"; a "proximate" or recently completed crime would receive an "expedited mobile response"; and a "cold" call, including all discovery crimes, would receive, at best, a "routine mobile response."

Screening calls for urgency in this way can be extended to include the use of a variety of police response mechanisms, both mobile and non-mobile, by either sworn officers or civilian employees, in person or by telephone or mail, using walk-in reporting or report-taking by appointment--a wide range of nontraditional responses depending on the urgency and nature of the call. The recent Forum report mentioned above (Farmer, ed., 1981) and an ongoing NIJ experiment with differential response, as well as other recent publications (Cahn and Tien, 1981; Tien and Larson, 1978) illustrate the potential value of such an approach.

One potentially useful approach to immediate mobile response is called "ring alert search." Common practice for a patrol officer responding to a call for service is to proceed directly to the scene of the crime to meet the complainant. Unless the crime is still in-progress when the officer arrives, however, the scene of the crime is the last place the suspect is likely to be. Since the early 1960's, police have experimented with the so-called "ring alert search." To work, this coordinated search tactic relies on large numbers of searching patrol officers, who surround the vicinity of the crime soon after it has been committed, close off

escape routes, and then close in on the offender. Evaluators have found ring alert search tactics to be very effective in producing arrests, increasing the chances of arrest by 200 to 300 percent (Bottoms, 1971).

Although they increase the chances of success, ring alert search tactics have not been widely implemented, because they require that as many as eight to ten patrol cars be available to join the search. Even in those few agencies large enough to field such a large force, however, implementing such tactics given present workloads would result in increased stacking of calls, and slower responses to emergency calls made while searches are in progress. A department that has the capability and makes full use of call screening and alternative responses might, however, be able to free enough resources to regularly implement ring alert search tactics, and would likely make arrests at an increased rate.

One frequently raised objection to call screening and differential response, including non-traditional responses to service calls, involves an anticipated degradation in the level of citizen satisfaction; the existing evidence, however, is clear on this point. Research indicates that the <u>expectations</u> of citizens and the ability of the police to satisfy those expectations are more important to citizen satisfaction then sheer speed of response. In other words, for a particular call type, if a citizen is told that an officer "will be right there," but the officer does not arrive until fifteen minutes later, that citizen is less likely to express satisfaction than if he or she had been told that the officer "will be there in about half an hour," and the officer had arrived in 25 minutes.

If the citizen is given a realistic set of expectations by the police complaint taker, and those expectations are met, the citizen will be better satisfied than if an unrealistic set of expectations is unmet.

The key to the success of call screening and differential response lies in the complaint taker's ability to elicit the information necessary to classify a call correctly in a minimum of time. This requires the development of explicit criteria for assessing urgency--Does this domestic dispute involve the presence of a weapon? Was the person who was seen exiting a vacationing neighbor's house recognized by the caller?--and the training of complaint takers to apply such criteria properly. The criteria to be used in selecting the people who will serve as complaint takers and as dispatchers under a differential response program must be given serious consideration as well. The police agency would surely want to select persons on the basis of their ability to make decisions and set priorities rather than on the basis currently used by some departments, under which officers on limited duty owing to injury, age, poor health, drinking problems or reassignment pending the outcomes of investigations serve as complaint takers and dispatchers.

Using Resources Freed by Call Screening

By taking advantage of call screening and alternative responses to non-emergency calls, a department will free patrol resources that would otherwise be used in responding immediately to all calls. If the patrol is maintained at the same size, successful use of call screening will decrease

the workload of patrol officers and free up much of the time previously consumed in responding to unscreened calls. Any added slack in the patrol force may be taken up in some form of structured patrol activity, for example:

- Some officers might be placed in a separate structured patrol force that devotes all its time to structured crime prevention activities.
- Patrol workloads might be reorganized, and officers assigned blocks of time each day in which they do not respond to calls for service, but conduct preventive or other structured activities instead.

A reorganized patrol force, offering blocks of time for directed activities, might make use of the following.

- Surveillance and stakeouts have been found to be particularly successful in producing arrests (Tien, Simon and Larson, 1975).
- Foot patrol, though ineffective at increasing arrest rates, appears to increase levels of citizen satisfaction (Police Foundation, 1981).
- Fixed post assignments are effective deterrents to crime at the point of the fixed post; though obviously limited in scope, carefully chosen posts may affect crime rates and levels of citizen satisfaction slightly.

In Wilmington, Delaware, directed activities such as these were employed by a portion of the patrol force dedicated only to crime prevention activities: the arrest productivity of the patrol division and, apparently, of the department as a whole, increased substantially as a result (Tien, Simon and Larson, 1975).

The directed patrol force need not focus on activities that directly deter offenders or produce arrests. A department may also direct its energies toward providing services to citizens, indirectly influencing them to prevent crimes and report them more quickly.

- Neighborhood organization programs, such as Neighborhood Watch, provide police with a method of directly influencing citizen reporting. As shown above, these programs can substantially increase the number of cases reported and the number of arrests.
- Providing victim and witness services, including transportation to and from the police station and court, advocacy before victim compensation boards, and explanation of crime prevention measures, will help allay citizen fears that reporting a crime will be emotionally and financially costly. As we have shown, these citizen fears are the biggest single cause of slow reporting and nonreporting.

Activities need not be assigned by police managers. Having individual officers plan their own actions for the structured time available to them would help to make the job of patrol officer more interesting, satisfying, and productive.

Implicit in this entire discussion, of course, is the idea that patrol resource allocation should be based on consideration of the number of calls received that require rapid response, not simply on the total number of calls for service or crime calls received. This will be an important consideration especially in those agencies shifting from a policy of rapid response to all calls to a policy of call screening and differential response.

Regarding quality of service, observers of detective activities have noted for many years the degree to which follow-up investigations are constrained by the results of on-scene preliminary investigations. Case

screening models rely on the fact that the success of a follow-up investigation can be very reliably predicted from the information produced by the initial investigator. All too often, however, patrol officers responsible for carrying out these preliminary investigations simply fill out reports and go back in service as quickly as possible, without conducting thorough crime scene checks or cavassing for witnesses (Eck, forthcoming). In fact, the present system of call response encourages this, since minimizing response time requires as many cars on the street as possible at all times. By freeing patrol officers from these restrictions, and by training them carefully in methods of crime scene investigation, information can be collected at this critical stage of crime response, leading to additional arrests and clearances by follow-up investigators.

The Impact of Call Screening and Alternative Responses

Call screening and use of alternative responses provide the means by which not only efficiency but also effectiveness can be increased. This is brought about by freeing patrol resources for activities more likely to produce fast reporting and arrest and by increasing the quality of service delivered in response to crime calls. By structuring the activities of the patrol force, police managers and patrol officers will not only increase arrest rates, but also help to lessen the gap between the police and the community.

We must recognize, however, that the implementation of a policy aimed at reducing the speed of police response to a highly selected group of emergency situations, such as in-progress crimes and crimes with injuries, may have a tendency to prolong an agency's average response time. This was shown to be true for San Diego (see Chapter 3). This observation calls into question the value of using "average response time" as a measure of police effectiveness, because that average may very well be distorted and appear to reflect a lack of police responsiveness, while, in fact it should reflect favorably on the agency. If any use of response time is to be made in evaluating agency effectiveness, it should be based only on those few calls for which rapid response is desirable. Rapid response to other types of calls wastes resources.

Summary

After recapitulating the study's findings and examining a variety of implications for police policy and procedure and for other possible governmental efforts, it again becomes clear that no single new program or procedural change is likely to be completely successful, and that the increase in response-related arrests resulting from any single approach will be limited. To begin with, total success in eliminating all delays due to any one source is very unlikely. There will always be some delays no matter what corrective approach is taken. Therefore, when we say that the removal of delays caused by conflict over the value of calling the police could result in an estimated increase in response-related arrests from about 29 Part I crimes per thousand up to nearly 48 per thousand, we mean that a completely successful program would have that effect. Removing

all the delays caused by needs the police cannot meet would increase arrests 29 per thousand to 31 per thousand. Insuring that all citizens have immediate access to the correct police telephone number would increase response-related arrests to a maximum of just under 32 per thousand. Removal of all delays caused by ambiguous situations would have about the same effect.

Some problems in communication access are apparently not amenable to change at all. Insuring that all pay telephones are in working order at all times is obviously impossible, but even if it weren't, the payoff in terms of arrest potential would be extremely small. The same minimal effect would result from installing telephones that can be used without coins to reach police emergency numbers. Obviously, no single-focus approach will begin to achieve the levels of effectiveness the police executive would like to see, and even a combination of several diverse and complementary programs would still leave at least 70 to 85 percent of all Part I crimes untouched, i.e., discovery crimes, which, as we have demonstrated, are beyond the reach of even the most effective programs designed to counter citizen reporting delay. When we include involvement crimes reported while in progress in our estimates, it is still unlikely that more than 70 Part I crimes per thousand would result in response-related arrest if all causes of delay were totally eliminated.

What would a reasonable package of efforts to reduce citizen reporting time and total response time include? We would recommend the following:

- Take actions that will reduce the victim's or witness's conflict over reporting the incident, including:
  - implementing call-handling procedures that make reporting easier;
  - defraying money costs and inconvenience by means of victim-witness assistance programs;
  - removing fear of reprisal and/or protecting victims and witnesses from reprisal through education and protection programs.
- Publicize the police agency's emergency telephone number in every way possible, including posting it in conspicuous places near telephones.
- Encourage citizens to place urgent crime calls to the police by using the telephone company operator as an alternative to using up valuable time seeking the correct number in the phone book when the number is not known.
- Encourage citizens to be more aware of their surroundings so that less time is needed to decide what events are worthy of immediate calls to the police; programs such as Neighborhood Watch should serve this purpose well.
- Institute some form of call screening aimed at identifying those incidents having some reasonable probability of resulting in arrest due to rapid response. Police response should include:
  - immediate response to all in-progress crimes;
  - expedited response to other involvement crimes and to those where prevention of crime or injury is possible (man-with-gun, suspicious person, etc.);
  - routine response to discovery calls other than those in which it is suspected that valuable evidence might be lost as a result of delay.

In addition to this core set of actions, any or all of the other activities and efforts identified in this chapter should be considered for local implementation, based on local needs, conditions and resources.

A systematic, coordinated approach to agency policy modification, changes in call-handling procedures and complaint operator training, and methods for reaching the public with relevant information about when, why and how to report crimes to the police can have an impact on the proportion of reported Part I crimes that result in on-scene, response-related arrests. Decisions as to the tolerable costs for such improvements must ultimately be made by the appropriate officials at the local level.

BIBLIOGRAPHY

Preceding page blank

Aceituno, Thomas and Michael Matchett. "Street Robbery Victims in Oakland," in Floyd Feeney and Adrianne Weir (eds.) The Prevention and Control of Robbery, Vol. One. Davis, CA: University of California: Center on the Administration of Criminal Justice, 1973.

American Bar Association, Criminal Justice Section. Reducing Victim/Witness Intimidation: A Package. Washington, D.C.: ABA, January 1981.

Anderson, Norman H., and James C. Shanteau. "Information Integration in Risky Decision Making." Journal of Experimental Psychology, 84, 3 (1970), pp. 441-451.

Andrews, R.D., "Treatment and Outcomes for Critical Patients," Emergency Medical Services System Research Projects, NCHSR Research Management Series, 1978, p. 8.

Antunes, George and Eric J. Scott. "Calling the Cops: Police Telphone Operators and Citizens Calls for Service", Journal of Criminal Justice, 9, 2 (1981) pp. 165-180.

Ashworth, C. D., and S. Feldman-Summers. "Perceptions of the Effectiveness of the Criminal Justice System--The Female Victim's Perspective." Criminal Justice and Behavior, 5, 3 (September 1978).

Banton, Michael. The Policeman in the Community. New York: Basic Books, 1964.

Bard, Morton. "The Psychological Impact of Personal Crime," in Emilio C. Viano (ed.). Victim/Witness Programs: Human Services of the 80s. Alexandria, VA: National Victim/Witness Resource Center, 1980.

Berkson, J. "Maximum Likelihood and Minimum X^2 Estimates of the Logistic Function." Journal of the American Statistical Association, 50 (1955), pp. 130-162.

Bickman, Leonard. "Bystander Intervention in a Crime: The Effect of a Mass Media Campaign." Journal of Applied Social Psychology, 5, 4 (October-December 1975), pp. 296-302.

Bickman, Leonard. "Attitude Toward an Authority and the Reporting of a Crime." Sociometry, 39 (1976).

Bickman, Leonard and Susan Green. "Interpersonal Influence, Severity and the Reporting of a Crime," unpublished paper, 1975.

______. "Is Revenge Sweet? The Effect of Atitude Toward a Thief on Crime Reporting." Criminal Justice and Behavior, 2 (1975).

______. "Situational Cues and Crime Reporting: Do Signs Make a Difference?" Journal of Applied Social Psychology (1977?).

Preceding page blank

Bickman, Leonard, John Edwards, Paul J. Lavrakas, et al. Citizen Crime Reporting Projects--NEP Phase I Summary Report. Washington DC: National Institute of Law Enforcement and Criminal Justice, 1977.

Blair, R. Clifford, and J.J. Higgins. "The Power of t and Wilcoxon Statistics: A Comparison." Evaluation Review, 4 (October 1980), pp. 645-656.

Block, Richard. "Why Notify the Police?" The Victim's Decision to Notify the Police of an Assault." Criminology, 11, 4 (February 1974).

Bottoms, Albert M. "Police Tactics Against Robbery," unpublished Final Report to NILECJ, Pilot Grant NI 70-065-PG-2, 1971.

Bottoms, Albert M., et al. Resource Allocation in the Chicago Police Department--Final Report of the Operations Research Task Force. Chicago, IL: Chicago Police Department, 1969.

Broadbent, Donald E. Decision and Stress. London: Academic, 1971.

Brown, W.J. "Evaluation of Police Patrol Operations." M.A. Thesis, University of Ottawa: 1974.

Brown, W.J., and F.P. Lipsett. "Response Speeds and Response Times of Urban Police Patrol Cars in Ottawa, Canada." Journal of Criminal Justice, 4, 3 (Fall 1976).

Bureau of Justice Statistics (BJS). Intimate Victims: A Story of Violence Among Friends and Relatives. National Crime Survey Report SD-NCS-N-14. Washington, DC: U.S. Government Printing Office, 1980.

Burgess, A.W., and L.L. Holstrom. "Coping Behavior of the Rape Victim." American Journal of Psychiatry, 133, 4 (April 1976).

Cahn, Michael F., and James M. Tien. An Evaluation Report of an Alternative Approach in Police Response: The Wilmington Management of Demand Program. Cambridge, MA: Public Systems Evaluation, 1981.

Cann, A., et al. "Social Context Variables in the Social Perception of Rape," unpublished manuscript, 1978.

Clark, III, Russell D. and Larry E. Word. "Why Don't Bystanders Help? Because of Ambiguity." Journal of Personality and Social Psychology, 24, 3 (December 1972).

__________. "Where Is The Apathetic Bystander? Situational Characteristics of the Emergency." Journal of Personality and Social Psychology, 29, 3 (March 1974).

Clawson, Calvin, and Samson K. Chang. "The Relationship of Response Delays and Arrest Rates." Journal of Police Science and Administration, 5, 1 (1977).

Committee on Cardiopulmonary Resuscitation. Discussion Guide: Emergency Measures in Cardiopulmonary Resuscitation. New York, NY: American Heart Association, n.d.

Dayharsh, Thomas I., et al. Joint City-County Coordinated Emergency Services Communication System Implementation Study." Interim Report, Number 1, Vol. 1, prepared for County of Santa Clara CA: SRI Project 3133. Menlo Park, CA: SRI International, May 1974.

Dayharsh, Thomas I., Terrence I. Yung, Dwight K. Hunter, and Susan C. Ivy. "Update on the National Emergency Number, 911." IEEE Transactions on Vehicular Technology, VT-28 4 (November 1979).

DuBow, Fred, Edward McCabe and Gail Kaplan. Reactions to Crime: A Critical Review of the Literature. Washington, DC: National Institute of Law Enforcement and Criminal Justice, November 1979.

Elliott, James F., Interception Patrol. Springfield, IL: Charles C. Thomas, 1973.

Elliott, James F. and Thomas J. Sardino. Crime Control Team. Springfield, IL: Charles C. Thomas, 1971.

Ellison, K.W. "Just World in the 'Real World'--Attributions about Crime as a Function of Group Membership, Victim Precipitation and Injury." Ann Arbor, MI: University Microfilms, 1976.

Ennis, Phillip H. Criminal Victimization in the United States: A Report on the National Survey, Field Surveys II. Washington, DC: U.S. Government Printing Office, 1967.

Ernest, Marvin, Patricia Freudiger and H.J. Friedsam. "Perceptual Variance Between Elderly Victims and Non-Victims of Crime," presented before the Southwest Social Science Convention, Houston, TX (April 1978).

Farmer, Michael T. (ed.). Survey of Police Operational and Administrative Practices--1977. Washington, DC: Police Executive Research Forum, 1978.

Farmer, Michael T. Differential Police Response Strategies. Washington, DC: Police Executive Research Forum, 1981.

Federal Bureau of Investigation (FBI). Crime in the United States--Uniform Crime Reports, 1976. Washington, DC: U.S. Government Printing Office, 1977.

Feldman-Summers, S., and K. Lindner. "Perceptions of Victims and Defendants in Criminal Assault Cases." Criminal Justice and Behavior, 3, 2 (June 1976).

Felperin, Karl D., et al. 911 in Florida: A System Concept, Final Report, prepared for State of Florida, SRI Project 3101. Menlo Park, CA: SRI International, 1974.

Folley, Vern L. American Law Enforcement. Boston: Holbrook, 1978.

Franklin Institute Research Laboratories. A Study of the Single Emergency Telephone Number. FIRL Project Number C2487. Philadelphia, PA: March 1970.

Gates, M.J. "Rape Victim on Trial." Washington DC: Center for Women Policy Studies, 1975.

Gibbons, Jean Dickinson. Nonparametric Methods for Quantitative Analysis. New York: Holt, Rinehart and Winston, 1976.

Gilbert, Francis S., Michael C. Dillbeck, James P. Curran and L. Michael Little. "The Perception of Time Following Stress." Motivation and Emotion, 1, 2 (1977).

Goldsmith, J. "Victim Services and the Police." Crime Prevention Review, 5, 3 (April 1978).

Goodman, John L., Jr. "Is Ordinary Least Squares Estimation with a Dichotomous Dependent Variable Really That Bad?" Working Papers 216-23. Washington, D.C.: Urban Institute, March 1976.

Gorman, Bernard S., and Alden E. Wessman. "The Personal Experience of Time," in Emotions, Personality and Psychotherapy. New York, NY: Plenum, 1977.

Gottfreson, Michael R., and Michael J. Hindelang. "Bodily Injury in Personal Crimes," in Wesley G. Skogan (ed.), Sample Surveys of the Victims of Crime. Cambridge, MA: Ballinger, 1976.

Gourley, G. Douglas. "Police Public Relations." Annals, 291, (January 1954).

Greenberg, Roger P., and Ronald B. Kurz. "Influence of Type of Stressor and Sex of Subject on Time Estimation." Perceptual and Motor Skills, 26, 3 Pt 1 (1967).

Hackett, Thomas P., and N.H. Cassen. "Factors Contributing to Delay in Responding to the Signs and Symptoms of Acute Myocardial Infarction." American Journal of Cardiology, 24, (November 1969).

Heal, Kevin, and Paul Ekblom. "Coping with Public Demand: A Challenge for Police Management. Police Studies (forthcoming).

Hodges, Jr., J.L., and E.L. Lehmann, "The Efficiency of Some Nonparametric Competitors of the t-test." Annals of Mathematical Statistics, 27, 2 (June 1956), pp. 324-335.

Hogan, H. Wayne. "A Theoretical Reconciliation of Competing Views of Time Perception." American Journal of Psychology, 91, 3, (September 1978), pp. 417-428.

Holliday, Leo P. "A Methodology for Radio Car Planning." New York, NY: Rand Institute, 1974.

Isaacs, Herbert H. "A Study of Communications, Crimes and Arrests in a Metropolitan Police Department." Appendix B of Science and Technology Task Force Report. Washington, DC: U.S. Government Printing Office, 1967.

Ivy, Susan C. "Potential for Citizen Time Savings with 911 Access." IEEE Transactions on Vehicular Technology, VT-28, 4 (November 1979).

Ivy, Susan C., M.R. Tantimonaco and K.D. Felperin. Citizen Access to CRAG Public Safety Agencies," Technical Note 3858-1, prepared for Columbia Regional Association of Governments, Portland, OR, SRI Project 3858. Menlo Park, CA: SRI International, 1975.

Janis, Irving L., and Leon Mann. Decision Making. New York, NY: Free Press, 1977.

Kansas City Police Department. Response Time Analysis: Volume I--Methodology and Volume II--Part I Crime Analysis. Kansas City, MO: Author, 1977.

Kansas City Police Department. Machine-Readable Codebook for Part I Crime Response Time Analysis. (Computer printout). Kansas City, MO: Author, 1977a.

Kelling, George, Tony Pate, Duane Dieckman and Charles F. Brown. The Kansas City Preventive Patrol Experiment: A Technical Report. Washington, DC: Police Foundation, 1974.

Kmenta, Jan. Elements of Econometrics. New York: MacMillan, 1971.

Knudten, R.D., et al. Victim and Witnesses--The Impact of Crime and Their Experience with the Criminal Justice System. Milwaukee, WI: Marquette University, 1976.

Langer, Jonas, Seymore Wapner and Heinz Werner. "The Effect of Danger on the Experience of Time." American Journal of Psychology, 74 1, (March 1961), pp. 94-97.

Larson, Richard C. Measuring the Response Patterns of New York City Police Patrol Cars. New York, NY: Rand Institute, 1971.

Larson, Richard C., and Amadeo R. Odoni. Urban Operations Research. Englewood Cliffs, N.J.: Prentice-Hall, 1981.

Larson, Richard C., et al. "A Controlled Preventive Patrol Experiment," response to research solicitation by National Institute of Justice. Cambridge, MA: Public Systems Evaluation, April 1979.

Latane, Bibb, and John M. Darley. The Unresponsive Bystander. New York, NY: Appleton-Century-Crofts, 1970.

Legislative Analyst. An Evaluation of the Mandated Statewide Emergency Telephone Number (911) Program, (rev. ed.). Sacramento, CA: July 1979.

Lejeune, R., and N. Alex. "On Being Mugged--The Event and Its Aftermath." Urban Life and Culture, 2, 3 (October 1973).

Leonard, V.A. Police Communications Systems. Berkeley, CA: University of California, 1938.

Liebermann, Gerald J. "The Status and Impact of Reliability Methodology." Naval Research Logistics Quarterly, 16, 1 (1969), pp. 17-35.

Lindemann, E. "Symptomatology and Management of Acute Grief." American Journal of Psychiatry, 101 (1944), pp. 141-148.

Loftus, Elizabeth F. "Unconscious Transference in Eyewitness Identification." Law and Psychology Review, 2 (1976).

Loftus, Elizabeth, Diane Altman and Robert Geballe. "Effects of Questioning Upon a Witness' Later Recollections." Journal of Police Science and Administration, 3, 2 (June 1975).

Maltz, Michael. "Measures of Effectiveness for Crime Reduction Programs." Operations Research, 23, 3 (May-June 1975).

Mervin Field and Company. "Customer Awareness and Attitude Towards 911 Service." Survey conducted for Pacific Telephone Company, San Francisco, CA: 1979.

Meyer, John C. "Patterns of Reporting Noncriminal Incidents to the Police." Criminology, 112, 1 (May 1974).

Milgram, Stanley. "The Experience of Living in Cities." Science, 169 (1970), pp. 1461-1468.

Miller, Frederick D., et al. "Peredicting Perceptions of Victimization." Journal of Applied Social Psychology, 6, 4 (1976), pp. 352-359.

Miller, Robert E., and Allen Rappaport. "On the Relationship Between Fire Department Response Times and Damages," presented at the national meeting of the ORSA/TIMS, Atlanta, GA (1977).

Monroe, David G., and Earle W. Garrett, under the direction of August Vollmer. Police Conditions in the United States, A Report to the National Commission on Law Observance and Enforcement. Montclair, NJ: Patterson Smith Reprint Series, 1968.

Montgomery, Jerry. Are You Man Enough? The Seattle Plan. Seattle, WA: Physio-Control Corporation, 1971.

Moriarty, Thomas. "Crime, Commitment, and the Responsive Bystander: Two Field Experiments." Journal of Personality and Social Psychology, 31, 2 (February 1975), pp. 370-376.

Moss, A.J., et al. "Delay in Hospitalization During the Acute Coronary Period." American Journal of Cardiology, 24 (November 1969).

Mosteller, Frederick, and John W. Tukey. Data Analysis and Regression: A Second Course in Statistics. Reading, MA: Addison-Wesley, 1977.

Myrick, Justin A., et al. Implications for Administrators, Summary of Discussion at a Conference on Evaluation of the Role of the Police in the EMS System: Implications for Administrators, 29 November 1977. Atlanta, GA: Georgia Institute of Technology, March 1978.

National Advisory Commission on Criminal Justice Standards and Goals. Report on Police. Washington DC: U.S. Government Printing Office, 1973.

National Criminal Justice Information and Statistics (NCJISS). Criminal Victimization in the United States--1977. National Survey Report Number SD-NCS-N-12. Washington DC: U.S. Government Printing Office, December 1979.

Nie, Norman H., et al. Statistical Package for the Social Sciences. New York, NY: McGraw-Hill, 1975.

Notman, M.T., and C.C. Nadelson. "Rape Victim--Psychodynamic Considerations," unpublished manuscript, 1975.

Office of Telecommunications Policy. "911--The Emergency Telephone Number--A Handbook for Community Planning." Washington DC: U.S. Government Printing Office, 1973.

Ornstein, Robert E. On the Experience of Time. Baltimore, MD: Penguin, 1975.

Percy, Stephen L. "Response Time and Citizen Evaluation of Police." Journal of Police Science and Administration, 8, 1 (1980) pp. 76-86.

Piliavin, Irving M., Judith Rodin and Jane Allyn Piliavin. "Good Samaritanism: An Underground Phemomenon." Journal of Personality and Social Psychology, 13, 4 (1969), pp. 289-299.

Pittman, Julian V. Evaluation of the Medical Aid Vehicle Concept: A Project Overview, presented at a Conference on Evaluation of the Role of Police in the EMS System: Implications for Administrators, 29 November 1977. Atlanta GA: Georgia Institute of Technology, March 1978.

Police Department News, New York City, November 1970. Quoted in Office of Telecommunications Policy (1973).

Pollatsek, Alexander, and Amos Tversky. "A Theory of Risk." Journal of Mathematical Psychology, 7, 3 (1970), pp. 540-553.

President's Commission on Law Enforcement and the Administration of Justice. The Challenge of Crime in a Free Society. Washington, DC: Author, 1967.

Raiffa, Howard. Decision Analysis: Introductory Lectures on Choices Under Uncertainty. Reading, MA: Addison-Wesley, 1968.

Rapoport, Amnon, and Thomas S. Wallsten. "Individual Decision Behavior," in Paul H. Mussen and Mark Rosenzweig, (eds.); Annual Review of Psychology. Palo Alto, CA: Annual Reviews, 1972.

Rosenthal, Robert. "Combining Results of Independent Studies." Psychological Bulletin, 85, 1 (1978), pp. 185-193

Rutledge, William P. "The Radio in Police Work," presented at the Annual Convention of the International Association of Chiefs of Police, 1929.

Scarpitti, Frank R., and Ellen C. Scarpitti. "Victims of Rape." Society, 14, 5 (July/August 1977).

Sheleff, L. and D. Shichor. "Victimological Aspects of Bystander Involvement." Crime and Delinquency, 26, 2 (1980).

Skogan, Wesley G. "Citizen Reporting of Crime: Some National Panel Data." Criminology, 13, 4 (February 1976), pp. 535-549.

Slovic, Paul and Sarah Lichtenstein. "Relative Importance of Variance Prefer- ences and Payoffs in Risk Taking." Journal of Experimental Psychology Monographs, 78, 3, pt. 2 (November 1968), pp. 1-18.

Snedecor, George W. and William G. Cochran. Statistical Methods. Ames, IO: Iowa State University, 1978.

Stewart, 2nd, J.E. and D.A. Cannon. "Effects of Perpetrator Status and Bystander Commitment on Responses to a Simulated Crime." Journal of Police Science and Administration, 5, 3 (1977).

Tarr, D.P. "Analysis of Response Delays and Arrest Rates." Journal of Police Science and Administration, 6, 4 (1978).

Theil, Henri, Principles of Econometrics. New York, John Wiley and Sons, 1971.

CALLING THE POLICE:
CITIZEN REPORTING OF SERIOUS CRIME

-TECHNICAL APPENDIXES-

[illegible] K STREET N.W., SUITE 400
WASHINGTON, D.C. 20006

[illegible]

POLICE EXECUTIVE
RESEARCH FORUM

GARY P. HAYES
EXECUTIVE DIRECTOR

CALLING THE POLICE: CITIZEN REPORTING OF SERIOUS CRIME

-TECHNICAL APPENDIXES-

William Spelman

August 1981

Preface to the Technical Appendixes

This techinical report accompanies Calling the Police, the final report of the Police Executive Research Forum's Citizen Offense Reporting Replication study. Each of the seven appendixes included here provide additional documentation for the results reported in the final report, including detailed descriptions of the methods used in data collection and analysis, and the results of statistical analysis in tabular and graphic form. The methods and findings are presented as follows:

> Appendix A includes a detailed description of the Research Design, and a brief discussion of the validity of the data collected.
>
> In Appendix B, one particularly important validity issue, the validity of citizen time estimates, is examined in more detail. The limitations of citizen-estimated reporting times place some limitations on the kinds of analysis that are appropriate, and these are discussed as well.
>
> Appendix C complements the common-sense discussion of Chapter 2 of the final report with a mathematical and theoretical justification for the total response time model of response-related arrest production.
>
> Appendix D describes statistical methods and results reported in Chapter 3, Citizen Reporting Time.
>
> Appendix E includes statistical methods and results to accompany Chapter 4. Additional documentation for the psychologically-oriented aggregation of citizen reporting actions, and information on the likelihood of eliminating each cause of delay, are provided as well.
>
> Appendix F accompanies Chapter 5, Placing the Call, and details statistical results reported there.

Appendix G contains the data collection instruments and data collection manuals used, with information on the availability of the study data base.

Anyone interested in additional information on the methods used and the results obtained is invited to contact the authors at the Forum.

TABLE OF CONTENTS

CALLING THE POLICE:
CITIZEN REPORTING OF SERIOUS CRIME

-TECHNICAL APPENDIXES-

APPENDIX A
RESEARCH DESIGN

As explained in Chapter 1, the chief goal of this study is to determine how well the citizen reporting findings of Kansas City's Response Time Analysis generalize to other jurisdictions. More specifically, we look at the length of citizen reporting delays, and both the actions people take and the problems they encounter before calling the police. Clearly, most of the information needed must come directly from the citizens themselves, in the form of sample survey responses. In order to best meet our goals, the research design emphasized the following:

- The results must be generalizable to many different jurisdictions. Thus, care was taken in the SITE SELECTION process to get a representative cross-section of big-city police jurisdictions.
- The most efficient way to identify recent reporters of a crime is to examine police crime reports. If victims and witnesses to all crimes reported in the site cities are surveyed, an unnecessarily large amount of data will have been collected. Thus these cases are SAMPLED to obtain a large but practical number of cases.
- People's memories of crimes may be unreliable unless they are questioned by carefully-trained interviewers soon after the crime occurs. The DATA COLLECTION methods required speed and accuracy, and were supported by extensive QUALITY CONTROL checks.
- Finally, because the sampling and interview methods may influence the results obtained, the impact of the research design on survey VALIDITY was assessed before data analysis began.

A more comprehensive look at site selection, sampling, data collection, and quality control, and validity follows.

Appendix A-1
Selection of Sites

This study was conducted in four cities: Jacksonville, Florida; Peoria, Illinois; Rochester, New York; and San Diego, California. They were selected from among 47 candidate departments considered. The chief of each department considered was a member of the Police Executive Research Forum, and had requested that the Forum pursue this research in his department. Selection was based on characteristics of the city itself, its residents, and the police department.

The greater the variation among the sites in demographic and organizational characteristics, the greater the likelihood that the relationships found will be valid and applicable to other departments. Table A-1 shows that the sites represent a wide range of geographic locations, populations (129,000 to 766,000), area (36 to 840 square miles), and population densities (774 to 7,579 persons per square mile.)

People living in the four sites differ widely as well. Table A-2 reveals this heterogeneity of population characteristics in per capita income ($2,850 to $3,540), educational levels (43 percent to 66 percent high school educated), mobility (36 percent to 52 percent of people living at the same location for five years or more), and nonwhite population (11 to 23 percent). For most of these characteristics, the national average is in the middle with the Forum cities grouped around it. Thus the cities represent not only a range of characteristics--they are also typical of cities throughout the country with populations of 100,000 or more.

Table A-1

Characteristics of Four Site Cities, Kansas City, and National Average for Cities

	Jacksonville	Peoria	Rochester	San Diego	Kansas City	U.S. Average
Location	South	Midwest	Northeast	West	Midwest	-
Population (1975)	650,000	129,000	276,000	766,000	507,000	-
Area	840	41	36	320	317	-
Density	774	3,146	7,579	2,398	1,599	3,376

Figures taken from Farmer (1977), FBI (1976), and Department of Commerce (1972)
"U.S. Average" is census estimate for urbanized areas.

Table A-2

Population Characteristics of Four Site Cities, Kansas City, and National Average for Cities

	Jacksonville	Peoria	Rochester	San Diego	Kansas City	U.S. Average
Income						
per capita	$2,853	$3,542	$3,239	$3,517	$3,329	-
percent of persons below poverty level	16.8%	11.2%	12.0%	11.0%	12.6%	12.8%
Education						
Median years of high school education	12.0	12.2	11.1	12.5	12.2	12.1
Percent with high school education	51.6%	55.6%	43.2%	66.2%	55.9%	55.9%
Mobility: Percent of people in same residence 5 yrs.	48.4%	49.6%	52.2%	35.8%	51.3%	47.7%
Minority: Percent nonwhite	23.0%	11.9%	17.4%	10.8%	22.5%	14.8%

Figures from Department of Commerce (1972)

These four jurisdictions were also selected to provide a mixture of police department activities and organizational structures. Four departmental characteristics are represented in Table A-3: communication access, organizational structure, officer visibility, and police force minority representation. Communications access consists of the presence or absence of an operational 911 system and the existence of a public educational effort to publicize procedures for contacting police. Three measures of patrol visibility represent a range of factors which could affect both frequency of police encounters and speed of citizen reporting. Finally, police minority representation may indicate minority group members' satisfaction and willingness to report to the police.

The number of crimes in each jurisdiction was sufficient to provide adequate sample sizes for this study. Table A-4 indicates the levels and rates of Part I offenses by site and compares them to Kansas City, and to the national average for cities of 100,000 or more for 1976. Homicide and rape tend to be underrepresented in all sites, as are aggravated assault in Rochester, and robbery and auto theft in Peoria. In general, however, the cities are representative of most American cities. This is shown more graphically by the comparison of Part I crime rates in Figure A-1.

Appendix A-2
Sample Design

The chief objective of this study was to determine whether or not the results of the Kansas City Response Time Analysis concerning citizen

Table A-3

Police Department Characteristics in Site Cities

	Jacksonville	Peoria	Rochester	San Diego
Communications Access				
911	No	Yes	No	No
Publicity	Yes	Yes	No	No
Organization				
Centralized	Centralized	Centralized	Decentralized	Centralized
Number of Stations	1	2	7	3
Patrol Visibility				
Patrol Officers/1,000 Population	.96	1.02	1.23	.69
Percent of Beats That Are Foot Beats	3.8%	0.0%	12.5%	0.0%
Marked Cars per Square Mile	.58	1.40	2.60	.72
Minority Representation				
Percent Black in Population	22%	11%	17%	2%
Percent Black Sworn Officers	9%	6%	8%	5%
Percent Spanish in Population	1%	1%	2%	13%
Percent Spanish Sworn Officers	1%	N/A	1%	8%

Sources: U.S. Department of Commerce, County and City Data Book, 1972.
Police Executive Research Forum, Survey of Operational and Administrative Procedures, 1978.

Table A-4

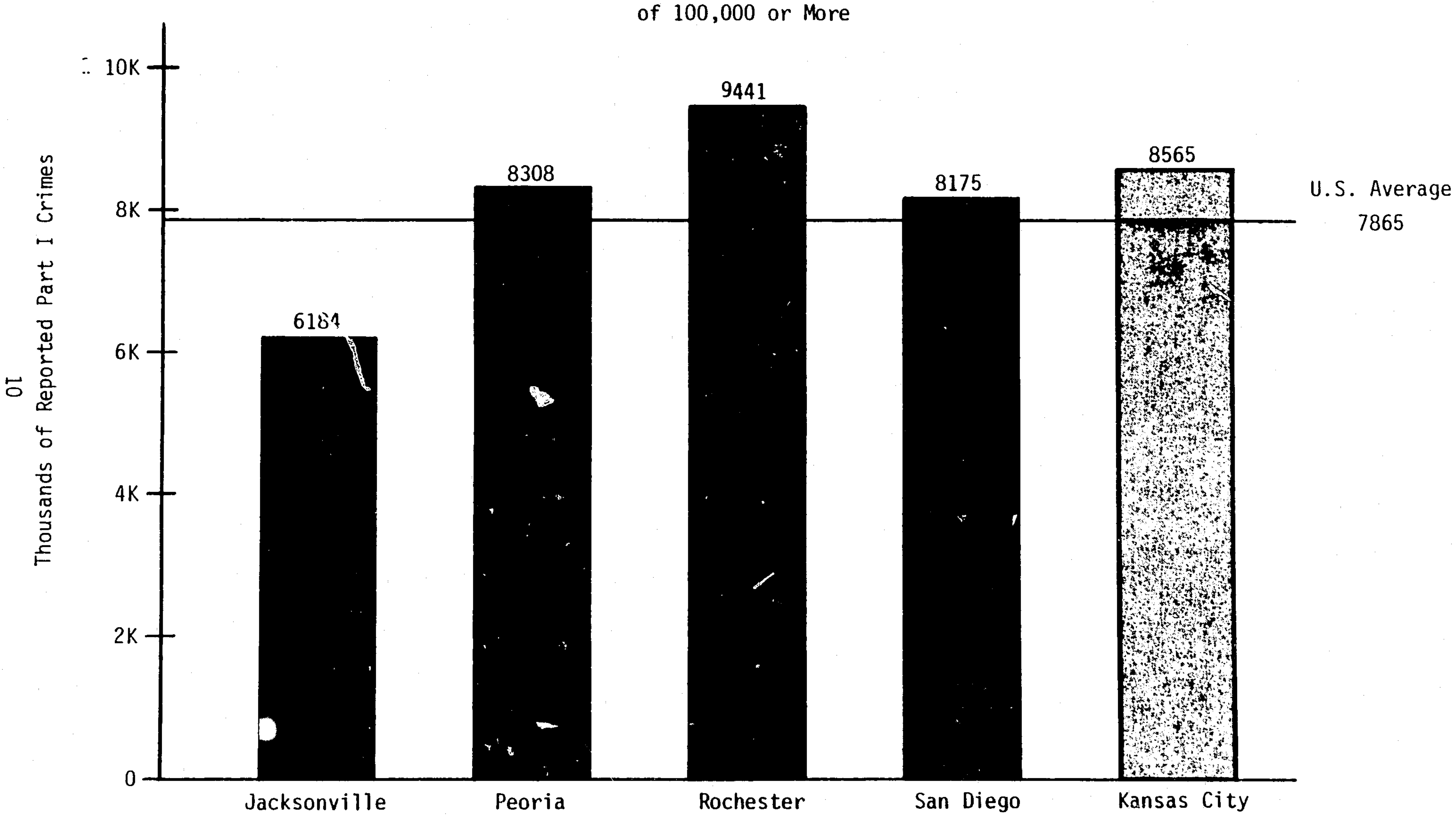
Part I Crimes in the Four Sites, Kansas City and U.S. Cities over 100,000

	Homicide	Rape	Robbery	Ag. Assault	Burlgary	Larceny	Auto Theft	Total
Rochester	32	76	1,196	328	7,616	14,900	1,910	26,058
per 100,000	(11.6)	(27.5)	(433.3)	(118.8)	(2759.4)	(5398.6)	(692.0)	(9441)
Peoria	7	68	375	935	2,727	6,106	499	10,717
per 100,000	(5.4)	(52.7)	(290.7)	(724.8)	(2114.0)	(4733.3)	(386.8)	(8308)
San Diego	103	233	2,271	1,555	15,848	36,397	6,217	62,624
per 100,000	(13.4)	(30.4)	(296.5)	(203.0)	(2068.9)	(4751.6)	(811.6)	(8175)
Jacksonville	90	279	1,558	2,516	11,117	22,747	1,890	40,197
per 100,000	(13.8)	(42.9)	(239.7)	(387.1)	(1710.3)	(3499.5)	(290.8)	(6184)
Kansas City	139	350	2,410	2,723	12,625	21,816	3,362	43,425
per 100,000	(27.4)	(69.0)	(475.3)	(537.1)	(2490.1)	(4303.0)	(663.1)	(8565)
U.S. Cities	(20.9)	(49.0)	(521.4)	(367.5)	(2272.5)	(3979.9)	(724.6)	(7865)

*Figures from FBI (1976)

Table A-1

Part I Crimes per 100,000 Population for
Four Site Cities, Kansas City, and U.S. Cities
of 100,000 or More



figures from F.B.I. (1976)

delay in reporting crime can be generalized to other jurisdictions. In order to address the research questions subsumed under that objective, it was necessary to study specific incidents of criminal activity having particular characteristics. The rationale and procedure employed in narrowing the focus of the study from the universe of all criminal incidents down to a manageable sample of those incidents having the desired characteristics are described below.

The Population of Interest

The total universe of events from which sampling was done is defined as those crimes included in the Kansas City Police Department's <u>Response Time Analysis</u>, that is, Part I crimes which occurred in the four study sites during the data collection period for this study; i.e., from April 21 through December 7, 1979. Rape, robbery, aggravated assault, larceny, burglary, and motor vehicle theft were included. Homicide was not, for two reasons: it does not happen often enough to guarantee a large sample, and the victim of a homicide is not available as a data source. At the time the study was initiated, arson was not classed as a Part I crime, and therefore not included in the study. Finally, although the crime of rape was selected for inclusion in the study, the San Diego Police Department asked that rape victims in that city not be interviewed, since this might interfere with an ongoing rape victim assistance program there. As a result, rape cases were only sampled in Jacksonville, Peoria and Rochester.

All crimes that are reported to the police by citizens are included. These include cases reported by:

- using a telephone;
- walking into a police station;
- activating a manually-operated, silent alarm.

Kansas City excluded cases where a citizen flagged a patrol car, since they were primarily interested in police response; to ensure comparability with the Response Time Analysis, we excluded these cases as well. Finally, crimes that are "discovered" by automatic alarm, and those discovered by police officers on duty would shed little light on citizen reporting activities, and were not included. The population of criminal incidents eligible for inclusion in the study, then, consisted of the six Part I crimes listed above, whenever they were reported by phone, walk-in, or manual alarm.

In order to determine the approximate size of this population of incidents to be encountered in 1979, projections were made for each month of the data collection period based on reported crime in a prior year (1977). These estimates were used as the basis for the sample design for the study.

It was neither necessary, nor particularly desirable to analyze all eligible incidents. A sampling plan was devised to reduce the data

base to manageable proportions, while ensuring that a large number of representative cases would be included.

Sample Stratification

The Response Time Analysis was the first published study of response time that distinguished between discovery crimes (crimes that are discovered after they have occurred and the suspect has left) and involvement crimes (cases in which a victim or witness saw or heard the crime as it was happening). In the Forum cities, between 70 and 85 percent of Part I crimes are discovery crimes; however, involvement crimes are by far the more interesting and important of the two in terms of citizen reporting and police response time. This is because discovery crimes almost never result in response-related arrests. Since no one has seen or heard the suspect commit these crimes, the suspect can only be immediately associated with the crime and arrested by the responding officer if, for example:

- the victim knows the name or address of the suspect;
- the suspect has injured himself in the course of committing the crime;
- some evidence at the scene links the suspect to the crime;
- the suspect turns himself in.

None of these conditions are very likely to begin with, and in none of them is rapid response likely to influence the chances of arrest. On the other hand, incidents in which someone hears or sees the crime in progress may be reported in progress or shortly thereafter. Here, rapid response can be very important. In addition, witnesses are available and injuries are only possible for involvement crimes. In order to get a sample of involvement crimes large enough to allow reliable conclusions, we stratified the eligible population of incidents into involvement and discovery crimes. Since Kansas City indicated that the effect of citizen reporting and police response on arrest may differ even within these strata, we substratified within the involvement stratum according to the six crime categories considered. Rape, robbery, and aggravated assault, and all crimes against persons, are included as involvement crimes; burglary, larceny, and motor vehicle thefts, and all property crimes, are classified as either involvement or discovery crimes depending on the circumstances of their occurrence. Discovery crimes were not stratified by crime type since no separate analyses were planned for the various categories of discovery crimes.

Even involvement crimes are unlikely to result in response-related arrests, however, as both this study and Kansas City demonstrate. In order to get a large enough sample of on-scene arrest cases, it was necessary to stratify by arrest/no-arrest as well. Both arrest and no-arrest cases were taken from all groups of involvement and discovery crimes. Table A-5 illustrates the sample stratification in its entirety.

Size Requirements

Based on the plan to replicate certain of the analyses reported in the Response Time Analysis, it was determined that the Kansas City

Table A-5

Sample Stratification

Incident Type	On-Scene Arrest	No On-Scene Arrest
Involvement Crimes		
Rape	Cell #1*	Cell #2*
Robbery	#3	#4
Aggravated Assault	#5	#6
Burglary	#7	#8
Larceny	9	10
Auto Theft	11	12
Discovery Crimes	13	14

*Rape cases were only included in Jacksomville, Peoria, and Rochester.

Police Department's sample size target of approximately 1,500 cases (per site) would be appropriate for the Forum's study as well. This total figure allowed for adequate cell frequencies for the analyses planned, given the stratification design. The sample size targets for each stratum and substratum are described in Table A-6.

Case Selection

Once target values had been established for the stratum and substratum sample sizes, procedures were developed for systematically achieving those targets. Because the sample sizes were based on cell frequencies required for particular analyses and were, therefore, independent of the number of people in a city, the same plan was applicable in all four site cities. This had the added convenience of allowing less troublesome management of the data collection efforts in four widely dispersed locations.

Sampling Calendar

The bridge between the sample design and the sampling procedures took the form of a sampling calendar. Two calendars were devised, one for San Diego which excludes the sampling of rape cases, and one for the other three cities which includes rape. These calendars specified the exact dates on which sample cases would be drawn from the eligible population at the four locations. Both are based on crime volumes taken from 1977

Table A-6

Sample Size Target for each Stratum

Incident Type	On-Scene Arrest	No On-Scene Arrest
Involvement Crimes	50*	50*
Rape	120	120
Robbery	120	120
Aggravated Assault	120	120
Burglary	120	120
Larceny	120	120
Auto Theft	120	120
Discovery Crimes Burglary, Larceny, and Auto Theft	100	100

*Rape figures apply to Jacksonville, Peoria and Rochester only.

statistics, under the assumption that the frequencies would be similar for 1979. Cases were selected every other day, so as to distribute this aspect of the workload of field research assistants. The calendar for Jacksonville, Peoria, and Rochester, with additional information for interpreting the calendar, appears in Table A-7.

Selection Procedure

The frame used for sample selection consisted of the actual crime reports for each day of the sampling calendar, categorized according to the 14 cells (12 in San Diego) of the sample design. Cases from cells not to be sampled on that day were put aside. Crime reports in cells to be sampled were numbered sequentially, and one case was randomly selected from each of these cells using a table of random numbers. On days when there were no eligible cases of a required type, one was selected from the previous (non-sampling) day. Quality control procedures were implemented to insure that all steps in the sampling process were taken as designed.

A pretest of the sampling procedures revealed that on-scene arrests were very infrequent in the smaller sites, Peoria and Rochester. To maintain large sample sizes the field research assistant in these sites took all on-scene arrest cases that occurred on a sampling day. Midway through data collection, it became clear that sampling targets for on-scene arrests would not be met in Jacksonville and San Diego, either, and this procedure was implemented in the other two sites on September 2, 1979. On

Table A-7

Sampling Calendar
Jacksonville, Peoria, and Rochester

April	May	July	August	September	October	November
22	27 x z	1	5 xyz	9	14 x	18
23 xyz	28	2 x z	6	10 xy	15	19 x z
24	29 xyz	3	7 x z	11	16 xyz	20
25 x z	30	4 xyz	8	12 x z	17	21 xyz
26	31 x z	5	9 xy	13	18 x z	22
27 xyz	1	6 x	10	14 xyz	19	23 x z
28	2 xyz	7	11 x z	15	20 xyz	24
29 x z	3	8 xy	12	16 x z	21	25 xyz
30	4 x	9	13 xyz	17	22 x z	26
1 xyz	5	10 x z	14	18 xyz	23	27 x z
2	6 xyz	11	15 x z	19	24 xyz	28
3 x	7	12 xyz	16	20 x z	25	29 xyz
4	8 x z	13	17 xyz	21	26 x z	30
5 xyz	9	14 x z	18	22 xyz	17	1 x
6	10 xyz	15	19 x z	23	28 xyz	2
7 x z	11	16 xyz	20	24 x z	29	3 xyz
8	12 x z	17	21 xyz	25	30 x	4
9 xyz	13	18 x z	22	26 xy	31	5 x z
10	14 xyz	19	23 x z	27	1 xyz	6
11 x z	15	20 xyz	24	28 x z	2	7 xyz
12	16 x z	21	25 xy	29	3 x z	8
13 xyz	17	22 x z	26	30 xyz	4	
14	18 xyz	23	27 x z	1	5 xyz	
15 x z	19	24 xy	28	2 x z	6	
16	20 x	25	29 xyz	3	7 x z	
17 xyz	21	26 x z	30	4 xyz	8	
18	22 xyz	27	31 x z	5	9 xyz	
19 x	23	28 xyz	1	6 x z	10	
20	24 x z	29	2 xyz	7	11 x z	
21 xyz	25	30 x z	3	8 xyz	12	
22	26 xyz	31	4 x z	9	13 xyz	
23 x z	27	1 xyz	5	10 x z	14	
24	28 x z	2	6 xyz	11	15 x	
25 xyz	29	3 x z	7	12 xy	16	
26	30 xyz	4	8 x z	13	17 xyz	

x = one case in cells 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

y = one case in cells 1 and 2

z = one case in cells 13 and 14

* The cell numbers are referred to those presented in Table 4a, Key to the Sampling Calendar with Rape Cases. 'y' is only applicable to Jacksonville; rape cases were sampled each sampling day for Peoria and Rochester.

the same day, all four field research assistants were instructed to include one extra "no on-scene arrest" case whenever there was no "on-scene arrest" case to be sampled. This ensured that the total sample size for each crime stratum would be large enough to give reliable results.

Appendix A-3
Data Collection

Data Sources

The individual crime report was the sampling unit for the study. Once the sample of incident reports had been selected, data were acquired from several sources concerning the selected incidents. These data sources included:

- the crime reports themselves;
- arrest reports;
- recorded police telephone communication tapes;
- dispatch records;
- interviews with people involved in the incidents.

How these sources were used is described below.

Crime Reports

Crime reports include all of the various reporting forms used in the study sites to record information about incidents of criminal activity.

Information acquired or derived from this source included:

- crime type (UCR category);
- whether the crime was an involvement or a discovery crime;
- date and time the incident occurred;
- date and time the incident was reported;
- number of victims involved;
- characteristics of the caller who reported the incident and the principal victim;
- whether an on-scene arrest was made, and whether it was response-related; and
- a seriousness score based on the Sellin-Wolfgang Seriousness Index.

Since the determination of response-related and non-response-related arrest was made from information in police records, it is bound to be incorrect in a few cases. All arrests were classified as response-related unless the crime report or arrest report made it clear that the arrest had been made due to: identification or apprehension of the suspect by a victim or witness; the suspect's immobilization by crime-related injury; the suspect's turning himself in to the responding officer; immediate identification of the suspect from evidence at the scene. Since information may not be included or adequately emphasized in the crime and arrest reports, it is likely that some non-response-related arrests are misclassified as response-related arrests.

Arrest Reports

Arrest reports were used solely for the purpose of verifying arrest-related data contained in the incident report for a particular incident. No new information was obtained from this source.

Communications Records

Three types of communications records were employed as data sources. Communication tapes, recordings of the caller-operator conversations which resulted in incident reports, were used to identify the caller and to verify the length of the call. The tapes were also used to eliminate calls for service initiated by automatic alarms, and on-duty police officers. The location of specific conversations on the tapes were found through use of the CADSI printouts or dispatch cards, which were also used to estimate police response time.

All information collected from crime reports, arrest reports, and communications records was recorded on a data coding sheet by the field research assistants. Data coding sheets for all cases sampled were sent to the Forum office after they were completed. A copy of the data coding sheets is included in Appendix G.

Interviews

The bulk of the data analysis presented in this report is based on responses to interview questions asked of persons involved in any of several roles in the crime incidents included in the sample. The specific roles of interest were as follows:

- Victim-Caller: a citizen who was the victim of crime and who reported the crime to the police.
- Witness-Caller: a citizen who was not a victim, but witnessed the incident and reported the crime to the police.
- Bystander-Caller: a citizen who was neither a victim nor a witness to the crime in question, but who reported the incident to police.
- Non-Caller Victim: a citizen who was the victim of a criminal incident, but who was not the person who reported the incident to the police.

The person who reported the crime was interviewed whenever he or she could be reached. Usually this was the victim. When it was not, the victim was interviewed as well, in order to study information-relaying patterns among roles and to provide a validity check on information obtained.

The interview questionnaire was based on the Kansas City Response Time Analysis questionnaire. After consultation with the Response Time Analysis staff, various modifications were made in order to avoid some problems encountered in the original study.

The major problem addresssed was that the Kansas City interviewers used four types of questionnaires, one for each type of respondent. A significant portion of callers in that study were found, after having completed large portions of an interview with one type of questionnaire, to actually be members of another class of respondent. Because the Forum study differed from the Kansas City study in that it did not rely on observers to identify the respondents, this misclassification of respondents was likely to occur more often. Therefore, the Forum questionnaire used a complex skip pattern in the question sequence to incorporate the four separate Kansas City instruments into a single questionnaire.

Because the present study was designed to replicate as closely as possible most aspects of the Kansas City Response Time Analysis, the Forum questionnaire content followed as closely as possible the relevant parts of the KCRTA questionnaire. Some questions on reporting time and patterns were changed for the sake of clarity, again based on problems reported by the Kansas City staff. In addition, many new questions were added with the objective of increasing our knowledge concerning citizen actions and problems. The result was a much longer and more complex questionnaire than the original, but one which met all the requirements of the study objectives while eliminating many of the problems that might otherwise have been anticipated. A copy of the questionnaire is included in Appendix G.

Data Collection Procedures

The questionnaire was designed to be used as a guide for either a telephone interview or a face-to-face ("personal") interview. Since the telephone interview was more cost-effective it was the primary data collection method. In certain cases, however, it was anticipated that telephone interviews would not be possible--where the respondent had no telephone or refused a telephone interview in favor of a personal interview, for instance. The personal interview was the second line of approach. Telephone interviews were conducted from Washington, D.C., while personal interviews were assigned to field research assistants and personal interviewers in each study location.

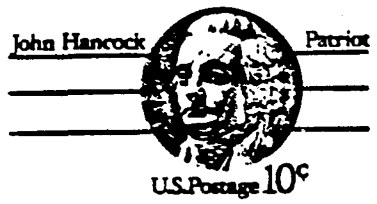
Telephone Interview Methods

Twice a week, each field research assistant telephoned the Forum's Washington office with information necessary to contact the victims, witnesses and bystanders included in the latest sampling. This information included the potential respondent's name, address, phone number, and role in the incident, the incident type, and any additional information which would help in scheduling an interview (for example, information from the incident reporting concerning times when it would be most convenient to contact the individual). At the same time, the field research assistant sent a post card (Figure A-2) to each potential respondent informing them of the impending contact. Respondents without telephones were assigned personal interviews at this time.

Figure A-2

Postcard

Police Executive Research Forum
1909 K Street, N.W., Suite 420
Washington, D.C. 20006



Mr. G. T. Ottoe
949 Wagenschlussel Avenue
San Diego, CA 92138

Dear Mr. Ottoe:

The Police Executive Research Forum is conducting a nation wide research study on how crimes are reported to the police.

In a few days, an interviewer will either call you from our Washington office, or visit you in person.

Your name was selected at random, and we would greatly appreciate your participation in this interview.

If you have any questions, you can call our local research assistant, Pat Cournoyer , at 466-7827

Sincerely,
Akiko Y. Swabb
Akiko Y. Swabb
Project Director
CORR Study

Because respondents were likely to forget relevant details of an incident unless contacted soon after the crime took place, an effort was made to complete all interviews within six weeks of the crime report. After six weeks, no attempt was made to complete an interview. In order to allow time for rescheduling a personal interview when necessary, an attempt was made to phone each respondent within 16 days of the crime report. This allowed for many callbacks and scheduling of personal interviews, while staying within the six week limit.

Each telephone interviewer and each field research assistant received training in the use of the questionnaire. Interviews were conducted under close supervision, with numerous quality control checks including verification callbacks by the interview supervisor, cross-validation of responses, and edit checks.

Personal Interview Methods

Data collection procedures for telephone and personal interviews were quite similar. Each field office maintained the same procedures for interview assignment. A potential respondent was slated for a personal interview in any of the following situations:

- no phone number was available for respondent;
- phone contact was not made within 16 days of the incident;
- the respondent requested a personal interview; or
- the respondent refused to be interviewed over the phone.

When no phone number was available, the initial contact with the respondent was attempted by the field research assistant or personal interviewer without prior notification, and based on information provided on the crime report indicating the best time for contact. After the first unsuccessful attempt, a letter requesting an appointment and including a return postcard was left at the respondent's home (Figure A-3). For respondents requesting an appointment, the field research assistant or a personal interviewer conducted the interview accordingly. Two additional attempts were made for all respondents who neglected to make an appointment. If the third attempt was unsuccessful, the case was labeled "inactive."

Appendix A-4
Quality Control Procedures

Quality control procedures were implemented at each major data collection and data transformation step having a potential impact on the analysis. The first quality control process ensured adherence to the sampling procedure. Next, the quality of coding from the incident reports was checked as well as the data collection from the communications records. Finally, the quality of interviews was maintained through several procedures. These various types of quality control are described below.

Sampling Quality Control

Sampling was checked by the individual in each police department designated as police liaison twice a month to insure compliance with

Figure A-3

Follow-Up Letter

1909 K STREET, N.W., SUITE 420
WASHINGTON, D.C. 20006

(202) 833-1399

POLICE EXECUTIVE
RESEARCH FORUM

GARY P. HAYES
EXECUTIVE DIRECTOR

31 April 1979

Ms. Wanda W. Callor
911 No. Snowplow Boulevard
Rochester, NY
14602

Dear Ms. Callor:

We have made several attempts to contact you recently in order to interview you as part of a study of how citizens report crimes to the police. This study is conducted by the Police Executive Research Forum, with the cooperation of

The study will provide information on the time it takes for a citizen to report a crime and the time it takes for the law enforcement agency to respond. The problems encountered by citizens during these time periods will be examined. In addition, people's attitudes about the law enforcement agency and their suggestions concerning it will be sought.

The information you can give us will be extremely useful for making it easier for people to call the police and for helping the police respond to calls. Your answers represent not only yourself but also hundreds of other persons like yourself. All information you give us will be held in the strictest confidence.

Please contact our interviewer Margaret Szott at 466-7820 to arrange for an appointment. If you have no telephone please fill in the information as to the best time and place to contact you in the spaces below. Clip this section of the page and mail it to us in the enclosed envelope. I sincerely hope that you will participate in this study.

Best regards,

Akiko Y. Swabb
Project Director
CORR STUDY

- -

NAME____________________
I can be reached at______________________________
(Address)
or by calling____________________ at______________ AM PM
(Telephone Number) (Time)

established procedures. The liaison randomly sampled the cases to be checked, and the sample procedure and sample stratification were examined. If a mistake was found, the liaison immediately called it to the attention of the field research assistant, and the correct procedure was explained. The liaison recorded findings in a report sent to the Forum office every month. After the first month, errors were very infrequent. Invariably they involved confusion of legal definitions peculiar to the site, or inaccuracies in the use of the random number table.

Quality Control of Data Collection from Police Records

The accuracy of data coding from the incident reports was checked by Washington staff. This occurred twice a month, when the data coding sheets and the incident reports arrived from the sites. Whenever a mistake was discovered, the field research assistant was informed by telephone and counseled. The accuracy of data coding from CADSI printout or dispatch cards and communication tapes was examined during the site trip, at the middle of the data collection phase. Again, errors were infrequent. The only problem to happen regularly was failure to prepare or provide a data coding sheet, a fault which was remedied quite easily.

Quality Control of Interviewing

The interview supervisor monitored the first and four other contacts by telephone interviewers with respondents. If these were found to

be satisfactory, approximately every twentieth subsequent interview was monitored by the supervisor for the next three weeks. If these were found to be satisfactory, monitoring was continued at the rate of about every fortieth interview. This produced a monitoring rate of three to five percent of the sample. When the supervisor identified consistent problems, counseling was used to assist the interviewer in understanding the cause of the problem; the results were presented to the interviewer on a monitoring report form.

The information recorded for the first ten interviews completed by each telephone interviewer, personal interviewer or field research assistant was checked for completeness and internal consistency by the interview supervisor. The results of this editing process were recorded in the interview log, the interview performance log, and on the assignment card for the case involved. Interviewers continued to be edited until a group of five completed consecutive interviews reached a satisfactory error rating. Each interviewer's work was reviewed after the second week. If judged satisfactory, a monthly work review was scheduled.

After a questionnaire was edited, it was filed with the data coding sheet and any other questionnaire corresponding to that case. Five percent of the telephone and one percent of the personal interviews were selected for re-interview. If the case had already been monitored, the case immediately preceding it on the interview log was used. The re-interview questionnaire contained selected items from the original interview questionnaire contained selected items from the original interview schedule. The interview supervisor or assistant supervisor phoned the respondent and asked these items to test the accuracy of information obtained in the original interview. At this point, differences between the original interview and re-interview were reconciled and explanations given by the respondent were recorded. Remarks from the original interviewer necessary to clarify the differences were also recorded on these forms.

Appendix A-5
Implementation of the Design

Pretest of Interview Procedures

The first pretest was conducted in Alexandria, Virginia, to test the wording and structure of a draft questionnaire to be used in a further pretest at the four study sites. Although the sample of 12 recent victims was non-random and small, it was sufficient to indicate the need for changes in the structure of the questionnaire. Skip patterns in the questionnaire structure were changed to reflect the findings.

The restructured questionnaire was reviewed and approved by participating police departments before site pretesting began. An on-site pretest phase was then implemented which lasted four weeks. The primary purpose for this pretest was to ensure that the sampling, data collection, and quality control methods were practical. They were, and as a result, a formalized sampling procedure was developed along with an interviewing manual, a data

collection manual, and a slightly reworked questionnaire and data coding sheet. A week-long trial usage period followed before the data collection phase began.

Observation

While the pretest analysis and the revision of data collection instruments were underway, the field research assistants conducted a three week ride-along observation to become acquainted with dispatch and patrol procedures in their sites.

Each field research assistant had a program to guide his or her observations while riding with the police. Program items included: time between dispatch and response by officer, for both one- and two-officer cars; the impact of calls in which officers other than those assigned arrive on the scene first; estimates of response time; estimates of travel distance; accuracy of police notification of arrival to the dispatcher; elasped time from officer exit from car to contact of caller; and any other significant occurrences relating to the study. In this manner, the field research assistant became more acquainted with the department's procedures, and identified possible difficulties with the data interpretation which might result from factors not previously considered.

Implementation

As a result of this pretesting and orientation phase, the data collection materials and procedures were deemed to be more than adequate to the data collection task. Sampling began on April 21, 1979, and ended eight months later, on December 7. The last interviews were completed by January 15, 1980.

Appendix A-6
Validity

Although the sampling and data collection procedures were designed to avoid potential sources of bias, the best procedures were sometimes conflicting, too costly, or too difficult to administer. For example, had we sampled Part I crimes in each city randomly, giving each case an exactly equal probability of inclusion, it would have been impossible to interview all respondents within six weeks of the crime, and the sample size would have had to be greatly increased to ensure a large number of involvement and on-scene arrest cases. Personal and phone interviewers may obtain different kinds of responses from the people interviewed, particularly to questions of attitude and opinion; however, hiring many personal interviewers in each site would have been costly and very difficult to administer. Thus some concessions to cost and ease of administration have been made in the research design. These concessions might have influenced the results obtained, and in this section we examine the extent and effect of these on the results. One of the possible biases stems from the sampling method used; the others are potential problems with the interview procedures and the questionnaire. Another validity question, the validity of citizen time estimates, is considered separately in Appendix B.

Sampling: Day of the Week

Because of the sampling method used, we might have chosen a biased sample of cases. The problem was this: cases were randomly selected from all those reported on a "sampling day," which was every other day throughout the data collection period. In addition, we stratified by crime category (robbery, assault, and so on), by crime type (involvement or discovery), and by outcome (on-scene arrest, no on-scene arrest). Cases fitting some of the categories occurred very infrequently--there were few involving auto thefts resulting in arrests, for example--and no case fit the requirements for some categories on some sampling days. When this happened, the field research assistants looked at crime reports from the previous day to see if any of these fit the requirements, and randomly sampled one of those that did. Because of this previous-day sampling procedure, we would expect more Saturdays and other high crime days in our sample for rare crime types.

For crimes that occurred more often, on the other hand, a case was usually available every sampling day. This means that our sample will include roughly equal numbers of cases for each day of the week, even though they are more likely to be reported on some days than others. If the day of the week the crime was reported is related to what the respondents did before calling or how they feel about police, the sample will be biased, and the cases must be reweighted to account for it.

The relationship of day of the week to actions and attitudes of the respondent is shown in Table A-8. The statistic shown, the square root of the uncertainty coefficient, is roughly equivalent in size and meaning to a correlation coefficient, but is appropriate for unranked, categorical data (see Nie, et al., 1976). Only four of the 64 relationships tested are significant, and no relationship is significant in more than one site. In addition, none of the coefficients are particularly large. Accordingly, we conclude that the implicit stratification by day of the week is not liable to affect our results much, if at all.

Interview Completion

Even if a simple random sampling procedure were used--one that gives every victim and witness an equal chance of selection--it is possible that questionnaires will not be completed at random. This could be because some people are more difficult for interviewers to contact: they work at night, they are often out of town, or they have changed address. Also, some people refuse to answer questions; for this study, about five percent of potential respondents refused. As shown in Table A-9, we were unable to interview about 20 percent of victims, witnesses, and callers in each site. If this 20 percent had consistently similar attitudes, or were involved in the same kinds of crime, the sample of completed questionnaires--and our results--would be biased.

Table A-8

Size of Significant Relationships Between Day of the Week Crime Was Reported and Respondent's Actions and Attitudes

Relationship between Day of Week and:	JACKSONVILLE	PEORIA	ROCHESTER	SAN DIEGO
Respondents past-incident actions				
Talked	.05	.10	.04	.08
Phoned	.17	.15	.18*	.09
Chased Suspect	.09	.12	.14	.17
Caught Suspect	.14	.26	.18	.10
Investigated	.09	.08	.15*	.08
Injured	.13	.27	.22	.25
Left Scene	.10	.11	.04	.06
Waited	.07	.08	.11	.08
Process of Reporting				
Phone Used	.12*	.11	.13	.13
Number Used	.10	.17	.10	.13
How Number Known	.14	.21	.20	.17
Satisfaction with Police Service				
Last Contact	.13	.16	.17*	.13
Call Handling	.12	.18	.16	.13
Response Time	.11	.16	.1	.12
On-scene Handling	.08	.16	.16*	.13
Overall	.08	.14	.12	.10
Number of Cases	1298	707	884	1193

Figures shown are square roots of uncertainty coefficients. Only figures significant at the .05 level are shown.

Table A-9

Case and Interview Completion Rates

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Cases Sampled	1,266	770	934	1,156	4,126
Terminated as inappropriate	2	0	0	4	6
Cases with completed questionnaires	1,055 (83.5)	599 (77.8)	741 (79.3)	937 (81.3)	3,332 (80.9)
Cases without completed questionnaires	209 (16.5)	171 (22.2)	193 (20.7)	215 (18.7)	788 (19.1)
Interviews Attempted	1,713	930	1,173	1,595	5,411
Terminated as inappropriate	47	33	43	56	179
Interviews completed	1,303 (78.2)	710 (79.2)	886 (78.4)	1,196 (77.7)	4,095 (78.3)
No interview completed	363 (21.8)	187 (20.8)	244 (21.6)	343 (22.3)	1,137 (21.7)
Incomplete or refusal	69 (4.1)	70 (7.8)	53 (4.7)	51 (3.3)	243 (4.6)
Unable to locate respondent	52 (3.1)	42 (4.7)	59 (5.2)	52 (3.4)	205 (3.9)
Expired before respondent could be contacted	241 (14.5)	74 (8.2)	128 (11.3)	233 (15.1)	676 (12.9)
Other reason	1 (0.1)	1 (0.1)	4 (0.4)	7 (0.5)	13 (0.2)

To check this, we compared crime reports and dispatch records of all cases sampled with those in which at least one questionnaire was complete. The characteristics examined were:

- crime category, and whether it was involvement or discovery;
- seriousness of the crime;
- whether an arrest was made on the scene;
- on what day of the week the crime was reported;
- race, sex, and age of both the victim and the caller.

Z-tests (for ages and seriousness) and one-sample X^2 tests were used to determine whether cases with complete questionnaires were different from all cases samples. Only three differences were significant at the .05 level: In Jacksonville, questionnaires were completed for slightly more serious crimes, and for cases involving slightly older victims; in Rochester, we interviewed people involved in slightly less serious crimes. None of the differences were very large, as shown in Tables A-10 and A-11.

Interview Delay

Although each potential respondent was interviewed as quickly as possible after the incident, some people were more difficult to contact than others. In some cases, as much as six weeks went by before the interview took place. Thus people may have forgotten some details of the case (particularly time estimates and police actions), and may have changed their attitudes toward police service. To guard against this bias, we

Table A-9

Case and Interview Completion Rates

	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
Cases Sampled	1,266		770		934		1,156		4,126	
Terminated as inappropriate	2		0		0		4		6	
Cases with completed questionnaires	1,055	(83.5)	599	(77.8)	741	(79.3)	937	(81.3)	3,332	(80.9)
Cases without completed questionnaires	209	(16.5)	171	(22.2)	193	(20.7)	215	(18.7)	788	(19.1)
Interviews Attempted	1,713		930		1,173		1,595		5,411	
Terminated as inappropriate	47		33		43		56		179	
Interviews completed	1,303	(78.2)	710	(79.2)	886	(78.4)	1,196	(77.7)	4,095	(78.3)
No interview completed	363	(21.8)	187	(20.8)	244	(21.6)	343	(22.3)	1,137	(21.7)
Incomplete or refusal	69	(4.1)	70	(7.8)	53	(4.7)	51	(3.3)	243	(4.6)
Unable to locate respondent	52	(3.1)	42	(4.7)	59	(5.2)	52	(3.4)	205	(3.9)
Expired before respondent could be contacted	241	(14.5)	74	(8.2)	128	(11.3)	233	(15.1)	676	(12.9)
Other reason	1	(0.1)	1	(0.1)	4	(0.4)	7	(0.5)	13	(0.2)

Table A-10

Interview Selection Validity
Differences Between All Cases Sampled and Cases with Completed Questionnaires

	Jacksonville	Peoria	Rochester	San Diego
UCR Category	7.973 (p< .20)	1.560 (p< .95)	3.429 (p< .70)	1.251 (p< .90)
Involvement	.053 (p< .90)	1.336 (p< .30)	.763 (p< .50)	.023 (p< .90)
Arrest	.064 (p< .80)	.005 (p< .98)	.106 (p< .80)	.170 (p< .70)
Day of Week Crime Reported	.883 (p< .98)	.630 (p< .99)	.985 (p< .99)	.678 (p< .99)
V's Race	.710 (p< .50)	.307 (p< .70)	.314 (p< .90)	.298 (p< .98)
V's Sex	.138 (p< .80)	.012 (p< .95)	.132 (p< .80)	1.018 (p< .50)
C's Race	.275 (p< .70)	.036 (p< .90)	.023 (p< .99)	.133 (p< .99)
C's	.057 (p< .90)	.116 (p< .80)	.003 (p< .98)	.592 (p< .50)
Number of Cases Sampled	1265	770	929	1132
Number of Cases with Completed Questionnaires	1056	590	743	933

Figures are one-sample X^2 statistics. Significance level is shown in parentheses. No X^2 are significant at the .10 level or less.

Table A-11

Differences in Seriousness of All Cases Sampled and Cases with Completed Questionnaires

	Jacksonville	Peoria	Rochester	San Diego
<u>Property Seriousness</u>				
Mean--all cases	2.666	2.949	2.496	2.858
Mean--completed	2.713	2.972	2.516	2.861
z of difference	.598	.263	.317	.035
<u>Injury Seriousness</u>				
Mean--all cases	0.895	.616	0.857	0.593
Mean--completed	0.778	.627	0.737	0.551
z of difference	-1.504	.111	-1.501	-.600
<u>Intimidation Seriousness</u>				
Mean--all cases	2.226	1.534	1.642	1.465
Mean--completed	1.956	1.520	1.402	1.407
z of difference	<u>-2.010</u>	-.093	<u>-2.057</u>	-.603

tested the relationship of actions and attitudes to interview delay times. The only consistent relationships were for the respondent's method of contacting the police. The delays were longer for citizens who used a pay phone or someone else's phone, and for citizens who dialed the crime alert number or "911."

Interview delay probably does not cause these differences, rather it seems more likely that the interviews were delayed because people who call from pay phones and other people's phone, and who dial emergency numbers, are harder to contact than others. The etas, shown in Table A-12, are very small, indicating that the effect is not very important. (The distribution of interview delay times is shown in Figure A-5 in the next section of this appendix.)

Phone and Personal Interviews

Another closely-related problem comes from the fact that, while most respondents were interviewed over the phone, the most difficult-to-reach respondents were interviewed in person. People may be willing to divulge personal information, such as income and marital status, or unfavorable attitudes toward the police, to personal interviewers. It also seemed likely that hard-to-reach, personally interviewed respondents would have different social characteristics from those interviewed by phone. The size of these differences is given in Tables A-13 and A-14.

Table A-12

Size and Significance of Relationships Between Time Lag and Responden't Actions and Attitudes

Relationship between time lag and:	Jacksonville	Peoria	Rochester	San Diego
Talked	.03	.00	.01	.01
Phoned	.04	.06	.01	.01
Chased Suspect	.03	.02	.03	.01
Caught Suspect	.02	.01	.04	.02
Investigated	.05	.07	.03	.04
Injured	.04	.03	.01	.03
Left Scene	.06*	.01	.04	.03
Waited	.05	.01	.05	.06
Reporting Process				
Phoned Used	.14	.20	.13*	.04
Number Used	.24	.15*	.09	.09
How Number Known	.12	.05	.07	.17*
Satisfaction with Police Service				
Last Contact	.07	.12	.09	.16*
Call Handling	.08	.12	.05	.08
Response Time	.07	.06	.07	.06
On Scene Handing	.05	.04	.04	.13*
Overall	.11*	.07	.07	.11*
Number of Cases				

Figures shown are etas. *Eta significant at the .05 level.

Table A-13

Completion of Interviews by Type and Size

	Jacksonville		Peoria		Rochester		San Diego		Total	
	Phone	Personal	Phone	Personal	Phone	Personal	Phone	Personal	Phone	Personal
Interview Status										
Complete	1058	152	581	70	748	75	1073	29	3459	326
No Social Characteristics	48	0	30	0	27	0	45	0	150	0
Incomplete	45	0	28	1	36	0	46	1	155	2
Total	1151	152	639	71	811	75	1163	30	3764	328
		11.7%	90.0%	10.0%	91.5%	8.5%	97.5%	2.5%	92.0%	8.0%

Table A-14

Size of Significant Relationships Between Type of Interview and Respondent's Actions, Attitudes, and Characteristics

	Jacksonville	Peoria	Rochester	San Diego
Respondent's social characteristics				
Residence in Site City	.04	.12	.15*	.04
Own, Rent or Board	.12*	.15*	.10*	.06
Hometown Pop'n	.10*	.13*	.10*	.03
Years of Schooling	.08*	.10*	.08	.07
Labor Force Part'n	.11*	.09*	.12*	.05
Marital Status	.04	.11*	.09*	.05
Head of Household	.09*	.08*	.03	.02
Sex	.02	.03	.00	.01
Race	.15*	.11*	.05	.05
Income	.15*	.14*	.13*	.10*
Respondent's Post-Incident Actions				
Talked	.12*	.07*	.09*	.03
Phoned	.03	.11	.01	.08
Chased Suspect	.01	.07	.05	.01
Caught Suspect	.07	.03	.00	.02
Investigated	.02	.05	.02	.02
Injured	.33*	.25*	.11	.28*
Left Scene	.16*	.11*	.01	.04
Waited	.11*	.00	.03	.03
Process of Reporting				
Phone Used	.16*	.22*	.12*	.03
Number Used	.24*	.11*	.15*	.02
How Number Known	.05	.08	.05	.10
Satisfaction with Police Service				
Last Contact	.08*	.06	.05	.06
Call Handling	.05	.07	.07	.04
Response Time	.10*	.07	.05	.06
On Scene Handling	.13*	.04	.08	[illegible]
Overall	.13*	.05	.07*	.00

Figures shown are square roots of uncertainty coefficients.
*Significant at .05 level.

Personal interviewers were more likely to complete interviews (and include social characteristics) than phone interviewers. This may explain why most of the significant differences between interview types are differences of social characteristics. Personally-interviewed respondents appear to be poorer, less educated, and more likely to rent, and be black than phone respondents did. And a personal interview was more often required for people who used a pay phone or someone else's phone and who dialed the crime alert number; these were the long-delayed interviews mentioned above, and these respondents were harder to reach than others.

If personal and phone interviewers get about the same information regarding citizen actions and opinions, these results would probably be obtained anyway. Some bias might be apparent if people interviewed personally were consistently more or less satisfied with police service, or responded that they took different actions before calling the police than other people. This did not occur, however. Thus the only significant differences do not appear to affect the study conclusions.

Respondent's Role in the Incident

In about 20 percent of the crimes sampled, interviews were attempted with two of the people involved: a victim and a witness-caller, or a victim and a bystander-caller. For some of these cases, we were only able to interview one of these people. If victims remember different things about an incident than witnesses or callers, we may get incomplete

or wrong information about these incidents. For example, a victim may not mention asking a bystander to call the police. The bystander would probably mention it, however, since it is the reason for his involvement in the crime. On the other hand, one would expect people in different roles to take somewhat different actions after the crime has occurred. Both actions and attitudes were examined to see if the role of the respondent made a difference in any unexpected ways.

The differences, shown in Table A-15, are about what one would expect. Victims are more likely to chase and catch suspects, leave the scene of the crime, and take no action before reporting than are witnesses or bystanders. Only victims are injured. When the police are notified by a non-witness caller, the caller is typically using a home or business phone; crimes with witnesses are more likely to occur in public places, and thus witness-callers are more likely to use a pay phone or someone else's phone. Both witness-callers and non-witness callers are more likely to use a crime alert number or "911," perhaps because they are calling on behalf of other people and concerned with rapid police response in what are overwhelmingly involvement crimes. There were no consistent differences in satisfaction with police service between respondents with different roles.

Police Information and Citizen Information

Previous studies have suggested that, for some kinds of information, police records are more accurate than citizens' recollections, and for other kinds, citizens are more accurate. Aceituno and Matchett (1973) consider this

Table A-15

Size of Significant Relationships Between Respondent's Role in Incident and Respondent's Actions and Attitudes

Relationship between Respondent's role and:	JACKSONVILLE	PEORIA	ROCHESTER	SAN DIEGO
Respondents past-incident actions				
Talked	.05	.06	.09*	.06
Phoned	.11	.18	.11	.16*
Chased Suspect	.17*	.08	.10	.14*
Caught Suspect	.10	.08	.17	.15*
Investigated	.07	.04	.09	.05
Injured	.50*	.19	.37*	.46*
Left Scene	.23	.16*	.26 *	.20*
Waited	.24*	.15*	.12	.13*
Process of Reporting				
Phone Used	.12*	.12	.06	.14*
Number Used	.10*	.12	.13*	.15*
How Number Known	.11	.12	.13	.14
Satisfaction with Police Service				
Last Contact	.08	.12	.09	.12*
Call Handling	.11	.09	.12	.09
Response Time	.08	.12	.13	.09
On-scene Handling	.08	.10	.09	.08
Overall	.10 *	.07	.09	.08

Figures shown are square roots of uncertainty coefficients. Only figures significant at the .05 level are shown.

question and conclude that, for most items, the two sources are equally valid. If there are differences between crime reports and interviews in many cases, however, there would be reason to doubt both sources of information. The proportion of interviews resulting in different answers to the same questions is shown in Table A-16. The differences in the race and sex of the victim and caller average about five percent for each site, primarily because these cases had multiple victims, and the identity of the caller--while extremely important to our study--was much less important to the police. Information from the two sources on the number of victims reveals an interesting phenomenon: for many crimes (burglaries and auto thefts, for example), the number is ambiguous and unimportant to the police, and the crime reports and interviews differ frequently. For a number which is important and unambiguous, however--the number of rape victims--the crime reports and interviews are exactly the same.

Appendix A-7
Selected Frequencies

Throughout the test we examined the relationship between output variables such as citizen reporting time, and input variables such as locat of the crime and the citizen's yearly income. These input variables can be divided into three types:

- Situation characteristics include crime type, location of the crime, and whether someone was involved in the crime while it was happening, or it was discovered later.
- Relationship of the respondent to the crime includes the respondent's role in the incident (as a victim, witness, uninvolved bystander), his relationship to the suspect, and whether he was physically threatened by the suspect.

Table A-16
Comparison of Crime Report and Questionnaire Information

	Jacksonville	Peoria	Rochester	San Diego
Victim's Race	3.1%	4.9%	4.6%	5.3%
Victim's Sex	5.2	4.8	6.4	6.9
Victim's Age	39.0	32.3	33.2	55.8
Caller's Race	5.0	7.4	4.3	4.2
Caller's Sex	7.4	8.7	6.8	5.8
Caller's Age	17.7	60.8	18.4	71.9
Number of Victims	29.3	25.4	26.0	29.9
Number of Rape Victims	0.0	0.0	0.0	-
Number of Cases	1303	710	886	1193

Figures are percent of cases in which Crime Report and Questionnaire are different.

- Characteristics of the respondent include place of residence, yearly income, occupational status, sex, race, age, and so on.

Without exception, we found that characteristics of the situation and the respondent's relationship to the situation were by far the most important indicators of what the citizen did, what problems he had, and how long it took to report the crime. Frequencies and descriptive statistics for these variables for each site are presented in Tables A-17 through A-24. Since respondent characteristics have frequently been found to be important indicators in studies that did not explore other variables thoroughly, frequencies and descriptive statistics for these characteristics for each site are presented in Tables A-25 through A-27. Finally Figure A-4 shows the cumulative distribution of interview delay times in days.

Table A-17

Frequencies and Descriptive Statistics for Respondent's Role, Interview Type, and Interview Delay

ITEM	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Respondent's Role										
Victim	373	28.6	220	31.0	331	37.4	361	30.2	1285	31.4
Victim-Caller	592	45.4	365	51.4	378	42.7	522	43.6	1857	45.3
Witness-Caller	144	11.1	53	7.5	70	7.9	153	12.8	420	10.3
Caller	190	14.6	72	10.1	103	11.6	156	13.1	521	12.7
Missing	4	0.3	0	0.0	4	0.5	4	0.3	12	0.3
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0
Interview Type										
Telephone	1148	88.1	637	89.7	810	91.4	1160	97.0	3755	91.7
Personal	153	11.7	71	10.0	75	8.5	30	2.5	329	8.0
Missing	2	0.2	2	0.3	1	0.1	6	0.5	11	0.3
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0
Interview Delay (days)										
Mean		13.01		16.04		12.31		17.58		14.69
Median		10.17		8.54		10.78		11.71		10.60

Table A-18
Frequency of Questionnaires by Crime Type

ITEM	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Discovery crimes	157	12.0	100	14.1	143	16.1	189	15.8	589	14.4
Burglary										
Larceny										
Auto Theft										
Involvement crimes	1146	88.0	610	86.0	743	83.9	1007	84.2	3506	85.6
Aggravated assault	289	22.2	132	18.6	185	20.9	232	19.4	838	20.5
Robbery	183	14.0	109	15.4	141	15.9	193	16.1	626	15.3
Burglary	291	22.3	148	20.8	205	231	275	23.0	919	22.4
Larceny	252	19.3	155	21.8	168	19.0	215	18.0	790	19.3
Auto Theft	77	5.9	20	2.8	6	0.7	92	7.7	195	4.8
Rape	54	4.1	46	6.5	38	4.3	0	0.0	138	3.4
TOTAL	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0

Table A-19
Frequency of Different Crime Locations

ITEM	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
Location of Crime	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
At Home	520	39.9	296	41.7	383	43.2	509	42.6	1708	41.7
At Work	355	27.2	182	25.6	164	18.5	291	24.3	992	24.2
Somewhere else										
Sidewalk, Street or Alley	136	10.4	80	11.3	148	16.7	140	11.7	504	12.3
Inside/Outside Private Residence	140	10.7	69	9.7	83	9.4	105	8.8	397	9.7
Inside a Store or Office	57	4.4	36	5.1	46	5.2	38	3.2	177	4.3
Parking Lot/Garage	41	3.1	27	3.8	33	3.7	53	4.1	154	3.8
Other	40	3.1	14	2.0	21	2.9	50	4.2	125	3.1
Don't know	5	0.4	1	0.1	3	0.3	6	0.5	15	0.4
Refused	4	0.3	0	0.0	2	0.2	0	0.0	6	0.1
Missing	5	0.4	5	0.7	3	0.3	4	0.3	17	0.4
TOTAL	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0

Table A-20

Frequency of Suspect Information

ITEM	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
56. Did you see who committed the crime?										
No	90	6.9	77	10.8	83	9.4	114	9.6	364	8.9
Yes	710	54.5	364	51.3	453	51.1	607	50.7	2134	52.1
Ineligible	503	38.6	269	37.9	350	39.5	475	39.7	1597	39.0
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0
57. Would you be able to recognize him/her/them if you saw him/her/them again?										
No	118	9.1	84	11.8	91	10.3	129	1.8	422	10.3
Yes	562	43.1	259	36.5	326	36.8	432	36.1	1579	38.6
Don't know	30	2.3	21	3.0	34	3.8	46	3.8	131	3.2
Refused	0	0.0	0	0.0	2	0.2	0	0.0	2	0.0
Ineligible	593	45.5	346	48.7	433	48.9	589	49.3	1961	47.9
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0
58. Do you know the name(s) of (any of the person(s) who commited the crime?										
No	302	23.2	129	18.2	179	20.2	321	26.8	931	22.7
Yes	289	22.2	151	21.3	181	20.4	156	13.1	777	19.0
Refused	1	0.1	0	0.0	2	0.2	1	0.1	4	0.1
Ineligible	711	54.5	430	60.5	524	59.2	718	60.0	2383	58.2
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0

Table A-21

Relationship of the Suspect to the Respondent

ITEM	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
59. What is the relationship of the suspect to you?										
Spouse	28	2.1	11	1.5	9	1.0	12	1.0	60	1.5
Other relative	27	2.1	14	2.0	13	1.5	9	0.7	63	1.5
Friend	66	5.0	41	5.8	40	4.5	27	2.2	174	4.2
Acquaintance/neighbor	96	7.4	48	6.8	63	7.1	51	4.3	258	6.3
Business associate	8	0.6	4	0.6	3	0.3	8	0.7	23	0.6
Apartment manager or guard/tenant	1	0.1	0	0.0	4	0.5	1	0.1	6	0.2
Salesperson or security guard/customer	10	0.8	5	0.7	2	0.2	6	0.5	23	0.6
Stranger	345	26.5	156	22.0	218	24.6	350	29.3	1069	26.1
Other	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Don't know	3	0.2	3	0.4	0	0.0	0	0.0	6	0.1
Refused	0	0.0	1	0.1	4	0.5	3	0.2	8	0.2
Ineligible (Stranger)	719	55.2	427	60.1	530	59.8	729	61.0	2405	58.7
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0
60. Are you and the suspect members of the same household?										
No	81	6.2	52	7.3	46	5.2	37	3.1	216	5.3
Yes	38	2.9	14	2.0	12	1.3	10	0.8	74	1.8
Don't know	2	0.2	0	0.0	0	0.0	0	0.0	2	0.1
Refused	0	0.0	0	0.0	4	0.5	1	0.1	5	0.1
Ineligible	1182	90.7	644	90.7	824	93.0	1148	96.0	3798	92.7
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0

Table A-22

Frequency of Physical Threats

ITEM	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
63. Were you threatened either physically or verbally?										
No	328	25.2	150	21.1	186	21.0	299	25.0	963	23.5
Yes	368	28.2	204	28.7	265	28.8	290	24.2	1117	27.3
Don't know	2	0.2	2	0.3	1	0.1	0	0.0	5	0.1
Ineligible	605	46.4	354	49.9	444	50.1	607	50.8	2010	49.1
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0

Table A-23

Frequency of Arrests

ITEM	Jacksonville		Peoria		Rochester		San Diego		Aggregate	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
71. Was the person who may have committed the crime still at the scene when the police arrived?										
No	447	34.3	269	37.9	354	40.0	421	35.2	1491	36.4
Yes	163	12.5	57	8.0	65	7.3	135	11.3	420	10.3
Don't know	25	1.9	10	1.4	9	1.0	17	1.4	61	1.5
Refused	2	0.2	0	0.0	0	0.0	0	0.0	2	0.0
Missing	4	0.3	2	0.3	5	0.6	3	0.3	14	0.3
Ineligible	662	50.8	372	52.4	453	51.1	620	51.8	2107	51.5
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0
72. Did the police arrest anyone <u>on</u> or <u>near</u> the scene?										
No	721	55.3	552	77.7	688	77.7	710	59.3	2671	65.2
Yes	509	39.1	138	19.4	159	17.9	428	35.8	1234	30.1
Don't know	72	5.5	16	2.3	34	3.8	56	4.7	178	4.4
Missing	1	0.1	4	0.6	5	0.6	2	0.2	12	0.3
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0

Table A-24

Frequency of Physical Injuries

ITEM	Jacksonville Number	Jacksonville Percent	Peoria Number	Peoria Percent	Rochester Number	Rochester Percent	San Diego Number	San Diego Percent	Aggregate Number	Aggregate Percent
183. Did the officer give first aid to you or someone else?										
No	256	80.8	118	86.1	213	87.7	194	77.6	781	82.5
Yes	43	13.5	12	8.8	17	7.0	38	15.2	110	11.6
Don't know	12	3.8	3	2.2	10	4.1	15	6.0	40	4.2
Missing	6	1.9	4	2.9	3	1.2	3	1.2	16	1.7
Ineligible	986	(75.7)	573	(80.7)	643	(72.6)	946	(79.1)	3148	(76.9)
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0
184. Was an ambulance called to the scene?										
No	240	75.7	103	75.2	177	72.9	177	70.8	697	73.6
Yes	70	22.1	26	19.0	61	25.1	60	24.0	217	22.9
Don't know	2	0.6	5	3.6	2	0.8	9	3.6	18	1.9
Missing	5	1.6	3	2.2	3	1.2	4	1.6	15	1.6
Ineligible	986	(75.7)	573	(80.7)	643	(72.6)	946	(79.1)	3148	(76.9)
Total	1303	100.0	710	100.0	886	100.0	1196	100.0	4095	100.0

Table A-25

Frequency of Social Characteristics

ITEM	Jax.		Peoria		Roch.		S. Diego		Kansas City	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Length of Residence at Site (in years)	19.65	18.75	19.13	17.50	24.13	20.03	14.47	10.5	22.1	20.5
Length of Residence at Present Address (in years)	6.82	2.99	6.08	3.01	8.50	3.98	5.46	1.99	6.9	3.1
Age	35.07	31.66	33.74	29.72	37.01	32.14	33.58	29.67	37.0	N/A
Number of Household Members	3.28	3.03	3.56	3.12	3.34	2.88	3.01	2.63	N/A	N/A
Years of Schooling	11.89	11.98	11.77	11.93	11.78	11.92	12.73	12.55	12+	12+
Yearly Total Income	$12,454	$12,464	$15,515	$17,142	$13,280	$14,272	$14,844	$15,245	N/A	$10,000 to $11,999
Occupation (Duncan code)	36.2	35.7	35.0	33.9	36.4	36.0	39.1	38.6	N/A	19.0

N/A = not applicable or not available

Table A-26

Frequency of Social Characteristics

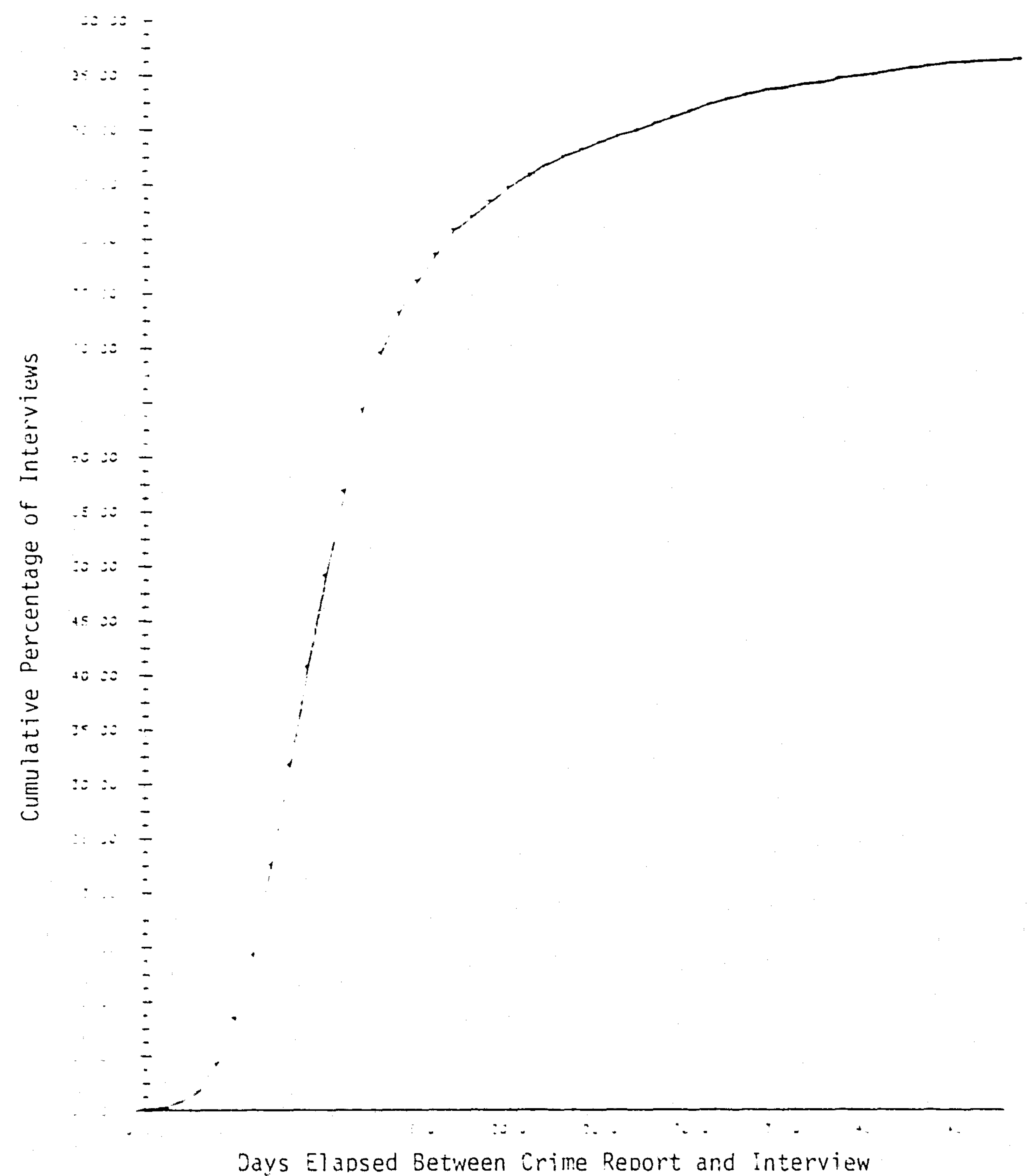
ITEM	Jax.		Peoria		Roch.		S. Diego		Kansas City	
	No.	%	No.	%	No.	%	No.	%	No.	%
Respondent's Place of Residence										
Site City	1172	95.1	591	89.4	763	91.6	1027	92.6	N/A	
Same State	49	4.0	65	9.8	65	7.8	71	6.4	N/A	
Out of State	11	0.9	5	0.8	5	0.6	11	1.0	N/A	
Missing	71	5.4	49	6.9	53	6.0	84	7.0	N/A	
Tenure										
Own	575	46.2	300	45.0	370	43.9	413	36.5	N/A	46.0
Rent	508	40.8	279	41.8	387	45.9	613	54.2	N/A	44.7
Board	63	5.1	42	6.3	46	5.5	41	3.6	N/A	9.4
Without Payment of Cash Rent	98	7.9	46	6.9	40	4.7	65	5.7	N/A	
Missing	59	4.5	43	6.1	43	4.9	61	5.1	145	14.7
Hometown Population										
Open County, Not a Farm	31	2.5	18	2.7	24	2.9	28	2.5	N/A	
On a Farm	26	2.1	17	2.6	20	2.4	15	1.3	N/A	
Small Town or City	135	11.0	119	17.9	83	10.0	124	11.1	N/A	
Medium-Size City	184	15.0	342	51.4	213	25.6	165	14.8	N/A	
Suburb Near Large City	156	12.7	47	7.1	74	8.9	188	16.8	N/A	
Large City	696	56.7	123	18.5	417	50.2	596	53.4	N/A	72.5
Missing	75	5.8	44	6.2	55	6.2	77	6.5	215	21.7

Table A-27
Frequency of Social Characteristics

ITEM	Jax. No.	Jax. %	Peoria No.	Peoria %	Roch. No.	Roch. %	S. Diego No.	S. Diego %	Kansas City No.	Kansas City %
Respondent's Race										
Black	344	27.9	131	19.8	195	23.4	149	13.4	N/A	43.6
White	881	71.5	527	79.6	609	73.0	833	74.8	N/A	54.8
Spanish-American	2	0.2	1	0.2	25	3.0	89	8.0	N/A	
Pacific-Asian	1	0.1	2	0.3	1	0.1	21	1.9	N/A	
American Indian	2	0.2	1	0.2	1	0.1	6	0.5	N/A	
Other	2	0.2		0.0	3	0.4	15	1.3	N/A	1.6
Missing	71	51.4	48	6.8	52	5.9	80	6.7	155	15.7
Sex										
Female	614	49.6	321	48.3	440	52.5	538	48.1	N/A	43.1
Male	623	50.4	344	51.7	398	47.5	581	51.9	N/A	56.9
Missing	66	5.1	45	6.3	48	5.4	74	6.2	145	14.7
Marital Status										
Married	569	46.3	266	40.3	350	42.1	458	40.8	N/A	46.7
Separated	76	6.2	41	6.2	68	8.2	42	3.7	N/A	
Divorced	206	16.7	108	16.3	84	10.1	161	14.3	N/A	
Widowed	60	4.9	19	2.9	42	5.1	45	4.0	N/A	
Never Married	319	25.9	227	34.3	287	34.5	417	37.1	N/A	
Missing	73	5.6	49	6.9	55	6.2	70	5.9	146	14.8

Figure A-4

Delay in Obtaining Interview: All Sites



APPENDIX B
ACCURACY OF CITIZEN TIME ESTIMATES

The Kansas City Police Department's Response Time Analysis concluded that the value of rapid police response to a citizen call for service was severely limited by the delay which often occurred between the commission of a crime and the initial report of that crime to the police. The purpose of this study is to study the length of that delay and the actions of involved citizens during the delay period. Because we are dealing with a natural field setting and not a laboratory, however, there is no direct measure of the length of that delay. We are forced to rely on time estimates made by victims and witnesses as our sole measure of the length of the reporting delay. As a result, the ability of citizens to provide accurate time estimates is the single most important threat to the validity of the results reported here. The problem is a crucial one in light of the Response Time Analysis finding of a very low correlation between citizen estimates of police response time and the actual response time as obtained from official records. It was necessary, then, to make every possible external check on the accuracy of citizen time estimates in the present study.

Citizen time estimates were studied to determine the average size of estimation errors, and the presence of any systematic direction in those errors. This was done under the premises that: if the estimates were found to be acceptably accurate, the analysis would be done as planned; if errors were beyond the range of accuracy considered acceptable, some attempt would be made to correct the error by statistical means; and, in any case, some modification of the original analysis plan might be necessary if the time estimations data did not conform to the assumptions and technical requirements of that plan.

The analyses performed here to assess the accuracy of citizen time estimates were based on comparison of citizen estimates for which we did have an external measure as well as an estimate. There were three time intervals for which it was possible to make some such comparison. These are:

- Phone duration, defined as the length of time spent talking on the telephone to the police when reporting an incident. (This comparison was possible only for those respondents who were victim-callers, witness-callers and bystander callers.) The external measure of that interval comes from the communication tapes of the conversations, with measures of elapsed time taken by field research assistants who listened to the tapes and timed the conversations.

- Police response time, defined as the elapsed time from conclusion of the caller's conversation with a police operator to the arrival of an officer on the scene. This time was taken from the dispatcher's records. Because these times are notoriously inaccurate (Clawson and Chang, 1977, Maltz, 1976), this is probably the weakest of the three measures used here.

- Interview length. Each interview was timed by the interviewer, and each respondent was asked, at the conclusion of the interview, to estimate the length of the interview.

Since the bulk of the phone durations lie between a few seconds and two minutes, police response times between about 4 and 14 minutes, and interview lengths between 15 and 25 minutes, we have a suitable range of time durations for assessing citizen estimates. This is important in that

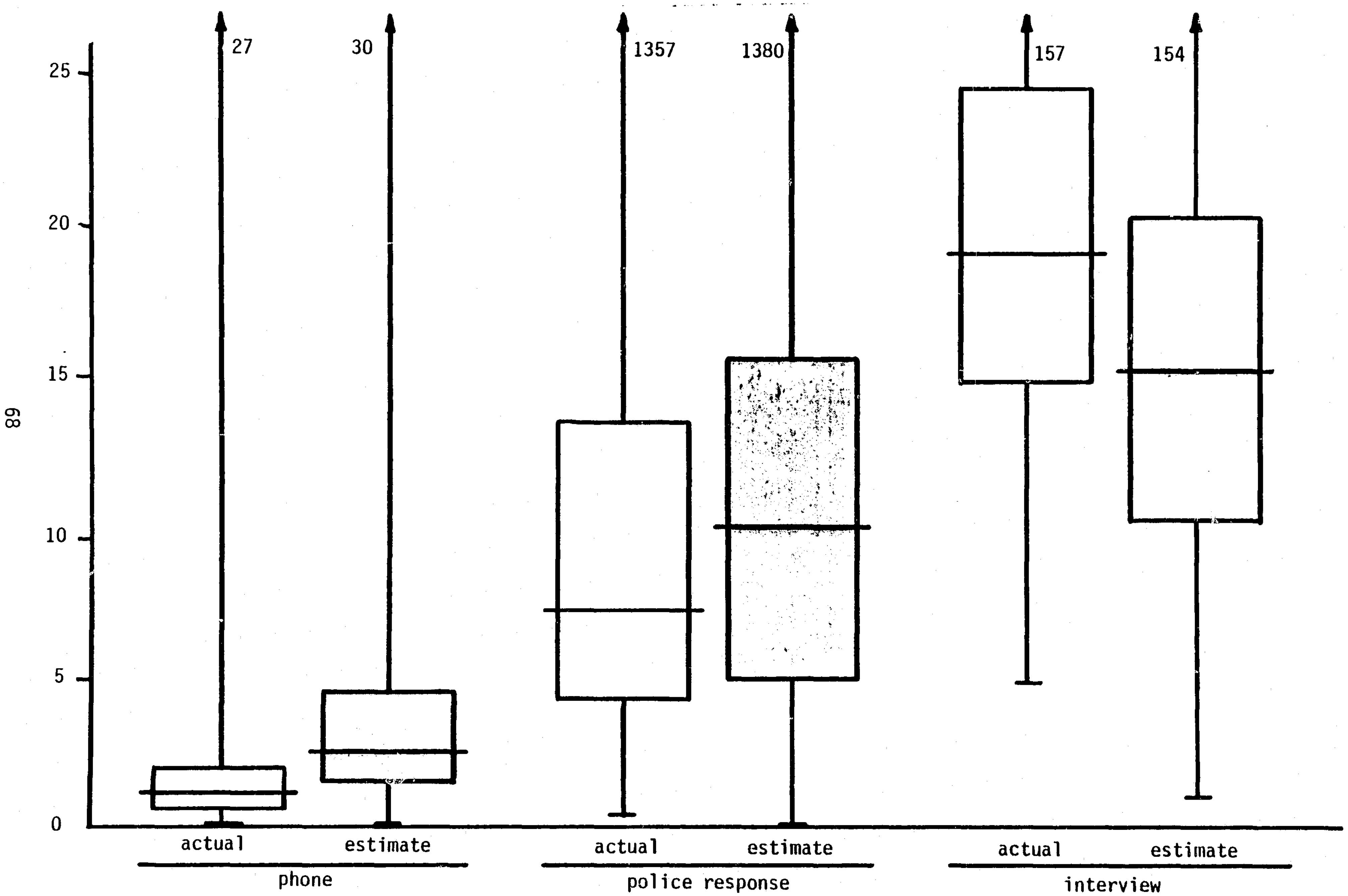
the psychological literature on time perception suggests that perceptions of time passage may depend greatly on the actual length of the interval that people are asked to estimate (Ornstein, 1975). Thus, to the extent that the estimates which can be verified externally are relatively accurate, our confidence in estimates of reporting delay is increased. Where systematic bias appears to be operating, corrective actions can be considered.

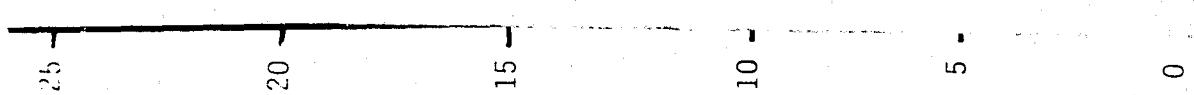
Figure B-1 uses box plots to show the comparison of actual and estimated durations for all three time periods. This figure shows the median time (50th percentile) for each interval by a horizontal line through a box. The lower and upper ends of each box represent the 25th and 75th percentiles in the distribution, respectively. The tails of the distribution are represented by the vertical lines above and below the boxes. For actual phone duration, then, the fastest report took less than one minute (the lowest extreme of the bottom "tail"); twenty-five percent of all calls took one minute or less; 50 percent of all calls were completed within 1-1/2 minutes (the median), 75 percent took 2-1/2 minutes or less, and the longest actual report required 27 minutes on the telephone.

Looking first at the actual time durations, we note that the median duration is shortest for phone reports and longest for interviews; but the range of actual durations is greatest for police response time, from a low of about one minute to a high of 1,357 minutes. The middle 50 percent of cases, however, occupy about the same duration for police

Figure B-1

Comparison of Actual and Citizen-Estimated Distributions





response time and interview time. Looking next at the estimates, we see that, again, the median estimated phone duration is the shortest of the three and interview time is the longest.

Next, comparing the actual and estimated durations, we note some interesting findings. Looking first at phone duration and police response time, we see that the lower and upper limits are fairly well estimated for both, and that the 25th, 50th (median), and 75th percentiles are somewhat higher for the estimates than the actual durations, indicating that, on average, respondents thought that these events took longer than they actually took to occur. The exact opposite is true for interview length, however, indicating that, on the average, the interview was perceived as being considerably shorter than it actually was. The same tendency to underestimate interview length was present at both lower and upper extremes, as well. Overall, although the estimates are somewhat more varied than the actual durations, and are not completely unbiased, they do appear to represent useful indicators of actual times. Table B-1 gives exact points for the minimum, 25th, 50th and 75th percentiles, and maximum values of actual and estimated duations.

Further analyses were performed to determine just how adequate these estimates are, and whether or not some corrective action should be taken before subjecting the estimates to rigorous analysis.

Table B-1
Coordinates for Box Plot, Figure 1

		Phone	Police Response	Interview
Minimum	Actual			5.0
	Estimated	0.0	0.0	1.0
25th Percentile	Actual	.681	4.265	14.817
	Estimated	1.524	4.960	10.262
Median	Actual	1.184	7.255	19.135
	Estimated	2.536	9.894	15.147
75th Percentile	Actual	1.987	13.449	24.480
	Estimated	4.581	15.490	20.239
Maximum	Actual	27.0	1357.0	157.0
	Estimated	30.0	1380.0	154.0
Number of Cases	Actual	3463	3196	4085
	Estimated	2130	2762	3703

Analysis of Systematic Bias

The first question addressed in this analysis has to do with the presence or absence of systematic bias in the estimates. We asked: Is there evidence of consistent over- or underestimation that would have a predictable detrimental impact on analyses performed using citizen time estimates?

The most convenient way to assess this attribute of citizen estimates is to examine the size and direction of differences between respondent estimates and the actual length of the interval being estimated. Error in time estimation was defined as:

ERROR = ESTIMATE - ACTUAL

In this notation, a positive error is an overestimate, a negative error an underestimate. The size of the error is, of course, its absolute value.

What one would want to see as a characteristic of citizen estimates is that the number of over- and underestimates is about the same; that the median error is zero or close to zero; and that over- and underestimates are about equal in size, so that they "cancel each other out," giving a mean error near zero. Mean and median errors are shown in Table B-2.

Table B-2
Mean and Median Citizen Time Estimation Errors

	Jacksonville	Peoria	Rochester	San Diego
Phone Duration				
Mean	1:20	1:26	1:32	1:53
Median	0:17	0:38	0:32	0:19
Police Response				
Mean	2:57	2:45	2:45	-0:41
Median	1:04	1:43	1:57	0:00
Interview Length				
Mean	-2:43	-2:02	-2:33	-3:11
Median	-2:27	-2:15	-3:21	-3:01

As indicated by the box plots in Figure B-1, there were more people who overestimated phone duration and police response time than there were who underestimated those times. The error, on average, is in the range of one to two minutes. More people underestimated than overestimated interview length, the average error being between two and three minutes. Although these biases are relatively small, they are significantly different from zero with one exception--police response time estimates in San Diego. This exception appears to be due to a few underestimates of very long response times pulling the mean much lower than for the other sites (see Footnote 7, Chapter 3). Except for these, the San Diego plot appears very similar to those of the other cities (Figures B-2, B-3, and B-4).

The estimates are biased within each time category; and, with the exception of San Diego, the mean error for each time estimated does not differ significantly between sites. In addition, the mean error differs from one estimated duration to another. Phone duration and police response time are both overestimated, but are significantly different from each other (except in San Diego). Interview length is underestimated by an equal amount in all sites. Since the biases appear to depend on which duration is estimated, generalizations to other estimates, most importantly to estimates of citizen reporting delay, are not possible unless some common element underlies the biases. This was the next question addressed.

Figure B-2

Perceived and Actual Phone Durations--All Sites

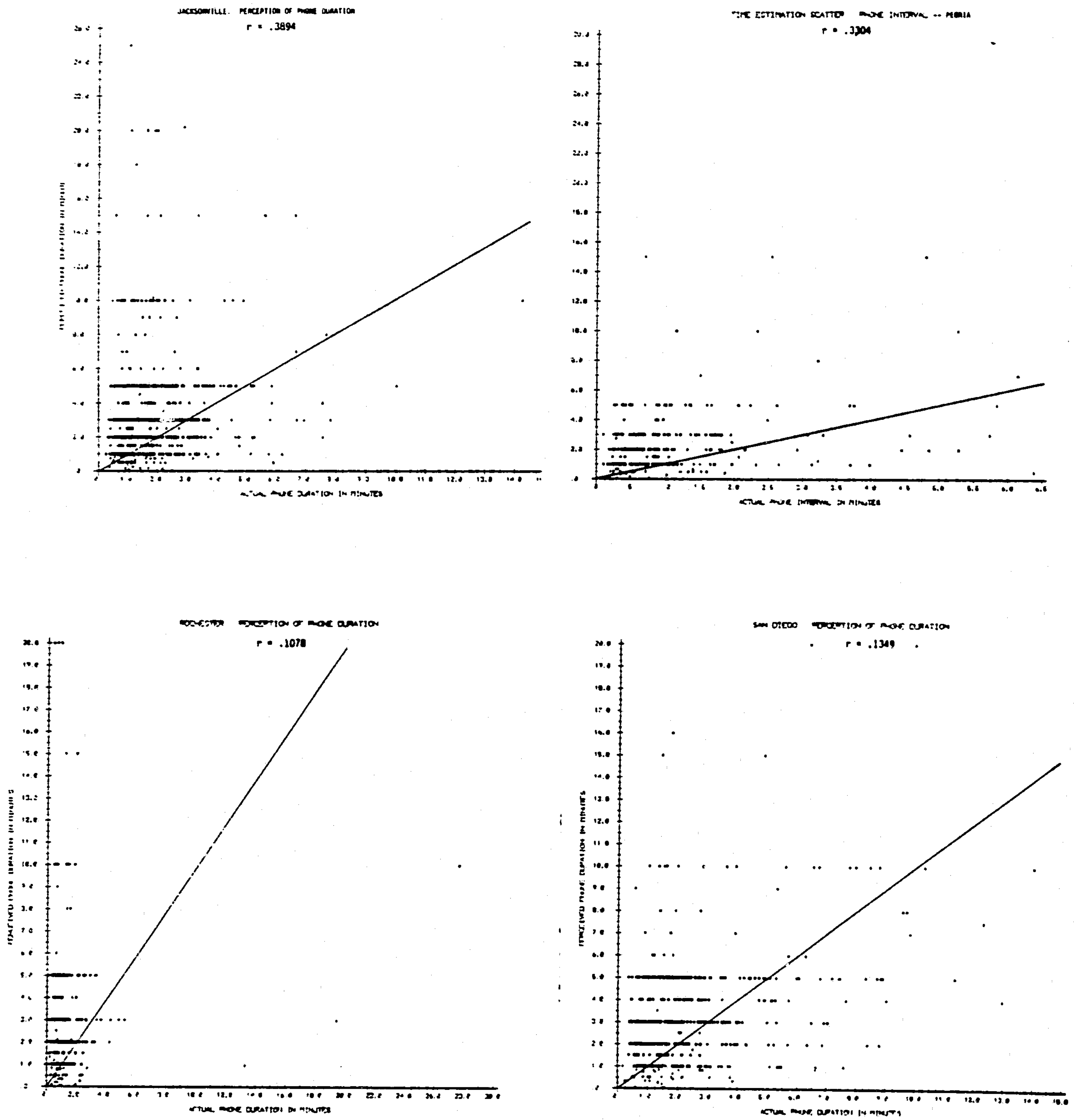


Figure B-3

Perceived and Actual Police Response Times--All Sites

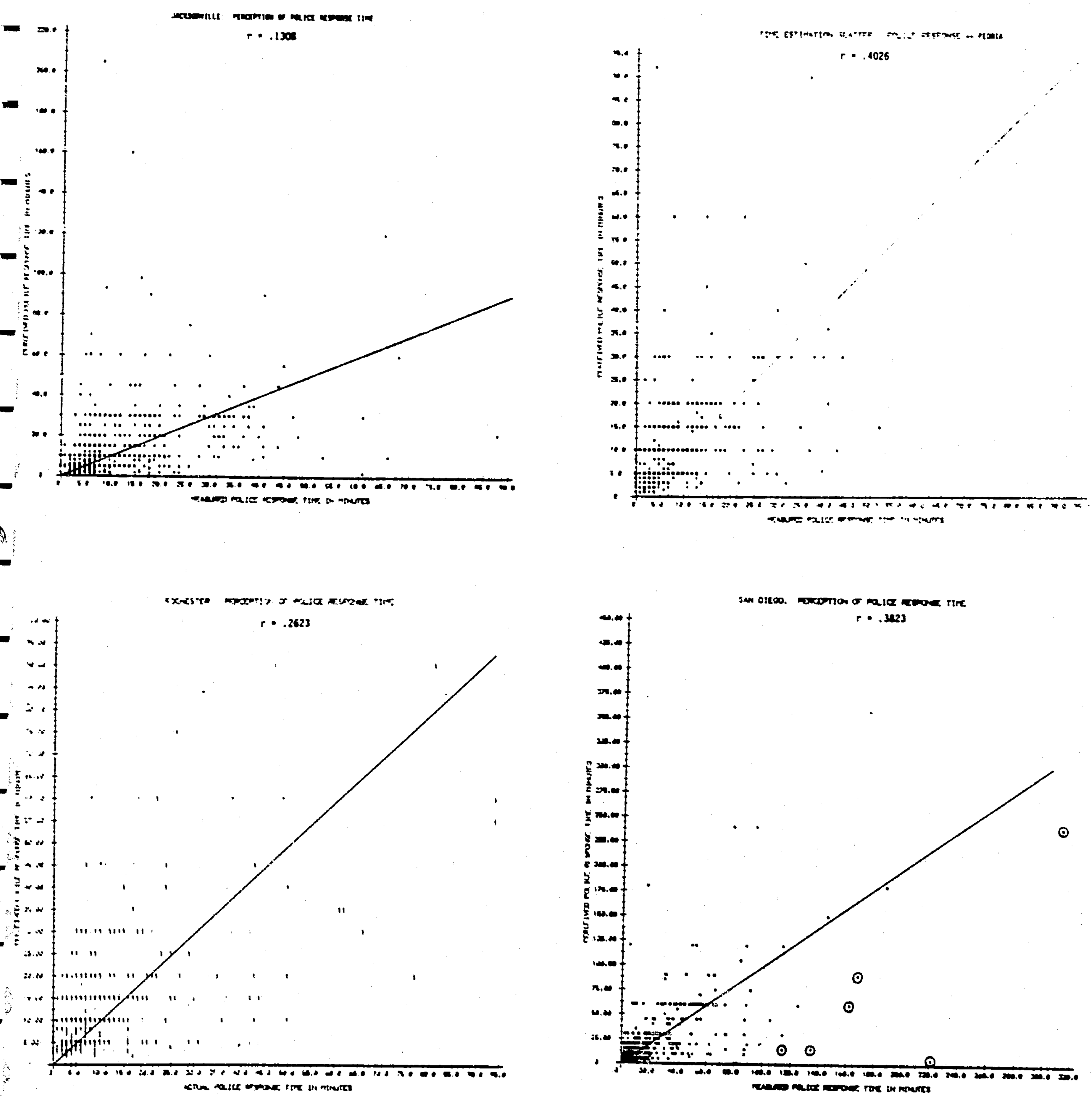
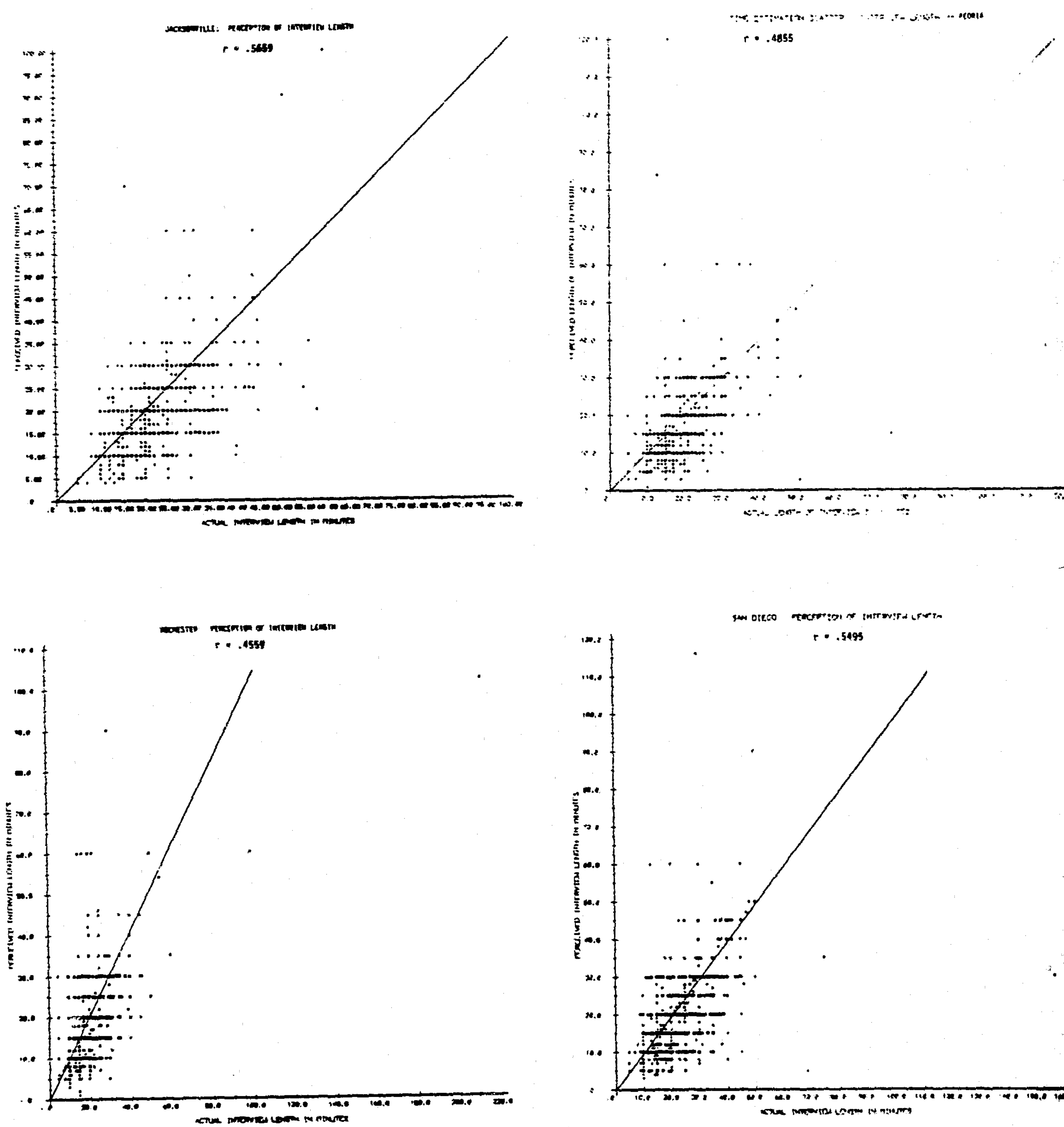


Figure B-4

Perceived and Actual Interview Durations--All Sites



One hypothesis might be that the actual length of time estimated is responsible for the bias. To study this possibility, errors in estimation were plotted against actual duration for each site. The scatter diagrams are presented in Figures B-5, B-6, and B-7. This analysis indicates that, as the time being estimated increases in actual length, errors tend to increase in size and to move from positive to negative in direction. Regression lines for all but one of the twelve plots are statistically significant at or beyond the .05 level. Table B-3 shows the correlation between estimates and actual times for all three periods.

But, is the effect of actual time estimated on the error the same for all times and sites? To get an estimate of the effect of actual times on citizen estimates over the entire relevant range of values, the three time estimates were pooled for each site, and a regression line was estimated for this aggregate. The regression lines for the sites--shown in Table B-4--are indistinguishable. It is possible, then, to aggregate across all sites. This aggregate plot appears here as Figure B-8, which shows the regression line with a 95 percent confidence interval.

As the plot indicates, estimates of times between ten and fifteen minutes are relatively unbiased. Times less than this are slightly overestimated, times greater than this are slightly underestimated. When examining the distribution of reporting, decisionmaking, or other citizen estimates, we would expect to count too few times less than ten minutes, and too many greater than fifteen minutes.

Table B-3

Correlation of Time Estimates with Actual Times

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Phone Duration					
Correlation	.389	.330	.108	.135	.255
Number of Cases	713	266	350	611	1940
Probability	.001	.001	.022	.001	.001
	χ^2 = 35.42 with 3 degrees of freedom.				
	p = .001				
Police Response					
Correlation	.131	.407	.262	.382	.282
Number of Cases	669	413	475	536	2093
Probability	.001	.001	.001	.001	.001
	χ^2 = 31.39 with 3 degrees of freedom.				
	p = .001				
Interview Length					
Correlation	.566	.486	.456	.550	.525
Number of Cases	1156	639	795	1110	3700
Probability	.001	.001	.001	.001	.001
	χ^2 = 13.66 with 3 degrees of freedom.				
	p = .004				

Figure B-5

Estimation Error and Actual Phone Duration--All Sites

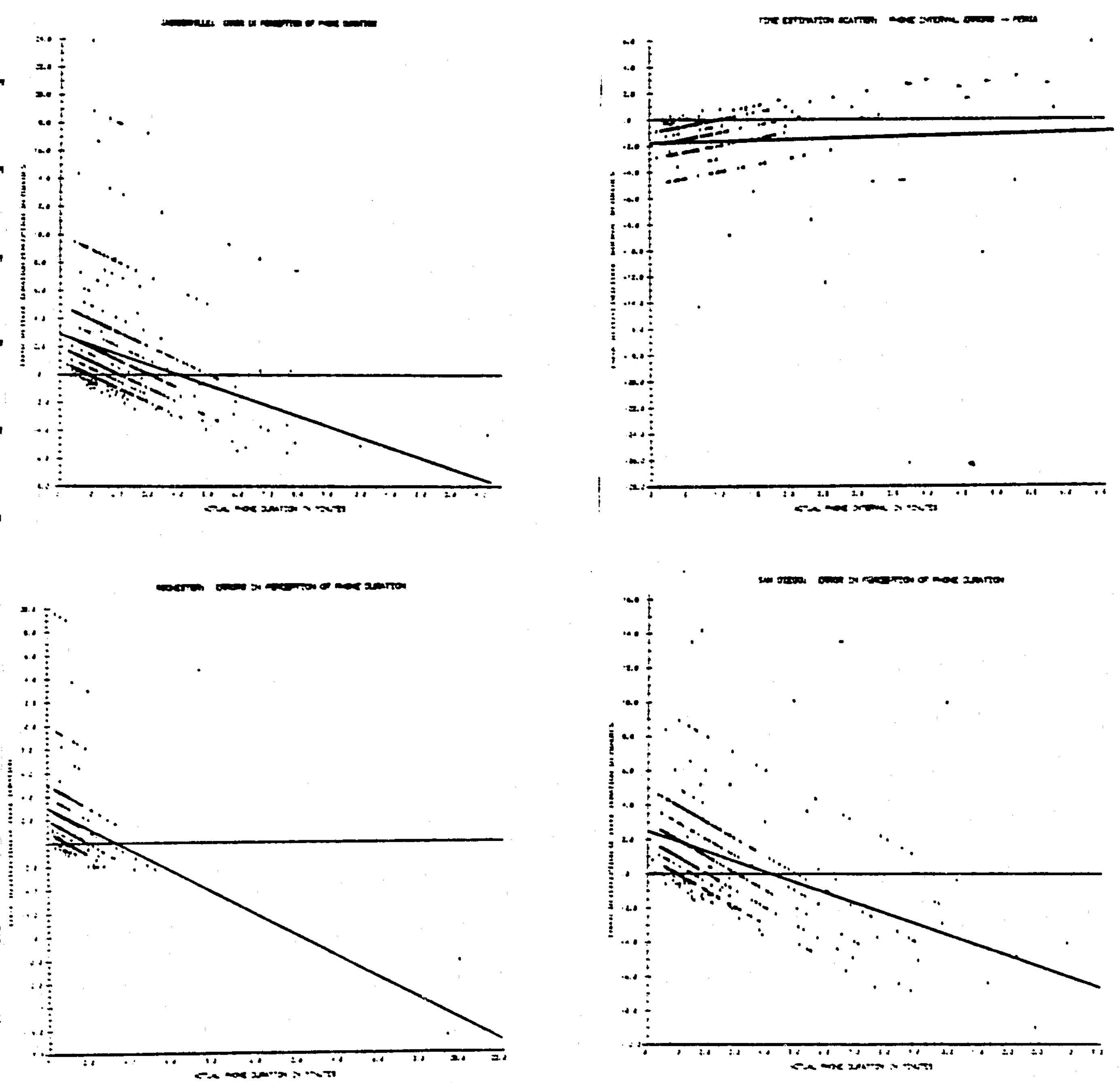


Figure B-6

Estimation Error and Actual
Police Response Time--All Sites

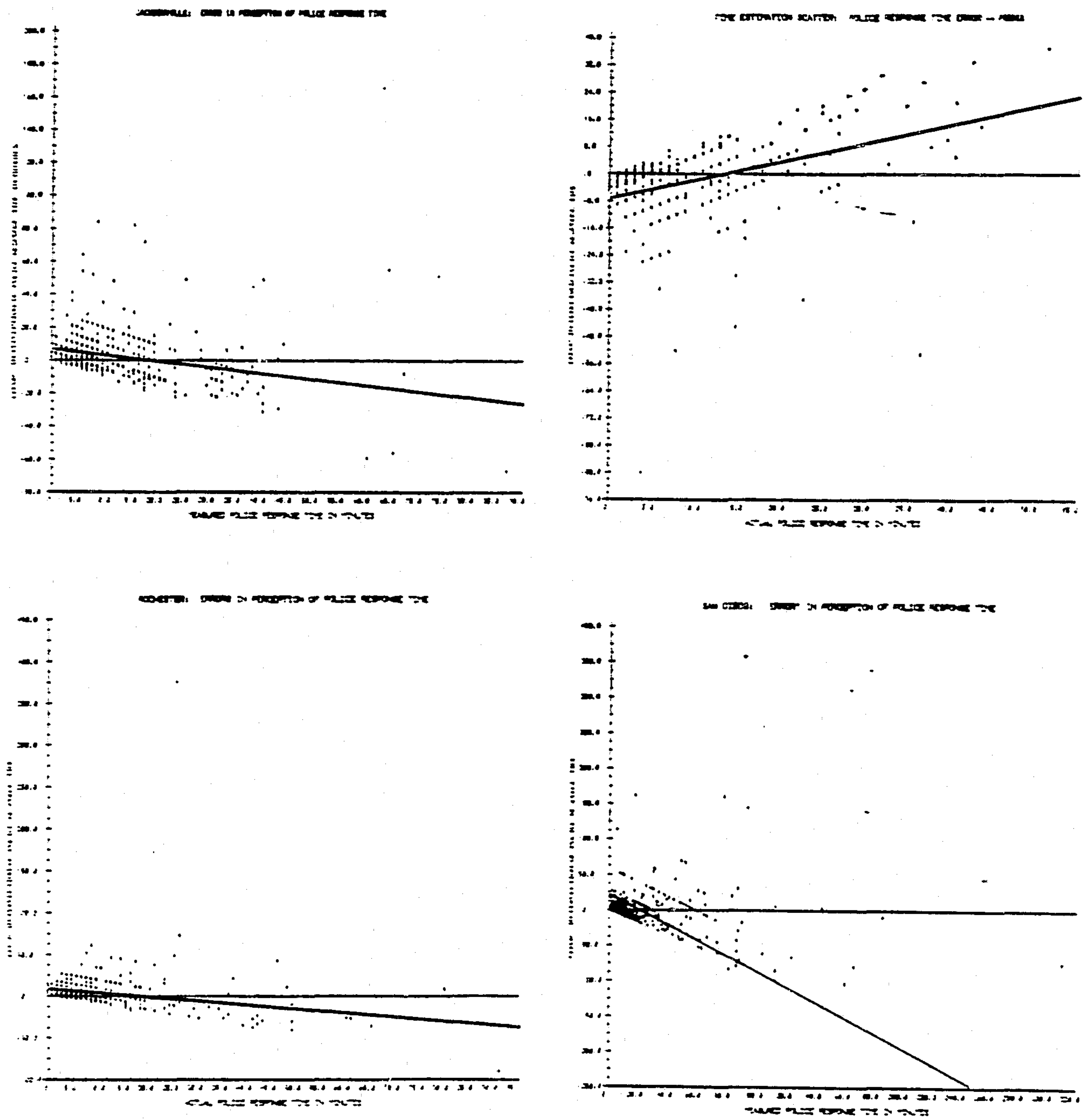


Figure B-7

Estimation Error and Actual
Interview Length--All Sites

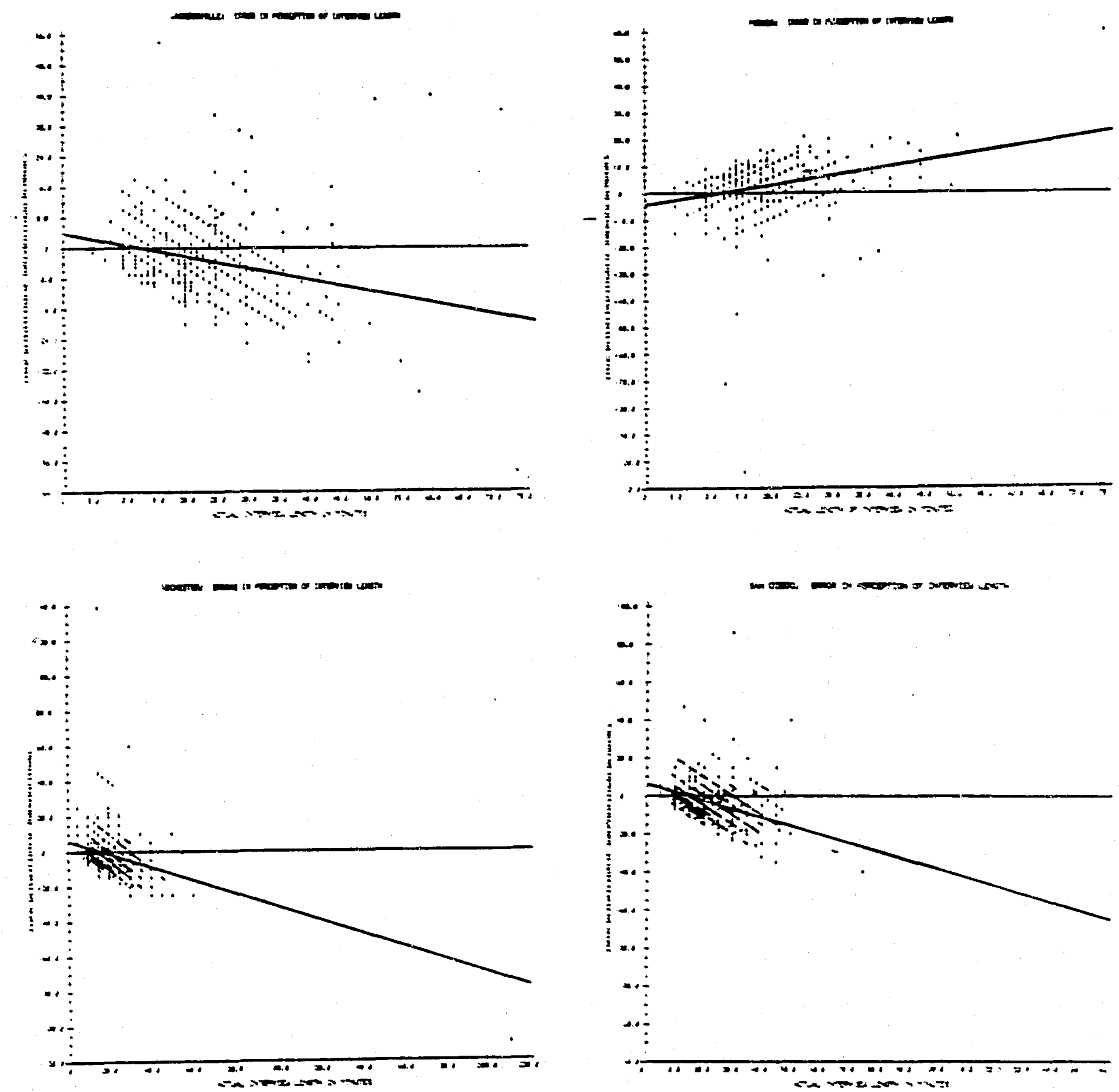


Table B-4

Comparison of Regression Lines--Error in Time Estimation by Actual Length of Duration Being Estimated

Aggregate:

Error = 3.918 - .305 Actual $\qquad R^2 = .043$
(.016)

Jacksonville:

Error = 3.841 - .309 Actual $\qquad R^2 = .108$
(.018)

Peoria:

Error = 4.260 - .342 Actual $\qquad R^2 = .143$
(.023)

Rochester:

Error = 4.807 - .370 Actual $\qquad R^2 = .176$
(.020)

San Diego:

Error = 3.684 - .279 Actual $\qquad R^2 = .022$
(.039)

Note: Slope in Rochester is significantly different from aggregate slope. No other differences between site and aggregate are significant at levels up to .10.

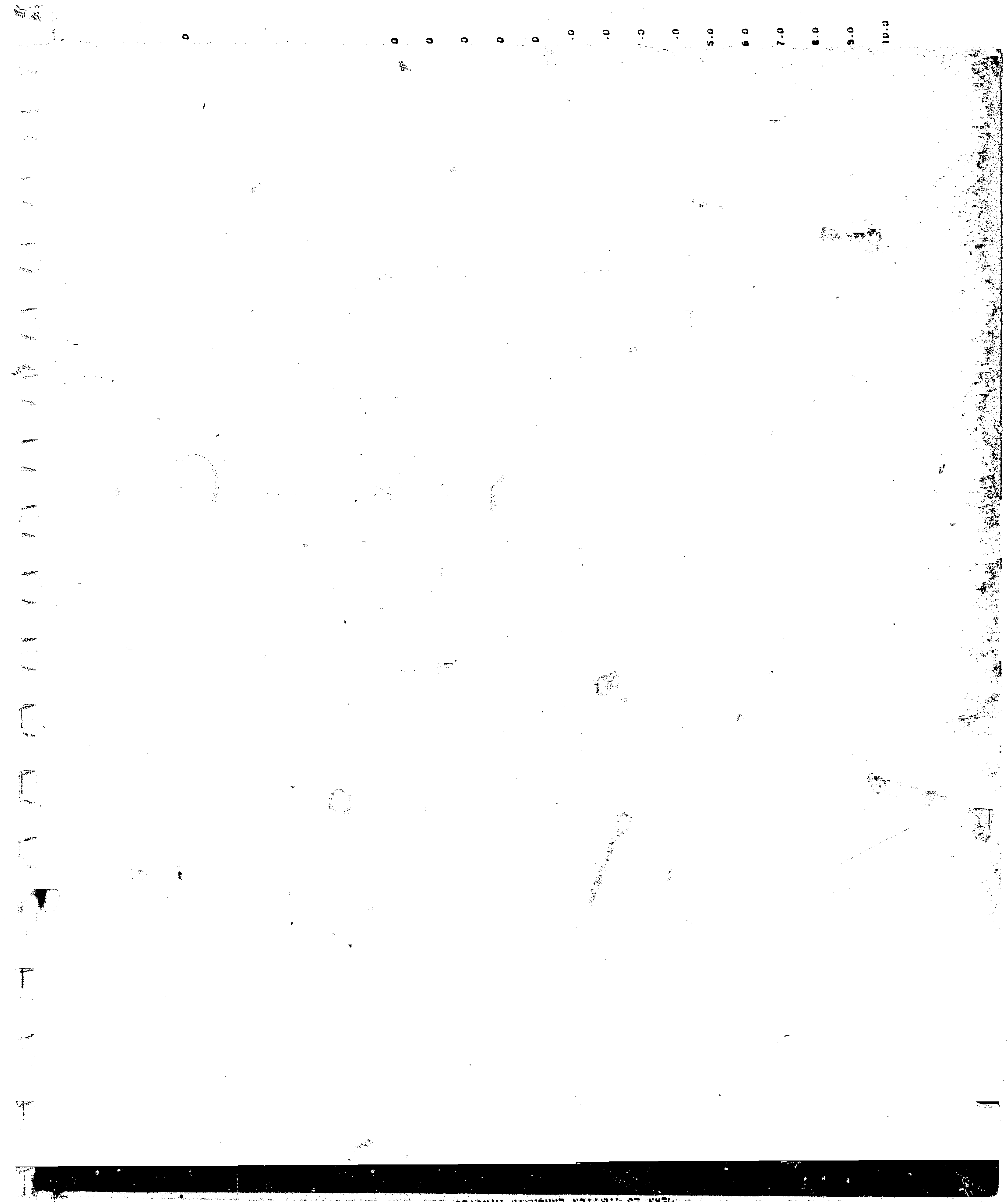
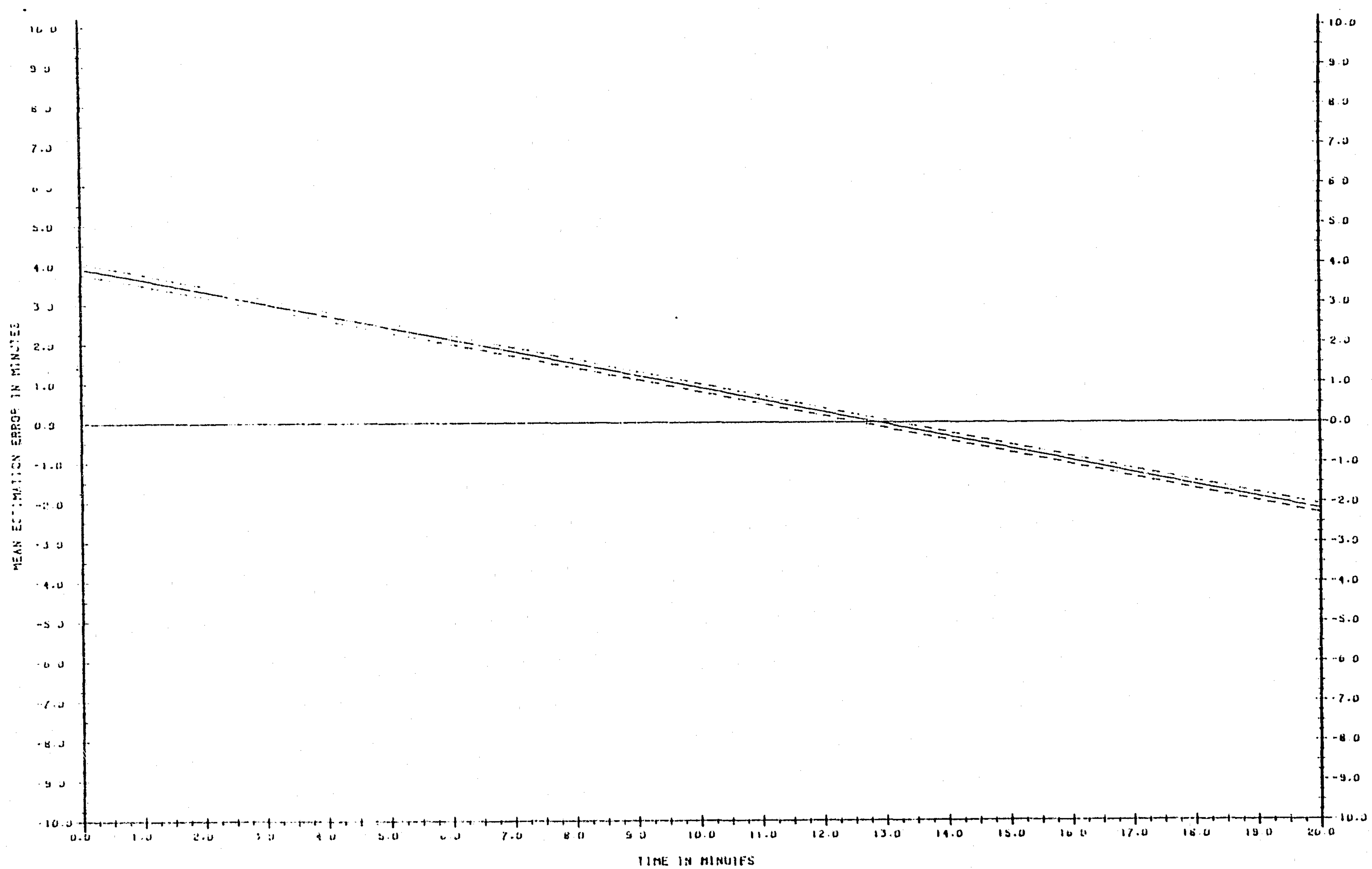


Figure B-8

Effect of Actual Time on Citizen Estimation Error--Aggregate



The largest deviations of estimates from the actual times occur in "steps," caused by the respondents' tendency to round times off to the nearest minute, or the nearest five minutes. Figure B-9 shows the cumulative distribution of <u>actual</u> times and the distribution of citizen estimates. As is obvious from the plot, there are far too many time estimates of exactly five minutes, and far too few for times around five minutes, particularly just below five minutes. In order to get unbiased predictions of the number of times of (say) three minutes or less, it would be necessary to smooth the "lumps" in this distribution in such a way that the resulting smoothed distribution would be close to what we would expect it to look like.

Although there is no distribution that seems theoretically justifiable for this aggregation of estimates from vastly different distributions, for some durations the functional form could be specified in advance. For example, phone durations ought to be about exponentially distributed, police response times ought to be Rayleigh-distributed, and so on (Brown, 1972). When some distribution is theoretically justified, it should smooth out the "lumps" and unbias the results.

We can conclude from the analyses presented here that, in general, biases in citizen estimates will cause small and relatively predictable distortions in estimated distributions. The distributions may even be correctable in the aggregate. On the other hand, random disturbance caused by unpredictable factors (inefficiency of estimates) is a much greater potential problem, and one that may limit the analysis more severely than the bias described here. This is examined below.

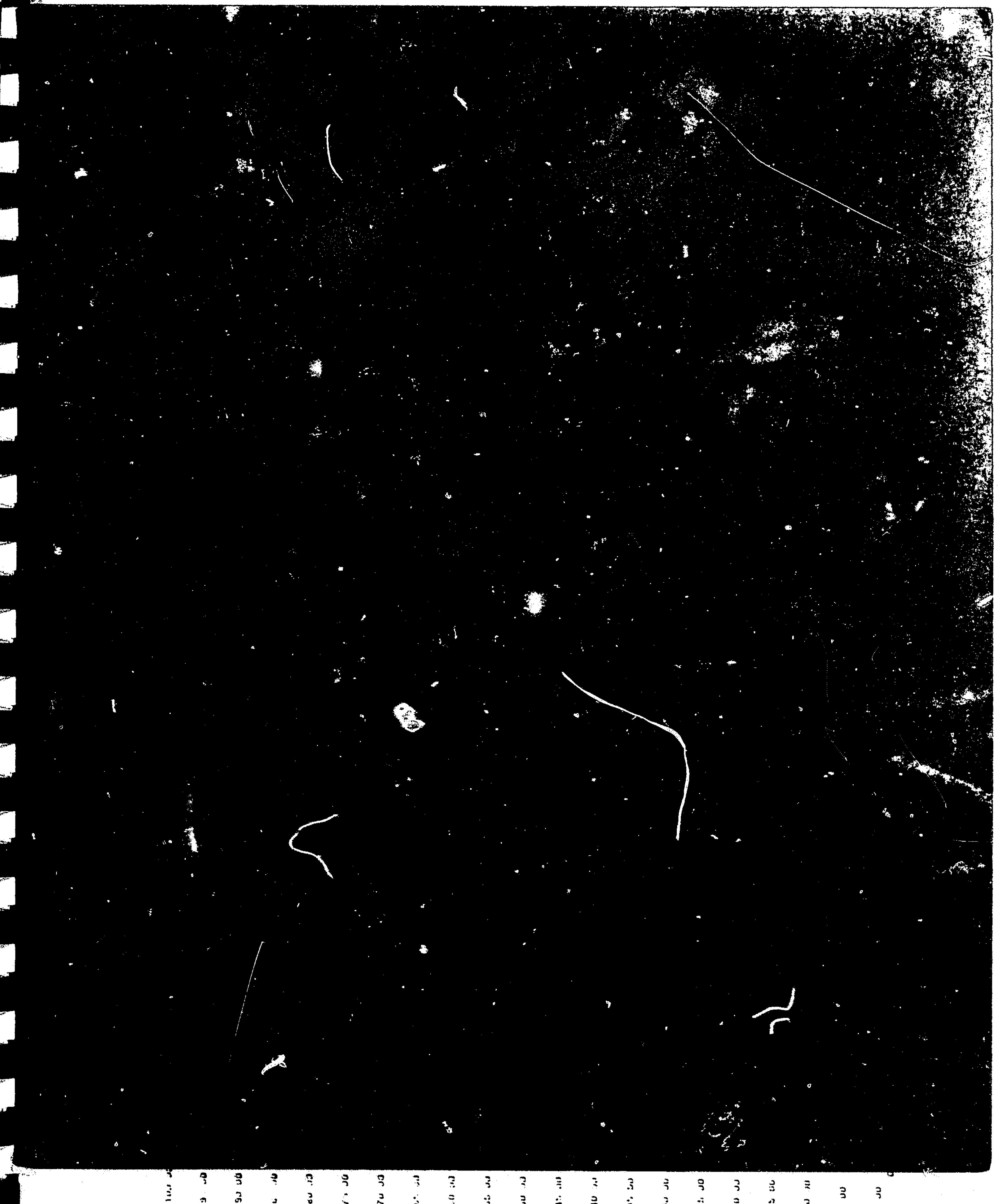
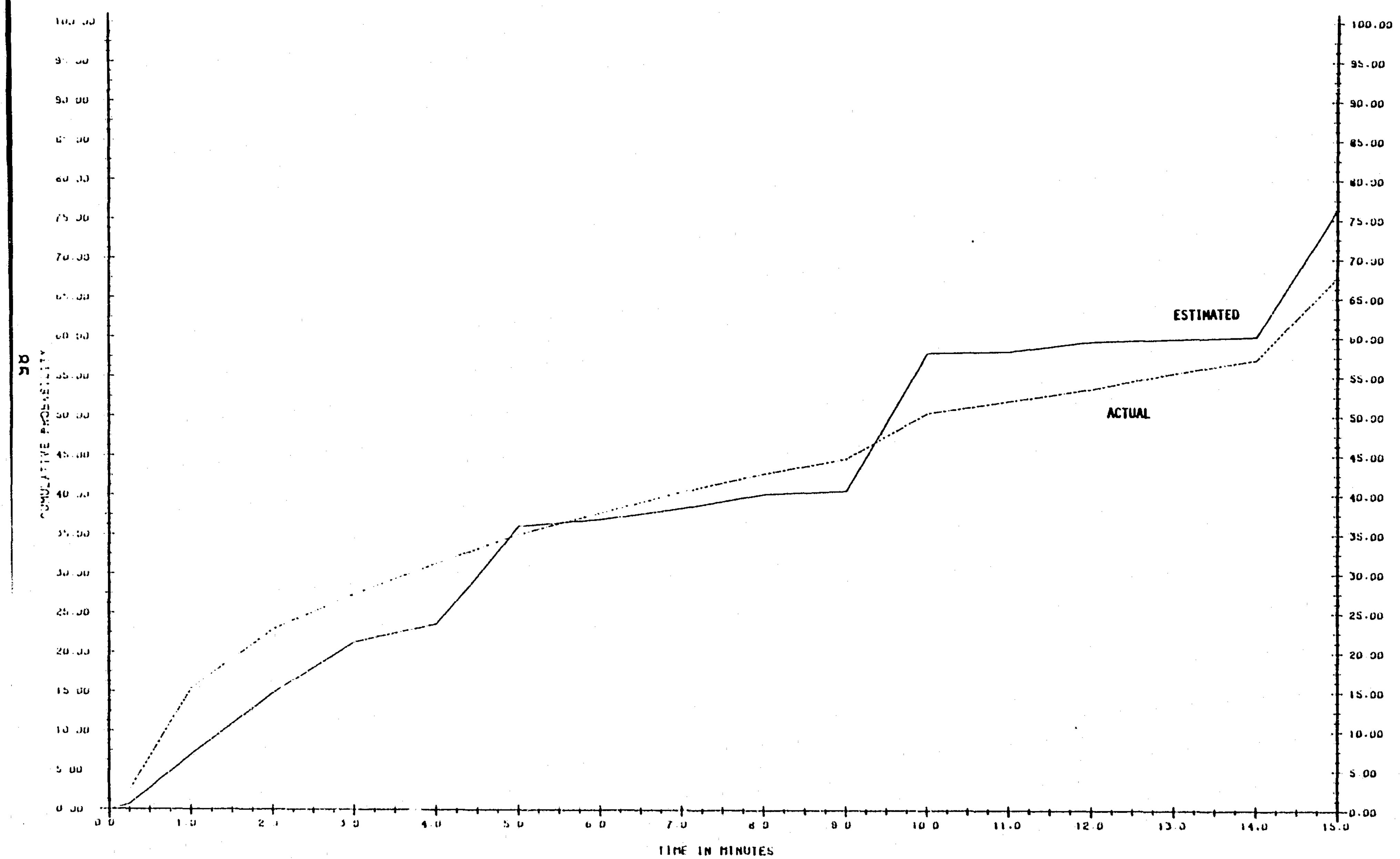


Figure B-9

Cumulative Distribution of Action Time Durations and Citizen Estimates--Aggregate



Analysis of Accuracy of Estimates

The average accuracy of an estimate is known as the efficiency of that estimate. Efficiency is measured by the amount of variation around some expected value, in this case, the mean. When the variance of the distribution of estimates is low, efficiency is high. The first step taken here in assessing the efficiency of citizens' time estimates was to study the distribution of errors in those estimates while controlling for the effects of the actual length of time being estimated. The findings (see Table B-5) indicate that the variances of the errors differ from one time category to another, as did mean errors, but are not significantly different across sites.

The values obtained for dispersions around mean error indicate that there is likely to be a great deal of "random disturbance" associated with any individual estimate. While the average of a large group of estimates of a duration which is, for example, six minutes in length, will be close to six minutes, only about two-thirds of all the individual estimates of that duration will fall between 3-1/2 minutes and 8-1/2 minutes; five percent of those estimates will be either greater than 11-1/2 minutes or less than 30 seconds. In short, estimates of a six-minute duration can be expected to range from a few seconds to over eleven minutes.

Table B-5
Dispersion of Errors in Citizen Estimates of Three Time Durations, by Site

	Jacksonville	Peoria	Rochester	San Diego
Phone Duration				
Variance	9.290	6.755	7.695	5.415
Standard Deviation	3.048	2.599	2.774	2.327
Number of Cases	669	270	351	537
Police Response Time				
Variance	243.173	103.999	510.082	4335.037
Standard Deviation	15.594	10.198	22.585	65.841
Number of Cases	713	415	478	615
Interview Duration				
Variance	53.290	72.966	92.237	63.139
Standard Deviation	7.300	8.542	9.604	7.946
Number of Cases	1157	642	795	1112

These percentages are only accurate, however, when the errors are normally distributed. If there are a few very bad estimates, then most estimates will be better than those described above. The distribution of errors obtained in this study were tested for skew and for kurtosis (see Table B-6) to see whether or not they are distributed normally. The results indicate that:

- The data are decidely non-normal. A few very bad errors are dramatically increasing the variance of errors in estimates of police response and interview times in particular.
- Overestimates are more responsible for the abnormality than underestimates.

In spite of the seriousness of the skew and length of the tails, the errors are still equally distributed on either side of the regression line, and will cancel out when many observations are taken. The larger the sample size, the more likely is cancellation. For example, a sample of about 260 observations is sufficient to calculate the mean interview length within one minute in either direction with 95 percent confidence. Therefore, to obtain the most reliable results, we have avoided comparing groups with samples of marginal size.

Finally, inefficiency will have a smaller effect on the median than on the mean of a skewed and long-tailed distribution. Therefore, comparison of medians and tests based on ranks rather than intervals will help to minimize the effects of inefficiency. The effects are still likely to be substantial, however, and thus sample sizes must be kept as large as possible for each analysis.

Table B-6

Measures of Skewness and Kurtosis for Citizen Estimates of Three Time Periods, for Four Cities

	Jacksonville	Peoria	Rochester	San Diego
Phone Duration				
Skewness	2.509	4.263	1.745	0.747
Kurtosis	10.885	34.324	14.422	4.464
Number of Cases	669	270	351	537
Police Response				
Skewness	4.198	2.019	12.260	3.562
Kurtosis	31.380	12.135	221.490	62.730
Number of Cases	713	415	478	615
Interview Duration				
Skewness	0.640	3.684	2.542	-1.313
Kurtosis	9.001	44.329	56.625	47.609
Number of Cases	1157	642	795	1112

Note: All observations are significantly different from zero at $p < .001$

Comparing large groups, using rank tests, and shifting confidence intervals are all methods of handling bias and inefficiency in data that are sometimes wrong but cannot be made right. Another method for accounting for estimation errors is to correct them on an individual basis, either by actually changing an estimate from one time to a more accurate time, or by deleting it altogether. It is possible that tendencies to over- and underestimate can be predicted for individual estimates from characteristics of the situation or the respondent. If reliable predictions can be made, then we can account for this bias before analyzing citizen estimates by adjusting the times. We examine these prospects further, below.

Correction of Citizen Estimation Errors

The next question addressed in this assessment of citizens' ability to estimate the passage of time had to do with the extent to which certain characteristics of the individual or of the situation can serve to predict errors, so that appropriate adjustments can be made in order to make the estimates more accurate. The three time durations under study here, and the fourth which is of primary concern, that is, citizen delay in reporting a crime, may, in fact, be influenced by different factors. Before any attempt was made to predict and adjust for errors, several factors were identified from a literature review on time estimation which

might be anticipated as having an effect on the accuracy of time estimates. The following factors were identified.

Other errors

An obvious predictor of error in one time estimate is the error in another estimate. If respondents who underestimate phone duration are likely to underestimate police response time and interview length as well, they will probably underestimate reporting times; very wrong estimates of one time may predict very wrong estimates of another. On the other hand, if there is little direct relationship among the estimation errors made by a given respondent, it is less likely that elements common to all of these estimates--forgetting, stress, or personal characteristics--are offsetting the errors.

Forgetting

If forgetting were important, errors would increase in size as the time between the event and the recollection increased (Straus, 1966). Thus forgetting is measured by the number of days elapsed between the day the crime was reported and the day the respondent was interviewed.

Stress

This may be measured by a variety of variables on which we have information: the type of crime (involvement or discovery) and the UCR classification; the location of the crime (at home, work, or somewhere else), and the role of the respondent in the crime (victim, witness, or caller). In addition, since stress of the interview situation may affect citizens' estimates, personal and phone interviews were compared. Stress is probably the most widely cited cause of time estimation errors in the psychological literature, but its effects on estimates is still uncertain (Langer, 1961; Gilbert, 1977; Hogan, 1978).

Personal characteristics

Characteristics of the respondents are the most difficult of the possible predictors to measure, although the psychological literature suggests that psychological factors may be the most important (Greenberg and Kurtz, 1968; Simpson, 1977; Gorman and Wessman, 1977). The best measures available were the respondent's social characteristics: race, age, sex, and so on.

Although all of these factors were expected to affect each of the times estimated to some degree, some were expected to be more important than others. The most important hypothesized relationships are shown in Table B-7. If the relationships expected were large enough, these measurable variables may be used to predict responses likely to be in error. If the errors are predictable, there are two ways of correcting them:

- Adjusting the times by adding or subtracting some length of time or proportion from the perceived duration. For example, if college graduates consistently

Table B-7

Hypothetical Relationships Between Predictor Variables and Time Estimation Errors

	Time Estimates Affected			
Predictors	Phone	Police Response	Interview	Reporting
Forgetting (Delay between incident and interview)	Yes	Yes	No	Yes
Stress, Characteristics of situation or interview	Yes	Yes	Unlikely	Yes
Personality (Social characteristics)	Yes	Yes	Yes	Yes

perceive time to be 20 percent longer than it really is, while high school graduates perceive it to be 20 percent shorter, we can improve both estimates and make them comparable by subtracting 20 percent from the college grad estimates and adding 20 percent to the high school grad's. This technique depends on being able to predict both the size and direction of the errors made.

- Deletion of outliers, times that are very likely to be wrong, is another alternative. People who make large errors in estimating one duration may be likely to make large errors in other estimations. If this is true, we can ignore these bad estimators when analyzing reporting times.

Since no times would be changed, deletion is probably a more conservative approach than adjustment; on the other hand, any deleted cases must be inspected to insure that they are not a biased portion of the sample. If the deleted cases include much longer reporting times than those remaining, it will be impossible to say whether the long estimates are due to incorrect perceptions or actually longer times--and if the times are really longer, we will underestimate reporting time. Although we must look at the direction of the errors before deleting any cases, defining the outliers depends on our ability to predict only the size of the errors made.

It is likely that when several variables are considered as predictors of another, a few of the relationships obtained will be spurious. By definition, using a .05 level of significance to determine which relationships will be considered "real" means that, on average, five of every hundred relationships tested will incorrectly appear to be significant. If the variables used to predict error direction and size appear to be

related to the errors, but those relationships are spurious, then it is unlikely that we will properly adjust times or delete the right cases; we may make already bad estimates worse. In order to consider a variable a predictor for deletion or adjustment, we therefore require either: (1) that the relationship be similar for all times and all sites; or (2) that the relationship have some grounding in the psychological literature on time perception. Of course, it is preferable that both justifications apply, but it was expected that a somewhat different error-prediction equation might be necessary for each of the four sites.

Adjustment

As noted above, adjustment involves predicting both the direction and the size of errors made by respondents. The strength of the relationship between each factor and the error is shown for each group of factors in Tables B-8 through B-11. Here, as elsewhere, measures of the strength, rather than the significance, of the relationship were emphasized. Strength measures are not affected by sample sizes, which are particularly small for some time estimation analyses; thus relationships which are large but not significant due to small samples can be flagged and examined more carefully. In the tables, statistics significant at the .05 level are shown in parentheses.

In order to determine the consistency of relationships between times and sites, we conducted two kinds of tests of the etas and correlations. Both tests assume each combination of sites and times is an independent random variable. Although this is not strictly correct, we have shown the relationships between errors by time and site to be small.

A sign test was appropriate for testing the consistency of correlations. Even if no correlation is statistically significant, a relationship is likely if most of the signs are positive or negative. The sign test gives the probability that the observed signs are actually evenly distributed between positive and negative. When the sign test probability is low, the correlations were considered to be consistent and the relationship was flagged.

Friedman's Index was appropriate for testing the consistency of analysis of variance results (etas). The analysis of variance ranks the values of each factor by the mean size of the errors made. For example, consider an analysis of the variance in phone duration error with one factor, location of the crime. If the mean error is smallest when the crime occurs at home, this value of the factor is ranked first; if the mean error is next smallest when the crime happens at the respondent's place of work, this value is ranked next; and so on. A ranking will result for each of the three times in each of the four sites. The Friedman Index determines the probability that the 12 rankings for this factor are unrelated. If the rankings are similar for all sites and times, the Friedman probability will be low and we would consider the relationship consistent--even if it were not statistically significant for any site or time.

Somewhat more precise techniques are available for checking consistency (see, for example, Rosenthal, 1978), however, the tests used were much simpler and sufficiently exact for our purposes. Rather than concentrate on the aggregate probabilities, we decided that--corresponding to the expectations shown in Table B-7--relationships should be in some cases consistent for police response time and phone time, and not necessarily for interview lengths. Thus probabilities have only been computed for times we expected to be consistent.

Perhaps the first impression one gets from looking at the tables is the small size of the relationships. This indicates that little of the large variability in time estimation errors can be explained by any single characteristic, significant or otherwise. Group by group, the potentially important relationships are examined below.

Other errors (Table B-8) have little effect. Interview length appears to be almost entirely unrelated to the other two times in all sites. Phone duration and police response time are strongly related in one site, but hardly at all in the other three. In general, the errors are poor predictors of one another; therefore, it is less likely that social or situational characteristics will be reliable predictors either. This is in fact the case.

Forgetting (Table B-9) was expected to cause important differences in respondents' answers, but did not. Most of the differences appeared to stem from the fact that the timelag was higher for respondents

Table B-8

Correlation Between Errors in Estimates of Three Time Durations

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Interview Length and Phone Duration					
Correlation	.0371	.0627	.0390	.0558	.0464
Number of Cases	605	223	285	442	1555
p	.181	.176	.256	.121	.034

χ^2 = 0.17 with 3 degrees of freedom.

p = .98

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Interview Length and Police Response Time					
Correlation	.0156	.0304	.1086	-.0178	.0284
Number of Cases	638	333	388	513	1872
p	.347	.290	.017	.344	.110

χ^2 = 3.70 with 3 degrees of freedom

p = .30

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Phone Duration and Police Response Time					
Correlation	.0445	-.0751	.2244	.0184	.0483
Number of Cases	433	198	195	298	1124
p	.178	.147	.001	.376	.053

χ^2 = 9.46 with 3 degrees of freedom.

p = .024

Table B-9

Effect of Interview Delay Time on Time Estimation Errors

	Jacksonville	Peoria	Rochester	San Diego	Probability of Inconsistency
Phone Duration	-.06	.01	-.00	.07	
Response Time	-.00	.01	.01	-.01	.637
Interview Length	.00	-.05	-.03	(-.07)	

Correlations are shown.

Significant correlations are in parentheses.

Inconsistency probability is sign test result.

who are harder to contact, and these hard-to-reach respondents are different from easier-to-reach ones. The timelag itself seemed to have little effect. The same is true of time errors. The direction of the relationship could not be estimated before the analysis, and the correlations are evenly distributed between positive and negative for the three times in four sites (the sign test does not approach significance). Scatterplots, shown in Figure B-10, show no evidence of non-linearity. The only correlation different from zero is one that should be zero, the correlation between timelag and interview length in San Diego. Because it is extremely unlikely that there is any direct cause-and-effect relationship between interview length and timelag, we must assume that the correlation is spurious.

Stress and other characteristics of the incident (Table B-10) appear to have moderate but inconsistent effects. When the crime occurred at work, respondents were somewhat more likely to underestimate (and less likely to overestimate) phone and response times; this is the only particularly consistent result. People greatly overestimated phone duration in most involvement crimes, but were slightly closer to the mark in discovery cases and robberies. All other relationships either varied between sites, or came nowhere near significance.

Personality (Table B-11)--Sex, occupation and income are clearly poor predictors of time errors: the coefficients are sometimes positive, sometimes negative, and in any case extremely low. Age, schooling, and race appear more promising. Coefficients are higher, the signs are the

Figure B-10

Estimation Error and Interview Delay Time--Peoria

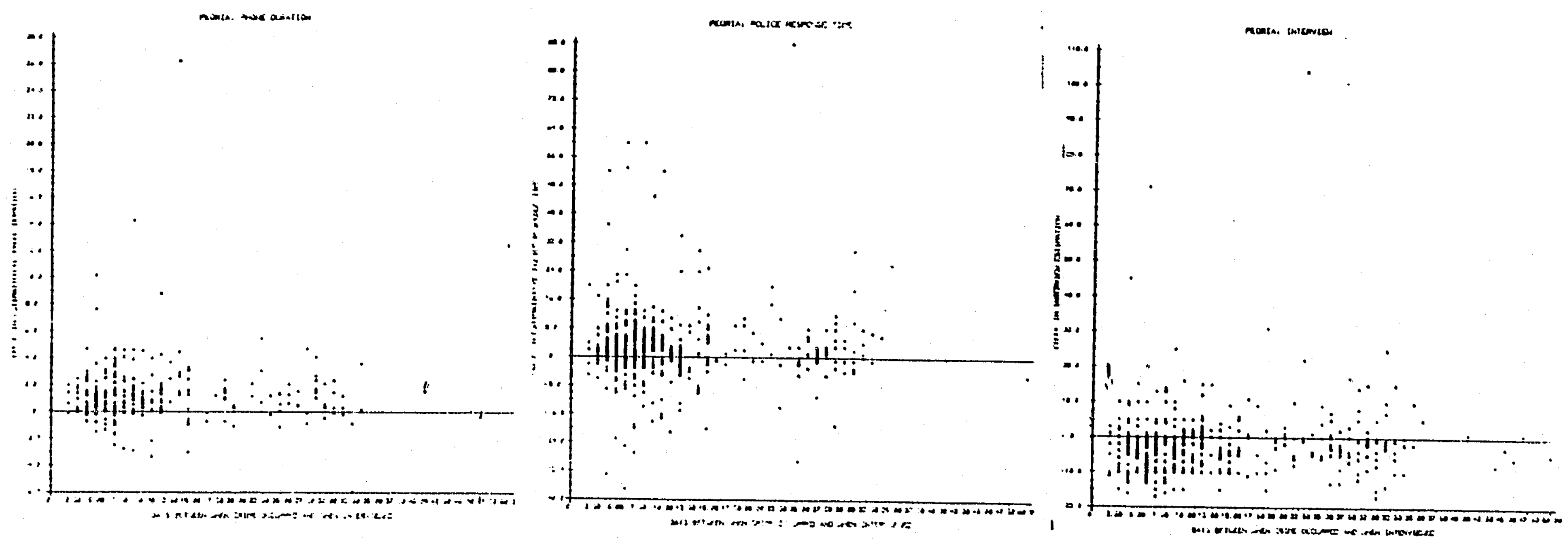


Table B-10

Effects of Stress on Time Estimation Errors

	Jacksonville	Peoria	Rochester	San Diego	Probability of Inconsistency
Crime Type					
Phone	(.17)	(.20)	.15	(.17)	
Response Time	.05	.13	.08	.04	.086
Interview	.06	.06	.07	.04	.694
Involve/Discovery					
Phone	(.09)	.08	.07	(.09)	
Response Time	.04	.04	.04	.05	.363
Interview	.00	.03	.01	.01	.626
Location					
Phone	.05	.09	.05	(.16)	
Response Time	.07	.11	.01	.04	.009
Interview	.04	.06	.03	.05	.653
Role					
Phone	.09	.05	.13	.05	
Response Time	.02	.09	.09	.08	.800
Interview	.03	.06	.08	.07	.830
Interview Type					
Phone	(.08)	.01	.03	.03	
Response Time	.03	.09	.00	.01	.363
Interview	.00	.07	.05	.01	.626

Etas are shown

Significant (.05 level) Etas are in parentheses.

Inconsistency probability is Friedman Index result.

Table B-11

Potential for Time Adjustment--Social Characteristics

	Jacksonville	Peoria	Rochester	San Diego	Probability of Inconsistency
Sex*					
Phone	.04	.07	.04	.04	
Response	.01	.01	.06	.05	.073
Interview	.03	(.09)	.05	.03	
Race*					
Phone	(.16)	.09	.06	.07	
Response	.04	.09	(.11)	.04	.003
Interview	.02	.06	(.13)	.02	
Age					
Phone	(-.17)	-.11	-.08	(-.15)	
Response	.00	-.03	-.03	-.02	.073
Interview	.02	.06	(-.08)	-.00	
Schooling					
Phone	(-.08)	-.05	(-.14)	.03	
Response	-.05	-.05	-.03	-.01	.019
Interview	-.04	-.05	-.02	-.02	
Occupation					
Phone	-.04	.08	.03	.05	
Response	.00	.04	.00	-.02	.387
Interview	-.02	-.07	.00	-.02	
Income					
Phone	-.08	-.06	-.06	-.06	
Response	-.01	-.02	.10	.02	.194
Interview	-.04	(.15)	-.07	.02	

*Statistics shows are Etas.

All others are correlations. Inconsistency probability is sign test result.

Significant (.05 level) statistics are in parentheses.

same and more of them are significant. Still, the highest coefficient here is .17--indicating that less than three percent of the variance in the best predicted error can be explained by the best predictor, age. In general, white, older, and better-educated respondents give lower time estimates than do people without those characteristics.

Of 12 variables tested, only six--race, age, schooling, location of crime, type of crime, and UCR category--give any indication that they will reliably predict errors and allow time adjustments. These variables predict phone duration errors better than response time or interview length errors, possibly because phone duration estimates were proportionately worse than the others, and there was more variance to explain. Despite the significance of these variables, it is unlikely that they will provide good adjustments because of the low correlations.

To illustrate this, assume that each of the variables is statistically independent of the others. If this is true, the proportion of variance explained by a combination of all of them would be equal to the sum of the squared correlations. (If the variables are positively intercorrelated--the most likely case--this proportion explained could only be lower (see Snedecor and Cochran, 1978, pp. 400-402). Then the maximum possible variance in each error that can be explained by these variables would be the value shown in Table B-12.

As shown, the maximum possible value is 10.0 percent. If citizen reporting times behave more like police response times or interview lengths

Table B-12

Maximum Possible Percentage of Variance in Time Estimation Errors Explained by Six Predictor Variables

	Jacksonville	Peoria	Rochester	San Diego
Phone Duration	10.0%	7.7%	6.0%	9.1%
Police Response Time	1.3%	4.2%	2.2%	0.8%
Interview Length	0.8%	1.8%	3.0%	0.5%

(as they are likely to, since they appear to be usually longer than phone durations), the maximum value would be closer to four percent. Since the predictor variables are certainly correlated, the value will be lower still.

It is unlikely that a transformation of the errors would increase the correlations and etas much. Plots of the relationship between errors and such variables as income, age, occupation, and schooling show that a straight line should fit the data about as well as anything.

Given the abysmal potential for prediction, and the unknown but potentially serious validation problems (methodological and theoretical) involved in adjusting the data, we conclude that no worthwhile adjustment is possible.

Deletion of Errors

The prospects for predicting grossly erroneous estimates and deleting them is little better. Although a few relationships were found to be significant or consistent, they were not large enough to warrant use of prediction and deletion. Correlations are shown in Tables B-13 through B-16.

<u>Other errors</u> (Table B-13) are inconsistent predictors. There is no relationship between the size of interview error and the size of the other two that is useful for our purposes. Phone duration and police response time are significantly but weakly related to each other, indicating that forgetting, stress, and personality are again unlikely to be reliable predictors.

Table B-13

Correlation Between Size of Errors in Estimates of Three Time Durations

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Interview Length and Phone Duration					
Correlation	-.0141	.0803	.0035	.0104	.0096
Number of Cases	605	223	285	442	1555
p	.365	.116	.477	.414	.353

χ^2 = 1.46 with 3 degrees of freedom.

p = .69

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Interview Length and Response Time					
Correlation	-.0260	.0589	.0522	.0142	.0163
Number of Cases	638	333	388	513	1872
p	.256	.142	.152	.374	.240

χ^2 = 2.24 with 3 degrees of freedom.

p = .53

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Phone Duration and Police Response Time					
Correlation	.0272	.2692	.2238	.0151	.1018
Number of Cases	433	198	195	298	1124
p	.287	.001	.001	.398	<.001

χ^2 = 13.57 with 3 degrees of freedom.

p = .004

Forgetting (Table B-14) again has no effect. If forgetting were important, errors would increase in size as the time between the event and the recollection increased (Straus, 1966). Thus forgetting is measured by the number of days elapsed between the day the crime was reported and the day the respondent was interviewed.

Stress appears more likely to predict the size of errors than their direction. Respondents in discovery cases were consistently better estimators of time durations than respondents in involvement cases. Although the location of the crime was not a powerful predictor, it was a very consistent one: when the crime occurred at work, respondents made smaller errors in estimation of police response times and phone times than did respondents victimized at home or elsewhere. Non-victims--bystander-callers and witness-callers--were better estimators than either victims or victim-callers. There were no consistent or large differences between crime types or interview types.

Personal characteristics (Table B-16) have marginal effects once again. Nonwhites made slightly larger errors on phone and police response times than whites, but were neither better nor worse for interviews. Respondents with more years of schooling made smaller errors for all times and men made marginally smaller errors than women. Age, occupation, and income have inconsistent, though occasionally spectacular, effects.

In addition to these variables, we analyzed respondent confidence in estimation accuracy (Table B-16)--comparing time perceptions that

Table B-14

Effect of Interview Delay Time on Size of Time Estimation Errors

	Jacksonville	Peoria	Rochester	San Diego	Probability of Inconsistency
Phone	-.07	.03	-.05	.04	.36
Response Time	.02	-.02	.08	.06	
Interview	-.01	.04	.04	(.08)	.31

Correlations are shown.
Significant (.05 level) correlations are in parentheses.
Inconsistency probability is sign test result.

Table B-15

Effect of <u>Stress</u> on Size of Time Estimation Errors

	Jacksonville	Peoria	Rochester	San Diego	Probability of Inconsistency
Crime Type					
Phone	(.14)	(.21)	(.19)	.13	
Response Time	(.17)	.09	.11	.09	.210
Interview	.03	.08	.06	.08	.590
Involvement/Discovery					
Phone	.07	.07	.03	.01	
Response Time	(.16)	(.13)	(.13)	(.19)	.040
Interview	.04	.02	.03	.04	.062
Location					
Phone	.07	.08	.15	.05	
Response Time	(.11)	.05	.02	.08	.037
Interview	.01	.07	.02	.07	.371
Role					
Phone	.10	.10	.11	.14	
Response Time	.08	(.14)	(.16)	.09	.027
Interview	.06	.05	.04	.05	.180
Interview Type					
Phone	.08	.01	.04	.06	
Response Time	.05	.01	.01	.01	.360
Interview	.00	.07	(.09)	(.08)	.310

Etas are shown.

Significant (.05 level) Etas are in parentheses.

Inconsistency probability is Friedman Index result.

Table B-16

Effect of <u>Social Characteristics</u> on Size of Time Estimation Errors

	Jacksonville	Peoria	Rochester	San Diego	Probability of Inconsistency
Sex*					
Phone	.07	.11	.04	.02	
Police Response	.01	.09	(.17)	.08	.07
Interview	.05	.08	.01	.04	
Race*					
Phone	(.15)	.09	.03	.05	
Police Response	.01	.09	.04	.03	.019
Interview	.01	(.10)	.04	.03	
Age					
Phone	(-.14)	-.13	-.01	(-.12)	
Police Response	-.01	.01	-.04	-.02	.39
Interview	.04	.03	(.07)	.01	
Schooling					
Phone	-.08	-.08	-.06	-.02	
Police Response	-.02	-.07	-.07	-.02	.003
Interview	-.03	-.05	(-.09)	-.03	
Occupation					
Phone	-.04	-.09	+.05	.01	
Police Response	-.01	.03	-.03	-.01	.39
Interview	.00	(-.13)	-.01	.01	
Income					
Phone	-.12	-.15	.06	-.00	
Police Response	-.01	-.01	-.09	.10	.39
Interview	.01	(.25)	(-.25)	.02	
Subjective Accuracy Estimate					
Phone	.07	(.13)	.06	.03	.145
Response	.03	.02	.01	.02	

*Statistics shown are Etas. All others are correlations.

Significant (.05 level) statistics are in parentheses.

Inconsistency probability is sign test result.

respondents claimed were "exact" to those they felt were "estimates." Surprisingly, "estimated" perceptions were not significantly different from "exact" ones, and in one-fourth of the cases were better. The correlations of these subjective accuracy estimates with one another were extremely high, ranging from .69 to .93. We conclude that "exactness" of an estimate probably depends more on the characteristics of the respondent than on the perceived "exactness" of the estimate itself.

If these characteristics were statistically independent, we could expect to explain no more than eight percent of the variance in citizens' time perception errors (Table B-17). A more likely figure is four percent to five percent, and of course the characteristics will not be completely independent. Given the extensive cross-validation necessary to insure that the times we predict to be worse really are worse, we conclude that identification and deletion of outliers is impractical.

Although large errors cannot be predicted or adjusted, they are certain to occur. Luckily, the sample sizes are large enough so that these random mistakes need not have a disastrous effect on our analysis. If the appropriate techniques are used, valid conclusions may still be drawn from citizen time perceptions.

Summary and Implications for Restricting the Analysis

Although methods are readily available for altering confidence intervals and probabilities to account for errors in measurement, the

Table B-17

Maximum Possible Percentage of Variance in Size of Time Estimation Errors Explained by the Six Best Predictor Variables

	Jacksonville	Peoria	Rochester	San Diego
Phone Duration	5.4%	4.8%	4.2%	2.6%
Police Response Time	4.5	6.0	7.8	5.8
Interview Length	0.9	2.7	1.3	1.2

peculiarities of citizen time estimates--particularly the inefficiency of small samples--mean that some analyses are very likely to be a waste of time, and that others may give falsely precise results even when alterations have been completed. When appropriate techniques are used, however, citizen estimates are reliable enough to yield conclusive results. The techniques must be chosen with four considerations in mind.

First, inefficiency effects will overwhelm bias effects for individual estimates. That is, random errors have a larger effect on each case than pre-determined biases. When sample sizes are very small, these random errors will not necessarily cancel each other out. As sample size increases, so does the likelihood that these random errors will offset one another. In general, then, we should aggregate estimates into the larger groups practical for comparison, and view comparisons of small groups with a grain of salt.

Second, characteristics of the situation or the respondent are not consistent or important predictors of errors. Thus we can aggregate different crime types and locations, different income and ethnic groups, and so on, with little fear of biasing the resulting distribution.

Third, a principal source of bias is the length of the time interval estimated. Although this source of bias will affect the intervals between individual estimates, it will preserve their order. The expected difference between a five and a ten minute estimate is probably greater

than five minutes, for example, since the five minute guess is more often than not an overestimate, while the ten minute guess is probably about right. Still the five minute estimate will very likely represent a shorter length of time than the ten minute, and the estimates may be rank-ordered. The higher precision inherent in traditional, interval-scale statistics is likely to be a mirage. Statistics that rely on ranks will be preferable.

Finally, people tend to round estimates off to the nearest minute, or the nearest five minutes. This accounts for the tendency to overestimate very short times--citizens have rounded times of a few seconds up to one minute, and times of two and three minutes up to five. Thus, our data will underrepresent the number of very short times, unless some way can be found of smoothing out the distribution.

In conclusion, citizen time estimates present a difficult but not insurmountable problem. They are only slightly biased although extremely inefficient. In the analysis reported in the text, we have chosen methods which avoid much of this error, and we explicitly account for the rest wherever possible. Despite the relaxed assumptions and widened confidence intervals, the results are often highly significant.

APPENDIX C
THE EFFECT OF TOTAL RESPONSE TIME ON ARREST

In Chapter 2 we discussed the effects of reporting time, dispatch time and travel time on arrest. The most important result was that arrest depends on the total response time--all of these times added together--and not on any of them separately. Separate analysis would, as it has in the past, cause researchers to underestimate the effects of response time.

Even when the variables are added together, however, there are any number of forms the relationship may take. Kansas City looked at linear, logarithmic, and inverse power functions, for example, choosing the form that fit the data best. This sort of "model searching" procedure will eventually result in the model that best fits the data at hand. However, the fit may be spurious (due only to the fact that many models were considered), and thus may not extend to other jurisdictions (Mosteller and Tukey, 1977). This problem can be overcome if the model can be stipulated in advance by theory.

A distinct but related problem that has not been handled by researchers is the problem of two-directional effects. Fast response leads to arrest in some cases, it is true; but the perception that an arrest might be made will lead to faster response times as well. Although this is not a problem statistically (a relationship is a relationship, regardless of which variable is the cause and which the effect), it does pose a policy problem. If the relationship is analyzed without controlling for two-directional effects, only some of the relationship found will be due to the effect of total response time on arrest; the rest will be due to the effect of arrest on total response time. Thus lowering total response times by adding officers to the response force, changing dispatch procedures, or encouraging faster reporting will not have as big an impact on arrests as one would expect.

There are at least three ways of handling this cause-effect problem. The first, discussed frequently in the literature (Isaacs, 1967; Clawson and Chang, 1977), is to conduct an experiment. Police response times would be randomly manipulated to determine the effect of change on arrest rates. Unfortunately, it would be very difficult to manipulate the most important component of total response time (because it is the largest), citizen reporting time. In addition, an experiment of this type would be extremely costly.

A second method of examining the effect of response time is to control for information that affects the perceived probability of arrest at all stages of total response, thus eliminating the effect of arrest on response time. Here, the information available to the police operator, to the dispatcher, and to the responding officer would all have to be categorized by perceived likelihood of arrest, and each category analyzed separately. If the department is considering a program to increase reporting speed, the information available to

citizens would have to be included. Like an experiment, this method would require extensive (and expensive) data collection, especially since large sample sizes would be needed for each of the information categories.

A third method is cheaper, because it relies on data collected by Kansas City for its Response Time Analysis. This method uses an econometric technique called "indicator variables" to estimate reporting time, dispatch time, and travel time using factors that do not predict arrests. Examples include actions taken and problems encountered by the reporting citizen, whether the responding patrol officer was in or out of his car when dispatched, the distance traveled, and so on. The total response time predicted by the so-called indicator variables is then regressed on the probability of arrest, resulting in an unbiased measure of the one-way effect of response time on arrest. Slightly better predictors can be obtained through a closely-related "three-stage least squares" technique developed by Zellner (1962). Both the indicator variables and three-stage least squares techniques have the advantage of being much less expensive than the others, particularly given the easy availability of the Kansas City data. Here again, however, the form of the indicator relationships must be obtained from theory to prevent spurious results and inaccurate policy implications.

In this appendix, then, we do two things:

- We look at the basic relationship of total response time to arrest, specifying the form that basic relationship ought to take;

- We examine a set of possible indicator variables, and specify the theoretically-justifiable indicator equations.

The final result is a set of equations which may be analyzed either in series or simultaneously to allow unbiased estimation of the effect of total response time on arrest.

Basic Form of the Arrest-Response Time Relationship

Figure 4 (in Chapter 2) shows the basic shape of the relationship between total response time and arrest. The accompanying text illustrates how a curve of this type makes intuitive sense when response time is looked upon as "suspect getaway time." We can justify the curve in Figure 4 in two other ways:

- Its general shape--a backwards "S"--is that of the function most frequently used for analysis of dichotomous dependent variables, the logistic function.
- It is nearly identical to the curve predicted by an entirely different method, search theory.

The remainder of this section is devoted to showing that the search theory curve can be expressed as a logit, and can therefore be estimated by ordinary linear regression. Since common sense, prevailing statistical practice, and an applied mathematical theory all predict the same form, we believe that form should be used to estimate the relationship.

Search theory has been applied several times to law enforcement. The most notable involve random preventive patrol (Elliot and Sardino, 1970) and response to crime calls for service (Bottoms, et al., 1969; Bottoms, 1971). The description here is paraphrased from the simplified robbery response model presented by Bottoms (1971).

Assume that a crime has been committed in a city where streets are laid out in a perpendicular grid. The criminal leaves the scene of the crime and proceeds randomly away at some speed less than or equal to S blocks per minute. At t minutes after he leaves the scene, the criminal may thus be anywhere within the square in Figure C-1; in other words, he can be no further than St blocks from the scene. The police enter the area T minutes after the suspect has left, and immediately begin to search the area at speed P blocks per minute. The probability that the suspect will be arrested within x minutes of the time search begins is:

$$p(x) = 1 - \exp(-NP/4S^2\ (1/T - 1/T+x))$$

where N is the number of police units responding to the call. If the police continue to search indefinitely, the last term will drop out, and the asmyptotic equation is thus

$$p(x) = 1 - \exp(-NP/4S^2T)$$

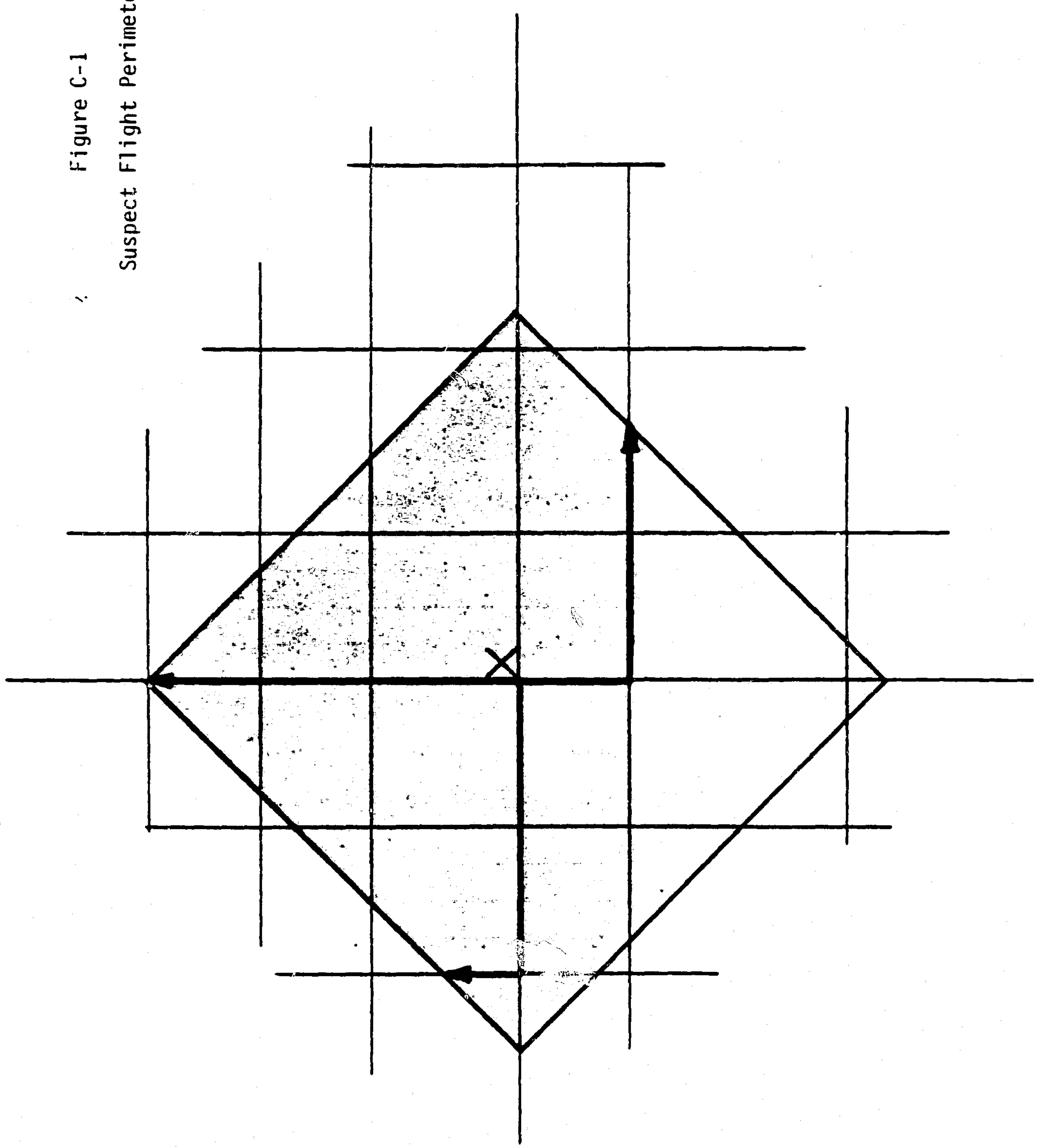
which may be reexpressed as

$$p(x) = 1 - \exp\ (\text{alpha}\ T^{-1}),\ \text{where alpha} = -NP/4S^2.$$

To illustrate the relationship predicted by search theory, consider the following example: two officers respond to the call, and

Figure C-1

Suspect Flight Perimeter.



search at the speed of 6 miles per hour (about 2 blocks per minute) for 5 minutes, before giving up and returning to the scene to take a report. The suspect leaves the scene traveling at 3 miles per hour (1 block/minute). The predicted probability of response related arrest for each level of suspect getaway time T is

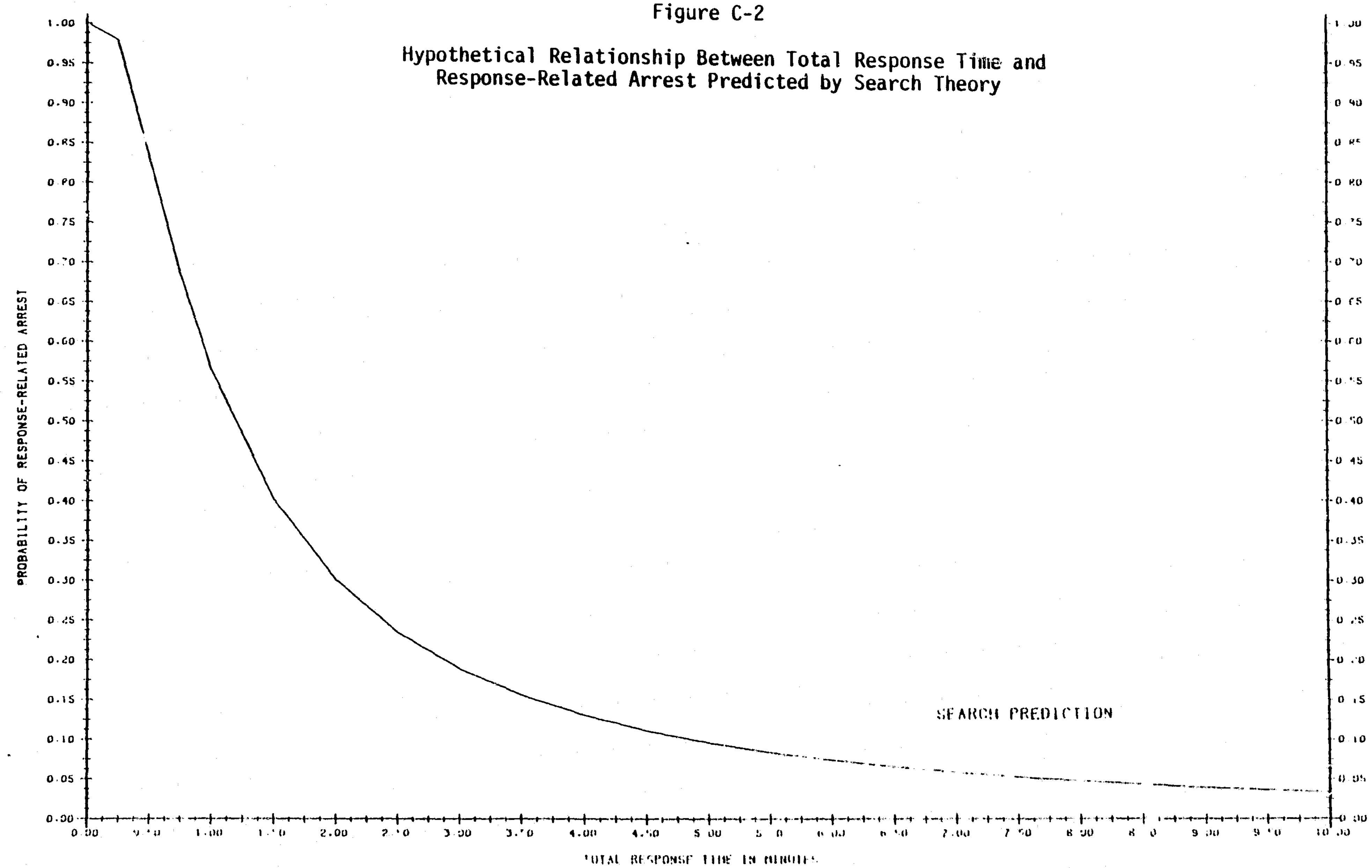
$$p(A) = 1 - \exp ((2 \times 2)/(4 \times 1) \times (1/T - 1/T + 5)).$$

The probability of arrest for each value of T up to ten minutes is shown in Figure C-2. The shape of the curve will of course depend on the exact parameters specified, but the backward-S shape extends to all curves predicted by search theory.

In using the above equation, we assumed that the chances of arrest (given that the police see the fleeing suspect) are 100 percent. If arrest is less certain, because the suspect is hiding or armed, or because the description is too vague or incorrect, this can be taken into account by multiplying the actual search speed by the probability of arrest given that the suspect is sighted. This yields <u>effective</u> search speed. For example, two officers searching in their patrol car at an actual speed of 12 miles per hour may only identify and arrest the suspect with a probability of .50 if they see the suspect. In this case, the effective search speed would be 12 x .5 = 6 miles per hour. Note also that this relationship does not require that the officer respond to the scene; rather, total response time is considered to be the time between commission of the crime and the time the officers are able to begin searching the vicinity. Suspect descriptions are frequently given by radio to officers as they respond, and in these cases they need not respond directly to the scene.

Figure C-2

Hypothetical Relationship Between Total Response Time and Response-Related Arrest Predicted by Search Theory



The search theory curve in Figure C-2--like the intuition-based curve of Figure 4--is not symmetrical. That is, the right-hand tail of the backwards-S (corresponding to the chances of arrest for relatively long total response times) is very long. This indicates that the chances of arrest decrease quickly as the total response time increases to a few minutes, and then levels off. Where the curve levels off depends on the search parameters: the speed of the suspect and the patrol officers while they are searching, the number of officers responding to the call, and the thoroughness of the search. No matter what the parameters, however, all curves predicted by search theory show the arrest probability to be one at zero total response time; drop fairly quickly for the first few minutes; and then level off, only reaching zero as total response time becomes infinite. Since the parameters for any given search are unknown (suspect speed can only be guessed at, for instance), and since the technique used to measure the curve must be valid for aggregation of searches with greatly differing parameters, some approximation to the search theory results must be found. Logit regression provides a near-perfect approximation.

<u>Logit regression</u> relies on a transformation of the dichotomous dependent variable (here, arrest) to accomplish two statistical goals:

- Use of logits helps to stabilize the regression error term, which is very unstable when simple regression is used;
- The logit limits the predicted probabilities to values between zero and one, while simple regression usually pedicts that some probabilities would be less than zero or greater than one.

The logit transformation involves computing the log-odds in favor of arrest, or

$$\text{logit} = \log \frac{p(\text{arrest})}{1-p\ (\text{arrest})},$$

and regressing this against the appropriate independent variable. Thus the typical logit regression equation is:

$$\log \frac{p(\text{arrest})}{1-p(\text{arrest})} = B_1 + B_2X + e$$

where X is the independent variable and e is the regression error term.

When X is a continuous variable, such as total response time, B_1 and B_2 may be estimated in two ways: (1) by categorizing X into several parts, determining the probability of arrest for each part, and calculating the logit using ordinary least squares regression (or weighted least squares--see Theil, 1970); (2) by using a non-linear estimation technique, such as the one described by Berkson (1955). Because some information is lost when a continuous variable is split into categories, the second technique is slightly more efficient, especially with small samples. It is also more expensive, however. Either method will estimate curves in the proper backwards-S shape.

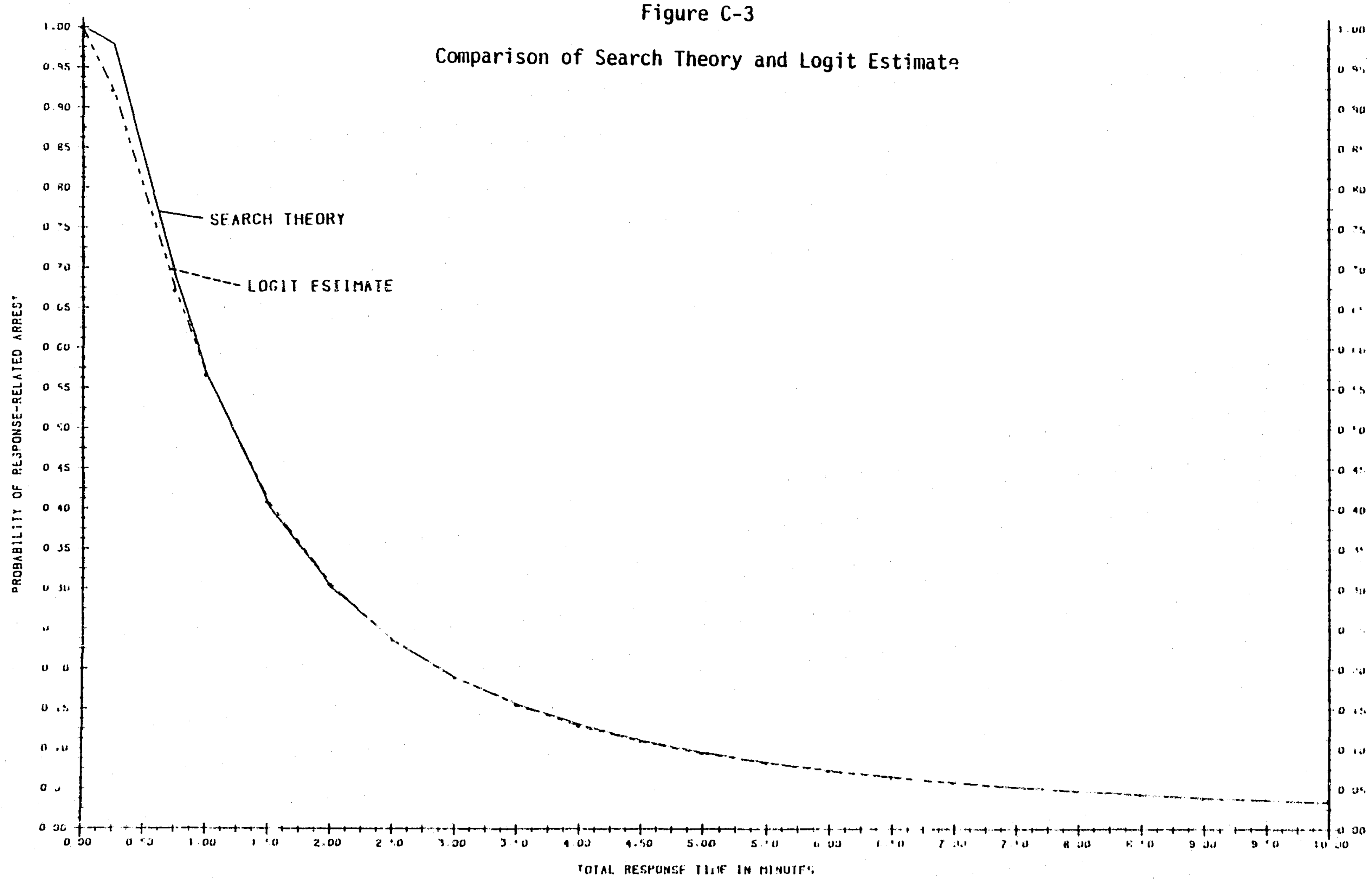
The estimated logit curve will be symmetrical, however, unless the X variable is transformed in some way; as stated earlier, the expected curve is not symmetrical. Thus some transformation will be needed, to "squeeze" the left-hand values (short total response times) together, and pull the right-hand values (long response times) apart. Although an infinite number of transformations will do this, the

logarithm is particularly appealing. Kansas City found the logarithm to be the transformation of dispatch time and travel time that best fit their response-related arrest data. Miller and Rapaport (1977) found that the logarithm of fire department response time was the transformation that best predicted fire damage. Finally, statisticians have concluded that logarithms are usually the best method of re-expressing variables that are counts or amounts, including time durations (Tukey, 1977). For these reasons, and not incidentally because it invariably worked better than anything else, the logarithm of various time durations has been used frequently in this study (see Appendixes D-5 and E-4, for example).

Figure C-3 shows two curves. One is the search theory-predicted curve of Figure C-2. The other is the logit approximation of this curve, obtained by regressing the log-odds of arrest on the logarithm of total response time, for times grouped into one-minute intervals. Clearly, the curves are almost indistinguishable, particularly for the critical response times between one and five minutes. The largest deviation between the probability of arrest predicted by search theory and the logit approximation of it is just over five percent for total response times between zero and 30 seconds. These happen very infrequently, and a huge sample of cases would be required to get a reasonably large number of them. In fact, 100 cases with these minimum response times would be required for the difference between the theoretical result and the approximation to be statistically significant at the .05 level. For the

Figure C-3

Comparison of Search Theory and Logit Estimate



more important differences when response times are one minute or greater, over 50,000 cases with the same total response time would be needed before the differences would be statistically significant. It is obvious that sampling error will overwhelm the marginal differences between the search theory results (the "actual" regression line) and the logit approximation to it.

As noted in the text, there is no single relationship between total response time and arrest. In some situations, total response time will be more important than others: fleeing suspects are harder to see at night, thus the effective search speed will be reduced; fast response times are more likely to lead to arrest when several units can respond to the call than when only one can; longer searches are more likely to be productive than shorter ones. These conditions, differing from one crime to the next, will be reflected in differing search parameters and slightly differing curves. Somewhat more precise results may be obtained by calculating the relationship between response time and arrest separately for each set of conditions, just as past researchers calculated the police response time relationship separately for each crime type (Clawson and Chang, 1976; Tarr, 1977; Kansas City, 1977). On the other hand, these more precise results will not be particularly useful unless different situations imply radically different policies. It is hard to imagine police researchers advocating (and police administrators implementing) one policy on response time for rainy days, and a different policy for sunny days.

In summary, search theory and our intuition indicate that the relationship between response time and arrest should resemble the curve in Figure 4. Logit regression on the logarithm of response time provides a nearly-perfect approximation of this theoretically predicted result. Finally, although more precise results can be obtained if search parameters are controlled for, the extra precision is not likely to be policy-relevant.

Estimating the Effect of Total Response Time on Arrest

Although the functional form of the relationship between total response time and response-related arrest can now be specified, it is still necessary to consider the fact that expectation of arrest will influence total response time as well. The most straightforward way of handling this problem is to conduct an experiment. Although an experiment has been recommended with ritual regularity by analysts of nonexperimental data, the expense required and the difficulty of administering an experiment may indicate that nonexperimental data should be used if at all possible.

An experiment would be very expensive and thus might only be conducted in one or two sites (if it is conducted at all). On the other hand, reanalysis of the (nonexperimental) Kansas City data would be relatively cheap. Reanalysis would also help settle the question of how reliable the police dispatch and travel time data regularly collected by most police departments are. If the dispatch and travel data are relatively good, total response time data from four more cities--the data collected by the present study--could also be used.

An experiment would also be extremely difficult to administer, if indeed any police department would consent to administer it.

- Police dispatch times would have to be manipulated by queueing randomly chosen calls for service. To test the hypothesis that reporting time matters most when it is very short, some calls received in-progress or with very short reporting times would have to be queued--a policy few police administrators could live with.
- Information available to responding officers would have to be carefully maintained and the content analyzed.
- It is unlikely that citizen reporting time--the largest component of total response time--could be manipulated at all without resorting to city-wide time series design. As explained in Chapter 6, advertising and community organization campaigns aimed at shortening reporting times would only take effect over weeks and months rather than immediately.

If the controversy surrounding the Kansas City Preventive Patrol Experiment (Kelling, et al, 1975) is any indication, at least two attempts at a carefully controlled experimental design may be required: one to get the "bugs" out of the design, and one to assess the actual impact of changing total response time.

Luckily, statistical techniques are available for partitioning the effect of total response time on arrest from the effects of expectation of arrest on total response time. Each of these simultaneous effects can be measured through the use of simultaneous equation estimation: an econometric method used extensively to specify such two-directional systems as the effects of the price of a good on the quantity available, and the corresponding effect of the quantity demanded on the price. These methods require that the variables in question (here, total response time and arrest) depend not only on each other, but on other "exogenous" factors as well. If a sufficient number of exogenous variables can be identified and their effects measured, then the basic results of an experiment can be obtained without resorting to an experimental design.

In the rest of this section, we identify a number of exogenous variables that are measured in the Kansas City study, and could be easily and relatively cheaply measured by future researchers. The form of the relationship between these variables and each of the three components of total response time is then considered, followed by a specification of the entire system of simultaneous equations.

Citizen Reporting Time

As is shown in Appendixes E-4 and F-3, citizen reporting time depends on both the actions people take before deciding to call the police, and the problems they encounter in attempting to place the call. In addition, one might suspect that the likelihood of arrest will influence citizen reporting time. (This is not tested in Appendixes E and F, since the expectation of arrest is not particularly relevant to the issues examined in these sections.) Arrest may affect citizen reporting time in two ways.

First, people may take different actions in situations when they believe that an arrest is likely. (Since problems are unforeseen hindrances to placing the call, the likelihood that a problem will occur should not be influenced by the expectation of arrest.) If this is the case, then the functional form of the relationship between citizen

reporting time and actions, problems, and the expectation of arrest would look like this:

$$CRT = a + b_1\text{Action1} + b_2\text{Action2} + \ldots + b_n\text{ProblemN} + b_a\text{Arrest}.$$

That is, arrest would simply be an additional dummy variable added to the equation.

Expectations of arrest may also influence reporting time if people act or solve problems more quickly when they expect that an arrest could be made. In this case, the functional form of the citizen reporting time/actions, problems, and arrest relationship would be more complicated:

$$CRT = a + b_1\text{Action1} + \ldots + b_a\text{Arrest} + b_{n+1}\text{Action} \cdot \text{Arrest} + b_{n+2}\text{Action 2} \cdot \text{Arrest} + \ldots + b_{2n}\text{Problem N} \cdot \text{Arrest}.$$

Here, the interaction of arrest with each action and problem is also added to the equation. In both cases, expectations of arrest are assumed to be strongly and positively related to the likelihood that an arrest was actually made.

Regardless of which functional form is correct, the second equation will result in better predictions of citizen reporting time, simply because there are more independent variables. However, the additional proportion of the variance in citizen reporting time that could be explained by the addition of the action/arrest and problem/arrest interaction effects would not be statistically significant or particularly large, if the "real" functional form is the first, shorter model. Thus, before using either model, it makes sense to test the significance of the additional predictive power of the second over the first.

It seems likely that the added power of the second will not be significant, since the time required to act and solve problems differed only slightly between discovery crimes (when a response-related arrest is extremely unlikely) and involvement crimes (when a response-related arrest is sometimes very likely). In Appendix E-4, we show that the addition of interactions between crime types and actions, and crime types and problems do not significantly increase predictive power.

All else being equal, a shorter model will of course be preferred, because it is simpler to work with, and results in fewer hypothesis testing problems.

Police Dispatch Time

Kansas City (1977), Clawson and Chang (1976), and Tarr (1978) all found no significant (or large) relationship between the chances of arrest and dispatch time. Although Kansas City did not report their results, both Clawson and Chang and Tarr found, as one would expect, that dispatch was slightly faster when an arrest was made. The samples collected were too small for the expected negative relationship to be statistically significant, however.

One would expect this relationship to be negative, for two reasons:

- Shorter dispatches will cut total response times, and thus decrease suspect getaway times. That is, shorter dispatch time will lead to higher chances of arrest.

- Dispatchers probably act more quickly when they expect that an arrest is possible.

Unless dispatchers' expectations are usually wrong, these two reasons will confirm one another, and the relationship will be roughly equal to the sum of the two parts.

Since dispatch time is only slightly related to the chances of arrest, controlling for two-directionality in the relationship will only decrease the size of an already very minor relationship. Thus it is probably not necessary to include the chances of arrest in the equation that predicts dispatch time, and no prediction equation may be necessary. For completeness' sake, however, we note that the equation may take two forms:

- If all arrests are equally important to dispatchers, and if dispatchers are equally good at estimating the chances of arrest for all situations, then
  $DT = a + b_1X_1 + b_2X_2 + \ldots + b_a\text{Arrest}.$

- If the expectation of arrests depend on other factors as well (such as reporting time, location, and so on), or if arrests for some crimes are judged more important than for others, then
  $DT = a + b_1X_1 + \ldots + b_a\text{Arrest} + b_{n+1}X_1 \cdot \text{Arrest}$
  $+ \ldots + b_{2b}X_n \cdot \text{Arrest}.$

In both sets of equations, the X's are among the factors shown in Table C-4, and correspond to the information typically collected by the complaint taker upon receiving a call for service.

Table C-4

Potential Indicators of Dispatch Time

- Dispatch Workload
- Patrol Workload
- Availability of Beat Officer
- Time of Day
- Location of Crime
- Involvement/Discovery
- UCR Category
- In-progress
- Reporting Time
- Injury
- Weapon Used

Again, it is technically appropriate to determine the significance of adding the interaction terms to the model before choosing one or the other. In practice, use of indicator variables to predict dispatch time will probably be more trouble than it is worth.

Police Travel Time

The effect of patrol officer expectations of arrest on police travel time is by far the most important problem to be considered here. Virtually all researchers who have examined the issue have noted that two-directionality would bias the relationship between travel time and arrest. As the Kansas City data indicate, however, several factors may be used to predict police travel time, independent of the expectations of arrest. To determine the functional form of the indicator equation, it makes sense first to examine the actions taken by a police officer in traveling to the scene of a crime.

Travel time may be thought of as consisting of three components: "start-up" time, the time required to get in the patrol car and begin moving toward the scene; time in motion toward the scene; and contact time, in which the officer identifies the complainant or suspect at or near the scene and begins to act.

Start-up time and contact time will generally depend directly on the importance or urgency of the call, and as such may be predicted by such factors as crime type, priority of the call assigned by the dispatcher, and so on. In addition, start-up time will depend on whether the officer is in or out of the car when assigned.

Time in motion is somewhat more complicated. By definition, it will be equal to the distance traveled times the avarage speed. Speed, in turn, will probably depend on urgency of the call in the same way that start-up and contact time did. Thus time in motion will be best predicted by the interaction of distance with these urgency factors.

Since police travel time is equal to start-up time plus contact time plus time in motion, a simple indicator equation for police travel time would be:

$$PTT = a + b_1U_1 + b_2U_2 + \ldots + b_nU_n + b_{n+1}U_1 \cdot \text{Distance} + \ldots + b_{2n}U_n \cdot \text{Distance} + b_a\text{Arrest}.$$

where U_i represents the ith urgency factor. A list of possible factors identified by the Kansas City researchers is shown in Table E-5.

Once again, arrest may enter the equation both as an additional factor and as an interaction term with other factors. The same procedure of testing the significance of adding interaction terms will help to determine the need for using the more complicated model.

The Simultaneous System

For the reasons noted earlier, it seems most likely that arrest will only enter each indicator equation as a factor, and not in an interaction term with other factors. If this is the case, the entire system of equations will be as shown in Table C-6. The first equation is of course the point of the whole exercise, and would be simultaneously estimated with the last three equations using three-stage least squares or iterative three-stage least squares. The second equation is, of course, an identity.

Table C-5

Indicators of Travel Time

- Officer already in beat of incident
- Officer in/out of patrol car when dispatched
- Assigned to beat officer
- In/out of assigned beat
- Response code authorized
- Busted call
- In-progress
- UCR category
- Involvement/discovery
- Weapon used
- Injury
- Distance traveled

Table C-6

The Simultaneous System

(1) $\log \frac{p(A)}{1-p(A)} = a + b \log TRT$

(2) $TRT = CRT + PDT + PTT$

(3) $\log CRT = a + b_1 \text{ Action 1} + b_2 \text{ Action 2} + \ldots + b_n \text{ Problem N} + b_A \text{ Arrest}$

(4) $\log PDT = a + b_1X_1 + b_2X_2 + \ldots + b_A \text{ Arrest}$

(5) $\log PTT = a + b_1U_1 + b_2U_2 + \ldots + b_nU_n + b_{n+1}U_1 \cdot \text{Distance} + \ldots + b_{2n}U_n \cdot \text{Distance} + b_A \text{ Arrest}$

Although two-stage least squares is often used as a simpler but slightly less efficient "single equation" method of solving a simultaneous system like that shown in Table C-6, there is reason to believe that the gain in efficiency resulting from use of the multiple equation methods will be important. This is because much of the information available to all actors in the system--the suspect, the reporting citizen, the complaint taker and dispatcher, and the responding officer--cannot be directly measured. For example, the tone of the citizen's voice may convey to the complaint taker that the situation is urgent and the chances of arrest good, even if more easily measurable factors such as reporting time and crime type do not suggest extreme urgency. If this sense of urgency is conveyed to the dispatcher and the responding officer, they may all respond more quickly than the observed factors would predict. Thus the error terms for the equations in the system would be correlated. One of the simultaneous methods will take this additional information into account when computing the regression coefficients, whereas the information would be lost if two-stage least squares were used.

Summary

In theory, the effect of changes in total response time on arrest can be conclusively determined through a carefully controlled experiment. However, this experiment would be very expensive and difficult to administer. Nonexperimental data--collected by the Kansas City Police Department, or perhaps taken from this study if reanalysis of Kansas City suggests that dispatch data are reliable--can be used to determine the size of the relationship. The functional form of this relationship, derived in a common-sense way in Chapter 2, and from two complementary methods in the first section of this appendix, requires that all three components of total response time be added, to determine the relationship between citizen and police response and response-related arrests.

Indicator equations for the three components were derived from the results of the Kansas City study, and from the regression of citizen reporting time on actions and problems examined in Appendixes E and F. The final system of five equations may be estimated through the use of two-stage least squares or three-stage least squares. Of these, the latter is likely to give considerably more efficient estimates of the coefficients.

APPENDIX D
CITIZEN REPORTING TIME

Appendix D includes analysis results referred to in Chapter 3, Citizen Reporting Time. The appendix is divided into six sections, each corresponding to a different section of Chapter 3. Each appendix section consists of a text, explaining how the results were obtained and how they were used, and the results themselves, presented in tables following the text.

Appendix D-1.
Frequency of Arrest

The proportion of cases that result in response-related arrest, with background statistics, is shown here as Appendix D-1.

Tables D-1a through D-1d shows the number of crimes that occurred on sampling days in each of the four sites, and thus could have been included in the sample. The crimes have been broken down into the cells used by the field research assistants to stratify the sample--crime type by arrest. Since only sampled cases were examined for evidence of response-related arrest, it is impossible to tell exactly how many cases in the total population were response-related. The number shown in the figures assumes that cases sampled are a random selection of this population, and that the chances of response-related arrest are the same as in the population. Since cases were chosen by a random process, this assumption is more than reasonable.

The percentage of crimes resulting in response-related arrest is overestimated in our study. This is because information regarding arrest type was collected from crime reports, rather than from observers at the scene. For our purposes, a response-related arrest was defined (as in Kansas City) as any arrest which could not be attributed to some other means, including apprehension by the victim or witness before arrival of the police, immobilization of the suspect due to injury, arrest made due to a victim or witness knowing the suspect's name or address, and the suspect's turning himself in. Crime reports do not always include the information necessary to classify the event as a response-related or non-response-related arrest, however, and in these cases the arrest was classified as response-related. In Appendix D-5, we show that many of the arrests classified as response-related were actually non-response-related arrests; we do not subtract these misclassified arrests from the figures shown here.

Table D-1e summarizes the response-related arrest information in Tables D-1a through D-1d. For all crime types, the proportion of arrest cases attributed to fast police response is shown. Since the decision on whether an arrest was response-related or not was based on information from the crime report, and since crime reports (and the instructions officers receive for filling them out) differ greatly from one city to another, some differences are to be expected. Thus the measured proportion of cases resulting in response-related arrest is overestimated by a slightly different amount in each site, as shown. Like other information taken by the field research assistant, decisions to code arrests as response-related or not were checked by the Washington staff to ensure uniform application of the definition.

Table D-1a

Estimated Number of Arrest and Response-Related Arrest Cases in Each Site
Jacksonville

Involvement	Number	Arrest	Response-Related Arrest (est)
Rape	212	49	30
Robbery	491	56	43
Agg. Assault	723	241	177
PERSONAL	1426	346	250
Burglary	507	163	109
Larceny	911	139	52
Auto Theft	82	16	11
PROPERTY	1500	318	172
Discovery Crimes	8021	56	14
All Part I Crimes	10947	720	436

Table D-1b

Estimated Number of Arrest and Response-Related Arrest Cases in Each Site
Peoria

Involvement	Number	Arrest	Response-Related Arrest (est)
Rape	57	9	4
Robbery	184	14	9
Agg. Assault	243	35	20
PERSONAL	484	58	33
Burglary	186	29	24
Larceny	276	35	26
Auto Theft	20	4	2
PROPERTY	482	68	52
Discovery Crimes	2174	2	0
All Part I Crimes	3140	128	85

Table D-1c

Estimated Number of Arrest and Response-Related Arrest Cases in Each Site

Rochester

Involvement	Number	Arrest	Response-Related Arrest (est)
Rape	52	5	0
Robbery	274	15	12
Agg. Assault	501	70	29
PERSONAL	827	90	41
Burglary	284	49	43
Larceny	494	24	12
Auto Theft	7	0	0
PROPERTY	785	73	55
Discovery Crimes	3876	12	7
All Part I Crimes	5488	175	103

Table D-1d

Estimated Number of Arrest and Response-Related Arrest Cases in Each Site
San Diego

Involvement	Number	Arrest	Response-Related Arrest (est)
Rape	N/A	N/A	N/A
Robbery	707	84	69
Agg. Assault	442	161	107
PERSONAL	1149	245	176
Burglary	706	159	122
Larceny	980	169	107
Auto Theft	153	16	13
PROPERTY	1839	344	
Discovery Crimes	14924	66	37
All Part I Crimes	17912	655	455

Table D-1e

Proportion of All Arrests That Are Response-Related

Crime Type	Jacksonville	Peoria	Rochester	San Diego
Rape	.615	.429	.000	N/A
Robbery	.773	.625	.824	.821
Aggravated Assault	.736	.581	.413	.667
Involvement Burglary	.666	.812	.868	.768
Involvement Larceny	.372	.730	.500	.635
Involvement Auto Theft	.688	.500	.000	.833
Discovery	.244	.000	.800	.556
Weighted Total	.605	.657	.602	.696

Between 60% and 70% of on-scene arrest can be attributed to fast citizen and police response.

Appendix D-2.
Description of Response Times

Appendix D-2 includes descriptive statistics for citizen reporting, police dispatch, police travel, and total response time for all four Forum sites and Kansas City. Like Table 4 in Chapter 3, statistics include: the mean and median, measures of the center of the time distribution; the standard deviation, a measure of the dispersion of the times around the center; the minimum and maximum times obtained; the number of cases from which these times were estimated; and the percentage of total response time made up by each component. Crime types included are:

Figure D-2a--Robbery;

Figure D-2b--Aggravated Assault;

Figure D-2c--Involvement Burglary;

Figure D-2d--Involvement Larceny;

Figure D-2e--Involvement Motor Vehicle Theft;

Figure D-2f--Rape;

Figure D-2g--Discovery Burglary;

Figure D-2h--Discovery Larceny;

Figure D-2i--Discovery Motor Vehicle Theft.

Similar tables for all involvement and discovery cases aggregated are shown in Table 4.

Table D-2a

Descriptive Statistics for Response Time Components for Robbery

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	18.2	3.08	4.06	25.25
	Median	4.3	1.91	3.45	11.56
	Std. Dev'n	70.26	3.86	2.86	70.78
	Minimum	1.06	.38	.1	2.4
	Maximum	721.11	25.7	18.33	730.95
	Number	122	122	127	123
	% of Total Response Time	46.2	21.6	32.2	100.0
Jacksonville, FL	Mean	30.87	5.57	5.06	33.67
	Median	4.59	3.92	3.73	12.50
	Std. Dev'n.	155.30	5.721	4.219	102.74
	Minimum	.00	0.00	0.00	3.00
	Maximum	1510.00	33.00	20.00	745.00
	Number	131	138	116	94
	% of Total Response Time	35.52	51.88	27.19	100.0
Peoria, IL	Mean	234.30	4.47	3.05	43.59
	Median	5.10	3.77	2.42	11.12
	Std. Dev'n.	1248.82	3.59	4.07	206.75
	Minimum	.00	.00	.00	3
	Maximum	10080.00	19.00	29.00	1460
	Number	74	64	76	49
	% of Total Response Time	42.03	34.48	21.45	100.0
Rochester, NY	Mean	119.49	4.98	5.35	189.24
	Median	5.25	3.24	3.36	18.88
	Std. Dev'n.	457.85	5.87	9.15	608.54
	Minimum	.00	.00	.00	4
	Maximum	3720.00	39.00	76.00	3735
	Number	92	86	78	45
	% of Total Response Time	50.48	23.65	25.86	100.0
San Diego, CA	Mean	178.90	11.66	7.01	180.51
	Median	3.06	7.41	4.71	16.93
	Std. Dev'n.	1310.15	16.15	10.08	1381.86
	Minimum	.00	1.00	.00	2
	Maximum	14400.00	108.00	90.00	14520
	Number	134	140	137	112
	% of Total Response Time	23.65	48.21	28.14	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II. Analysis. Kansas City: Board of Police Commissioners, 1977, 142-145.

Table D-2b

Descriptive Statistics for Response Time Components for Aggravated Assault

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	43.38	3.33	4.31	51.1
	Median	5.1	2.00	3.56	12.28
	Std. Dev'n	165.71	4.96	2.81	166.66
	Minimum	1.08	.63	1.05	3.41
	Maximum	956.16	34.7	13.28	967.3
	Number	80	82	84	80
	% of Total Response Time	48.8	21.1	30.1	100.0
Jacksonville, FL	Mean	44.81	4.91	5.57	63.21
	Median	4.82	3.83	4.07	15.90
	Std. Dev'n.	264.04	4.68	6.10	294.39
	Minimum	.00	1.00	.00	4.00
	Maximum	2880.00	42.0	58.00	2916.00
	Number	154	194	192	126
	% of Total Response Time	37.34	27.90	33.32	100.0
Peoria, IL	Mean	225.04	3.27	3.91	29.24
	Median	5.41	2.18	2.86	12.67
	Std. Dev'n.	1237.13	4.04	4.39	72.11
	Minimum	.00	.00	.00	1
	Maximum	10200.00	25.00	22.00	502
	Number	75	84	95	51
	% of Total Response Time	52.19	22.40	25.42	100.0
Rochester, NY	Mean	1375.13	5.36	4.60	73.17
	Median	5.17	2.98	3.37	15.50
	Std. Dev'n.	9634.75	8.90	4.46	267.00
	Minimum	1.00	.00	.00	3
	Maximum	91220.00	78.00	29.00	1482
	Number	94	122	112	58
	% of Total Response Time	47.58	25.28	27.14	100.0
San Diego, CA	Mean	142.23	8.55	16.21	81.24
	Median	4.56	4.91	4.77	16.30
	Std. Dev'n.	1100.15	11.89	116.24	282.37
	Minimum	.00	1.00	.00	3
	Maximum	12240.00	103.00	1355.00	1510
	Number	128	148	135	100
	% of Total Response Time	29.30	39.34	31.36	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Commissioners, 1977, 142-145.

Table D-2c

Descriptive Statistics for Response Time Components for Involvement Burglary

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	4.75	3.03	4.18	11.95
	Median	2.48	2.58	2.81	11.73
	Std. Dev'n	4.15	2.11	4.95	6.75
	Minimum	1.13	.81	.18	4.1
	Maximum	15.15	10.66	30.21	34.85
	Number	35	35	35	35
	% of Total Response Time	37.7	29.3	33.0	100.0
Jacksonville, FL	Mean	438.06	6.35	7.17	595.14
	Median	4.65	4.03	4.18	14.36
	Std. Dev'n.	5569.68	8.20	10.70	6434.88
	Minimum	.00	1.00	.00	3
	Maximum	79342.00	82.00	115.00	79347
	Number	203	209	193	152
	% of Total Response Time	37.12	30.90	31.98	100.0
Peoria, IL	Mean	35.91	4.19	3.84	29.44
	Median	4.53	2.94	2.88	11.67
	Std. Dev'n.	173.75	5.42	4.38	94.19
	Minimum	.00	.00	.00	2
	Maximum	1465.00	38.00	35.00	671
	Number	93	98	102	82
	% of Total Response Time	40.04	29.93	28.81	100.0
Rochester, NY	Mean	44.22	5.38	5.20	26.15
	Median	5.50	3.26	3.86	25.00
	Std. Dev'n.	193.15	7.46	8.55	20.89
	Minimum	.00	.00	.00	0
	Maximum	1442.00	60.00	91.00	88
	Number	122	124	117	73
	% of Total Response Time	46.80	26.53	26.67	100.0
San Diego, CA	Mean	66.00	41.06	12.63	66.07
	Median	4.65	6.00	4.25	15.83
	Std. Dev'n.	278.23	413.79	69.01	238.14
	Minimum	.00	1.00	.00	4
	Maximum	1680.00	5782.00	919.00	1522
	Number	183	195	179	154
	% of Total Response Time	31.72	39.52	28.77	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Commissioners, 1977, 142-145.

Table D-2d

Descriptive Statistics for Response Time Components for Involvement Larceny

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	75.43	4.83	6.93	87.1
	Median	5.23	2.83	6.51	17.11
	Std. Dev'n	430.4	6.45	3.33	429.33
	Minimum	1.1	.26	1.06	4.93
	Maximum	2880.88	43.51	20.15	2885.21
	Number	88	90	91	88
	% of Total Response Time	40.8	21.7	37.6	100.1
Jacksonville, FL	Mean	39.15	5.60	9.72	60.33
	Median	4.70	2.98	5.82	17.79
	Std. Dev'n.	184.16	10.94	12.14	206.09
	Minimum	.00	.00	.00	2
	Maximum	1480.00	133.00	77.00	1485
	Number	178	187	169	138
	% of Total Response Time	34.20	23.55	40.08	100.0
Peoria, IL	Mean	32.06	6.62	4.14	50.65
	Median	4.60	3.67	3.11	13.20
	Std. Dev'n.	158.32	8.00	3.83	186.61
	Minimum	.00	1.00	.00	3
	Maximum	1443.00	46.00	23.00	1450
	Number	109	97	111	79
	% of Total Response Time	38.55	32.70	27.48	100.0
Rochester, NY	Mean	790.33	6.83	6.87	485.63
	Median	5.67	3.33	4.36	16.00
	Std. Dev'n.	5331.58	11.76	11.31	2221.50
	Minimum	.00	.00	.00	3
	Maximum	54720.00	91.00	102.00	17890.
	Number	117	110	106	73
	% of Total Response Time	45.79	26.15	28.06	100.0
San Diego, CA	Mean	67.84	54.54	23.53	63.40
	Median	4.55	6.17	4.22	17.00
	Std. Dev'n.	395.54	459.62	153.92	199.46
	Minimum	.00	2.00	.00	5
	Maximum	4200.00	4999.00	1579.00	1477
	Number	132	118	105	73
	% of Total Response Time	30.56	41.46	27.98	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Police Commissioners, 1977, 142-145.

Table D-2e

Descriptive Statistics for Response Time Components for Involvement Motor Vehicle Theft

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	317.11	5.1	6.26	329.25
	Median	1.8	3.9	6.03	14.66
	Std. Dev'n	628.85	3.63	1.41	632.93
	Minimum	1.21	1.95	4.45	9.01
	Maximum	1260.38	10.56	7.68	1278.63
	Number	4	5	5	4
	% of Total Response Time	40.7	23.7	35.7	100.1
Jacksonville, FL	Mean	440.19	7.66	8.33	569.04
	Median	4.25	4.91	5.46	20.25
	Std. Dev'n.	2007.92	8.52	6.85	2251.14
	Minimum	.00	2.00	1.00	7
	Maximum	14400.00	45.00	35.00	14410
	Number	57	61	51	45
	% of Total Response Time	36.20	28.92	34.88	100.0
Peoria, IL	Mean	5.39	5.17	6.53	18.46
	Median	4.88	2.50	5.00	18.00
	Std. Dev'n.	4.65	6.18	5.89	10.97
	Minimum	.00	1.00	.00	4
	Maximum	15.00	22.00	21.00	44
	Number	13	12	15	11
	% of Total Response Time	33.75	27.76	38.49	100.0
Rochester, NY	Mean	4.67	3.67	6.20	14.00
	Median	2.50	2.50	7.00	9.75
	Std. Dev'n.	4.27	3.45	2.59	9.33
	Minimum	1.00	1.00	3.00	6
	Maximum	10.00	10.00	9.00	29
	Number	6	6	5	5
	% of Total Response Time	21.60	28.33	50.06	100.0
San Diego, CA	Mean	113.79	15.24	14.24	181.71
	Median	3.25	7.75	8.13	24.00
	Std. Dev'n.	517.48	19.03	17.69	611.10
	Minimum	1.00	1.00	1.00	6
	Maximum	2905.00	95.00	102.00	2951
	Number	68	72	59	49
	% of Total Response Time	26.91	36.64	36.45	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Police Commissioners, 1977, 142-145.

Table D-2f

Descriptive Statistics for Response Time Components for Rape

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	34.03	3.5	4.7	42.25
	Median	6.18	3.76	4.16	13.7
	Std. Dev'n	77.76	1.8	2.61	77.96
	Minimum	1.13	1.01	1.85	6.48
	Maximum	240.1	6.11	10.6	248.08
	Number	9	10	10	9
	% of Total Response Time	48.9	20.0	31.1	100.1
Jacksonville, FL	Mean	250.23	5.30	4.59	213.36
	Median	9.71	4.20	3.29	15.50
	Std. Dev'n.	912.94	4.67	4.32	955.18
	Minimum	.00	.00	.00	4
	Maximum	5070.00	28.00	19.00	5081.
	Number	35	40	39	28
	% of Total Response Time	49.36	27.31	23.33	100.0
Peoria, IL	Mean	495.17	4.28	3.81	131.95
	Median	19.75	2.88	2.33	22.75
	Std. Dev'n.	1880.65	5.59	3.48	341.10
	Minimum	1.00	1.00	.00	4
	Maximum	10080.00	29.00	15.00	1462
	Number	29	25	31	19
	% of Total Response Time	59.50	23.56	16.93	100.0
Rochester, NY	Mean	85.95	4.32	3.56	126.54
	Median	10.25	3.38	2.42	17.00
	Std. Dev'n.	227.15	3.59	3.07	272.98
	Minimum	1.00	.00	1.00	4
	Maximum	840.00	14.00	12.00	855
	Number	19	19	25	13
	% of Total Response Time	57.44	27.57	14.99	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Police Commissioners, 1977, 142-145.

Table D-2g

Descriptive Statistics for Response Time Components for Discovery Burglary

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	246.31	5.91	7.21	259.51
	Median	10.18	3.23	6.61	23.35
	Std. Dev'n	1354.00	7.55	4.13	1354.26
	Minimum	1.08	.58	1.06	3.86
	Maximum	14903.21	53.8	30.11	14918.96
	Number	295	298	302	295
	% of Total Response Time	50.0	19.7	30.3	100.0
Jacksonville, FL	Mean	308.15	10.61	10.24	394.46
	Median	10.25	5.50	8.70	45.75
	Std. Dev'n.	878.21	11.194	7.605	1017.330
	Minimum	1.00	1.00	1.00	9.00
	Maximum	5760.00	41.00	32.00	5791.00
	Number	53	56	41	35
	% of Total Response Time	52.85	23.26	23.89	100.00
Peoria, IL	Mean	188.90	28.03	6.92	186.84
	Median	10.25	5.50	4.44	24.0
	Std. Dev'n.	540.28	116.04	8.60	564.92
	Minimum	1.00	.00	.00	7
	Maximum	2910.00	663.00	40.00	2923
	Number	40	32	37	31
	% of Total Response Time	48.22	30.58	21.20	100.00
Rochester, NY	Mean	635.27	7.44	8.60	807.92
	Median	14.60	3.83	6.58	37.25
	Std. Dev'n.	1936.08	8.75	8.83	2200.34
	Minimum	1.00	.00	1.00	7
	Maximum	10710.00	42.00	41.00	10724
	Number	49	50	53	37
	% of Total Response Time	57.78	19.11	23.11	100.00
San Diego, CA	Mean	1810.44	75.27	26.34	2340.96
	Median	9.92	22.00	10.50	63.00
	Std. Dev'n.	12424.37	369.22	50.12	13977.43
	Minimum	1.00	2.00	1.00	9
	Maximum	93900.00	3020.00	319.00	93955.
	Number	57	66	56	45
	% of Total Response Time	35.77	37.68	26.55	100.00

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Police Commissioners, 1977, 142-145.

Table D-2h

Descriptive Statistics for Response Time Components for Discovery Larceny

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	587.4	5.21	6.75	599.43
	Median	10.3	3.05	6.2	22.3
	Std. Dev'n	4598.56	6.45	3.61	4598.66
	Minimum	1.11	.53	.43	5.51
	Maximum	59940.16	43.23	20.6	59950.96
	Number	201	203	206	201
	% of Total Response Time	54.6	18.5	27.0	100.1
Jacksonville, FL	Mean	1874.40	8.88	12.76	2109.83
	Median	30.00	4.4	8.1	61.50
	Std. Dev'n.	5450.95	10.892	12.809	5690.29
	Minimum	.00	0.00	1.00	10.00
	Maximum	21600.00	50.00	61.00	21628.00
	Number	63	65	59	46
	% of Total Response Time	67.43%	12.00	20.57	100.00
Peoria, IL	Mean	573.81	11.60	6.12	238.41
	Median	14.93	10.00	5.00	31.50
	Std. Dev'n.	1904.06	10.39	5.15	786.00
	Minimum	1.00	.00	.00	6
	Maximum	10755.00	42.00	22.00	3717.
	Number	36	25	26	22
	% of Total Response Time	48.22	30.58	21.20	100.0
Rochester, NY	Mean	187.46	8.80	7.96	204.08
	Median	9.63	5.50	6.36	32.50
	Std. Dev'n.	518.16	9.35	4.98	428.08
	Minimum	.00	1.00	2.00	7
	Maximum	2880.00	48.00	25.00	1450
	Number	55	46	46	26
	% of Total Response Time	43.97	27.00	29.02	100.00
San Diego, CA	Mean	718.18	123.39	40.30	1537.10
	Median	29.88	14.50	12.00	108
	Std. Dev'n.	2655.46	469.60	113.89	4661.15
	Minimum	1.00	3.00	1.00	15
	Maximum	20160.00	2419.00	559.00	20203
	Number	74	26	23	19
	% of Total Response Time	52.07	27.86	20.07	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Police Commissioners, 1977, 142-145.

Table D-2i

Descriptive Statistics for Response Time Components for Discovery Motor Vehicle Theft

Study Site		Reporting Time	Dispatch Time	Travel Time	Total Response Time
Kansas City, MO.	Mean	47.7	6.86	6.58	61.6
	Median	10.18	4.51	5.66	24.76
	Std. Dev'n	172.33	7.00	4.01	174.35
	Minimum	1.15	1.1	.75	7.7
	Maximum	1200.21	35.71	22.01	1217.75
	Number	69	71	73	68
	% of Total Response Time	46.4	25.8	27.9	100.1
Jacksonville, FL	Mean	4.86	9.4	11.1	29.50
	Median	4.67	7.0	11.0	20.00
	Std. Dev'n.	3.64	11.148	8.030	13.53
	Minimum	.00	1.00	2.00	17
	Maximum	10.00	33.00	23.00	44
	Number	8	7	7	4
	% of Total Response Time	20.93	51.88	27.19	100.00
Peoria, IL	Mean	881.20	2.00	5.75	29.25
	Median	15.00	1.50	4.50	19.00
	Std. Dev'n.	1922.48	1.83	3.30	22.96
	Minimum	1.00	.00	2.00	13
	Maximum	4320.00	4.00	9.00	63
	Number	5	4	4	4
	% of Total Response Time	56.06	27.32	19.18	100.00
Rochester, NY	Mean	8.40	8.50	3.50	21.75
	Median	4.00	6.00	3.75	18.50
	Std. Dev'n.	11.01	8.66	1.82	8.06
	Minimum	2.00	1.00	1.00	13
	Maximum	28.00	21.00	6.00	30
	Number	5	4	5	4
	% of Total Response Time	38.31	40.64	21.05	100.0
San Diego, CA	Mean	18.22	15.50	10.29	36.83
	Median	6.00	10.50	6.00	31.50
	Std. Dev'n.	32.92	12.92	9.59	24.99
	Minimum	2.00	4.00	1.00	10
	Maximum	105.00	43.00	25.00	70
	Number	9	10	7	6
	% of Total Response Time	24.73	47.10	28.17	100.0

Kansas City (MO) Police Department. Response Time Analysis, Volume II: Analysis. Kansas City: Board of Police Commissioners, 1977, 142-145.

Appendix D-3
Reporting Time: Comparisons between Crime Types

In Appendix D-3, we <u>compare crime types within each site,</u> with an eye toward combining crime types that are consistently similar. This is the first step in combining the 35 separate combinations of crime type and site (nine crime types for three sites, and eight--all but rape--for the fourth) into a smaller number of homogeneous groups. A smaller number of groups is desirable for several reasons.

First, it is easier to work with four or five combinations of crimes and sites than with 35. More important, comparison of each of 35 distributions with each of the rest would result in a high number of comparisons (595). Of these, five percent (30 or so) are likely to be found incorrectly to be significant at the .05 significance level, while other distributions that <u>are</u> different will be overlooked due to the need for a stringent test. Also, as shown in Appendix B, errors in citizen time estimation are more likely to cancel out when there are many times than when there are only a few. Finally, the process of comparing crime types and sites will tell which crimes are reported at similar speeds and which sites are alike, and this information can be useful in itself.

The comparison process has two parts: comparison of crime types (Appendix D-3), and the comparison of sites (Appendix D-4).

<u>Figure D-3a</u> shows a comparison of involvement and discovery crimes within each site. The test used--a Wilcoxon-Mann-Whitney test of mean ranks--does not require that the data be normally distributed, is 95.5 percent as efficient as the more widely used t-test when the samples <u>are</u>

normal, and is far more powerful than the t-test for many non-normal distributions (Whitney, 1948; Hodges and Lehmann, 1956; Blair and Higgins, 1980). For all sites, the chances are less than .0005 that involvement and discovery crimes are reported at the same rate.

<u>Figure D-3b and D-3c.</u> Although involvement crimes are on average reported more quickly than discovery crimes, this may not apply to all crimes within these groups. There was reason to suspect that rapes, for example, were reported more slowly than other involvement crimes (Burgess and Holstrom, 1976; Ashworth and Feldmann-Summers, 1978). Thus the next step involved comparing each involvement crime category (assault, burglary, and so on) with the average for all involvement crimes, and each discovery crime category with the discovery average. The technique used here, the Kruskal-Wallis analysis of variance, is simply a multiple-category generalization of the Mann-Whitney test. In all sites, at least one involvement crime was different from the average; that is, all Kruskal-Wallis statistics were significant at the .05 level. In no site, however, were there significant differences between discovery crime categories. We conclude that, in each site, discovery crimes were all reported at about the same speed, while there were some differences between involvement crimes.

<u>Figures D-3d and D-3e</u> show comparisons of each <u>pair</u> of involvement crimes within each site. When average reporting times for a pair of crimes are not significantly different in <u>any</u> of these five sites, the pair have

been placed in the same group. (Kansas City comparisons, based on multiple t-tests, are found in Volume 2 of the Response Time Analysis, 1977.)

Unfortunately, no computer program was available that would compute confidence intervals for location differences; in view of the cumulative distributions shown in Chapter 3, it is unlikely that the assumptions required (differences only in location, not in shape or dispersion) could have been met, anyway (Gibbons, 1978). To protect ourselves from combining crimes that were probably very different but not significantly so, we only grouped together crimes that were reported on average less than one minute differently in all sites. Consistent groups are listed in Figure D-3f, with medians for all crime types in all sites.

Table D-3a

Significance of Differences Between Involvement and Discovery Reporting Times--All Sites*

	Discovery	Involvement	z	Probability
Jacksonville				
Mean rank	595.75	417.99	6.921	.000
N of cases	124	759		
Peoria				
Mean rank	320.88	223.29	4.975	.000
N of cases	81	393		
Rochester				
Mean rank	327.71	269.72	3.058	.001
N of cases	109	450		
San Diego				
Mean rank	497.19	370.32	6.122	.000
N of cases	141	645		

*Method used is Mann-Whitney U test.

Table D-3b

Test of Differences* Between Crimes--Involvement

Jacksonville

	Robbery	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft	Rape
N	131	154	203	178	57	35
Mean rank	360.66	383.29	381.11	407.07	384.99	476.96

chi square = 122.81
p < .001

Peoria

	Robbery	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft	Rape
N	74	75	93	109	13	29
Mean rank	198.41	212.35	183.67	190.39	168.07	255.18

chi square = 30.00

p < 001

Rochester

	Robbery	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft	Rape
N	92	94	122	117	6	19
Mean rank	225.04	224.46	222.77	230.85	149.85	263.50

chi square = 15.136

p <.010

San Diego

	Robbery	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft
N	134	128	183	132	68
Mean rank	302.85	325.54	331.43	330.94	323.95

chi square = 7.423
p <.123

* Method used is Kruskal-Wallis Mean Rank Analysis of Variance.

Table D-3c

Test of Differences* Between Crimes--Discovery

JACKSONVILLE	Burglary	Larceny	Motor Vehicle Theft
N of Cases	53	63	8
Mean Rank	58.86	68.88	27.71

chi square = 3.319
p<.205

PEORIA	Burglary	Larceny	Motor Vehicle Theft
N of Cases	40	36	5
Mean Rank	39.58	42.56	45.83

chi square = 4.031
p<.147

ROCHESTER	Burglary	Larceny	Motor Vehicle Theft
N of Cases	49	55	5
Mean Rank	59.16	52.92	37.00

chi square = 2.647
p<.272

SAN DIEGO	Burglary	Larceny	Motor Vehicle Theft
N of Cases	57	74	9
Mean Rank	63.25	77.66	50.69

chi square = 3.986
p<.151

*Method used is Kruskal-Wallis Mean Rank Analysis of Variance

Table D-3d

Mann-Whitney U-Test of Mean Ranks, Comparing Differences in Reporting Time by Crime Type for Involvement Crimes

Site: Jacksonville

	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft	Rape
Robbery	z = -1.169 p < .242	z = -1.092 p < .275	z = -.415 p < .678	z = -.0737 p < .443	z = -3.334 p < .001
Assault		z = -.134 p < .894	z = -.803 p < .422	z = -.077 p < .939	z = -2.693 p < .007
Burglary			z = -.653 p < .514	z = -.092 p < .926	z = -2.865 p < .004
Larceny				z = -.447 p < .655	z = -3.206 p < .001
Motor Vehicle Theft					z = -1.874 p < .061

Site: Peoria

	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft	Rape
Robbery	z = -1.310 p < .190	z = -1.300 p < .194	z = -.944 p < .345	z = -.955 p < .340	z = -2.974 p < .003
Assault		z = -2.776 p < .006	z = -2.434 p < .015	z = -1.645 p < .100	z = -2.129 p < .033
Burglary			z = .379 p < .705	z = -.161 p < .872	z = -3.813 p < .000
Larceny				z = -.461 p < .645	z = -3.691 p < .000
Motor Vehicle Theft					z = -2.899 p < .004

Table D-3e

Mann-Whitney U-Test of Mean Ranks, Comparing Differences in Reporting Time by Crime Type for Involvement Crimes

Site: Rochester

	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft	Rape
Robbery	z = -.037 p < .970	z = -.266 p < .790	z = -.657 p < .511	z = -1.471 p < .141	z = -1.349 p < .177
Assault		z = -.196 p < .845	z = -.736 p < .462	z = -1.478 p < .139	z = -1.401 p < .161
Burglary			z = -.975 p < .329	z = -1.366 p < .172	z = -1.624 p < .104
Larceny				z = -1.637 p < .102	z = -.992 p < .321
Motor Vehicle Theft					z = -2.049 p < .040

Site: San Diego

	Aggravated Assault	Burglary	Larceny	Motor Vehicle Theft	Rape
Robbery	z = -1.548 p < .122	z = -2.302 p < .021	z = -2.013 p < .044	z = -1.323 p < .186	
Assault		z = -.473 p < .636	z = -.379 p < .704	z = -.052 p < .958	
Burglary			z = -.142 p < .887	z = -.683 p < .495	
Larceny				z = -.404 p < .686	
Motor Vehicle Theft					

Table D3f

UCR Crime Categories with Median* Reporting Times
Which Do Not Differ for Each of Five Cities

Involvement Crimes

Kansas City		Jacksonville		Peoria		Rochester		San Diego	
Burglary	2:29	Robbery	4:36	Motor Veh. Theft	4:52	Motor Veh. Theft	2:30	Robbery	3:03
Robbery	4:18	Burglary	4:39	Burglary	4:32	Burglary	5:30	Motor Veh. Theft	3:15
Agg Ass	5:06	Agg Ass	4:49	Larceny	4:36	Agg Ass	5:10	Agg Ass	4:33
Larceny	5:14	Motor Veh. Theft	4:15	Robbery	5:06	Robbery	5:15	Larceny	4:33
Rape	6:11	Larceny	4:42	Agg Ass	5:25	Larceny	5:40	Burglary	4:39
		Rape	9:43	Rape	19:45	Rape	10:15		

Crimes which are consistently homogeneous for all sites are:

- Robbery and Aggravated Assault
- Burglary, Larceny and Motor Vehicle Theft
- Rape

Discovery Crimes

Kansas City		Jacksonville		Peoria		Rochester		San Diego	
Motor Veh. Theft	10:11	Motor Veh. Theft	4:40	Burglary	10:15	Motor Veh. Theft	4:00	Motor Veh. Theft	6:00
Burglary	10:11	Burglary	10:15	Larceny	14:56	Larceny	9:36	Burglary	9:55
Larceny	10:18	Larceny	30:00	Motor Veh. Theft	15:00	Burglary	14:36	Larceny	29:52

Crimes which are consistently homogeneous for all sites are:

- Burglary, Motor Vehicle Theft and Larceny

* Although sample medians are shown, crimes are ordered by mean rank

Appendix D-4.
Reporting Time: Comparisons between Sites

The second step in forming crime/site homogeneous groups was to compare each crime group between sites. Again, a Kruskal-Wallis analysis of variance was used, followed by multiple Mann-Whitney tests when the Kruskal-Wallis statistic was significant. The tests require that the entire distribution be available, and only summary data were available from Kansas City, so only the Forum cities were tested.

Table D-4a shows analysis of variance results for homogeneous crime groups. As shown, only two of the four comparisons approach significance, and these were significant at the .001 level. Thus, discovery crimes and rapes do not differ significantly between sites, while involvement property and personal crimes do.

Table D-4b shows results of the between-site comparisons for involvement property and personal crimes. For property crimes, Rochester is clearly different from the other three cities. For personal crimes, the sites cluster into two groups: Peoria and Rochester in one, Jacksonville and San Diego in the other. Again, the median differences were less than one minute for the sites that were grouped together, so we have little fear that there were important, but statistically insignificant differences.

Table D-4a

Test of Differences Between Sites for Homogeneous Crime Types

	Jacksonville	Peoria	Rochester	San Diego
DISCOVERY CRIMES				
N of Cases	124	81	109	141
Mean Rank	241.42	222.52	212.21	231.99
		$x^2 = 4.761$ $p < .193$		
INVOLVEMENT PROPERTY				
N of Cases	438	215	245	383
Mean Rank	618.99	608.27	742.69	619.50
		$x^2 = 23.444$ $p < .001$		
INVOLVEMENT PERSONAL				
N of Cases	286	149	186	262
Mean Rank	419.77	489.97	506.59	393.13
		$x^2 = 29.487$ $p < .001$		
INVOLVEMENT RAPE				
N of Cases	35	29	19	0
Mean Rank	38.84	47.12	40.00	
		$x^2 = 2.056$ $p < .358$		

*Method used is Kruskal-Wallis mean rank analysis of variance

Table D-4b

Mann-Whitney Z-Test of Median Differences in Reporting Between Sites

Involvement Personal Crimes

Jacksonville	Peoria	Rochester	San Diego
Jacksonville	Z= -2.741 P < .006	Z= -3.700 P < .0005	Z= -1.272 P < .203
Peoria		Z= -0.451 P < .652	Z = -3.624 P < .0005
Rochester			Z= -4.710 P < .0005

Involvement Property Crimes

Jacksonville	Peoria	Rochester	San Diego
Jacksonville	Z = -0.313 P < .754	Z= -4.087 P < .0005	Z= -0.095 P < .924
Peoria		Z= -3.960 P < .0005	Z = -0.372 P < .710
Rochester			Z= -4.229 P < .0005

Appendix D-5.
Reporting Time and Arrest

The next step in our analysis was to determine how quickly a citizen has to report a crime in order for a response-related arrest to be possible. In order to get an idea of the range of citizen reporting times that could be considered quick, we used regression analysis to estimate the proportion of crimes resulting in a response-related arrest for each possible citizen reporting time. Theoretically, the limit of important citizen reporting times ought to be the time at which the chances of response-related arrest are very close to zero. Given the possibilities for error in our data (citizen reporting times are estimates and sometimes very wrong; arrests were sometimes coded as response-related when they were really not), we felt this kind of theoretically determined test to be too stringent. Instead, we concluded that the range of reporting times where the chances of response-related arrest seemed to "flatten out" would approximate the limit on times that could result in response-related arrest. Previous literature (reviewed in Chapter 2) indicated that this range ought to be in the neighborhood of three to five minutes.

There remain two theoretical problems with this analysis. First, as we noted in Chapter 2, examining the effect of reporting time on the chances of arrest <u>alone</u> gives incomplete results. This is because the chances of arrest are not determined by citizen reporting times, rather by total response time. Because the analysis is incomplete, we do not try to draw very precise conclusions; our aim is only to examine the shape of the

reporting time-arrest relationship, to get a better idea as to how quickly the chances of arrest drop as citizen reporting time increases.

The second problem is more technical. As shown in Appendix C, the <u>log-odds</u> of response-related arrest should be related to the <u>logarithm</u> of total response time. Re-expressing the chances of arrest as the log-odds of arrest (that is, using the logit transformation) stabilizes the variance of the regression error term and prevents the prediction that the chances of arrest for some total response time will be greater than one or less than zero--both of which are useful statistical properties. In addition, however, use of the logit produces the backwards-S shaped curve Figure 4 in the text. For the reasons noted in Chapter 2, the effect of any <u>piece</u> of total response time on the chances of arrest will not be large enough to predict probabilities greater than 40 to 50 percent. Even when reporting time is one minute or less, for example, dispatch and travel times will often be much longer, and will increase total response time beyond the three to five minute marks. Thus the backwards-S curve is inappropriate for analyzing the effect of any piece of the total response time distribution, only for the entire distribution itself. For these reasons, we satisfy ourselves with regressing the probability of arrest on the logarithm of reporting time, without using the logit transformation.

Discovery Crimes

Regression results for the effect of reporting time on the chances of arrest for discovery crimes are shown in Table D-5a. None of the three regressions approaches significance (in Peoria, regression was impossible because no discovery crime resulted in response-related arrest). As expected, the chances of response-related arrest do not depend on reporting time when the crime is discovered after it has been committed.

Involvement Crimes

Kansas City found that reporting time was a more important determinant of arrest for property crimes than for personal crimes. Unfortunately, the Kansas City analysts considered in-progress calls to be reported <u>one minute after the crime has been committed</u>, and did not separate in-progress crimes from others that actually <u>were</u> reported one minute after the crime was committed. In our sample, in-progress calls were much more likely for property crimes than for personal crimes, as shown in Table D-5b. Therefore, it seemed possible that the relationship between reporting time and arrest was the same for both kinds of crimes, and that the apparent difference found in Kansas City was due entirely to the coding of in-progress calls. To see if there was a difference in our sites, we estimated the effects in two parts:

- The overall effect of reporting time on arrest were determined, for both kinds of involvement crimes.
- Then, the property/personal dichotomy was controlled for, and assessment made of the additional variance explained by the dichotomy.

Four coefficients were estimated in the first stage of the analysis, and four more were estimated in the second stage. A graphical representative of the coefficients is shown in Figure D-5c: had all coefficients been significant, four separate regression lines would have been estimated.

The eight coefficients estimated in the <u>second</u> stage are shown in Table D-5d, with F-test results for the significance of the difference between personal and property regression lines. None of the differences approach statistical significance when in-progress calls are considered separately, and there is no particular pattern to the differences. We conclude that the relationship between reporting time and chances of response-related arrest does <u>not</u> depend on the crime type, but probably depends greatly on whether the crime was reported in-progress or not.

This conclusion is reinforced by the <u>first</u> stage findings presented in Table D-5e. In all cities, the chances of arrest were much higher when the crime was reported in-progress (that is, the "in-progress" coefficient is always significant and positive). When a crime was reported in-progress, however, the reporting delay itself does not seem to matter much. This is shown by the coefficient computed for the <u>slope</u> of the in-progress/reporting time curve: it is sometimes positive, sometimes negative, and never significantly different from zero.

By contrast, when the crime is <u>not</u> reported in-progress, reporting time was important. The coefficients for the not in-progress/reporting time curve were always negative (and at least one standard deviation from zero), and were significant for one site and the aggregate. In addition, the slope does not differ significantly between sites, although there are indications that reporting time may be more important in Jacksonville and San Diego than in Peoria and Rochester.

The results for the aggregate of all four sites are summarized in Table D-5f. Since the slope of the reporting time curve was not significantly different from the expected value of zero for in-progress cases, it was considered to be zero, and the intercept changed to the chances of arrest for the mean in-progress reporting time (see Kmenta, 1970). Had the intercept not been changed, the percentage of in-progress cases resulting in response-related arrest would have been consistently overestimated. The slope of the reporting time/arrest curve for not-in-progress cases was not altered.

Left in this form, the curves are somewhat difficult to interpret, and look little like the curves Kansas City produced. This is because some proportion of arrests in our sample considered to be response-related (that is, not attributable to anything else) were not actually response-related arrests, but were coded as response-related because information on what actually led to the arrest was not available from the crime report. The Kansas City analysts did not have this problem, since in their analysis the determination of response-related and non-response-related arrests was made by an observer at the scene, who did not rely on (frequently telegraphic) crime and arrest reports. This meant two things for our results: the proportion of variance in arrest explained by reporting time would be less

in our sample than in Kansas City, since the dependent variable is miscoded in some cases (Snedecor and Cochran, 1977); the curves are several percentage points higher than they would be if there were no miscoded cases. The second of these effects is illustrated in Figure D-5g.

To remedy the second problem (there is no remedy for the first), we estimated the effect of the one-fourth power of reporting time on arrest. The one-fourth power transformation results in a curve only slightly different from the log transformation, and explains an insignificant fraction less of the variance in the chances of arrest. However, this regression yields an asymptote (the constant term), which is approximately equal to the proportion of arrests that were not response-related but were incorrectly coded as response-related. Estimated assumptions and adjusted equations are shown in Table D-5h. As one would expect, the asymptote differs greatly fron one city to another, indicating that the proportion of miscoded response-related arrests depends on differneces in the format of crime reports in each site. The proportions of miscoded arrests were no different for personal and property crimes.

When the asympote for each of the four sites is subtracted from the log regression estimated previously, the apparently large differences in the constant terms are reconciled, and the cities cluster together more closely. This is illustrated by Figure D-5i (before subtracting the asymptote) and Figure D-5j (after subtraction). Figure 11 in the text shows the log regression results after subtraction of the aggregate asymptote. As stated in the text, the chances of arrest appear to be essentially constant for reporting times of two or three minutes or greater, and certainly for reporting times of five minutes or more.

In Chapters 4 and 5 it was necessary to assume that, had people decided to call more quickly, or been able to contact the police more quickly after deciding, the resulting decrease in reporting time would have made response-related arrest more likely, but would not have changed the relationship between reporting time and arrest in any way. As explained in Appendix E, making this assumption means that we will almost certainly overestimate the number of arrests that would result, and thus overestimate the usefulness of any program designed to shorten citizen reporting time. Since in-progress calls would presumably be more likely if the people called faster, and since in-progress calls are more likely to result in response-related arrest than not-in-progress calls, a doubly conservative approach included estimating the number of additional cases which would have been reported in-progress had reporting times been shortened. Although this assumption is obviously not true for some cases--victim-reported personal crimes, for example--it is at least reasonable for many situations. If anything, it increases the size of the overestimate.

The relationship between the chances that a crime will be reported in-progress and the log reporting time was estimated through regression. Results are shown in Table D-5k. The equations closely resemble the previous findings for the chances of arrest: the chances start off high, drop rapidly in the first minute or so, and then level off as reporting time increases to about five minutes. Again, the differences in slope are

not significantly different between sites, and the constant terms are similar. Accordingly, we use the aggregate equation for later analysis.

Table D-5a

Effect of Reporting Time on Chances of
Response-Related Arrest for Discovery Crimes

	Jacksonville	Peoria	Rochester	San Diego
Log Reporting Time	.1201	*	.0247	.0608
(Standard Error)	(.0505)		(.0511)	(.1086)
Constant	.2255		.1066	.2681
R^2	.0414		.0020	.0020
F (1, n)	5.651		0.233	0.314
Sample Size (n)	133		116	158

*In Peoria, no discovery crimes sampled led to response-related arrest.

Table D-5b

Proportion of Involvement Crimes Reported In-Progress

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
PROPERTY					
Percentage in Progress	20.9%	12.6%	10.1%	18.1%	16.4%
Number	(498)	(261)	(316)	(447)	(1522)
PERSONAL--Robbery and Assault					
Percentage in Progress	12.1%	7.6%	5.6%	14.5%	10.4%
Number	(371)	(211)	(269)	(318)	(1169)
PERSONAL--Rape					
Percentage in Progress	6.8%	2.8%	3.4%	Not Available	4.6%
Number	(44)	(36)	(29)		(109)
TOTAL					
Percentage in Progress	16.6%	9.8%	7.8%	16.6%	13.5%
Number	(913)	(508)	(614)	(765)	(2800)

Figure D-5c

Relationship of Regression Coefficients to Reporting/Arrest Curves

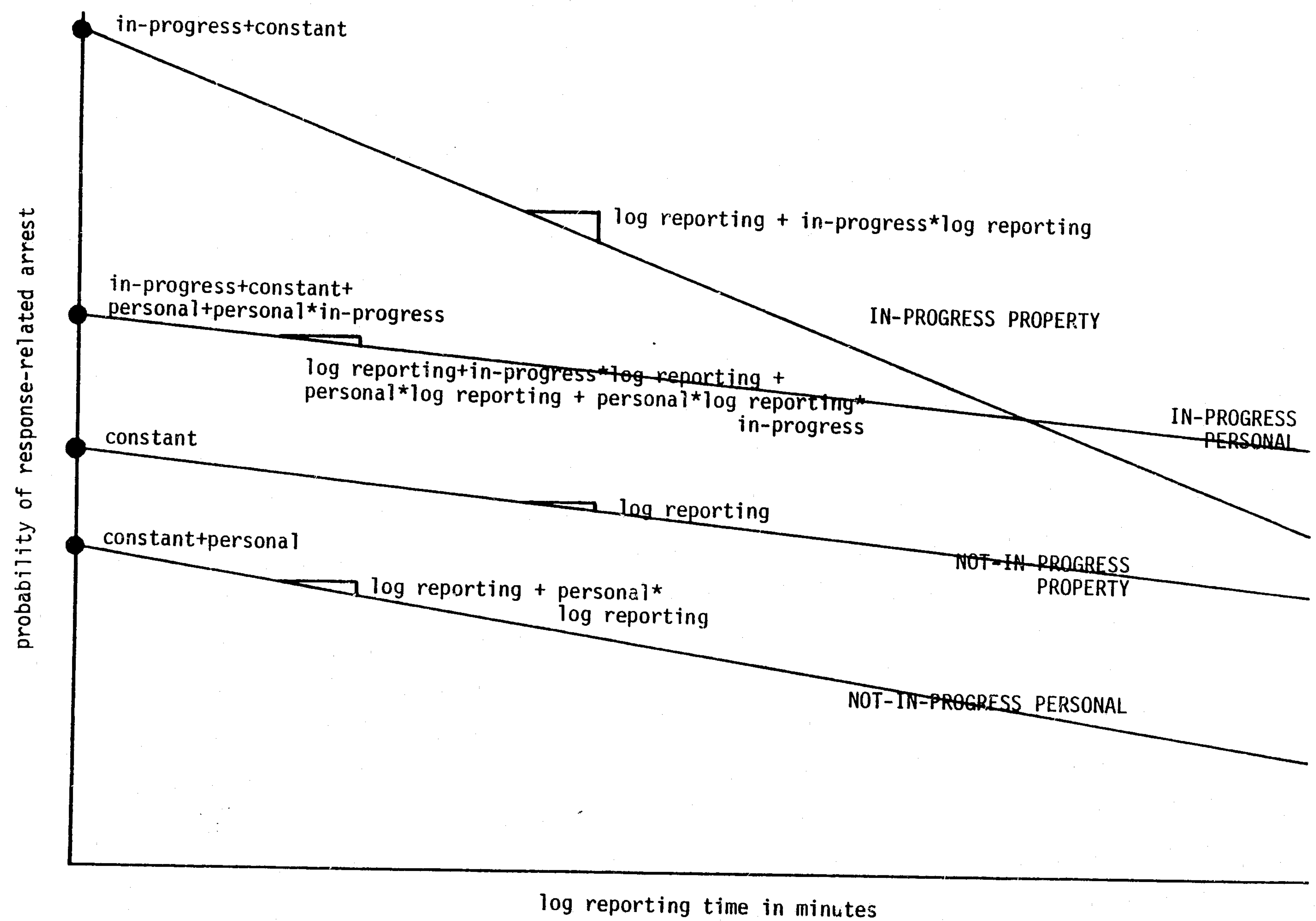


Table D-5d

Second Stage Results = Effect of Reporting Time on Chances of Response-Related Arrest for Involvement Crimes

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
In-Progess	.2871	.2393	.2241	.3275	.2900
(Standard Error)	(.0479)	(.0552)	(.0580)	(.0574)	(.0281)
Log Reporting	-.0101	-.0092	.0012	-.0159	-.0103
	(.0116)	(.0124)	(.0090)	(.0132)	(.0061)
In-Progress* Log Reporting	.0152	.0072	.0389	.0125	.0185
	(.0223)	(.0326)	(.0305)	(.0252)	(.0132)
Personal	.1286	-.0251	.0449	.0965	.0793
	(.0441)	(.0430)	(.0410)	(.0474)	.0235
Personal* Log Reporting	-.007	.0029	-.0176	-.0197	-.0154
	(.0172)	(.0157)	(.0131)	(.0185)	(.0085)
Personal* In-Progress	-.0120	-.1557	-.1902	-.2532	-.1225
	(.0817)	(.1045)	(.1057)	(.0864)	(.0463)
Personal* In-Progress* Log Reporting	.0026	-.0090	-.0273	.0616	.0090
	(.0375)	(.0520)	(.0480)	(.0418)	(.0217)
Constant	.1353	.0953	.0653	.2024	.1366
R^2 (Stage One)	.0848	.0666	.0498	.0810	.0862
R^2 (Stage Two)	.1023	.0780	.0679	.0920	.0912
F (4, n-4) of Difference	.0261	.0392	.0565	.0151	.0086
Sample Size (n)	861	436	526	757	2580

Table D-5e

First Stage Results: Effect of Reporting Time on Chances of Response-Related Arrest for Involvement Crimes

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
In-Progress	.2580	.2058	.1640	.2146	.2380
(Standard Error)	(.0384)	(.0459)	(.0481)	(.0429)	(.0221)
Log Reporting	-.0135	-.0081	-.0072	-.0267	-.0180
	(.0086)	(.0075)	(.0066)	(.0093)	(.0043)
In-Progress* Log Reporting	.0181	-.0088	.0167	.0418	.0239
	(.0179)	(.0246)	(.0232)	(.0198)	(.0104)
Slope of In-Progress Curve	.0046	-.0169	.0095	.0151	.0059
	(.0199)	(.0257)	(.0241)	(.0219)	(.0113)
Constant	.1981	.0841	.0867	.2491	.1746
R^2	.0848	.0666	.0498	.0810	.0862
F (2, n-4)	26.487	10.283	9.126	22.129	80.986
Sample Size (n)	861	436	526	757	2580

Table D-5f

Summary of Effect of Reporting Time on Chances of Response-Related Arrests for Involvement Crimes

CRIMES REPORTED IN-PROGRESS;

p (response-related arrest) = .4137

CRIMES NOT REPORTED IN-PROGRESS:

$$p\ (\text{response-related arrest}) = .1746 - \underset{(.0043)}{.0180}\ \log\ (\text{reporting time})$$

Aggregate of all sites.

Figure D-5g

Effect of Miscoded Arrests

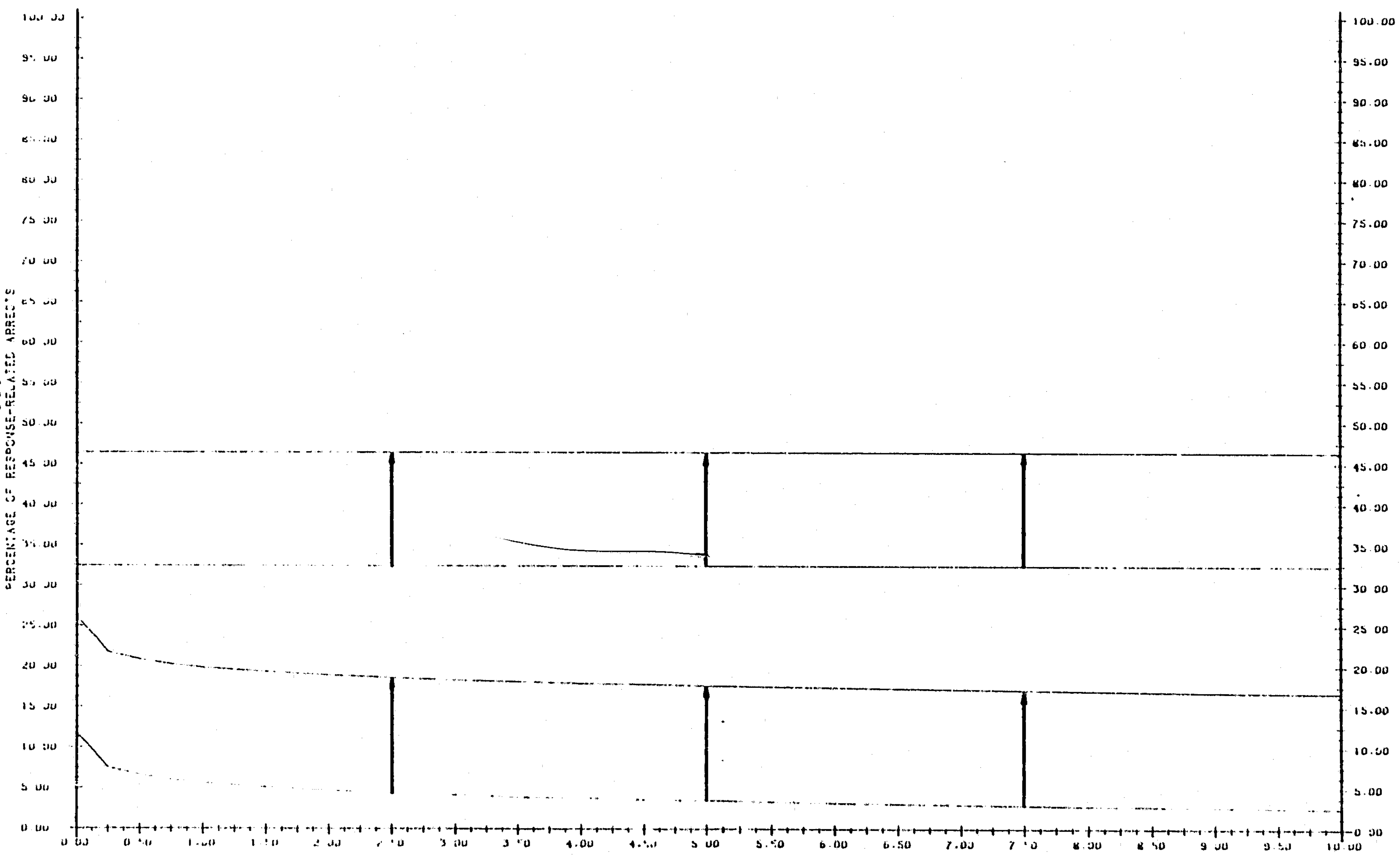


Table D-5h

Asymptotes and Adjusted Repression Equations

JACKSONVILLE

Asymptote = .1418
In Progress = .3243
Prob. (Arrest) = .0563 - .0135 log (Reporting Time)

PEORIA

Asymptote = .0460
In Progress = .2416
Prob. (Arrest) = .0381 - .0081 log (Reporting Time)

ROCHESTER

Asymptote = .0450
In Progress = .2070
Prob. (Arrest = .0417 - .0072 log (Reporting Time)

SAN DIEGO

Asymptote = .0993
In Progress = .3679
Prob. (Arrest) = .1498 - .0267 log (Reporting Time)

AGGREGATE

Asymptote = .0777
In Progress = .3360
Prob. (Arrest) = .0969 - .0180 log (Reporting Time)

Figure D-5i

Reporting and Arrest Before Adjustment

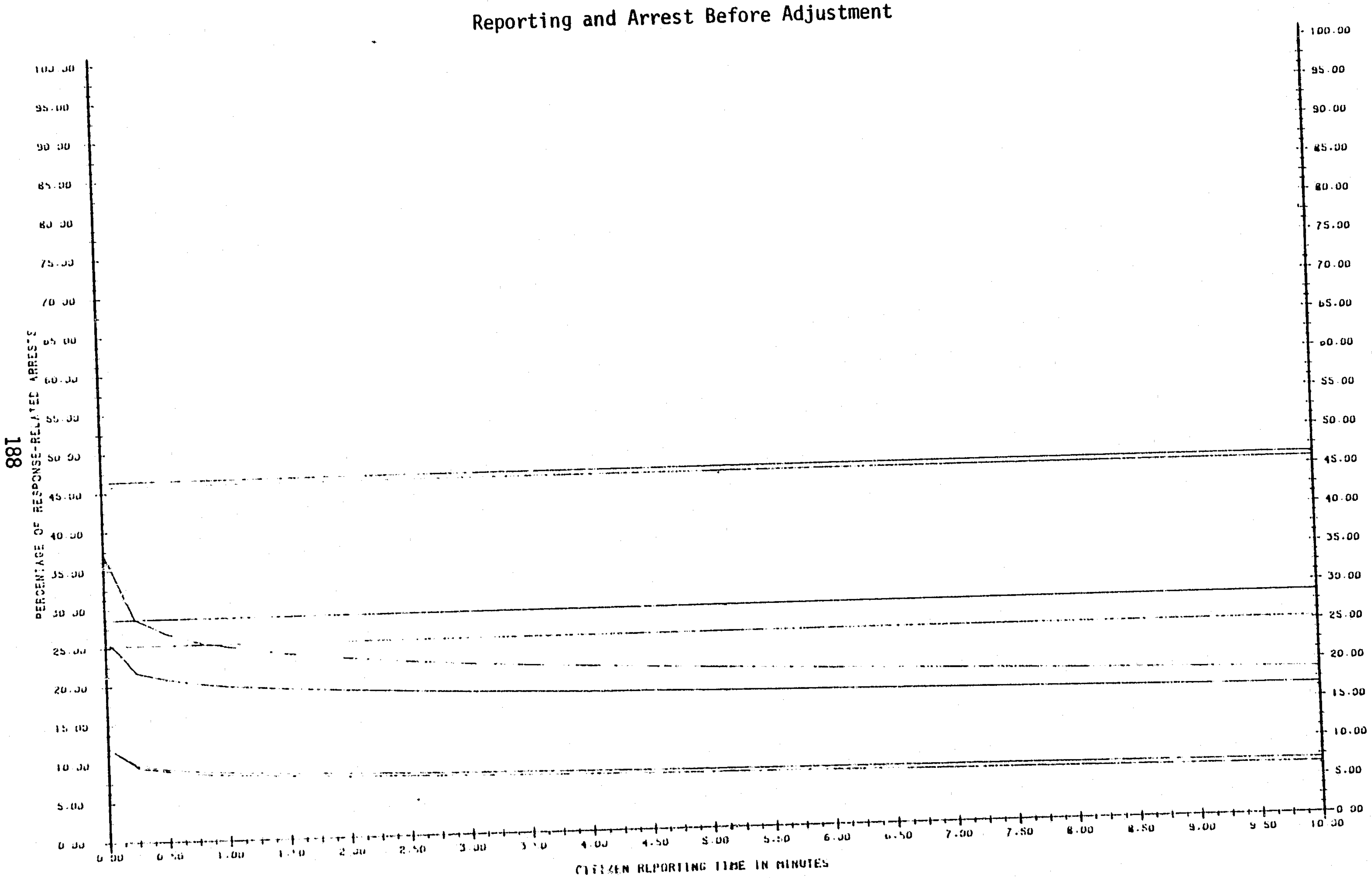


Figure D-5j

Reporting and Arrest After Adjustment

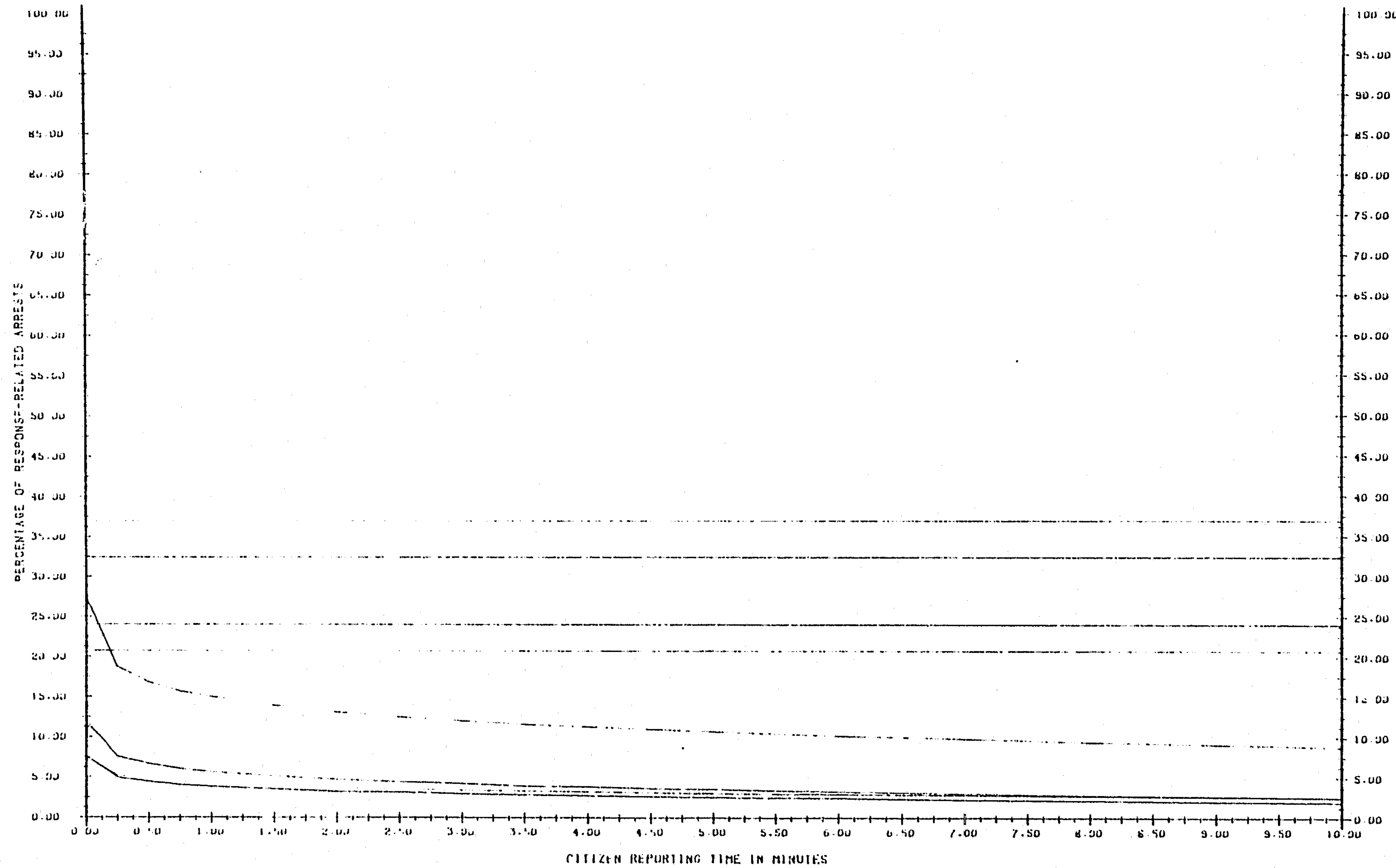


Table D-5k
Effect of Reporting Time on Chances of In-Progress Call

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Personal Crime	-.1743	-.1465	-.1300	-.0530	-.1238
	(.0372)	(.0466)	(.0422)	(.0393)	(.0079)
Log Reporting	-.0542	-.0582	-.0472	-.0341	-.0499
	(.0099)	(.0136)	(.0094)	(.0111)	(.0054)
Personal* Log Reporting	.0227	.0408	.0307	-.0051	.0189
	(.0152)	(.0176)	(.0140)	(.0161)	(.0079)
Constant	.3914	.2894	.2573	.3199	.3314
R^2	.0689	.0567	.0599	.0306	.0558
F (3, n-4)	21.111	9.714	11.089	7.913	50.716
Sample Size (n)	861	436	526	757	2580

Aggregate Equations:

Property Involvement Crimes:

Probability (in progress) = .3314 - .0499 log (reporting time)

Personal Involvement Crimes:

Probability (in progress) = .2076 - .0310 log (reporting time)

Appendix D-6
Distribution of Short Reporting Times

Having winnowed 35 crime type and site groups down to six and concluded that three to five minutes represents the longest that reporting time can realistically be and still result in response-related arrest, there remained one final problem before considering the distribution of the shortest reporting times. This is the problem of "rounding off" discussed in the previous chapter: people tend to estimate in round numbers, such as the nearest minute or the nearest five minutes. Rounding is a particular problem at times close to five minutes and ten minutes.

Figure D-6a demonstrates this problem for the distribution of rape reporting times. One would expect the data to approximate a smooth curve, however, there are very few reporting times of four minutes and six minutes, and very many of five and ten minutes. Some of the five minute estimates were actually three and four minute durations (rounded up), and some were actually six, seven, and eight (rounded down). This results in a "lumpy" cumulative distribution, shown in Figure D-6b: estimates at five and ten minutes are marked by steep increases, while times around these increases are too flat. When estimating the number of people reporting crimes within four minutes of the occurrence of the crime, for example, we will be certain to underestimate if we use the citizen-estimated cumulative distribution. An unbiased estimate could be obtained if some underlying distribution can be found which will smooth out the bumps in the estimated distribution.

Although the parameters of the smoothing distribution can be estimated statistically, the functional form must be supplied beforehand. For two reasons, citizen reporting time was expected to be Weibull distributed.

First, citizen reporting can be looked at as a mathematical catastrophe, or change in form. As shown in Chapter 4, most citizens do not call the police immediately. Instead, they discuss the situation with a friend or passerby, investigate the scene, or just wait and try to figure out what to do. Making and implementing the decision to inform the police of the matter represents a qualitative change in the citizen's coping behavior, and as such is defined mathematically as a catastrophe. In engineering, medicine, and other fields that deal with catastrophic systems, the time between system initiation (here, occurrence or discovery of the crime) and catastrophe (calling the police), is usually estimated to be a Weibull distribution when no additional information is known about the structure of the system (Johnson and Kotz, 1970).

Another distribution often used in problems of this sort is the gamma distribution. The gamma is generally shaped like a Weibull, and one form of the gamma, the Erlang distribution, is used extensively in police patrol allocation models and simulations, and other applications of queueing theory. Use of the Weibull has become more widespread than the

gamma for estimating time to catastrophe, because the Weibull is somewhat more flexible than the gamma, allowing a greater range of possible shapes, and because it is much more mathematically tractable (Lieberman, 1969).

Thus, if we knew nothing about the structure of citizen decision-making and implementation, we should assume reporting times to be Weibull-distributed.

There is a stronger reason for believing citizen reporting time to be Weibull-distributed, however, based on the structure of the reporting "system." According to the victimization literature, crimes create needs in victims and witnesses which must be met before the police can be called. People delay reporting by taking action to meet these needs. For example, a need to define the situation may be met by observing it as it happens; a need to regain emotional stability may be met by phoning a friend; and so on. These needs are met concurrently, and a single action may meet more than one need. When the citizen's most important needs have been met, he calls the police.

Therefore, reporting time will depend on the time required to meet these most important needs, and the appropriate smoothing function would be the distribution of the largest of several component "need" distributions. If these distributions are assumed to be exponential (at least as good an assumption as any), then the structure of citizen decision-making fits the Weibull perfectly (Tsokos, 1972). And as shown in Appendix E, by far the largest proportion of citizen reporting delay consists of decision-making time; implementation delays contribute much less to reporting time.

The structure is clearly too vague for us to be certain how reporting time should be distributed. However, what is known of the structure suggests that the Weibull-distribution should be an excellent approximation.

The general formula for the Weibull distribution is:

$$f(x) = \frac{\beta}{\alpha} (x-\gamma)^{\beta-1} \exp(-(x-\gamma)^{\alpha/\beta})$$

Since the citizen may report the crime at any time after he notices it, the location parameter, γ , may be set at zero. Thus the form of the Weibull we used was:

$$f(x) = \frac{\beta}{\alpha} x^{\beta-1} \exp(-x^{\beta/\alpha})$$

The cumulative distribution of the Weibull reduces to:

$$F(x) = 1 - \exp(-\frac{x^{\beta}}{\alpha})$$

which yields smooth curves in the appropriate shape. The smooth curve in Figure D-6b is a Weibull; although it is significantly different from the unsmooth distribution, the differences appear only where the raw data can be expected to be in error. Fully 93 percent of the variance in the actual data can be explained by the smoothed distribution.

Table D-6c shows the estimated parameters and their standard errors for each homogeneous group. Paramenters were estimated through multiple regression; only cases that were not reported in-progress were included in the estimation. Because crimes resulting in arrest were reported more quickly than non-arrest crimes, each case was weighted to approximate a simple random sample; standard errors are based on the unweighted number of cases, however.

Also included in Table D-6c are the R^2 (the proportion of the variance in the lumpy distribution explained by the smooth) and the significance of differences between the smoothed and unsmoothed cumulative distributions, and is equal to the largest single difference between the two. The figures show:

- The Weibull fits citizen reporting time distributions extremely well, explaining upwards of 90 percent of the variance for each group;
- The smoothed distributions are usually significantly different from the unsmoothed distributions.

Thus, although the smooths explain almost all of the variance, they are distinguishable from the rough. This is hardly alarming, however, since if the rough and the smooth are not significantly different, there would have been no need to estimate the smoothing parameters in the first place.

Table D-5b (in the previous section) shows the proportion of cases reported in progress for each crime type and site. For both involvement property and involvement personal crimes, the proportion of cases reported in-progress was higher in Jacksonville and San Diego than in Peoria and

Rochester, reinforcing the earlier finding that people in Jacksonville and San Diego report slightly more quickly. Note that there is a significant difference between the percentage of involvement property cases reported in progress in Peoria and the percentage in Jacksonville and San Diego. The results were combined for use in Figure 13 anyway, however, since the differences in in-progress calls are insubstantial, and the differences in citizen reporting time insignificant.

As shown earlier in this appendix, most of the crimes reported in the Forum cities were discovered after they had occurred and the suspect had left. For these crimes, a fast citizen reporting time will not contribute to the chances of arrest; thus the proportion of <u>all</u> Part I crimes that may lead to response-related arrest is very small. To demonstrate this, the cumulative distribution of all crimes reported within ten minutes of their occurrence was determined for each site, by weighting the cumulative distribution for each crime group by the proportion of all cases included in the group, and adding up the results. The cumulative distributions of involvement crimes only were included. Differences between the weighted distributions for each site are shown in Table D-6d; none at the .05 level, although one of the six differences is significant at the .10 level. We conclude that the differences are not significant and certainly not substantial, and aggregate the distributions for all sites together. The result is shown in Figure 16 in the text.

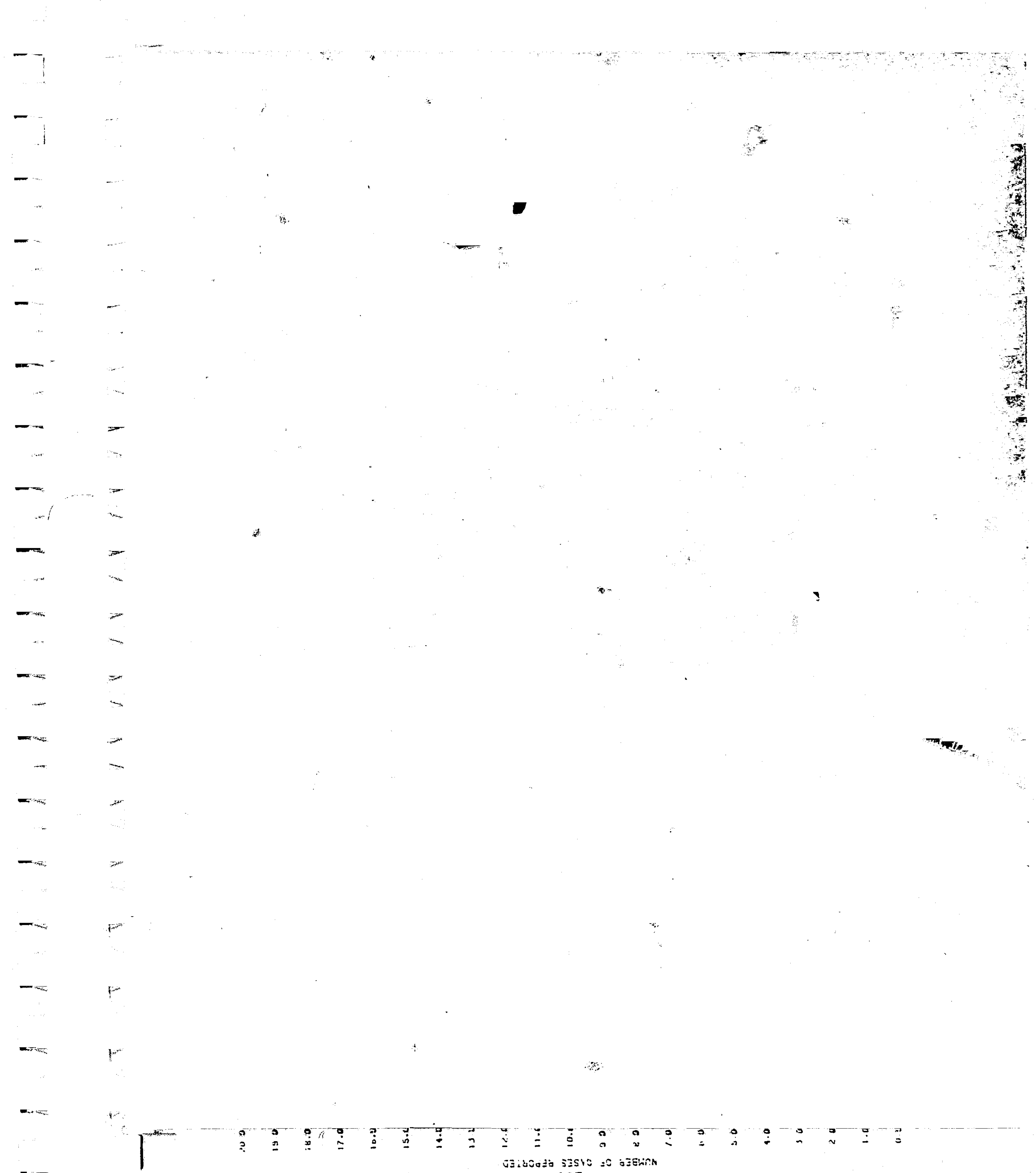


Figure D-6a

Frequency of Rape Reporting Times

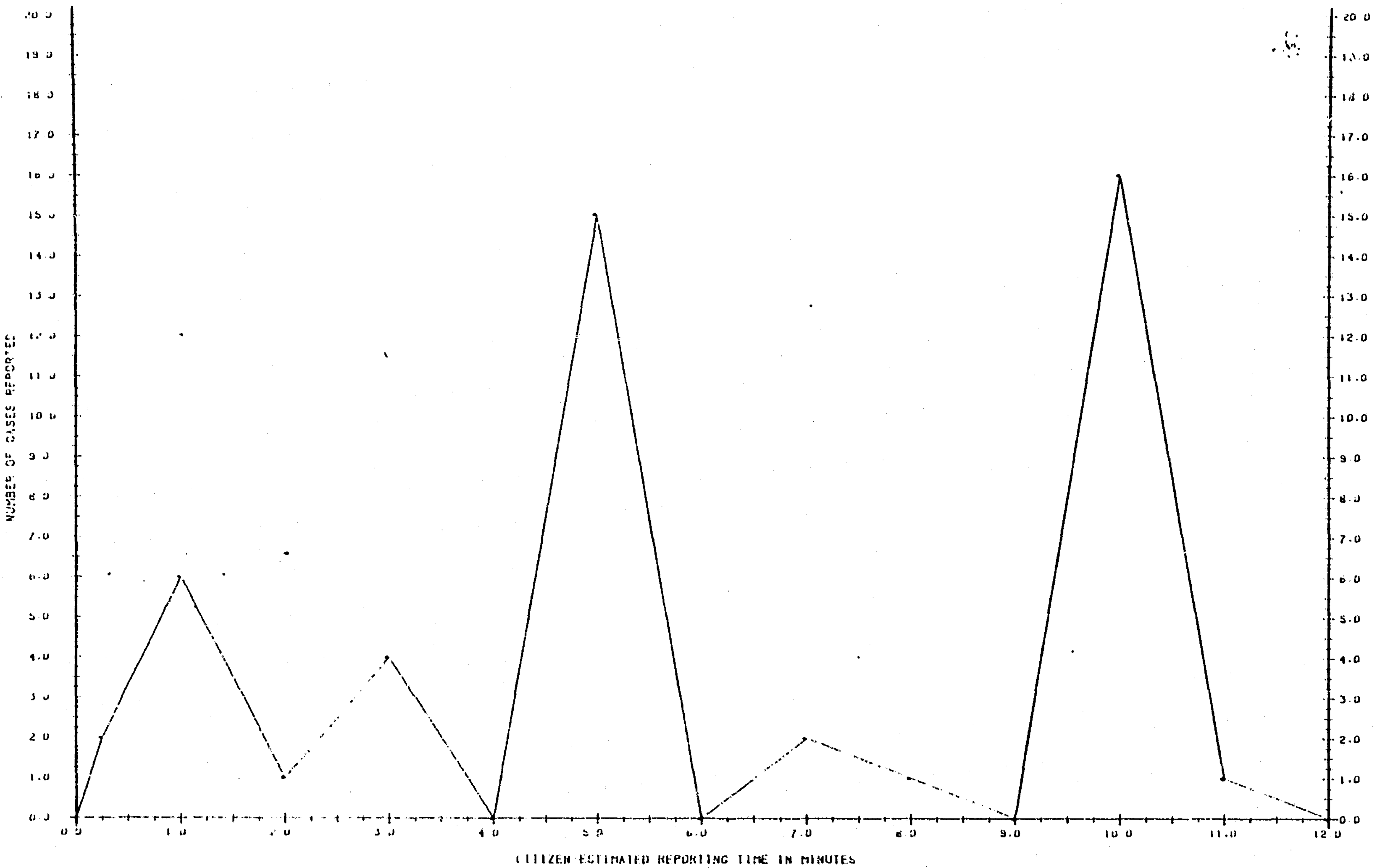


Figure D-6b

Cumulative Rape Reporting Distribution

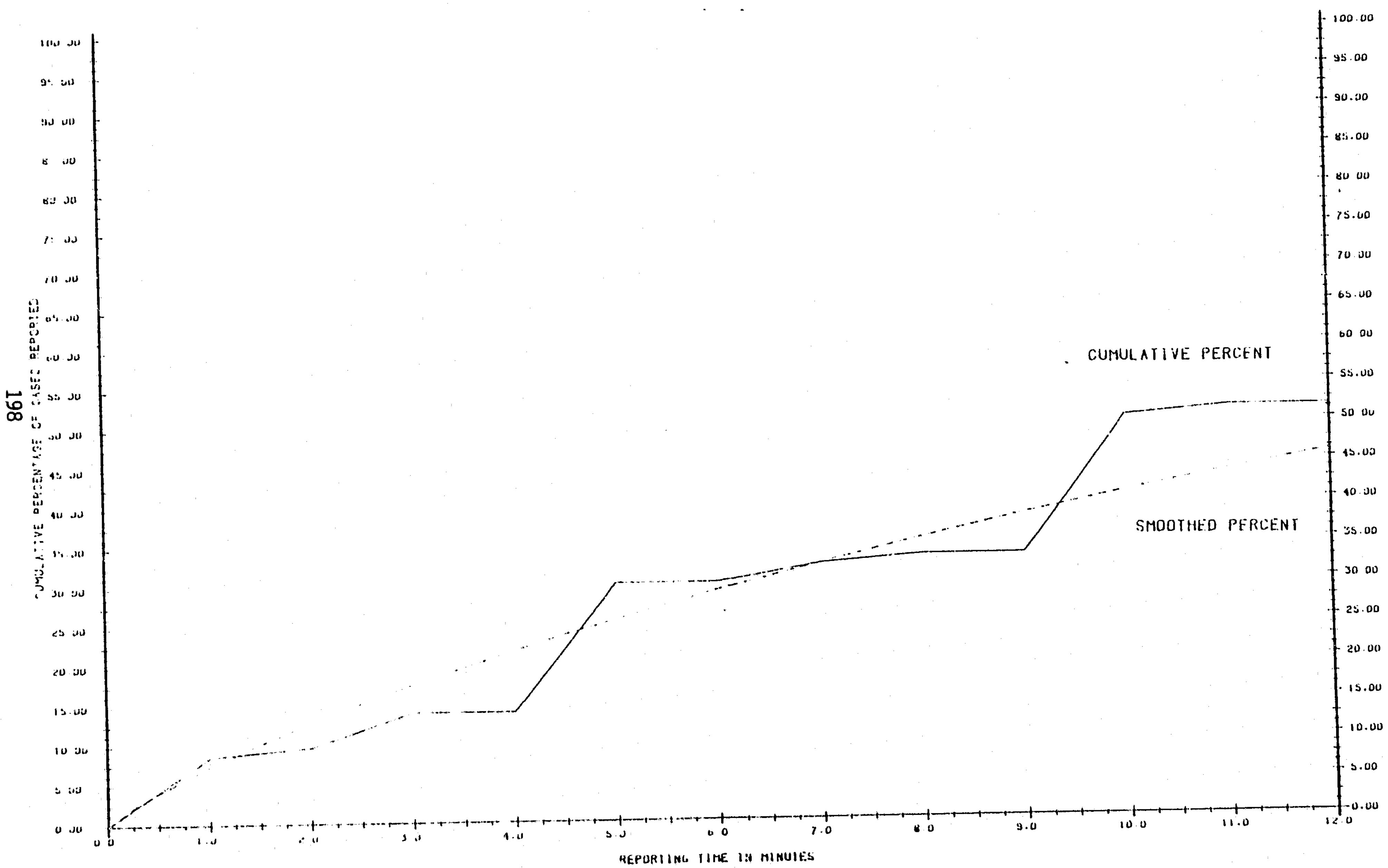


Table D-6c

Characteristics of Smoothing Distribution

	Smoothing Parameters			Kolomogorov-Smirnov Statistics	
Crime/Site Group	α	β	R^2	D	ρ(D)
Discovery: All Sites	19.550 (.094)*	.951 (.070)	.915	.102	<.01
Property Involvement: Jacksonville, Peoria, San Diego	4.370 (.052)	.722 (.041)	.930	.086	<.10
Property Involvement: Rochester	10.957 (.083)	.909 (.064)	.910	.061	<.05
Personal Involvement: Jacksonville, San Diego	3,971 (.041)	.650 (.031)	.955	.097	<.01
Personal Involvement: Peoria, Rochester	7.022 (.054)	.764 (.040)	.953	.077	<.20
Rape:	13.040 (.056)	.837 (.040)	.971	.890	<.10

$$f(x) = \frac{\beta}{\alpha} (t^{\beta-1}) \exp (-t^{\beta}/\alpha)$$

$$F(x) = 1 - \exp (-t^{\beta}/\alpha)$$

*The log of α is approximately normally distributed with this standard error.

Table D-6d

Comparison of Weighted and Aggregated Cumulative Distributions Between Sites*

	JACKSONVILLE	PEORIA	ROCHESTER	SAN DIEGO
JACKSONVILLE N=882		D=.0207 $p>.20$	D=.0207 $p>.20$	D=.0637 $p \leq .10$
PEORIA N=474			D=.0065 $p>.20$	D=.0570 $p>.20$
ROCHESTER N=559				D=.0495 $p \leq .20$
SAN DIEGO N=785				

*Statistic reported is the Kolmogorov-Smirnov Statistic, D.

APPENDIX E
DECIDING TO REPORT A CRIME

This appendix describes the statistical methods used and the results obtained in the analysis of citizen decisionmaking. It accompanies Chapter 4 in the text. Like Appendix D, it is divided into several sections. Extensive tabular and graphic data follow each section.

Appendix E-1
Frequency of Decisionmaking Actions

The starting point for analyzing the process of citizen decision-making is to ask what people did between the time they knew of the crime and were able to call the police, and the time they actually placed the call. In this, our data differed from the data collected by Kansas City.

Like Kansas City, we consider eight actions, or "patterns," taken by respondents after a crime occurs. Unlike Kansas City, however, we sharply separate the actions people take from their reasons for taking them. Kansas City asked an open-ended patterns question: "What was the cause of this delay (in calling the police)?" Respondents answered with both the actions they took and the feelings they had. Actions included talking to someone in person, phoning someone or taking a call, chasing the suspect, and so on. Feelings included apathy, fear, and uncertainty as to the usefulness of police involvement. Although both kinds of answers are important, we felt that the reliability of the responses may be low: the willingness of citizens to divulge their personal feelings could depend too much on uncontrollable factors such as the time elapsed since the incident, the time of day, or the skill of the interviewer. Thus, we chose to ask a question that focuses directly on the actions taken by the respondent after the crime occurred: "What was the very first thing you did after (you knew about) the crime? What did you do next?" Because this question is designed to obtain information on actions only, the Kansas City results are not directly comparable.

Frequencies for the eight patterns and a ninth "nonpattern" of calling the police without taking any delaying actions first, are shown in Table E-1a. Although occasionally the differences between sites are significant, none of them are very large. Each action is defined below.

Calling the police immediately--without further delaying actions--was the most frequent pattern, taken by nearly half of the respondents. There were small difference between sites: Peoria and Rochester respondents were somewhat more likely to take delaying actions than people in Jacksonville and San Diego. This parallels the earlier finding (Appendix D-4) that reporting times were slightly longer, on average, in Peoria and Rochester than in the other two cities.

Table E-1a

Frequency with Which Each of Nine Actions Were Taken in Response to a Crime

Action Taken		Jacksonville	Peoria	Rochester	San Diego	Aggregate	Chi-square (df=3) for inter-site differences
Call Police	n	622	303	367	526	1818	9.997
	%	47.7	42.7	41.4	44.0	44.4	P = .02
Talked to another person	n	262	144	214	252	872	5.887
	%	20.1	20.3	24.2	21.1	21.3	P = .13
Left the crime scene	n	242	143	201	205	791	10.861
	%	18.6	20.1	22.7	17.2	19.3	P = .01
Investigated the crime scene	n	180	111	125	212	628	8.661
	%	13.8	15.6	14.1	17.8	15.3	P = .04
Waited - took no immediate action	n	113	82	72	122	389	7.134
	%	8.7	11.5	8.1	10.2	9.5	P = .07
Chased a suspect	n	49	40	63	63	215	12.187
	%	3.8	5.6	7.1	5.3	5.3	P = .01
Phoned another person	n	64	41	39	69	213	2.626
	%	4.9	5.8	4.4	5.8	5.2	P = .46
Captured a suspect	n	14	3	11	19	47	5.471
	%	1.1	0.4	1.2	1.6	1.1	P = .16
Victim was injured, unable to take immedi-ate action	n	20	7	15	11	53	3.535
	%	1.5	1.0	1.7	0.9	1.3	P = .33

Talking to another person was the delaying action most frequently taken. About one respondent in five talked to someone before calling the police.

Some 20 percent of respondents left the scene of the crime. About one-fourth of these left to find a phone and called the police: these five percent of respondents are discussed at length in Chapter 5 and Appendix F. The rest left to take other crime-related actions such as talking to or phoning someone else, or to take actions not related to the crime.

Investigating the scene included cataloging stolen goods, looking for clues, and observing a situation in-progress to determine if it was a crime. One-sixth of respondents did this.

About one in every ten respondents took no action for a time before calling the police. This pattern included activities that were unrelated to the crime; as a result, virtually all of the very slowly reported crimes included this action.

Another five percent of victims, witnesses and bystanders chased the suspect. This only occurred in involvement crimes, of course. The probability of chasing was significantly higher in Rochester and lower in Jacksonville than the four-city average, but the differences were not substantial. Of the 215 respondents who chased the suspect, 47, or 22 percent of them, apprehended the supect. Chasers were significantly more successful in Jacksonville and San Diego than in Peoria and Rochester, but the differences are unimportant since so few people made the attempt.

About five percent of the respondents phoned another person before phoning the police to report the crime.

Although nearly one-fourth of the respondents in our sample were physically injured in some way in the course of a crime, only about one percent delayed reporting due to this injury. Delays due to injury included the time taken by a trip to the hospital, time spent unconscious, and the time required to give first aid to someone else.

As we show in the text, most of the time the reasons for these actions are self-explanatory. Two of the actions taken, however, talking and phoning someone other than the police, could be taken for a variety of reasons. Thus, we asked people who talked or phoned before reporting the crime why they did so. The results are shown in Tables E-1b and E-1c, and indicated that many of the resons people gave were rather vague. Almost half fell into the "miscellaneous" category, here titled "wanted to inform (the person contacted) of the crime." A substantial proportion of people sought advice, assistance, or information, however.

Table E-1b

Reason Given for Talking to Someone before Calling the Police

Reason	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Inform them of the crime.	250 45.5%	141 49.5%	181 46.3%	257 49.4%	829 47.5%
Was upset/person was there.	120 21.8%	68 23.9%	95 24.3%	124 23.8%	407 23.3%
Needed information.	91 16.5%	28 9.8%	63 16.1%	64 12.3%	246 14.1%
Wanted to use their phone.	42 7.6%	23 8.1%	26 6.6%	34 6.5%	125 7.2%
Wanted advice.	26 4.7%	22 7.7%	22 5.6%	18 3.5%	88 5.0%
Company procedure.	9 1.6%	2 0.7%	1 0.3%	10 1.9%	22 1.3%
Don't know or other.	12 2.2%	1 0.4%	3 0.8%	13 2.5%	29 1.7%
Total	550	285	391	520	1,746

Table E-1c

Reason Given for Phoning Someone before Calling the Police

Reason	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Inform them of crime.	28 41.2%	22 55.0%	13 28.9%	21 35.0%	84 39.4%
Needed advice	16 23.5	4 10.0%	10 22.2%	19 31.7%	49 23.0%
Needed assitance	7 10.3%	10 25.0%	13 28.9%	17 28.3%	47 22.1%
Needed information about the crime.	12 17.6%	2 5.0%	7 15.6%	3 5.0%	24 11.3%
Don't know or other	5 7.4%	2 5.0%	2 4.4%	0 0.0%	9 4.2%
Total	68	40	45	60	213

CONTINUED

6 OF 7

Appendix E-2
Indications of Decisionmaking Actions

In this section, we examine the size and significance of relationships between characteristics of the situation and the respondent, and the actions taken by the respondent before calling the police. Although in the text actions are only analyzed after they have been grouped together by the most likely reason that they have been taken, there are good reasons for focusing on individual actions first.

One reason is to see what kinds of characteristics are the best indicators of these actions. The list of potential indicators can be separated into three broad groups:

- Characteristics of the situation, including the location of the crime, the crime type, and whether the suspect was detected while commiting the crime (involvement/discovery).
- Characteristics of the respondent, which include familiar social characteristics such as age, race, sex, social status, and so on.
- The relationship of the respondent to the situation, including the role of the respondent in the crime (as a victim, witness, or bystander), whether the respondent himself was aware of the crime while it was happening, and the relationship of the respondent to the suspect (that is, whether the suspect was a friend, relative, acquaintance, or stranger to the respondent).

Although there are strong reasons for expecting characteristics of the situation and the relation of the respondent to the situation to be the best indicators of the reasons certain actions were taken, it was less certain whether they would also be good predictors of the actions themselves. On

the other hand, if they predict actions well, there is all the more reason to expect that they will be the best predictors of the reasons as well.

A related reason for considering actions before groups of actions is that some actions taken by citizens might have been very different from any of the others. Chasing the suspect, for example, might have been more strongly associated with social characteristics such as age and sex than with characteristics of the situation itself. If this were the case, it would make sense to analyze the pattern of "chasing" separately, rather than as one of a larger group of actions. On the other hand, if the indicators of all actions are the same, there is a practical as well as theoretical justification for aggregation: dissaggregate data will not help our understanding.

The size and significance level of the relationship between each action taken and characteristics of the situation, the respondent, and the respondent's relationship are summarized in Table E-2i. Three different but comparable statistics were used to measure the strength of these relationships. Each of the three, which are identified by the number in the far right-hand column, is appropriate for independent variables measured at different levels:

(1) When the independent variable was unranked and categorical, strength of relationship was measured by calculating the square root of the uncertainty coefficient. This is roughly equivalent in scale and meaning to a correlation coefficient. Significance is measured through a chi-square test.

(2) For independent variables that were categorical but rankable (hometown population, for example), Kendall's tau was appropriate. (A similar statistic,

gamma, was rejected as producing unrealistically high values. Although gamma has been categorized with the uncertainty coefficient and eta as a proportionate reduction in error statistic, it frequently reduces one kind of error--tied observations--by pretending it does not exist.) Significance is again measured through a chi-square test.

(3) Eta was appropriate when the independent variable was continuous and (very roughly) normally distributed. Here, significance is measured through an F-test.

As shown in the tables, situation and relation characteristics are, in fact, the most important and most often significant predictors of the actions people take. Only very rarely do social characteristics have a sizable effect on what people do. No action stands out as being particularly likely to be predicted by particular characteristics. All this suggests that the actions listed here are primarily responses to the situation, and that the situation affects people with different social characteristics in roughly the same way.

With somewhat less worry that something important has been left out, we now proceed to aggregate actions together that were probably taken for the same reason, and analyze the effects of situation and relation characteristics on the reasons.

Table E-2a

Indicators of Talking to Someone Personally

	CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION	Discovery Involvement/	.05	(.06)	.05	(.26)	.00	(.98)	.03	(.35)	1
	UCR Category	.08	(.08)	.10	(.21)	.18	(.00)	.10	(.03)	1
	UCR/Involvement Interaction	.09	(.00)	.07	(.18)	.12	(.00)	.07	(.04)	1
	Location	.12	(.00)	.11	(.01)	.13	(.00)	.07	(.04)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT	Role of Respondent	.19	(.00)	.26	(.00)	.20	(.00)	.24	(.00)	1
	Respondent Was/ Was Not Involved	.07	(.02)	.09	(.02)	.06	(.05)	.04	(.22)	1
	Relationship of Suspect to Respondent	.06	(.09)	.04	(.51)	.06	(.14)	.04	(.39)	1
CHARACTERISTICS OF THE RESPONDENT	Own/Rent/Board	.04	(.21)	.04	(.18)	.08	(.01)	.00	(.59)	2
	Hometown Population	.02	(.38)	.04	(.21)	.03	(.90)	.00	(.44)	2
	Head of Household	.09	(.01)	.08	(.15)	.10	(.01)	.08	(.02)	1
	Sex	.04	(.20)	.02	(.75)	.02	(.62)	.02	(.49)	1
	Race	.12	(.00)	.05	(.85)	.08	(.38)	.08	(.25)	1
	Age	.06	(.01)	.07	(.03)	.06	(.03)	.06	(.03)	3
	Years at Site	.04	(.08)	.01	(.42)	.05	(.07)	.04	(.11)	3
	Years at Present Address	.04	(.11)	.04	(.16)	.09	(.00)	.01	(.36)	3
	Education	.03	(.17)	.10	(.00)	.03	(.20)	.06	(.02)	3
	Income	.08	(.02)	.08	(.08)	.11	(.02)	.01	(.38)	3
	Occupation	.01	(.63)	.01	(.86)	.05	(.16)	01	(.84)	3
	Number of Respondents Taking This Action	262		144		214		252		

Table E-2b

Indicators of Leaving the Scene of the Crime

CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION									
Involvement/ Discovery	.07	(.07)	.13	(.00)	.11	(.00)	.06	(.03)	1
UCR Category	.23	(.00)	38	(.00)	.33	(.00)	.25	(.00)	1
UCR/Involvement Interaction	.20	(.00)	.37	(.00)	.30	(.00)	.24	(.00)	1
Location	21	(.00)	.30	(.00)	.28	(.00)	.19	(.00)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT									
Role of Respondent	.23	(.00)	.16	(.00)	.27	(.00)	.20	(.00)	1
Respondent Was/ Was Not Involved	.08	(.01)	.16	(.00)	.12	(.00)	.09	(.00)	1
Relationship of Suspect to Respondent	.14	(.00)	.20	(.00)	.17	(.00)	.12	(.00)	1
CHARACTERISTICS OF THE RESPONDENT									
Own/Rent/Board	.09	(.00)	.11	(.00)	.09	(.00)	.08	(.06)	2
Hometown Population	.01	(.12)	.01	(.68)	.01	(.55)	.00	(.73)	2
Head of Household	.13	(.00)	.08	(.09)	.12	(.00)	.05	(.26)	1
Sex	.02	(.64)	.04	(.35)	.04	(.29)	.01	(.88)	1
Race	.10	(.03)	.11	(.09)	.12	(.05)	.07	(.28)	1
Age	.13	(.00)	.19	(.00)	.11	(.00)	.10	(.00)	3
Years at Site	.05	(.05)	.08	(.02)	.07	(.02)	.03	(.14)	3
Years at Present Address	.03	(.11)	.10	(.00)	.09	(.30)	.03	(.18)	3
Education	.11	(.00)	.13	(.00)	.16	(.00)	.10	(.00)	3
Income	.20	(.00)	.11	(.02)	.12	(.01)	.07	(.03)	3
Occupation	.10	(.00)	.11	(.00)	.10	(.01)	.05	(.10)	3
Number of Respondents Taking This Action	242		143		201		205		

Table E-2c

Indicators of Investigating or Observing Situations

CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION									
Involvement/ Discovery	.14	(.00)	.18	(.00)	.17	(.00)	.21	(.00)	1
UCR Category	.28	(.00)	.30	(.00)	.30	(.00)	.21	(.00)	1
UCR/Involvement Interaction	.26	(.00)	.31	(.00)	.30	(.00)	.24	(.00)	1
Location	.11	(.00)	.15	(.00)	.13	(.00)	.08	(.03)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT									
Role of Respondent	.07	(.13)	.04	(.80)	.09	(.12)	.05	(.43)	1
Respondent Was/ Was Not Involved	.05	(.16)	.01	(.82)	.03	(.56)	.00	(.96)	1
Relationship of Suspect to Respondent	.17	(.00)	.23	(.00)	.15	(.00)	.12	(.00)	1
CHARACTERISTICS OF THE RESPONDENT									
Own/Rent/Board	.02	(.21)	.02	(.68)	.02	(.59)	.07	(.01)	2
Hometown Population	.04	(.31)	.02	(.25)	.00	(.03)	.00	(.72)	2
Head of Household	.07	(.04)	.03	(.69)	.06	(.27)	.03	(.58)	1
Sex	.01	(.82)	.08	(.05)	.06	(.10)	.02	(.46)	1
Race	.05	(.67)	.13	(.03)	.05	(.85)	.09	(.10)	1
Age	.01	(.32)	.01	(.44)	.03	(.18)	.03	(.19)	3
Years at Site	.04	(.08)	.06	(.07)	.06	(.03)	.00	(.46)	3
Years at Present Address	.02	(.30)	.06	(.06)	.04	(.10)	.03	(.14)	3
Education	.08	(.00)	.01	(.36)	.05	(.10)	.11	(.00)	3
Income	.02	(.34)	.05	(.20)	.03	(.28)	.05	(.10)	3
Occupation	.07	(.01)	.03	(.54)	.09	(.02)	.04	(.16)	3
Number of Respondents Taking This Action	180		111		125		212		

Table E-2d
Indicators of Waiting, or Taking No Action

	CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION	Involvement/ Discovery	.09	(.02)	.05	(.32)	.00	(.95)	.10	(.01)	1
	UCR Category	.10	(.23)	.12	(.15)	.07	(.74)	.07	(.49)	1
	UCR/Involvement Interaction	.09	(.04)	.12	(.03)	.05	(.63)	.11	(.01)	1
	Location	.07	(.17)	.07	(.34)	.10	(.11)	.01	(.93)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT	Role of Respondent	.24	(.00)	.13	(.05)	.12	(.08)	.14	(.00)	1
	Respondent Was/ Was Not Involved	.04	(.26)	.12	(.01)	.00	(.90)	.03	(.54)	1
	Relationship of Suspect to Respondent	.08	(.08)	.21	(.10)	.06	(.37)	.03	(.69)	1
CHARACTERISTICS OF THE RESPONDENT	Own/Rent/Board	.03	(.01)	.01	(.61)	.03	(.21)	.02	(.49)	2
	Hometown Population	.01	(.14)	.00	(.96)	.01	(.15)	.05	(.03)	2
	Head of Household	.05	(.16)	.02	(.90)	.06	(.18)	.04	(.45)	1
	Sex	.01	(.91)	.05	(.25)	.08	(.03)	.01	(.87)	1
	Race	.09	(.11)	.07	(.50)	.07	(.60)	.05	(.79)	1
	Age	.01	(.34)	.03	(.20)	.01	(.41)	.00	(.43)	3
	Years at Site	.00	(.44)	.04	(.14)	.04	(.10)	.02	(.26)	3
	Years at Present Address	.01	(.31)	.04	(.17)	.00	(.47)	.01	(.38)	3
	Education	.05	(.04)	.02	(.28)	.02	(.24)	.04	(.08)	3
	Income	.12	(.00)	.02	(.24)	.01	(.42)	.07	(.03)	3
	Occupation	.03	(.32)	.05	(.22)	.01	(.71)	.01	(.72)	3
	Number of Respondents Taking This Action	113		82		72		122		

Table E-2e
Indicators of Chasing Suspect

	CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION	Involvement/ Discovery	.18	(.02)	.20	(.02)	.23	(.00)	.15	(.01)	1
	UCR Category	.20	(.02)	.30	(.00)	.27	(.00)	.15	(.05)	1
	UCR/Involvement Interaction	.24	(.00)	.31	(.01)	.26	(.00)	.18	(.00)	1
	Location	.04	(.76)	.07	(.49)	.07	(.35)	.06	(.46)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT	Role of Respondent	.17	(.04)	.08	(.64)	.09	(.34)	.13	(.08)	1
	Respondent Was/ Was Not Involved	.28	(.00)	.34	(.00)	.34	(.00)	.26	(.00)	1
	Relationship of Suspect to Respondent	.13	(.05)	.11	(.22)	.13	(.06)	.11	(.24)	1
CHARACTERISTICS OF THE RESPONDENT	Own/Rent/Board	.01	(.94)	.01	(.01)	.01	(.79)	.02	(.46)	2
	Hometown Population	.06	(.76)	.01	(.17)	.02	(.57)	.02	(.47)	2
	Head of Household	.04	(.32)	.07	(.24)	.06	(.22)	.05	(.26)	1
	Sex	.02	(.12)	.02	(.78)	.04	(.29)	.08	(.01)	1
	Race	.01	(.99)	.04	(.93)	.05	(.81)	.12	(.00)	1
	Age	.01	(.36)	.05	(.10)	.04	(.15)	.01	(.32)	3
	Years at Site	.02	(.22)	.03	(.25)	.01	(.38)	.01	(.34)	3
	Years at Present Address	.03	(.18)	.04	(.15)	.00	(.47)	.03	(.15)	3
	Education	.00	(.46)	.01	(.47)	.01	(.44)	.02	(.24)	3
	Income	.01	(.42)	.03	(.27)	.09	(.04)	.05	(.12)	3
	Occupation	.02	(.48)	.02	(.59)	.04	(.33)	.01	(.67)	3
	Number of Respondents Taking This Action	49		40		63		63		

Table E-2f

Indicators of Talking to Someone by Phone

	CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION	Involvement/ Discovery	.13	(.00)	.19	(.00)	.02	(.94)	.19	(.00)	1
	UCR Category	.21	(.00)	.27	(.00)	.09	(.85)	.16	(.02)	1
	UCR/Involvement Interaction	.18	(.00)	.39	(.00)	.07	(.69)	.19	(.00)	1
	Location	.05	(.54)	.07	(.44)	.06	(.53)	.11	(.07)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT	Role of Respondent	.15	(.01)	.15	(.31)	.09	(.58)	.18	(.00)	1
	Respondent Was/ Was Not Involved	.00	(.92)	.18	(.01)	.05	(.51)	.03	(.60)	1
	Relationship of Suspect to Respondent	.07	(.31)	.15	(.08)	.05	(.62)	.05	(.38)	1
CHARACTERISTICS OF THE RESPONDENT	Own/Rent/Board	.01	(.94)	.07	(.35)	.03	(.84)	.00	(.99)	2
	Hometown Population	.02	(.09)	.02	(.15)	.01	(.91)	.02	(.29)	2
	Head of Household	.04	(.40)	.12	(.01)	.05	(.35)	.03	(.65)	1
	Sex	.08	(.01)	.13	(.00)	.04	(.31)	.07	(.02)	1
	Race	.05	(.68)	.04	(.91)	.04	(.96	.06	(.61)	1
	Age	.01	(.37)	.06	(.06)	.01	(.39)	.04	(.08)	3
	Years at Site	.02	(.28)	.02	(.31)	.01	(.40)	.01	(.35)	3
	Years at Present Address	.01	(.36)	.02	(.29)	.01	(.34)	.01	(.36)	3
	Education	.05	(.05)	.01	(.43)	.01	(.44)	.02	(.21)	3
	Income	.02	(.30)	.03	(.31)	.01	(.45)	.01	(.38)	3
	Occupation	.05	(.09)	.06	(.17)	.02	(.59)	.03	(.40)	3
	Number of Respondents Taking This Action	64		41		39		69		

Table E-2g

Indicators of Apprehending Suspect

	CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION	Involvement/ Discovery	.05	(.88)	.15	(.90)	.05	(.91)	.18	(.11)	1
	UCR Category	.19	(.38)	.31	(.72)	.13	(.94)	.21	(.14)	1
	UCR/Involvement Interaction	.06	(.46)	.33	(.18)	.10	(.69)	.26	(.01)	1
	Location	.08	(.63)	.25	(.47)	.27	(.01)	.12	(.20)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT	Role of Respondent	.30	(.01)	.32	(.42)	.17	(.51)	.14	(.30)	1
	Respondent Was/ Was Not Involved	.11	(.27)	.23	(.36)	.24	(.01)	.19	(.01)	1
	Relationship of Suspect to Respondent	.25	(.00)	.23	(.50)	.10	(.45)	.14	(.33)	1
CHARACTERISTICS OF THE RESPONDENT	Own/Rent/Board	.00	(.57)	.01	(.09)	.00	(.17)	4.00	(.65)	2
	Hometown Population	.01	(.13)	.00	(.86)	.00	(.55)	.01	(.24)	2
	Head of Household	.01	(.15)	.08	(.14)	.04	(.56)	.06	(.15)	1
	Sex	.09	(.00)	.05	(.51)	.04	(.44)	.11	(.00)	1
	Race	.02	(1.00)	.00	(.97)	.02	(.99)	.04	(.87)	1
	Age	.03	(.02)	.04	(.16)	.01	(.39)	.00	(.45)	3
	Years at Site	.08	(.00)	.01	(.35)	.01	(.41)	.01	(.38)	3
	Years at Present Address	.05	(.05)	.13	(.00)	.02	(.29)	.03	(.15)	3
	Education	.02	(.22)	.02	(.26)	.02	(.32)	.01	(.33)	3
	Income	.06	(.07)	.04	(.24)	.06	(.10)	.00	(.46)	3
	Occupation	.01	(.67)	.06	(.15)	.05	(.16)	.08	(.01)	3
	Number of Respondents Taking This Action	14		3		11		19		

Table E-2h
Indicators of Injury

	CHARACTERISTIC	JACKSONVILLE		PEORIA		ROCHESTER		SAN DIEGO		TEST
CHARACTERISTICS OF THE SITUATION	Involvement/ Discovery	.16	(.19)	.16	(.60)	.19	(.17)	.18	(.30)	1
	UCR Category	.45	(.00)	.40	(.06)	.42	(.00)	.49	(.00)	1
	UCR/Involvement Interaction	.42	(.00)	.40	(.01)	.42	(.00)	.42	(.00)	1
	Location	.26	(.01)	.44	(.00)	.05	(.78)	.08	(.69)	1
RELATIONSHIP OF THE RESPONDENT TO THE INCIDENT	Role of Respondent	.50	(.00)	.19	(.66)	.38	(.00)	.46	(.00)	1
	Respondent Was/ Was Not Involved	.28	(.00)	.09	(.75)	.25	(.04)	.27	(.04	1
	Relationship of Suspect to Respondent	.28	(.00)	.09	(.73)	.13	(.15)	.42	(.00)	1
CHARACTERISTICS OF THE RESPONDENT	Own/Rent/Board	.01	(.05)	.01	(.33)	.00	(.47)	.00	(.31)	2
	Hometown Population	.00	(.85)	.00	(.28)	.01	(.72)	.00	(.38)	2
	Head of Household	.08	(.02)	.01	(.60)	.04	(.43)	.02	(.79)	1
	Sex	.05	(.16)	.01	(.25)	.02	(.85)	.02	(.63)	1
	Race	.01	(1.00)	.02	(.48)	.03	(.99)	.12	(.00)	1
	Age	.02	(.28)	.01	(.43)	.03	(.22)	.00	(.46)	3
	Years at Site	.01	(.38)	.08	(.02)	.00	(.50)	.02	(.27)	3
	Years at Present Address	.02	(.26)	.02	(.27)	.04	(.15)	.03	(.19)	3
	Education	.12	(.00)	.03	(.20)	.00	(.50)	.05	(.04)	3
	Income	.14	(.00)	.05	(.17)	.02	(.33)	.02	(.34)	3
	Occupation	.07	(.02)	.01	(.87)	.03	(.42)	.05	(.13)	3
	Number of Respondents Taking This Action	20		7		15		11		

Table E-2i
Summary of Action Indicators

Characteristic	Average Correlation	Percentage of Times Statististically Significant (.05)
Involvement/Discovery	.12	50.0%
UCR Category	.23	62.5%
UCR/Involvement Interaction	.22	81.3%
Location	.14	43.8%
Role of Respondent	.19	56.2%
Respondent Was/Was Not Involved	.12	56.2%
Relationship of Suspect to Respondent	.14	37.5%
Own/Rent/Board	.04	25.0%
Hometown Population	.02	6.2%
Head of Household	.06	25.0%
Sex	.05	25.0%
Race	.06	18.8%
Age	.04	28.1%
Years at Site City	.03	18.8%
Years at Present Address	.04	15.6%
Years of Schooling	.05	37.5%
Income	.06	28.1%
Occupation	.04	21.8%

Appendix E-3
Causes of Decisionmaking Delay

As shown in the text, actions which were very likely to have been taken for the same reason were aggregated together. This was done because it is almost impossible to define policy implications based only on the actions people take. For example, one would expect that a citizen crime reporting program aimed at preventing people from delaying by talking to one another would have relatively little impact. If people did, in fact, stop talking to each other, they would simply find other ways to define situations, relieve stress, and resolve conflict if the needs were pressing. And, as explained at length in Chapter 6, it is very likely that the program would not prevent people from talking anyway, unless the program either publicizes or actually changes the costs and benefits or reporting, or relieves the ambiguity of criminal situations. Thus, it makes sense to focus directly on ambiguity, benefits, and costs by aggregating actions taken for these three basic reasons.

In addition to the three decisionmaking delays explained in the text, some people took actions not related to the decision to report a crime, but instead aimed at implementing the decision. These contact delays occurred when victims or witnesses were unable to place the call themselves, and instead asked others to do it for them. This group of actions also included talking to someone and asking to use a telephone with which to call the police. As shown in Table E-3a, a constant five percent of all respondents took delays related directly to contacting the police.

If these actions had not been taken, reporting time would probably have been longer: people would have had to find a less convenient method of reporting the crime. Thus we do not consider the effects of eliminating this cause of delay, and mention it only because it fills out the list of reasons.

Also shown in Table E-3a are the number and percentage of people who acted to resolve ambiguity, meet needs other than those that could be met by reporting the crime, and resolve conflict. As indicated on the table, there are no significant differences between sites for actions to resolve ambiguity and conflict; people in Rochester (and to a lesser degree, Peoria) were more likely to judge other actions as more beneficial than people in the other cities. Of course, the differences are only a few percentage points.

Although the reason we assigned to each action in the text is the most probable reason this action was taken, this will not be true for every case. One cause of this was the vagueness of citizen responses. For example, all respondents who asked for advice were aggregated together, and labeled as respondents who sought to resolve conflict. Although it is probably true that people asked for advice because they did not know whether calling the police was the best thing to do, it is also possible that some respondents were under stress, and talked to someone in order to relieve it, rather than because they really wanted an opinion.

Table E-3a

Frequency of Grouped Delaying Actions--All Sites

CONTACT	Count / Col %	SITE: JAX 1	PEORIA 2	ROCH 3	SANDY 4	Row Total
NO	0	1236	679	833	1128	3876
		94.9	95.6	94.0	94.3	94.7
YES	1	67	31	53	68	219
		5.1	4.4	6.0	5.7	5.3
	Column Total	1303	710	886	1196	4095
		31.8	17.3	21.6	29.2	100.0

Raw Chi square = 2.43402 with 3 degrees of freedom. Significance = 0.4873
Eta = 0.02438 with CONTACT dependent.

AMBIG	Count / Col %	SITE: JAX 1	PEORIA 2	ROCH 3	SANDY 4	Row Total
NO	0	1101	592	740	968	3401
		84.5	83.4	83.5	80.9	83.1
YES	1	202	118	146	228	694
		15.5	16.6	16.5	19.1	16.9
	Column Total	1303	710	886	1196	4095
		31.8	17.3	21.6	29.2	100.0

Raw Chi square = 5.92980 with 3 degrees of freedom. Significance = 0.1151
Eta = 0.03805 with AMBIG dependent.

OTHER	Count / Col %	SITE: JAX 1	PEORIA 2	ROCH 3	SANDY 4	Row Total
NO	0	872	450	542	787	2651
		66.9	63.4	61.2	65.8	64.7
YES	1	431	260	344	409	1444
		33.1	36.6	38.8	34.2	35.3
	Column Total	1303	710	886	1196	4095
		31.8	17.3	21.6	29.2	100.0

Raw Chi square = 8.82144 with 3 degrees of freedom. Significance = 0.0318
Eta = 0.04641 with OTHER dependent.

CONFLICT	Count / Col %	SITE: JAX 1	PEORIA 2	ROCH 3	SANDY 4	Row Total
NO	0	1171	622	804	1055	3652
		89.9	87.6	90.7	88.2	89.2
YES	1	132	88	82	141	443
		10.1	12.4	9.3	11.8	10.8
	Column Total	1303	710	886	1196	4095
		31.8	17.3	21.6	29.2	100.0

Raw Chi square = 5.87992 with 3 degrees of freedom. Significance = 0.1176
Eta = 0.03789 with CONFLICT dependent.

A more basic problem is that costs, benefits, and ambiguity are sometimes difficult to distinguish, and in any case strongly tied to one another. A victim may be in conflict because the situation is uncertain, for instance: all attempts to resolve ambiguity have been stymied, and the victim is torn between reporting what is probably not a crime, and not reporting what may be a large financial loss. Is this delay due to ambiguity, conflict, or both?

When examining the data on a case-by-case basis, it is almost impossible to make clear distinctions. In the limit, it seems likely that the misclassifications will at least partially cancel each other out, although there is no way of verifying this. What can be verified is that the group of respondents who took actions in each of the three decision-making groups took them in situations that would be expected to produce the needs assigned to that group of actions. That is, we can ask the following questions:

- Are actions apparently aimed at defining the situation taken in situations where previous research and common sense indicate that the situation will be ambiguous?
- Do people who take actions that were grouped together as "more beneficial" take them in situations where stress, injury and other needs can be expected?
- Do people take conflict-related actions when the costs of reporting a crime are likely to be high?

If all these questions can be answered with a "yes," then it is likely that there are relatively few misclassified cases, and the groupings used will be verified. Of course, it is still possible that previous research, common sense, and our data are all wrong in the same way; we must assume that the chances of this are slight.

Table E-3b through E-3d show that the relationship between four characteristics of the situation and of the respondent's relationship to the situation, and the number of respondents who took actions in each of the three decisionmaking groups. These four characteristics were determined in the previous section to be the most important predictors of each action, and are theoretically the most important as well. The relationships are discussed at length in the text, and illustrated by Figures 18, 20, and 22. Only aggregate figures are shown; the relationships were not significantly different in any of the cities sampled.

Because of interrelationships between the situation and relation characteristics (discovery crimes almost always happen at home or at work, for example), it was possible that relationships which appear to be significant and important are in fact spurious, and due only to the relationship of both the characteristic and the action taken to a third variable. Thus it was necessary to control for the effects of each independent variable to be certain that none of the relationships found to be significant were spurious. In addition, it was possible that some relationships that do <u>not</u> appear to be significant are actually important, but are suppressed by other, stronger relationships. Again, controlling for the effects of each independent variable would allow us to identify any cases of suppressed relationships.

Table E-3b

Effect of Situation and Relation Characteristics on Defining the Situation--Aggregate

AMBIG	Count / Col %	CRIME: DISCOV 1	PERSONAL 2	RAPE 3	INV PROPERTY 4	Row Total
NO	0	392 66.8	1364 93.0	128 92.8	1517 79.7	3401 83.1
YES	1	195 33.2	102 7.0	10 7.2	387 20.3	694 16.9
	Column Total	587 14.3	1466 35.8	138 3.4	1904 46.5	4095 100.0

Raw Chi square = 239.03254 with 3 degrees of freedom. Significance = 0.0000
Eta = 0.24160 with AMBIG dependent.

AMBIG	Count / Col %	PLACE: WORK 1	HOME 2	ELSE 3	Row Total
NO	0	837 83.6	1341 79.4	1204 87.1	3382 83.1
YES	1	164 16.4	347 20.6	178 12.9	689 16.9
	Column Total	1001 24.6	1688 41.5	1382 33.9	4071 100.0

Raw Chi square = 32.12803 with 2 degrees of freedom. Significance = 0.0000
Eta = 0.08884 with AMBIG dependent.

AMBIG	Count / Col %	ROLE: VICTIM 1	WITNESS 2	BYSTANDER 3	Row Total
NO	0	2618 83.0	349 83.1	434 83.3	3401 83.1
YES	1	536 17.0	71 16.9	87 16.7	694 16.9
	Column Total	3154 77.0	420 10.3	521 12.7	4095 100.0

Raw Chi square = 0.02837 with 2 degrees of freedom. Significance = 0.9859
Eta = 0.00263 with AMBIG dependent.

AMBIG	Count / Col %	RELAT: INTIM 1	ACQUAINT 2	STRANGR 3	Row Total
NO	0	277 95.8	251 94.0	2873 81.2	3401 83.1
YES	1	12 4.2	16 6.0	666 18.8	694 16.9
	Column Total	289 7.1	267 6.5	3539 86.4	4095 100.0

Raw Chi square = 65.18610 with 2 degrees of freedom. Significance = 0.0000
Eta = 0.12617 with AMBIG dependent.

Table E-3c
Effect of Situation and Relation Characteristics on More Beneficial Actions--Aggregate

CRIME

OTHER	Count / Col %	DISCOV 1	PERSONAL 2	RAPE 3	INV PROPERTY 4	Row Total
NO	0	410	804	62	1375	2651
		69.8	54.3	44.9	72.2	64.7
YES	1	177	662	76	529	1444
		30.2	45.2	55.1	27.8	35.3
	Column Total	587	1466	138	1904	4095
		14.3	35.8	3.4	46.5	100.0

Raw Chi square = 139.95779 with 3 degrees of freedom. Significance = 0.0000
Eta = 0.18487 with OTHER dependent.

PLACE

OTHER	Count / Col %	WORK 1	HOME 2	ELSE 3	Row Total
NO	0	729	1170	731	2630
		72.8	69.3	52.9	64.6
YES	1	272	518	651	1441
		27.2	30.7	47.1	35.4
	Column Total	1001	1688	1382	4071
		24.6	41.5	33.9	100.0

Raw Chi square = 128.33376 with 2 degrees of freedom. Significance = 0.0000

ROLE

OTHER	Count / Col %	VICTIM 1	WITNESS 2	BYSTANDER 3	Row Total
NO	0	1869	329	453	2651
		59.3	78.3	86.9	64.7
YES	1	1285	91	68	1444
		40.7	21.7	13.1	35.3
	Column Total	3154	420	521	4095
		77.0	10.3	12.7	100.0

Raw Chi square = 138.07899 with 2 degrees of freedom. Significance = 0.0000
Eta = 0.21431 with OTHER dependent.

RELAT

OTHER	Count / Col %	INTIM 1	ACQUAINT 2	STRANGR 3	Row Total
NO	0	146	136	2369	2651
		50.5	50.9	66.9	64.7
YES	1	143	131	1170	1444
		49.5	49.1	33.1	35.3
	Column Total	289	267	3539	4095
		7.1	6.5	86.4	100.0

Raw Chi square = 55.39083 with 2 degrees of freedom. Significance = 0.0000

Table E-3d
Effect of Situation and Relation Characteristics on Conflict-Resolving Actions--Aggregate

CRIME

CONFLICT	Count / Col %	DISCOV 1	PERSONAL 2	RAPE 3	INV PROPERTY 4	Row Total
NO	0	498	1300	119	1735	3652
		84.8	88.7	86.2	91.1	89.2
YES	1	89	166	19	169	443
		15.2	11.3	13.8	8.9	10.8
	Column Total	587	1466	138	1904	4095
		14.3	35.8	3.4	46.5	100.0

Raw Chi square = 20.55582 with 3 degrees of freedom. Significance = 0.0001
Eta = 0.07085 with CONFLICT dependent. = 0.06421 with CRIME dependent.

PLACE

CONFLICT	Count / Col %	WORK 1	HOME 2	ELSE 3	Row Total
NO	0	911	1493	1225	3629
		91.0	88.4	88.6	89.1
YES	1	90	195	157	442
		9.0	11.6	11.4	10.9
	Column Total	1001	1688	1382	4071
		24.6	41.5	33.9	100.0

Raw Chi square = 4.80572 with 2 degrees of freedom. Significance = 0.0905
Eta = 0.03436 with CONFLICT dependent.

ROLE

CONFLICT	Count / Col %	VICTIM 1	WITNESS 2	BYSTANDER 3	Row Total
NO	0	2757	401	494	3652
		87.4	95.5	94.8	89.2
YES	1	397	19	27	443
		12.6	4.5	5.2	10.8
	Column Total	3154	420	521	4095
		77.0	10.3	12.7	100.0

Raw Chi square = 44.63055 with 2 degrees of freedom. Significance = 0.0000
Eta = 0.10440 with CONFLICT dependent.

RELAT

CONFLICT	Count / Col %	INTIM 1	ACQUAINT 2	STRANGR 3	Row Total
NO	0	242	238	3172	3652
		83.7	89.1	89.6	89.2
YES	1	47	29	367	443
		16.3	10.9	10.4	10.8
	Column Total	289	267	3539	4095
		7.1	6.5	86.4	100.0

Raw Chi square = 9.61724 with 2 degrees of freedom. Significance = 0.0082
Eta = 0.04646 with CONFLICT dependent.

In order to control for all four characteristics identified simultaneously, the log-odds in favor of taking each group of actions (the logit of each probability) was regressed on the four situation and relation characteristics. The results are shown in Table E-3e through E-3g. The most important results of this analysis are the marginal probabilities. These are probabilities that a group of actions were taken, for each value of each situation and relation characteristic, after controlling for the effect of all other characteristics. Thus the marginal probability that a respondent in a discovery crime will act to define the situation (resolve the ambiguity) is .215. These probabilities cannot be directly compared to the actual (uncontrolled) probabilties, for reasons explained better elsewhere. (See, for example, the discussion of logistic analysis of variance in Winer, 1970.) They can, however, be compared with one another.

Values for each situation and relation characteristic which are significantly different from each other are enclosed in separate boxes in Tables E-3e through E-3g; conversely, values that are not significantly different are enclosed in the same box. Thus the probability that a respondent in a discovery crime will define the situation is significantly higher than the probability for involvement property crimes, which is significantly higher than the probability for rapes, aggravated assaults and robberies, after controlling for the effect of crime location, role of the respondent, and the relationship between the respondent and the suspect.

Since a large number of significance tests were conducted, it was particularly advisable to control the type-two error rate in some way. Dunn's

Table E-3e

Marginal Effects of Situation and Relation Characteristics on Defining the Situation--Aggregate

Characteristic	Coefficient	Standard Error	Marginal Probability	Actual Probability
CRIME TYPE				
(Discovery)	.999	--	.215	.332
Involvement Property	.359	.101	.126	.203
Rape	-.705	.252	.048	.072
Assault and Robbery	-.653	.118	.050	.070
CRIME LOCATION				
Home	.194	.140	.109	.206
(Work)	.078	--	.099	.164
Elsewhere	-.116	.146	.083	.129
RELATIONSHIP TO SUSPECT				
(Friend or Relative)	-.430	--	.062	.042
Acquaintance	-.202	.201	.076	.060
Stranger	.632	.140	.160	.188
ROLE OF RESPONDENT				
(Victim)	-.108	--	.083	.170
Witness	.051	.101	.096	.169
Bystander	.057	.095	.097	.167
CONSTANT	-2.292	.207	--	--

Goodness of fit x^2 = 140.710, 68 degrees of freedom.
Some interaction effects are significant.

Reference characteristics are labeled in parentheses.

Table E-3f

Marginal Effects of Situation and Relation Characteristics on More Beneficial Actions--Aggregate

Characteristic	Coefficient	Standard Error	Marginal Probability	Actual Probability
CRIME TYPE				
Rape	.676	.146	.341	.551
Assault and Robbery	.190	.072	.243	.452
(Discovery)	-.417	--	.149	.302
Involvement Property	-.449	.065	.145	.278
CRIME LOCATION				
Elsewhere	.834	.165	.380	.471
Home	.043	.164	.218	.307
(Work)	-.086	--	.196	.272
RELATIONSHIPS TO SUSPECT				
(Friend or Relative)	.004	--	.211	.495
Acquaintance	.133	.097	.233	.491
Stranger	-.137	.071	.188	.331
ROLE OF RESPONDENT				
(Victim)	.981	--	.415	.407
Witness	-.067	.094	.199	.217
Bystander	-.914	.101	.096	.131
CONSTANT	-1.323	.184	--	--

Goodness of fit x^2 = 92.872, 68 degrees of freedom.
Some interaction effects are significant.

Reference characteristics are labeled in parentheses.

Table E-3g

Marginal Effects of Situation and Relation Characteristics on Conflict-Resolving Actions--Aggregate

Characteristic	Coefficient	Standard Error	Marginal Probability	Actual Probability
CRIME TYPE				
(Discovery)	.231	--	.081	.152
Rape	.164	.195	.076	.138
Assault and Robbery	-.102	.101	.060	.113
Involvement Property	-.293	.098	.053	.089
CRIME LOCATION				
Elsewhere	-.682	.771	.091	.114
Home	.356	.268	.083	.116
(Work)	.326	--	.086	.090
RELATIONSHIP TO SUSPECT				
(Friend or Relative)	.245	.144	.082	.163
Acquaintance	-.132	.144	.047	.109
Stranger	-.113	.102	.049	.104
ROLE OF RESPONDENT				
(Victim	.669	--	.082	.126
Witness	-.364	.172	.058	.045
Bystander	-.305	.157	.059	.052
CONSTANT	-2.655	.295	--	--

Goodness of fit x^2 = 52.152, 68 degrees of freedom.
No interaction effects will improve fit significantly.

Reference characteristics are labeled in parentheses.

method of multiple comparisons was used, to maintain an error rate of five percent for each hypothesis (that is, each independent variable). Because the samples used were so large, z-tests were appropriate, instead of t-tests. Finally, even though the sign of each test could be specified in advance through previous research, two-tailed tests were used. This is because the primary purpose of this analysis was to validate the aggregation procedures, and we wanted to use as conservative a method as possible.

The same method of multiple comparisons between values of each characteristic was applied to the (uncontrolled) probabilities shown in Table E-3b through E-3d. The "actual probabilities" computed from these tabular results are shown in the right-hand column of Tables E-3e through E-3g. Again, when the probabilities are significantly different, they are in separate boxes; when they are not significantly different, they are in the same box. The result (with a few very minor exceptions) is <u>exactly the same classification</u>.

In other words, controlling for the other characteristics does not change the relationship between each characteristic and each group of actions. Even after controlling for the rest of the theoretically and practically important characteristics, the relationships are the same. If anything, controlling for other characteristics increases the significance of differences between values of each characteristics.

The models shown are not complete; the goodness of fit chi-square is statistically significant for two of the three regressions, indicating that

there are some significant interaction effects between the characteristics. By far, the largest effects are the main effects shown here, however, and adding interaction effects are very unlikely to change the multiple comparisons of the main effects. Since the characteristics shown here are judged the most important, both on theoretical grounds and on the basis of our tabular results, it is equally unlikely that these relationships will change if additional variables are added to the analysis.

We conclude that the relationships described by the more straightforward tabular data are real, and not spurious. As shown in the text, they are almost exactly what can be expected from previous research and common sense. Hence, our aggregation of actions by the most likely reasons for taking them is verified.

Appendix E-4
Effects of Eliminating Decisionmaking Delays

Up to this point, in both the appendixes and the corresponding places in the text, this analysis has been concerned almost solely with representing the citizen reporting and police response system as it is at present. Now the emphasis changes from what is to what would be, if some change in citizen reporting behavior came about. How these changes may be affected (citizen crime reporting programs, rubbing magic lamps, and so on), is outlined in Chapter 6, Policy Implications. What they are likely to do is the subject of Chapters 4 and 5, and of this appendix.

Briefly, we define and implement a method for determining: the number of crimes that would be reported quickly enough to perhaps result in response-related arrests; the number of crimes that would be reported in-progress; and the number of crimes that would result in response-related arrest, if citizen reporting behavior changed in certain ways. Three hypothetical scenarios are considered:

> Case One: Actions are never taken to define the situation. That is, citizens are never delayed by ambiguous situations.
>
> Case Two: Citizens never delay reporting a crime because they perceive something else to be more important. In this case, once citizens have defined a situation as criminal, calling the police becomes their first priority.
>
> Case Three: People never perceive calling the police to be costly. Regardless of the benefits they see in reporting a crime, they will never hesitate, bolster, or shift responsibility in order to avoid the costs.

By assessing the number of short reporting times, in-progress cases, and response-related arrests that would result from these hypothetical decisionmaking changes (and later by assessing the effects of eliminating various communications access delays, in Chapter 5 and Appendix F), we provide a basis for choosing among the various alternatives available for adapting to and changing the citizen reporting and police response system. In a later section of this appendix, we discuss the assumptions this analysis requires, and the likely effects on the results of relaxing these assumptions.

Time Required to Act

The first step is to determine how long people took when they defined the situation, resolved conflict, ameliorated stress, and so on. Being able to predict citizen reporting time from the actions people took or the needs they met will allow prediction of the effects of changes in actions or needs on citizen reporting time. There are two possible ways of structuring this analysis.

First, one could assume that meeting each need created by a crime took, on average, a certain length of time, and that once the need was met the victim, witness, or bystander then either acted to meet some other need, or called the police. This assumption seems unrealistic, however, since people may take more than one action to meet the same need. Then, too, it is not the need which delays the crime report; it is the action itself. Two people faced with the same problem--say, trying to resolve conflict in a decision to report a domestic assault--may meet their needs to resolve the problem in different ways. Whereas one person may wait for hours or days, trying to decide what to do, another person may call up friends and neighbors and solicit advice. All other things being equal, the second individual would probably make a decision (whether it be to report the crime or not) more quickly than the first, despite the fact that they both acted to meet the same need.

The second possible tack is to determine how long it takes to act in a certain way (to telephone someone, for example). Obviously the time required to act will depend on who is acting, when, and for what purpose. Although it is clearly impossible to include all the relevant variables that will influence the decision, predicting citizen reporting time from actions taken promises to be a better predictor than needs alone, since eight actions were identified, and only four needs. On balance, it seemed to make more sense to assume that reporting time depended only on actions themselves, rather than the psychological reasons motivating the actions.

The technique used to determine the effect of citizen decision-making actions on citizen reporting time was multiple linear regression. Since citizen reporting time depended on the actions taken, dummy variables representing each action were independent variables. The distribution of citizen reporting times was highly skewed, which would result in very inefficient estimates of the effects of each action and immeasurable errors in test statistics, so the natural (base e) logarithm of citizen reporting

time was used to normalize the dependent variable. (In a similar analysis, Kansas City also took the (base 10) logarithm of citizen reporting time. The choice of logarithm base is motivated entirely by convenience, and has no practical effect on the analysis.) Since it seemed likely that the time required to act would depend on the situation, the analysis was performed separately for each site for each value of crime type, and the results between sites were compared. Very small sample sizes would very likely lead to spurious conclusions. Thus crime was aggregated into three groups: discovery, involvement property, and involvement personal crimes.

In each site, four analyses were conducted: one for each crime type and one for all crimes types aggregated. (For Appendix F it was necessary to determine the effect of communications access problems on citizen reporting time. Since it was necessary to control the effect of actions to get the marginal effects of problems, and vice versa, dummy variables representing each of the five problems people encountered were also entered into the regression. (These coefficients are tabled in Appendix F-3, and are not discussed here.) Regression coefficients for each action, with their standard errors below in parentheses, are shown in Table E-4a through E-4d. Where both the coefficient and the standard errors are encased in brackets, this means that the bracketed coefficient is significantly different from the coefficient for all crime types combined.

Relatively few of the coefficients (11 of 96) are bracketed. This is larger than one would expect to find, were there no differences

Table E-4a

Estimation of Time Required to Take Each Action
Jacksonville

	Discovery	Involvement Property	Involvement Personal	All Cases
Talked	.713 (.415)	.769 (.174)	.404 (.170)	.656 (.124)
Left the Scene	-.125 (.501)	.272 (.209)	.806 (.162)	.532 (.131)
Investigated	.710 (.400)	.903 (.168)	.414 (.286)	.902 (.139)
Waited/No Action	3.453 (.514)	.864 (.269)	1.051 (.273)	1.709 (.188)
Chased Suspect	.000 (.000)	.200 (.233)	.106 (.487)	.006 (.231)
Phoned	.857 (.616)	1.014 (.270)	.478 (.364)	1.016 (.212)
Apprehended Suspect	2.779 (2.160)	.569 (.514)	.500 (.962)	.655 (.479)
Injured/First Aid	.000 (.000)	.000 (.000)	-.263 (.933)	-.233 (1.062)
Constant	2.400	1.373	1.527	1.508
Sample Size (n)	133	482	379	994
R^2	.376	.191	.179	.226
F (13, n-14)	5.516	8.481	6.128	22.003

Table E-4b

Estimation of Time Required to Take Each Action
Peoria

	Discovery	Involvement Property	Involvement Personal	All Cases
Talked	.247 (.498)	.251 (.249)	.372 (.279)	.337 (.176)
Left the Scene	.601 (.732)	.039 (.352)	.558 (.242)	.578 (.181)
Investigated	-.153 (.472)	.478 (.222)	.828 (.521)	.425 (.187)
Waited/No Action	1.491 (.609)	1.583 (.345)	2.869 (.346)	2.261 (.229)
Chased Suspect	.000 (.000)	.437 (.276)	.187 (.804)	.106 (.292)
Phoned	.748 (.634)	.628 (.489)	.685 (.570)	.775 (.300)
Apprehended Suspect	.000 (.000)	-.779 (.818)	.000 (.000)	-1.118 (.933)
Injured/First Aid	.000 (.000)	.000 (.000)	1.000 (1.198)	.538 (1.142)
Constant	2.393	1.448	1.715	1.651
Sample Size (n)	89	238	200	527
R^2	.293	.169	.337	.246
F (13, n-14)	2.396	3.498	7.259	12.846

Table E-4c

Estimation of Time Required to Take Each Action
Rochester

	Discovery	Involvement Property	Involvement Personal	All Cases
Talked	1.888 (.421)	1.104 (.250)	-.027 (.220)	.714 (.156)
Left the Scene	-.175 (.562)	.288 (.328)	1.103 (.215)	.604 (.168)
Investigated	.329 (.378)	.615 (.247)	.062 (.429)	.581 (.178)
Waited/No Action	2.728 (.624)	2.038 (.374)	2.162 (.338)	7.199 (.237)
Chased Suspect	0.000 (.000)	.328 (.290)	-.174 (.491)	-.365 (.248)
Phoned	.267 (.721)	.094 (.472)	1.354 (464)	.521 (.302)
Apprehended Suspect	-.534 (1.302)	-.248 (.682)	1.614 (.908)	.191 (.505)
Injured/First Aid	.000 (.000)	.000 (.000)	1.374 (1.089)	1.110 (1.169)
Constant	2.189	1.868	1.726	1.869
Sample Size (n)	117	278	251	646
R^2	.324	.207	.303	.214
F (13, n-14)	3.802	5.304	7.934	13.208

Table E-4d

Estimation of Time Required to Take Each Action
San Diego

	Discovery	Involvement Property	Involvement Personal	All Cases
Talked	.2724 (.3665)	.2692 (.1839)	.7003 (.1946)	.465 (.132)
Left the Scene	-.1729 (.4879)	.6933 (.2259)	.6937 (.1979)	.506 (.149)
Investigated	.4624 (.3384)	.7989 (.1799)	.7632 (.2713)	.876 (.137)
Waited/No Action	3.3311 (.4332)	1.3150 (.2612)	1.0806 (.2832)	1.937 (.181)
Chased Suspect	.2928 (1.4196)	.4306 (.2424)	-.1028 (.4183)	.155 (.227)
Phoned	.7020 (.4508)	.6129 (.3216)	.8053 (.4047)	1.038 (.216)
Apprehended Suspect	.0000 (.0000)	.3284 (.3732)	-1.5647 (1.4650)	.025 (.397)
Injured/First Aid	.0000 (.0000)	.0000 (.0000)	-.1713 (1.0340)	-.304 (1.134)
Constant	2.1444	1.4210	1.2699	1.403
Sample Size (n)	157	436	320	916
R^2	.410	.156	.184	.248
F (13, n-14)	7.712	6.001	5.333	22.821

between <u>any</u> coefficients. In addition, tests of the homogeneity of regression between crime types, as described by Kmenta (1971, p. 373), is highly significant, reinforcing the view that there are some differences. However, the apparent differences between the crime types might also be a statistical artifact resulting from nonnormality of the dependent variable, since even after taking the logarithm, citizen reporting time is still skewed.

If the differences are consistent across sites, it is very likely they are real differences, and not due to statistical problems. However, none of the differences are consistent across sites. For example, waiting or taking no action takes significantly longer than average for discovery crimes, and significantly less than average for involvement crimes, in Jacksonville and San Diego. In Peoria, however, waiting takes longest in personal crimes and delays reporting the least in discovery cases, while in Rochester there is no clear pattern. Moreover, seven of the nine differences between crime types concern the action of waiting, which is universally the action that contributes most to citizen reporting time. If statistical aberrations were a problem, their effects would probably be most pronounced for variables associated with the largest reporting time, since these slowly-reported crimes are the source of the abnormalities in the dependent variable and thus in the error term. If all differences in waiting coefficients are considered to be caused by abormalities, then only two coefficients were significantly different from the average--a two percent significance rate that is hardly worth worrying about.

Though statistical aberrations may well be the cause of the differences between coefficients, a much better argument can be made for combining across crime types and sites. This is that the aggregate equation--based on the effects of actions on citizen reporting time in all crime types and all sites--predicts citizen reporting time for each crime and site nearly as well as the best equation, the one fitted to that crime and site. The aggregate equation is shown in Table E-4e. The proportion of the variance in citizen reporting time explained by the aggregate equation is compared to the proportion explained by the best equation in Table E-4f. For each combination of crime and site, of course, the equation fitted to that crime and site explains more of the variance. In each case, however, the difference between the two equations is insubstan- tial (averaging about three percent), and is statistically insignificant. In short, we could do just about as well predicting citizen reporting time from the aggregate equation as from 12 different equations, one for each combination of crime type and city.

In addition, the aggregate regression coefficients will be much less susceptible to aberrations such as abnormalities; therefore, there is a much smaller chance of drawing spurious conclusions when the aggregate equation is used. Because it is both simpler and safer, the aggregate equation is used throughout the rest of this analysis.

All of this statistical mumbo-jumbo still has not answered the question: how long does it take to act? A definitive answer to this question (the median time required to investigate the scene, for example),

Table E-4e

Estimation of Time Required to Take Each Action--Aggregate

Action	Coefficient	F (1,3069)	Interpreted Coefficient
Talked to someone	.559 (.071)	61.582	+1:19 (0:55-1:47)
Left the scene	.594 (.076)	60.665	+1:26 (0:59-1:57)
Investigated	.741 (.078)	91.145	+1:56 (1:25-2:33)
Waited/no action	1.993 (.102)	385.466	+12:57 (8:50-14:03)
Chased suspect	.007 (.122)	.003	+ :01 (-0:22-0:30)
Phoned someone	.893 (.123)	52.535	+2:33 (1:37-343)
Apprehended suspect	.081 (.249)	.105	+ :09 (-0:35-1:21)
Injury-related	.365 (.559)	.425	+2:33 (-0:58-5:50)
Constant	1.568		+1:46
F (13,3069	67.947		
Sample size	3,083		
R^2	.223		

Table E-4f

Comparison of Variance Explained by Best Equation and Aggregate Equation

	Discovery	Involvement Property	Involvement Personal	All Cases
JACKSONVILLE				
R^2 Best Regression (Confidence Interval)	.376 (.245-.503)	.191 (.131-.256)	.179 (.114-.253)	.226 (.165-.225)
R R^2 Aggregate	.329	.155	.145	.190
PEORIA				
R^2 Best Regression (Confidence Interval)	.293 (.144-.452)	.169 (.090-.262)	.337 (.230-.665)	.246 (.183-.311)
R^2 Aggregate	.196	.139	.280	.212
ROCHESTER				
R^2 Best Regression (Confidence Interval)	.324 (.187-.463)	.207 (.127-.396)	.303 (.210-.399)	.214 (.159-.271)
R^2 Aggregate	.205	.168	.237	.202
SAN DIEGO				
R^2 Best Regression (Confidence Interval)	.410 (.290-.525)	.156 (.098-.222)	.184 (.113-.265)	.248 (.200-.297)
R^2 Aggregate	.355	.135	.155	.218

cannot be obtained from the data available. To get a definitive answer, we would need to ask people how long it took them to take each action they took ("And how long did it take to walk across the street, Mrs. Calabash?"). Given the frequently long lag times between crime and interview, the validity of people's answers would be questionable at best.

Still, a conservative answer to this question can be obtained from the data available. First, however, one must assume that the time required to act does not depend on any other actions taken. For example, the time required to leave the scene must not be influenced by the time required to talk to someone, either before or after leaving the scene. If this assumption is valid, then the time required to act in any circumstance can be estimated from the time required to act when that action was the only action taken. This is equal to

$$T(i) = e^{m_i+k-1} - e^{k-1}$$

where m is the coefficient for the variable, and k is the constant. (Since one was mistakenly added to the value of citizen reporting time in all cases to prevent negative values, one must be subtracted from the constant.) These "interpreted" coefficients are shown for each action in Table E-4e.

Do not be deceived by the simplicity of this result, however! The assumption required to obtain it--that the time required is independent of any other actions taken--is exactly the opposite of an assumption implicit in the use of the multiplicative logarithmic model: it was implicitly

assumed that total reporting time was equal to the product of the time required to take each action, not the sum. Because the coefficients for almost all variables are positive, the log sum of the two coefficients (the predicted reporting time when two actions are taken) will be greater than the sum of the interpreted coefficients. Thus the time required to take the action will often be more than one would predict from the method just described, and the interpreted coefficient is a very conservative estimate. It is probably only suitable for rough comparisons across actions.

Distribution of Short Reporting Times for Three Scenarios

It is now clear that reporting time can be predicted reasonably well from the actions people take before calling the police. It is possible to use this result to predict what the distribution of reporting times would be, if some of these actions were never taken. This is done as follows:

- The coefficients corresponding to the actions that would presumably not be taken are set at zero; all others are set to the (uninterpreted) value shown in Table E-4e.
- The estimated reporting time for each involvement case in the sample is calculated by adding each coefficient to the constant when the action was taken, and finding the exponent of the sum of the coefficients.

The cumulative distribution of these estimated reporting times is as lumpy as the original citizen estimates. This is not due to rounding errors, of course, but to the fact that some sets of actions are much more likely to be taken than others. Thus it is again helpful to smooth out the lumps by estimating through linear regression the Weibull parameters that best fit the data. The parameters fitted for each scenario are shown in Table E-4g.

The parameters shown are fitted to the distribution of involvement crimes in all four cities aggregated. Although there are some differences in the proportion of cases delayed by each type of action, the differences are small--never more than six percent--and would decrease to around one to two percent when involvement cases are properly weighted. Although these differences may be statistically significant, the implications will not be biased if we choose the simpler and (in view of the somewhat speculative nature of the analysis that follows) safer tactic of aggregating the sites.

Although these regression-generated distributions seem to be different from the distribution of actual involvement reporting times, this could have been due to random errors rather than to any inherent difference in the distributions. To validate the method, we estimate the reporting time for each involvement case in the sample, without changing any of the coefficients to zero. This is supposed to yield an unbiased estimate of the actual reporting time for each case. As the Weibull parameters fitted to the distribution of these regression-generated estimates indicate, this distribution is very close to the actual distribution. Whereas the beta parameters for the actual distribution are significantly different from the betas for the scenarios, they are not different from the beta for the regression estimate of the actual distribution. In other words, what ought

Table E-4g

Comparison of Smoothing Parameters for Cumulative Distributions

	Parameters α	β	R^2	X $(\beta-\beta_0)$
Base Distribution (Actual Data)	5.275 (.044)*	.7561 (.0336)	.962	--
Base Distribution (Regression Estimate)	5.769 (.053)	.7963 (.0408)	.950	.985 (p=.325)**
Defining the Situation Eliminated	3.553 (.039)	.7053 (.0292)	.970	-1.740 (p=.082)
More Beneficial Actions Eliminated	2.592 (.052)	.6166 (.0389)	.933	-3.586 ($p < .001$)
Conflict-Resolving Actions Eliminated	6.887 (.021)	1.027 (.0153)	.996	17.706 ($p < .001$)
All Decisionmaking Delays Eliminated	2.166 (.106)	1.637 (.308)	.934	2.860 (p=.002)

*The log of $\hat{\alpha}$ is approximately normally distributed with this standard error.

**All probabilities are two-tailed.

to be the same is the same, and what ought to be different is different. Thus the procedure so far seems valid.

Proportion of Cases Reported In-Progress

Since the ultimate goal is to estimate the number of additional response-related arrests that would result if any of these scenarios came about, and since the proportion of cases resulting in response-related arrests is substantially higher for cases reported in-progress than for other cases, it is necessary to determine the proportion of cases that would be reported in-progress. If one assumes that the present relationship between the probability a crime will be reported in-progress and citizen reporting time would not change if the scenario came to pass, then the proportion of in-progress cases can be predicted by

$$p(IP) = \int_{t=o}^{T} p(t)\, p(IP\ t)\, dt.$$

That is, the integral of the probability of reporting time t, multiplied by the probability of in-progress, given reporting time t, is equal to the probability that a crime will be reported in-progress. (Although the integral taken from zero to infinity is theoretically correct, the logarithmic function that best fits the in-progress data has no asymptote, and decreases monotonically. As such, some upper limit must be specified, else the predicted probability will be negative infinity.)

The probability that any crime would be reported at time t is estimated by the Weibull functions derived in the previous section. The probability that a crime reported at time t will be reported in-progress is given by the function estimated in Appendix D-5. As shown, neither function differs substantially between cities. Finally, to make things simpler, we sum the results at intervals of six seconds (.1 minutes), rather than taking the integral of the function. The summation of reporting times from Ø to 30 minutes is taken, since no in-progress calls were received at reporting times longer than 30 minutes. The percentage of in-progress calls received is relatively insensitive to changes in the upper limit: By the time the citizen has delayed one-half hour, the chances of an in-progress call are just under three percent, and the chances that any crime will be reported about 1.2 percent. Thus changing the upper limit by one minute would change the total proportion by (.030) x (.012) = .036%.

As an example, the percentage of calls reported in-progress for the present distribution of citizen reporting times is equal to:

$$\text{percentage IP} = 22.65 \sum_{t=0}^{60} \left(\frac{.7561}{5.275} t^{.7561-1} e^{-t^{.7561}/5.275}\right) \cdot (275-.0414 \log t) \pm 2.80\%$$

which is within one standard deviation of the actual number of in-progress calls received, 2.6 percent (22.65 is equal to 100 times the proportion of Part I crimes that are involvment crimes). The percentage of in-progress calls calculated for each of the three hypothetical cases considered is shown in Table E-4h. In addition, the in-progress percentage for the present situation, calculated for both the actual distribution of reporting times and the regression-generated distribution, is compared to the actual percentage of in-progress cases.

After estimating the percentage of cases reported in-progress for the present situation and each hypothetical case, it was necessary to adjust the distributions of reporting times to subtract in-progress cases from the total distribution before presenting the final result in Figures 19, 21, and 23. For example, if 10 percent of crimes were reported within five minutes of their commission, and one percent of these were reported in-progress, then the percentage of crimes reported five minutes after the offense, but not in-progress, is 10-1=9 percent. If, in addition, a total of two percent of crimes were reported in-progress (one percent within five minutes, and another one percent when reporting time was greater than five minutes), these two percent would be considered to have reporting time zero, and the "height" of the curve at five minutes would be 9+2=11 percent. The percentage of crimes reported in total and in-progress for each time up to 10 minutes, and the total percentage of in-progress calls, was obtained for times up to 10 minutes; the height of the curve was adjusted accordingly.

The resulting distribution for the present situation--obtained from regression estimates--is compared to the actual distribution of citizen reporting times in Figure E-4i. The curves are nearly identical. Nowhere is the difference between the curves larger than two-tenths of

Table E-4h

Percentage of Cases Reported In-Progress

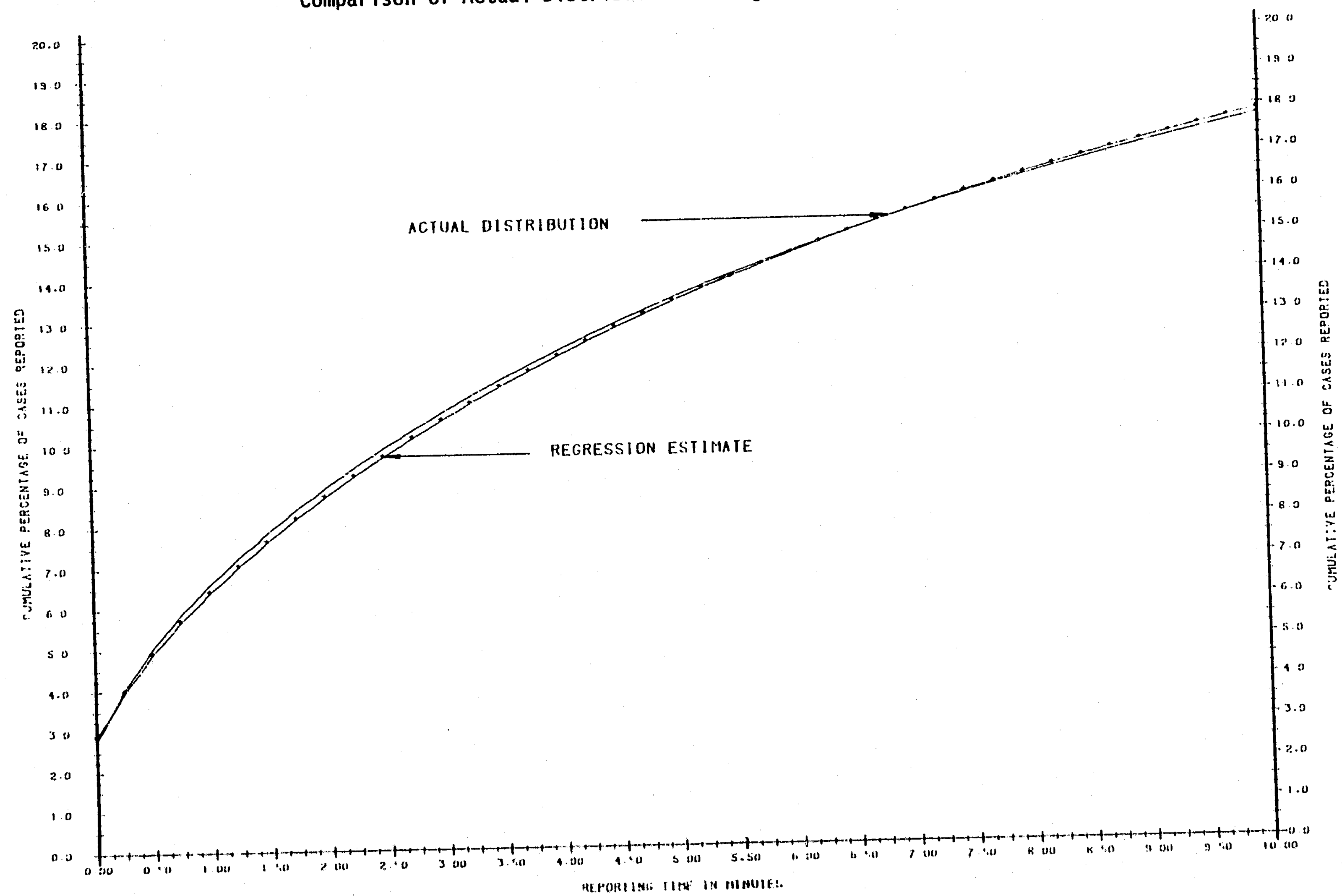
	Percent of Cases	$3\ (p - p_0)$
Actual Data	2.60% (.29)	--
Base Estimate (Actual Data)	2.80%	.690 (p=.490)*
Base Estimate (Regression Data)	2.91%	1.069 (p=.285)*
Defining the Situation Eliminated	3.22%	2.138 (p=.016)
More Beneficial Actions Eliminated	3.27%	2.310 (p=.010)
Conflict-Resolving Eliminated	4.62%	6.966 ($p < .001$)
All Decisionmaking Delays Eliminated	5.89%	11.345 ($p < .001$)

*Two-tailed probability. All others are one-tailed.

$$\text{pct IP} = 22.65 \sum_{t=0}^{30} p(t) \cdot p(IP \mid t)$$

Figure E-4i

Comparison of Actual Distribution to Regression Estimate



one percent, and for times greater than five minutes the differences are never more than one-tenth of one percent. Thus, despite the relatively low proportion of the variance in reporting time explained by citizen actions and problems, the results are more than adequate for the purpose of estimating the effects of changes in citizen behavior on the numbers of short reporting times and in-progress calls.

Percentage of Cases Resulting in Arrest

As shown in Appendix D-5, the relationship between the chances of response-related arrest and citizen reporting time did not differ between involvement crimes when the probability that a crime will be reported in-progress has been accounted for. Although the relationship does differ between sites, this is because the constant terms differ--the slopes do not differ significantly from one site to another. In addition, much of the difference between the curves disappears when a crude estimate of the percentage of miscoded response-related arrests is subtracted from the actual curves. Thus a reasonable four-city average percentage of response-related arrests can be obtained by multiplying the aggregate arrest equation by the probability distribution of citizen reporting times, and intergrating over relevant reporting times. In symbolic form:

$$\text{percentage RRA} = 100 \int_t^T p(RRA|t)\, p(t)dt + 100\, p(RRA|IP)\, p(IP)$$

Here, of course, p(t) refers not to the Weibull estimate, but to the probability of reporting a crime not in-progress at time t. Again, we simplified by summing the results at six second intervals, using 30 minutes as the upper limit. The results are again insensitive to changes in the upper limit: a one minute change in the upper limit would change the pretected prcentage of response-related arrests by .027 percent.

This estimate gave excellent predictions of the percentage of response-related arrests for the base distribution. The prediction--that 2.92 percent of Part I crimes would result in response-related arrest--is almost identical to the actual four-city average of 2.88 percent. (The fact that the estimate is a little higher suggests that the number of additional response-related arrests resulting from elimination of actions and problems might also be overestimates. This would further bias the results <u>in favor</u> of such programs as 911 and Neighborhood Watch.

The predicted percentage of crimes resulting in response-related arrest, if defining the situation, more beneficial actions, and conflict-resolving actions were never sources of delay, are shown in Table E-4j. The predicted percentage if all three could be eliminated is also shown. The predicted increases in the percentage of response-related arrests shown in the table and used in the text were obtained by subtracting the hypothetical response-related arrest rate from 2.88 percent, and not from the percentage predicted by the regression procedure.

Table E-4j
Percentage of Cases Resulting in Response-Related Arrest

	Percent of Cases	$z\,(p - p_0)$
Actual Data	2.89% (.29)	--
Base Estimate (Actual Data)	2.80%	-.310 (p=.757)*
Base Estimate (Regression Data)	2.92%	.103 (p=.920)*
Defining the Situation Eliminated	3.14%	.862 (p=.194)
More Beneficial Actions Eliminated	3.11%	.759 (p=.224)
Conflict-Resolving Actions Eliminated	4.76%	6.448 (p < .001)
All Decisionmaking Delays Eliminated	5.44%	8.793 (p < .001)

*Two-tailed probability. All others are one-tailed.

$$\text{Pct RRA} = 22.65\left[\left(\sum_{t=1}^{30} (p(t)-p(IP\ t)) \cdot p(RRA|t)\right) + p(RRA \mid IP) \cdot p(IP)\right]$$

Summary

The number of quickly reported crimes, in-progress calls, and response-related arrests that would result from the three changes in citizen reporting behavior are based on a four-part procedure:

- Dummy variables representing actions people took or problems they had were regressed against citizen reporting time, to determine how much each action and problem contributed to total reporting time. The regression was estimated separately for discovery, involvement property, and involvement personal offenses in each site. Crime types were compared against the aggregate equation within each site. When the differences were found to be insignificant or insubstantial, the aggregates for each city were compared to one another. A single aggregate equation was found to hold for all sites.
- The regression coefficients were used to generate three hypothetical distributions of citizen reporting times: first with all delays due to defining the situation eliminated (assigned a delay time of zero), then with all delays due to more beneficial actions eliminated, and finally all delays due to resolving conflict eliminated. Weibull parameters were fit to each hypothetical distribution.
- Using the Weibull smooths and the relationship between reporting time and chances that a call will be made in-progress, the number of in-progress calls was estimated for each hypothesis. The distributions were adjusted to take the results into account; the procedure up to this point was validated by comparing the estimated distribution for the base case to the actual distribution, and the estimated percentage of in-progress calls to the actual percentage.
- The adjusted distributions and the regression of response-related arrest on reporting time were used to calculate the expected number of additional response-related arrests that would result, if each of the three types of delaying actions taken by citizens were eliminated. This procedure was validated by comparing the estimated percentage of response-related arrests for the base case to the actual distribution.

Thus, at each stage of the process, the estimates were validated by comparing the regression estimate of the base case to the actual data. At each stage, the estimate and the actual data were insubstantially and insignificantly different. This process was also used to predict the effect on short reporting times, in-progress calls, and response-related arrests of eliminating each of the three problems that delay citizens who have decided to call the police.

Appendix E-5
Relative Success of Decisionmaking Programs

In assessing three different scenarios in the last section, we assumed that some kind of program, public or private, could prevent people from taking delaying actions of one kind or another. Because the actions people take are for the most part rational responses to the situation, however, it will be more difficult to change people's behavior than it may appear at first glance. Previous research on the effects of advertising and citizen action programs indicate that people's perceptions of the costs and benefits of reporting will have to change before people will change their behavior. Still, a few people regretted taking the actions they took: when asked whether they would take the same actions in a similar situation in the future, about one-fourth said either that they would not, or were not sure.

Table E-5a shows the percentage of people who said they would not, and were not sure whether they would take the actions they took again. Although the differences between sites are statistically significant, they are small: the largest difference is between San Diego (where 76 percent of people would delay reporting again) and Rochester (where a mere 69 percent would delay). The most important result of the table is of course that the vast majority of respondents who delayed do not regret their delay. (This may be particularly surprising in that the previous questions in the questionnaire makes it clear that the study is very much concerned with

Table E-5a

Number and Percentage of Respondents Who Would Take Delaying Actions Again, Given Similar Circumstances--All Sites

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Yes, would take delaying actions again.	75.9% (524)	73.6% (299)	68.7% (367)	76.1% (526)	73.9% (1,716)
No, would not take delaying actions again.	10.4% (72)	15.5% (63)	15.2% (81)	13.6% (94)	13.4% (310)
Don't know	13.6% (94)	10.8% (44)	16.1% (86)	10.3% (71)	12.7% (295)
Did not answer or refused	(7)	(5)	(5)	(4)	(21)
Called police without delay	(606)	(299)	(347)	(501)	(1,753)
Total	1,303	710	886	1,196	4,095

$x^2 = 19.599, p < .01$

reporting time. Thus, respondents seeking to give a "socially desirable" response would say that they did regret taking the actions they took.)

This proportion depends substantially on what actions the respondent took. Victims, witnesses and bystanders who acted to define the situation (Table E-5b) are very unlikely to regret taking these actions--even though every one of them eventually defined the situation as a crime and reported it. A few more people who took actions they considered more benefical would do so again, while a very substantial minority of respondents would not procrastinate or ask for advice in the future (Tables E-5c and E-5d). This is largely attributable to the fact that people who make a choice over which they have conflict very frequently regret whatever decision they make, whether it is to report the crime or not (Janis and Mann, 1977). Still, conflict-resolving actions seem to be the group of actions that can be most readily prevented. Moreover, as shown in the previous section, they are by far the most important.

Some respondents, of course, took more than one action. Since we only asked people once whether they would delay again (implicitly asking them whether they would take all the actions they took again), it was possible that these breakdowns were not really representative of the effects of each group on the chances that people would act in the same way again. To be certain, we regressed the log-odds in favor of taking the action again in the future (that is, the logit of the probability of a "yes" answer) on the three groups of decisionmaking actions simultaneously. Since we also asked this question of people who took "contact" actions (asking other

Table E-5b

Number and Percent of Respondents Who Would Define the Situation Again Given Similar Circumstances

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Yes, would delay again.	82.9% (165)	81.4% (92)	73.0% (103)	77.9% (176)	78.9% (536)
No or not sure.	17.1% (34)	18.6% (21)	27.0% (38)	22.1% (50)	21.1% (143)
Did not answer or refused.	(3)	(5)	(5)	(2)	(15)
Total	202	118	146	228	694

$x^2 = 5.404$

$p \doteq .15$

Table E-5c

Number and Percent of Respondents Who Would Take More Beneficial Actions Again Given Similar Circumstances

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Yes, would delay again.	72.6% (308)	72.7% (186)	66.1% (226)	76.0% (308)	72.0% (1,028)
No or not sure.	27.4% (116)	27.3% (70)	33.9% (116)	24.0% (97)	28.0% (399)
Did not answer or refused	(7)	(4)	(2)	(4)	(17)
Total	431	260	344	409	1,444

$x^2 = 9.384$
$p \doteq .02$

Table E-5d

Number and Percent of Respondents Who Would Resolve Conflict Again Given Similar Circumstances

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Yes, would delay again.	61.5% (80)	50.6% (44)	61.7% (50)	62.9% (88)	59.8% (262)
No or not sure.	38.5% (50)	49.4% (43)	38.3% (31)	37.1% (52)	40.2% (176)
Did not answer or refused	(2)	(1)	(1)	(1)	(5)
Total	132	88	82	141	443

$x^2 = 3.914$
$p \doteq .27$

people to call the police for them), this group was included in the analysis as well. The results, shown in Table E-5e, include the marginal probability that someone said they would take a group of actions in similar circumstances in the future, controlling for the effect of the other groups. The marginal probabilities are only slightly different from the uncontrolled probabilities; more important, the size of the differences between the groups is virtually unchanged. Because use of the logistic transformation assumes a multiplicative model, the chances that someone who took more than one kind of action will take it again is roughly equivalent to the product of the marginal probabilties. Thus people who acted to define the situation, and to resolve conflict, and because other actions were more beneficial are much more likely to say they would not take these actions again than someone who took only one of these actions. Finally, chi-square for the model shown is insignificant, indicating that the main effects of each group of actions adequately account for all the variance in the log-odds. Interaction effects between groups will not significantly improve the estimate.

Thus the main results of this analysis are these:

- The vast majority of people who delay reporting think they do so for good reasons, and would do so again in a similar situation.
- People who act to resolve conflict (by procrastinating, bolstering their preferred choice, or shifting responsibility for decisionmaking) are much less likely to say they would act in the same way again, given similar circumstances. Thus programs aimed at preventing conflict may be more effective than other kinds of programs.

Table E-5e

Estimation of Marginal Probability That Respondent Would Take Delaying Actions Again, Given Similar Circumstances

Delaying Action	"Yes Only" Coefficient	Marginal Coefficient	Marginal Probability of "Yes"	Actual Probability of "Yes"
Defining the Situation	-.036 (.062)	-1.553	.825	.789 (.016)
Contact-Related Delay	.039 (.083)	-1.403	.803	.735 (.030)
More Beneficial Actions	.200 (.058)	-1.081	.747	.720 (.012)
Conflict-Resolving Actions	.458 (.061)	-.565	.638	.598 (.023)
Constant	-.820 (.097)			--

Goodness of fit x^2 = 6.264, 9 degrees of freedom.
p = .713

Addition of interaction terms will not significantly improve estimate.

- People who take many different delaying actions are more likely to say they would act differently in the future than people who take only one. Therefore, programs aimed at limiting delay rather than eliminating it entirely (for example, advertising that shows some delays to be necessary, but long delays to be useless) may be more realistic to citizens, and thus may be more effective in changing their decisionmaking behavior.

Extensive use of these results is made in Chapter 6, Policy Implications.

APPENDIX F
PLACING THE CALL TO THE POLICE

This appendix includes analysis results explained in Chapter 5, Placing the Call. It consists of three sections; as in Appendixes D and E, each section includes a narrative and extensive tabular data.

Appendix F-1
Frequency of Communications Access Problems

The frequency with which citizens encountered problems in calling the police is considered in this first section of Appendix F.

The most basic question that must be considered in our analysis was: How did people contact the police? Although there are innumerable methods, including using a manually operated alarm, walking into a police station, flagging down a passing patrol car, and probably a few others not taken by the people in our sample, by far the most frequently used method is to call the police on the telephone. For this reason, only cases that were reported by telephone, or by a manually operated alarm connected to the police station are included in our sample. A few cases were included in the sample that were reported by telephone or alarm, as well as by some other means. (That is, while one citizen reported the crime by phone or alarm, another walked into a police station or flagged down a patrol car.) The frequency of these "double reported" cases is shown in Table F-1a.

Table F-1a

Type of Reporting Procedure for Crimes Sampled

Reporting Method	Jacksonville		Peoria		Rochester		San Diego		Total	
	N	%	N	%	N	%	N	%	N	%
Telephone	1,050	99.5	590	98.5	737	99.5	932	99.5	3,309	99.3
Manual alarm	5	0.5	9	1.5	4	0.5	5	0.5	23	0.7
Walk-in at stationhouse	6	0.6	23	3.8	9	1.2	4	0.4	42	1.3
Flagging/other	2	0.2	1	0.2	1	0.1	1	0.1	5	0.1
Total	1,055		599		741		937		3,332	

Tables F-1b through F-1h shows frequencies for each of the problems discussed in Chapter 5, and for other important parts of the contact process. These include: who called the police (a victim, witness, or otherwise-uninvolved bystander); whose telephone was used (the caller's home or work phone, a pay phone, or someone else's phone); and which telephone number the caller dialed to get the police.

Note that the percentage of people who called the police through a "crime alert" number was highest in Peoria. This was the only city sampled that had an operable 911 system at the time of data collection. (Although the digits "911" are available for use in Rochester, calls to 911 are routed to the phone company operator. Thus, in Rochester, dialing 911 is the same as dialing the operator, and these calls were categorized with calls to the operator in our analysis.) In Jacksonville the percentage of people who used the seven-digit crime alert number was significantly larger than the percentage in Rochester and San Diego. This may be due to a service offered by the local telephone company: telephone stickers are sent to all telephone subscribers with each monthly bill, showing the seven-digit fire, police and medical emergency numbers.

Appendix F-2
Indicators of Problems

Kansas City performed extensive analysis of differences in the social characteristics of people who used different telephones and numbers, and who knew about the number they used from different sources. To

Table F-1b

Role of the Caller in the Crime

	Kansas City	Jacksonville	Peoria	Rochester	San Deigo	Four-City Aggregate
Victim	509 70.3%	593 63.8%	365 74.5%	379 68.4%	523 62.7%	1,860 66.3%
Witness	64 8.8%	145 15.6%	53 10.8%	71 12.8%	154 18.5%	423 15.1%
Bystander	151 20.9%	191 20.6%	72 14.7%	104 18.8%	157 18.8%	524 18.7%
Caller Not Interviewed	225 (23.7%)	126 (11.9%)	109 (18.2%)	187 (25.2%)	103 (11.0)	525 (15.8%)
Total	949	1,055	599	741	937	3,332

Table F-1c
Telephone Used to Call the Police

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Citizen's home phone	353 42.6%	209 51.6%	278 57.0%	396 53.4%	1,236 50.2%
Citizen's work phone	258 31.2%	100 24.7%	87 17.8%	199 26.8%	644 26.1%
Public (pay) phone	93 11.2%	55 13.6%	48 9.8%	65 8.8%	261 10.6%
Someone else's phone	124 15.0%	41 10.1%	75 15.4%	82 11.1%	322 13.1%
No phone used--manual alarm	5 (0.5%)	9 (1.5%)	4 (0.5%)	5 (0.5%)	23 (0.7%)
Not specified or available	222 (21.0%)	185 (30.9%)	249 (33.6%)	190 (20.3%)	846 (25.4%)
Total	1,055	599	741	937	3,332

Table F-1d

Number of Crimes Reported to Police on Each of Several Telephone Numbers

		Jacksonville	Peoria	Roch.	S. Diego	Aggregate
911 or Police Emergency Number	m %	138 18.0	173 45.5	65 14.3	66 9.6	442 19.3
Police Administrative No.	m %	392 51.1	176 46.3	227 49.9	314 45.9	1109 48.5
Telephone Company Operator	m %	236 30.8	31 8.2	162 35.6	300 43.9	729 31.9
Other Telephone Number	m %	1 0.1	0 0.0	1 0.2	4 0.6	6 0.3
TOTAL	N	767	380	455	684	2286

*This is the total of all incidents for each city in which the respondent was able to remember and report which telephone number was used to call police.

Table F-1e

Source of the Number Used to Call the Police

		Jacksonville	Peoria	Rochester	S. Diego	Aggregate
Written by Phone	N	136	39	77	136	388
	%	17.6	10.3	16.3	19.3	16.6
Memorized/Had Handy	N	207	183	111	109	610
	%	26.7	48.3	23.6	15.5	26.1
Someone Else Knew the Number	N	14	14	9	15	52
	%	1.8	3.7	1.9	2.1	2.2
Asked Information Operator, "411"	N	16	4	13	24	57
	%	2.1	1.1	2.8	3.4	2.4
Dialed Operator, "0"	N	231	31	162	300	729
	%	29.8	8.2	34.4	42.6	31.2
Looked up in Book	N	168	105	97	117	487
	%	21.7	27.7	20.6	16.6	20.9
Other		2	3	2	3	10
		0.3	0.8	0.8	0.4	0.4
TOTAL		774	379	471	704	2333

Table F-1f

Frequency of Communications Access Problems

Problem Encountered		Kansas City	Jacksonville	Peoria	Rochester	San Diego	Four-City Aggregate
Telephone Unavailable	n	179	45	21	23	50	139
	%	18.9	5.3	4.8	4.6	6.6	5.4
Problem Using Telephone	n	-	5	2	1	1	9
	%	-	0.6	0.4	0.2	0.1	0.3
Problem Finding a Usable Telephone Number	m	118	170	110	98	123	501
	%	12.4	19.9	24.9	19.6	16.1	19.6
Contacted Incorrect Police Agency	m	1	4	0	1	4	9
	%	0.1	0.5	0.0	0.2	0.5	0.3
Problem Communicating with Police Operator	m	60	91	41	67	92	291
	%	6.3	10.6	9.3	13.4	12.0	11.4
No Problem Encountered	m	591	539	267	309	493	1608
	%	62.3	63.1	60.5	61.9	64.6	62.9
TOTAL N of Cases with Non-Missing Data		949	854	441	499	763	2557

Table F-1g

Causes of Police Communication Problems

	Jacksonville	Peoria	Rochester	San Diego	Aggregate
Police operator slow to respond.	48 52.7%	20 48.8%	40 59.7%	44 47.8%	152 52.2%
Police operator had difficulty understanding caller.	31 34.1%	15 36.6%	18 26.9%	27 29.3%	91 31.3%
Caller put on hold; no answer or busy signal.	18 19.8%	5 12.2%	18 26.9%	30 32.6%	71 24.4%
Other problems	1 1.1%	2 4.9%	3 4.5%	1 1.1%	7 2.4%
Total*	91 100.0%	41 100.0%	67 100.0%	92 100.0%	291 100.0%

*Numbers do not sum to total because citizens sometimes had more than one problem.

determine whether social characteristics were good indicators of these variables, and to assess whether characteristics of the situation and of the respondent's relationship to the situation were better indicators, the size of each bivariate relationship was calculated for each site. As in the calculations in Appendix E, three different but comparable summary statistics were approprate:

(1) The square root of the uncertainty coefficient was used for categorized, unranked variables such as tenure; the significance of the relationship was calculated using a X^2 test.

(2) Kendall's tau was used for categorized, ranked variables such as hometown size; the significance level was again based on X^2 results.

(3) Eta was used for continuous, ranked variables such as age, and the significance was determined through an F-test.

Tables F-2a, 2b, and 2c summarize these relationships. The test used is shown in the far right-hand column.

As these tables show, the best determinants of phone and number used and source of the number were generally characteristics of the situation, rather than of the respondent. This result, combined with the fact that problems were, by definition, unforeseeable hindrances to contacting the police, led us to expect that the five problems identified would not be related to social characteristics of the respondent. In any case, it is difficult to see what implications could be drawn from a relationship between respondent characteristics and problems. Thus Tables F-2d through 2f show only the relationships between situational characteristics and the

Table F-2a

Indicators of Phone Used to Call the Police

	Jacksonville	Peoria	Rochester	San Diego	Test
Situational Characteristics					
.Location of Incident	.53*	.53*	.52*	.52*	1
Home	.33*	.37*	.39*	.41*	1
Work	.43*	.50*	.42*	.46*	1
Others Public or Private	.33*	.14	.17	.35*	1
.Identity of Suspect					
S is intimate of R	.11*	.12*	.10	.05	1
S is Acquaintance of R	.02	.05	.01	.08	1
S is Intimate of V	.04	.11*	.03	.07	1
S is Acquaintance of V	.05	.05	.05	.02	1
.Respondent's Role	.12*	.12	.06	.14*	1
Crime Characteristics					
.UCR Category	.24*	.20*	.20*	.22*	1
.Involvement/Discovery.					
R was involved	.03	.03	.06	.13*	1
someone was involved	.06*	.13*	.04	.06	1
Social Characteristics of R					
.SES indicators					
Highest level of school	.23*	.31*	.20*	.20	3
Yearly Family income	.30*	.29*	.40*	.23	3
Occupation					3
.Relationship to Site City					
Time lived at site city	.06	.09	.13	.04	3
Time lived at present address	.11*	.17*	.17	.07	3
Own, rent, or board	.19*	.21*	.17*	.10	2
.Other Characteristics					
Sex	.15*	.10*	.14*	.09	1
Age	.18*	.15*	.13	.12*	3
Race	.15*	.16*	.13	.12	1
Marital Status	.10	.16	.12	.10	1
Head of Household	.06	.08	.06	.08	1
Hometown Population	.11	.20*	.12	.10	2
R's Actions After Incident					
Talked in person	.10*	.11*	.09*	.09*	1
Phoned	.02	.05	.07	.04	1
Chased suspect	.05	.07	.05	.05	1
Restrained/caught suspect	.08*	.04	.10*	.11*	1
Investigated scene	.05	.07	.04	.06	1
Taken to hospital/ went unconscious	-	.04	-	-	1
Left scene	.18*	.19*	.06	.17*	1
Waited, took no action	.06	.02	.02	.07*	1
Number of cases	475	405	488		

Table F-2b

Indicators of Number Used to Call the Police

	Jacksonville	Peoria	Rochester	San Diego	Test
Phone Used	.22*	.19*	.15*	.14*	1
Situational Characteristics					
.Location of incident	.14*				
Home	.09	.06	.04	.03	1
Work	.13	.03	.09*	.06	1
Others public or private	.07	.09*	.04	.35*	1
.Identity of suspect					
S is intimate of R	.09*	.13*	.05	.08	1
S is acquaintance of R	.02	.04	.13*	.03	1
S is intimate of V	.03	.04	.08	.05	1
S is acquaintance of V	.01	.07	.07	.01	1
Respondent's Role	.10*	.12	.13*	.15*	1
Crime Characteristics					
.UCR Category	.19*	.24*	.14*	.18*	1
.Involvement/Discovery					
R was involved	.06	.03	.09*	.13*	1
someone was involved	.11*	.18*	.10*	.15*	1
Social Characteristics of R					
.SES Indicators					
Highest level of school	.14*	.24*	.13*	.11*	3
Yearly Family income	.27*	.32*	.21*	.18	3
Occupation					3
.Relationship to Site City					
Time lived at site city	.02	.13	.18*	.14*	3
Time lived at present address	.01	.15	.20*	.11*	3
Own, rent or board	.09	.13*	.14*	.10	2
.Other Characteristics					
Sex	.06*	.01	.01	.06	1
Age	.12*	.08	.23*	.19*	3
Race	.14*	.11	.17*	.16*	1
Marital Status	.09	.15	.17*	.13	1
Head of household	.08*	.06	.08	.06	1
Hometown population	.14*	.12	.12	.11	2
R's Actions after incident					
.Talked in-person	.04	.11*	.02	.02	1
.Phoned	.05	.08	.07	.07	1
.Chased Suspect	.02	.07	.07	.05	1
.Restrained/caught suspect	.05	.02	.07	.08	1
.Investigated scene	.02	.09	.09*	.12*	1
.Taken to hospital/went unconscious	-	.05	-	-	1
.Left scene	.10*	.07	.03	.06	1
.Waited, took no action	.03	.06	.01	.04	1
Average N	766	380	454	684	

Table F-3c

Indicators of Source of the Number Used to Call the Police

	Jacksonville	Peoria	Rochester	San Diego	Test
Phone Used	.18*	.21*	.14	.17*	1
Number Used	.11*	.32*	.18*	.15*	1
Situational Characteristics					
.Location of incident					
Home	.13*	.12*	.06	.09	1
Work	.15*	.14*	.07	.13*	1
Others public or private	.07	.08	.06	.06	1
.Identity of Suspect					
S is intimate of R	.08	.12*	.07	.05	1
S is acquaintance of R	.07	.09*	.05	.08	1
S is intimate of V	.04	.08*	.05	.05	1
S is acquaintance of V	.08	.08*	.05	.07	1
.Respondent's Role	.11	.12	.13	.14	1
Crime Characteristics					
.UCR Category	.13	.21*	.17	.15*	1
Involvement/Discovery					
R was involved	.08	.04	.05	.09	1
someone was involved	.12*	.16*	.08	.16*	1
Social Characteristics of R					
.SES Indicators					
Highest level of school	.23*	.29*	.27	.25	3
Yearly Family income	.29	.39*	.40*	.30	3
Occupation					3
.Relationship to Site City					
Time lived at site city	.16*	.13	.15	.12	3
Time lived at present address	.14*	.16	.13	.13	3
Own, Rent or board	.13*	.18*	.12	.13	2
.Other Characteristics					
Sex	.03	.01	.07	.04	1
Age	.09	.17*	.09	.15	3
Race	.13	.13	.11	.14	1
Marital Status	.10	.23*	.16	.15*	1
Head of household	.12*	.12	.14	.11	1
Hometown Population	.16*	.19*	.22	.15	2
R's Actions after incident					
.Talked in-person	.12*	.08	.06	.11	1
.Phoned	.06	.09	.11	.08	1
.Chased Suspect	.07	.07	.09	.06	1
.Restrained/caught suspect	.09	.07	.05	.06	1
.Investigated scene	.06	.04	.11	.05	1
.Taken to hospital/went unconscious	-	.06	-	-	1
.Left scene	.12*	.13*	.07	.11	1
.Waited, took no action	.11*	.10	.07	.08	1
Average N	541	345	307	401	

Table F-2d
Indicators of Problem One: No Phone Available

	Jacksonville	Peoria	Rochester	San Diego
UCR Category	.26 (.00)	.15 (.52)	.12 (.74)	.15 (.03)
Involvement/Discovery	.12 (.07)	.05 (.77)	.12 (.25)	.06 (.30)
Crime Location	.26 (.00)	.17 (.07)	.22 (.03)	.21 (.00)
Number of Cases	45	21	23	50

Table F-2e
Indicators of Problem Three: Number Unknown

	Jacksonville	Peoria	Rochester	San Diego
UCR Category	.10 (.07)	.23 (.00)	.16 (.01)	.19 (.00)
Involvement/Discovery	.18 (.00)	.20 (.00)	.16 (.00)	.24 (.00)
Crime Location	.09 (.02)	.14 (.00)	.01 (.94)	.10 (.02)
Phone Used	.15 (.00)	.16 (.01)	.02 (.99)	.13 (.01)
Urgency	.19 (.00)	.20 (.00)	.15 (.00)	.30 (.00)
Number of Cases	170	110	98	123

Table F-2f
Indicators of Problem Five: Difficulty with Police Operators

	Jacksonville	Peoria	Rochester	San Diego
UCR Category	.07 (.70)	.08 (.77)	.11 (.26)	.07 (.51)
Involvement/ Discovery	.01 (.86)	.08 (.29)	.01 (.94)	.08 (.03)
Crime Location	.10 (.05)	.07 (.45)	.03 (.76)	.10 (.06)
Phone Used	.12 (.04)	.10 (.49)	.10 (.31)	.09 (.24)
Number Used	.06 (.36)	.15 (.11)	.08 (.35)	.07 (.49)
Number of Cases	91	41	67	92

chances that the problem would occur. Two of the problems (having trouble with a pay phone and contacting the wrong agency) occurred so infrequently that no relationships could be significant. Thus it cannot be said with any reliability that these problems were more or less likely under certain conditions. The rarity of occurrence of these problems indicates that it does not really matter much.

One potentially important indicator of the number used and the source of the number was urgency. Kansas City measured urgency on a four-part scale. They considered the most urgent calls to be either those placed while the crime was still in-progress, or calls reporting crimes in which a victim had been injured. Personal involvement crimes not involving injury or reported in-progress were considered the second most urgent calls, followed by involvement property crimes, and finally discovery crimes. After reviewing the Kansas City results, we decided to use a three-part urgency scale. The scale is identical to the one used in Kansas City, except that all involvement crimes that did not involve injury and were not reported in-progress were aggregated together. This was done for two reasons:

- Although personal crimes were usually more serious than property crimes, they were not always more serious.
- The scale is designed to be a measure of urgency, not seriousness. The two concepts are probably correlated, but they are not the same.

Table F-2g shows the relationship between urgency of the situation and the number used to call the police. The table is broken into two parts: one for the three cities where 911 has not been installed (Jacksonville, Rochester and San Diego), and another part for Peoria, where 911 has been in use since January 1976. (Although there were some differences between the three non-911 cities--people were more likely to use the seven-digit crime alert number in Jacksonville than in Rochester and San Diego, for example--the relationship between urgency and the number used was the same in all three cities when these "main effects" were controlled.) The table shows clearly that people distinguish between emergency and nonemergency calls in Peoria: the percentage of people using 911 is highest for the most urgent calls, somewhat lower for other involvement calls, and much lower for crimes discovered after they have been committed. In the other three cities, however, the table appears to show that people are most likely to use the crime alert number when the crime is a discovery, and least likely to use this emergency number in real emergencies! People seem to base their decisions on which number to use on the urgency of the call, just as in Peoria; but they seem to be making exactly the wrong decisions.

This result can be explained, however, when one considers that the primary emergency number for citizens in the non-911 cities is not the seven-digit crime alert number, but is instead the telephone company operator. The percentage of people dialing "0" increases dramatically as urgency increases, moving from 20 percent for discovery crimes to more than

CONTINUED

Table F-2g

Effect of Urgency on the Number Used to Call the Police

	Cities without 911 Jacksonville, Rochester and San Diégo			City with 911 Peoria		
	In-Progress or Injury	Other Involvement	Discovery	In-Progress or Injury	Other Involvement	Discovery
Crime Alert (7-digit or 911)	10.7% (48)	14.6% (168)	18.3% (58)	62.7% (42)	47.3% (116)	21.7% (15)
Operator	45.8% (205)	37.5% (430)	20.2% (64)	4.5% (3)	9.8% (24)	5.8% (4)
Police Administrative Number	43.5% (195)	47.9% (549)	61.5% (195)	32.8% (22)	42.9% (105)	72.5% (50)
Total	448	1,147	317	67	245	69

twice that amount for the most urgent crimes, those reported while they are still going on or after someone has been injured. When the phone company operator is not considered, there is no significant difference between levels of urgency for the percentage of people using either of the police numbers. That is, when 911 has not been installed, people do not generally distinguish between the police emergency number and the police nonemergency number. In an emergency, they appear to either dial whichever number they know or see posted, or dial the operator.

In Peoria, the extensive publicity associated with 911 caused people to shift their emergency calls from the operator to 911. In addition, the additional publicity appears to have made people more liable to distinguish between urgent calls requiring an emergency number, and less urgent calls in which the nonemergency number is appropriate. This is indicated by the fact that the strength of the relationship between urgency and the number used (the root of the uncertainty coefficient) is higher for Peoria than for the other three sites. (Another, equivalent method of phrasing this would be to say that 911 programs appear to have decreased citizen discretion in choosing a number. An explanation of discretion in this context may be found in Eck and Spelman (1981).)

If the extensive Peoria 911 publicity made a difference in people's actions, we would also expect to find the following:

- Since in Jacksonville, Rochester and San Diego people did not differentiate between police administrative and crime alert numbers, people who already knew one of these numbers would be expected to use it when a crime occurs, no matter how urgent the situation.

Thus the proportion of people who use a memorized or posted number would not depend on the urgency of the situation.

- In Peoria, the situation would be exactly reversed. Many people who have memorized or posted 911 would not use it if the situation were not urgent. That is, the proportion of people of using a memorized or posted number (usually 911) would be higher for in-progress and injury crimes, less for other involvement crimes, and less still for discovery crimes. Citizens would be much less likely to dial the operator at all levels of urgency, and may consider the operator not as an emergency number, but as a convenient, nonemergency number.

This hypothesis is tested in Table F-2h, which shows the percent of people who knew the number from each source for each level of urgency. In Jacksonville, Rochester, and San Diego, the percentage of people who memorized or posted the number did not differ with urgency; in fact, the differences were neither statistically significant, nor substantial, nor in any particular direction. In Peoria, however, the percentage of people using a memorized or posted number dropped with lower levels of urgency--paralleling the decreased use of 911 just shown.

Since people who memorized or posted the number in Jacksonvile, Rochester and San Diego seem to have used it, only those who did not know the number were forced to make a decision as to which number to use. As shown, their choice depended greatly on the urgency of the cell. Seventy-five percent of people who did not know the number called the operator when the crime was in-progress or someone was injured; 65 percent did so for other involvement crimes; only 32 percent called the operator for a discovery crime. This difference was consistently significant for each of

Table F-2h

Effect of Urgency on Source of the Number Used to Call Police

	Cities without 911 Jacksonville, Rochester, and San Diego			City with 911 Peoria		
	In Progress or Injury	Other Involvement	Discovery	In-Progress or Injury	Other Involvement	Discovery
Memorized or Posted	39.7% (180)	43.7% (515)	38.2% (123)	75.0% (48)	65.0% (158)	44.3% (31)
Operator	45.3% (205)	36.5% (430)	19.9% (64)	4.7% (3)	9.9% (24)	5.7% (4)
Phone Book	15.0% (68)	19.8% (233)	41.9% (135)	20.3% (13)	25.1% (61)	50.0% (35)
Total	453	1,178	322	64	243	70

the three non-911 cities. In the remaining city, Peoria, there was no such relationship between calling the operator and looking up the number in the book. People here appeared to be deciding, not between calling the operator and looking in the book, but between dialing 911 and looking in the book. Again, Peoria's publicity appears to have been successful.

The publicity may have partially backfired, however. Because people are encouraged not to use the operator, but still asked to differentiate between emergency calls (and use 911) and nonemergency calls (and look the number up), it is inevitable that occasionally in-progress crimes or crimes causing injury would be considered nonemergencies, and the citizen would delay reporting an important call. This happened in all cities. But perhaps because of widespread 911 publicity, this happened most often in Peoria. The differences between cities were not statistically significant here, so this result cannot be taken as a clear indication that publicity (or anything else) causes citizen misclassification. If the percentage were higher in Peoria, additional publicity ("unless you're sure, call 911") may be able to prevent this source of delay in the future. Still, even if citizens were no worse at differerentiating between emergency and nonemergency calls, it seems clear at least that they were no better in Peoria then in the other cities. Instead, they simply substituted 911 for the public telephone operator. As illustrated in the text, this results in a savings of less than twenty seconds.

Two other situation characteristics--crime type and location--were consistent predictors of communications access problems, although they did not have very large effects. The percentage of cases in which citizens encountered each of the five problems is broken down for each crime type in Table F-2i, and for each location in Table F-2j. Once again, the relationship is consistent for all cities sampled.

Appendix F-3
Effects of Eliminating Each Problem

The contribution of problems to citizen reporting time was estimated through multiple regression, and the effect of problems was calculated simultaneously with the effect of actions. In this way, the contribution of each problem is determined while controlling for the contribution of each action.

Tables F-3a through 3d show the regression coefficients for each problem (corresponding roughly to the time required to solve each problem), for each crime type and site. Although problems were encountered far more often in some crime types than others, the amount of time taken to solve each problem rarely differed significantly between types of crime in any of the four cities. (Coefficients which were significantly different from the aggregate coefficient for each site are again shown in parentheses. For brevity, t-test results are not shown, but may be readily obtained from the data shown in the tables.)

Not only did the times required to solve problems not differ much between crime types; they did not differ at all between sites. Thus the

Table F-2i

Percentage of Cases Delayed by Communications Access Problems for Each Crime Type--Aggregate

	Discovery	Involvement Property	Involvement Personal	Total
Phone not available	2.8% (15)	2.8% (43)	6.3% (80)	4.1% (138)
Trouble with pay phone	0.0% (0)	0.3% (5)	0.3% (4)	0.3% (9)
Police number not available	29.9% (159)	13.9% (212)	10.1% (129)	15.0% (500)
Wrong agency contacted	0.4% (2)	0.3% (5)	0.2% (2)	0.3% (9)
Difficulty communicating with Police Operator	8.8% (47)	9.0% (137)	7.0% (107)	8.7% (291)
Total	532	1,522	1,278	3,332*

*When cases were missing, it was assumed that no problem had occurred.

Table F-2j

Percentage of Cases Delayed by Communications Access Problems for Each Crime Location Relative to the Caller--Aggregate

	At Home	At Work	Elsewhere	Total
Phone not available	3.1% (43)	2.2% (18)	8.6% (95)	4.2% (136)
Trouble with pay phone	0.2% (3)	0.4% (3)	0.3% (3)	0.3% (9)
Police number not available	18.2% (253)	11.5% (93)	13.3% (147)	14.9% (493)
Wrong agency contacted	80.3% (4)	0.4% (3)	0.2% (2)	0.3% (9)
Difficulty communicating with with Police Operator	10.1% (140)	5.8% (47)	8.7% (96)	8.6% (283)
Total	1,390	807	1,104	3,301*

*Location of the crime was unavailable for some cases.

Table F-3a

Estimation of Time Required to Solve Each Problem
Jacksonville

Problem	Discovery	Involvement Property	Involvement Personal	All Cases
No phone available	.716 (2.015)	.564 (.416)	.342 (.259)	.348 (.240)
Pay phone does not work	.000 (.000)	-.523 (.854)	-.834 (.932)	-.697 (.693)
Police number unknown	.682 (.379)	.463 (.174)	.486 (.202)	.716 (.128)
Wrong police agency	.000 (.000)	-.957 (.855)	-.936 (1.343)	-1.055 (.781)
Difficulty communicating with police operator	-.154 (.608)	.493 (.220)	-.302 (.252)	.081 (.172)
Constant	2.400	1.373	1.527	1.508
F (13, n-14)	5.516	8.481	6.128	22.003
Sample size (n)	133	482	379	994
R^2	.376	.191	.179	.226

Table F-3b

Estimation of Time Required to Solve Each Problem
Peoria

Problem	Discovery	Involvement Property	Involvement Personal	All Cases
No phone available	.312 (1.566)	.041 (.581)	.024 (.504)	.022 (.372)
Pay phone does not work	.000 (.000)	-1.742 (1.413)	.364 (1.594)	-1.058 (1.125)
Police number unknown	.554 (.457)	.578 (.210)	.168 (.383)	.504 (.173)
Wrong police agency	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Difficulty communicating with police operator	3.701 (1.412)	-.029 (.351)	.712 (.423)	.537 (.277)
Constant	2.393	1.448	1.715	1.651
F (13, n-14)	2.396	3.498	7.259	12.846
Sample size (n)	89	238	200	527
R^2	.293	.169	.337	.246

Table F-3c

Estimation of Time Required to Solve Each Problem
Rochester

Problem	Discovery	Involvement Property	Involvement Personal	All Cases
No phone available	-.347 (1.897)	.203 (.571)	.394 (.490)	.304 (.376)
Pay phone does not work	.000 (.000)	.656 (1.744)	.000 (.000)	.590 (1.702)
Police number unknown	.555 (.395)	.603 (.274)	.313 (.341)	.588 (.184)
Wrong police agency	.000 (.000)	.000 (.000)	.240 (1.605)	.287 (1.665)
Difficulty communicating with police operator	-.834 (.596)	-.021 (.347)	.628 (.309)	.189 (.218)
Constant	2.189	1.868	1.726	1.869
F (13, n-14)	3.802	5.304	7.934	13.208
Sample size (n)	117	278	251	646
R^2	.324	.207	.303	.214

Table F-3d
Estimation of Time Required to Solve Each Problem
San Diego

Problem	Discovery	Involvement Property	Involvement Personal	All Cases
No phone available	1.205 (.665)	.169 (.437)	.509 (.308)	.574 (.243)
Pay phone does not work	.000 (.000)	.000 (.000)	-.787 (1.510)	-1.606 (1.627)
Police number unknown	1.261 (.340)	(.373 (.215))	(.217 (.321))	.902 (.158)
Wrong police agency	.864 (1.395)	-.567 (1.044)	.000 (.000)	.214 (.807)
Difficulty communicating with police operator	.459 (.467)	.555 (.234)	(-.169 (.301))	.438 (.180)
Constant	2.144	1.421	1.270	1.403
F (13, n-14)	7.712	6.001	5.333	22.821
Sample size (n)	158	437	321	916
R^2	.410	.156	.184	.248

aggregate coefficients shown in Table F-3e apply to all crime types and sites.

Since the coefficients represent the effect of problems on the logarithm of citizen reporting time, and not on reporting time itself, they must be interpreted before some sense can be made of them. A conservative estimate of the time required to solve each problem is shown (with 95 percent confidence intervals) in the right-hand column of Table F-3e. The method used to interpret the coefficients (and an explanation of the drawbacks of the method) is explained in detail in Appendix E-4. Suffice it to say that these figures are only suggestive, and in most cases too low. Two of the problems--having trouble with a pay phone, and calling the wrong police agency--are associated with smaller reporting times when they occur, rather than larger ones. This does not mean that citizens took negative time to solve them, rather that they occurred very infrequently, and most often in cases that were already reported more quickly than the average case. Thus it is impossible to determine, with any reliability and from our data, how long it took citizens to get a pay phone to work, and to get connected with the correct police department when they dialed the wrong number.

Despite the fact that relatively little of the variance in citizen reporting time can be explained by actions and problems, it has already been shown that the cumulative distribution of reporting times generated by the aggregate equation is nearly indistinguishable from the actual distribution (Figure E-4g). Thus, at least for the three problems that are significant predictors of longer reporting times, the effects of

Table F-3e

Estimation of Time Required to Solve Each Problem
All Sites

Problem	Coefficient, All Sites	F (1,3789)	Interpreted Coefficient
No phone available	.349 (.143)	5.986	+ :44 (0:07 - 1:34)
Pay phone does not work	-.853 (.533)	2.564	-1:01 (-1:30 - 0:22)
Police number unknown	.698 (.078)	80.495	+1:47 (1:17 - 2:22)
Wrong police agency	-.361 (.532)	0.460	- :32 (-1:20 - 1:43)
Difficulty communicating with police operator	.280 (.100)	7.857	+ :34 (0:09 - 1:05)
Constant	1.568		+1:46
F (13, n-14)	67.947		
Sample size (n)	3,803		
R^2	.198		

eliminating any of these problems on reporting time can be determined. Again, however, the limits of this analysis as detailed in Appendix E-4 apply.

Predicted Distribution of Short Reporting Times

If citizens were never delayed by communications access problems, more cases would be reported quickly. In order to determine how many cases this would be, the distribution of citizen reporting times for involvement cases was estimated by setting the coefficient for each problem in turn to zero, and predicting the reporting time for each involvement case in our sample. Since these regression-estimated distributions were as lumpy as the distributions originally obtained from the citizens, Weibull parameters were fitted to each of these distributions as well. Parameters corresponding to each hypothetical case are shown in Table F-3f.

The beta parameters for each hypothetical case (the "shape" of the Weibull) are larger than the beta for the present distribution, but the differences are so small that they are statistically insignificant. This contrasts with the parameters of the distribution of citizen reporting times if citizen actions were eliminated; all of these were significantly different from the original distribution. Thus it seems likely from the start that eliminating communications access problems will have a smaller effect on the number of quickly reported crimes and response related arrests than elimination of actions would.

Table F-3f

Comparison of Smoothing Parameters for Cumulative Distributions

	Parameters α	Parameters β	R^2	$3\ (\beta-\beta_0)$
Base Distribution (Actual Data)	5.275 (.044)	.7561 (.0336)	.962	--
Phone Is Always Available	5.331 (.054)	.7915 (.0400)	.956	.885 (p=.376)*
Number Is Always Known	4.825 (.051)	.7886 (.0379)	.960	.858 (p=.391)
Never Problem with Police Operator	5.784 (.064)	.8197 (.0475)	.943	1.339 (p=.181)
No Problems of Any Kind	1.560 (.037)	.574 (.040)	.959	-4.55 (p<.001)

*All probabilities are one-tailed.

**The log of $\hat{\alpha}$ is approximately normally distributed with this standard error.

Proportion of Crimes Reported In-Progress

If any of the three communications access problems could be eliminated, some crimes that would otherwise be reported after they have been committed would be reported so quickly that they would still be going on at the time the call is made. The proportion of involvement crimes reported in-progress was estimated to be:

$$p(IP) = .2265 \sum_{t=0}^{60} p(t)\cdot p(IP|t)$$

$$p(t) = \frac{\beta}{\alpha} t^{\beta-1} e^{-t^{\beta}/\alpha}$$

$$p(IP|t) = .275 - .0415 \log(t)$$

where alpha and beta are the scale and shape parameters of the distribution in question. The second term is the probability that a crime will be reported while in-progress, given reporting time t. (This was derived in Appendix D-4.) When this equation was applied, first to the actual distribution of reporting times, then to the regression-generated distribution, the results were in each case within one standard deviation of the actual value. The predicted proportion of involvement crimes results, in response-related arrest, is shown for each hypothetical case in Table F-3g.

After the total proportion of in-progress calls was estimated, the proportion of crimes reported in-progress at each time up to ten minutes

Table F-3g
Percentage of Cases Reported In-Progress

	Percent of Cases	$3\ (p - p_o)$
Actual Data	2.60% (.29)	--
Phone is Always Available	3.03	1.48 (p=.069)*
Number is Always Known	3.21	2.10 (p=.018)
Never Problem with Police Operator	3.08	1.66 (p=.048)
No Problems of Any Kind	4.03	4.94 (p<.001)

*All probabilities are one-tailed.

$$\text{pct IP} = 22.65 \sum_{t=0}^{30} p(T) \cdot p(IP|t)$$

was subtracted from the smoothed cumulative probability, and the entire distribution was shifted upwards by the total in-progress proportion to form Figures 18, 20 and 22. In the text, these curves are compared to the actual distribution of citizen estimates, rather than to the regression-generated distribution.

Proportion of Cases Resulting in Response-Related Arrest

After the distribution of reporting times was fully specified for each hypothetical case, it was possible to estimate the number of response-related arrests that would result. The estimated proportion of Part I crimes resulting in response-related arrest was obtained by multiplying the aggregate arrest equation by this probability distribution, and summing over the relevant times. That is,

$$p(RRA) = .2265 \left[\left(\sum_{t=1}^{30} (p(t) - p(IP|t)p(t))\ p(RRA|t) \right) + p(RRA|IP)p(IP) \right]$$

where p(t) is the probability distribution of citizen reporting times, p(IP|t) is the regression estimate of the effect of reporting times on the chances of an in-progress call, and p(RRA|t, IP) is the regression estimate for the effect of reporting time and in-progress on the chances of arrest. (This equation was also derived in Appendix D-4.) The resulting estimate of the proportion of Part I crimes resulting in response-related arrest was shown in Appendix E to be very close to the actual proportion when this song-and-dance was applied to the actual distribution of citizen reporting times. The results for each hypothetical case are shown in Table F-3h.

Effects of Eliminating Pay Phone Trouble and Wrong Numbers

Two of the problems occurred so seldom that they have not been considered in this analysis. As shown in Table F-1f, having trouble with a pay phone and calling the wrong agency each delayed reporting of only nine cases. The maximum possible increase in short reporting times and response-related arrest associated with eliminating either of these problems must then be less than one-tenth of one percent. This can be shown as follows:

- Assume that all nine crimes are involvement crimes; if any were discovery crimes (some were), the increase could only be less.
- Assume also that all were reported more than five minutes after the crime was committed, but would be reported in-progress if the delay could be eliminated. (The negative coefficients suggest that most were reported within five minutes, and that eliminating them would not change reporting time much.)

Given these extremely generous assumptions, the increase in involvement crimes reported quickly enough to result in response-related arrest would be equal to

$$\frac{\text{9 crimes delayed}}{\text{2800 involvement crimes sampled}} = .32\%.$$

Since only 23 percent or so of all crimes reported are involvement crimes, the increase in short reporting times would then be .23 x .32 = .074 percent

Table F-3h

Percentage of Cases Resulting in Response-Related Arrest

	Percent of Cases	$z\ (p - p_0)$
Actual Percentage	2.89% (.29)	--
Phone Is Always Available	3.03	0.48 (p=.316)*
Number Is Always Known	3.20	1.07 (p=.142)
Never Problem with Police Operator	3.09	0.69 (p=.245)
No Problems of Any Kind	3.68	2.72 (p=.003)

*All probabilities are one-tailed.

$$\text{pct RRA} = 22.65 \left[\left(\sum_{t=1}^{30} (p(t) - p(IP|t)\ p(t)) \cdot p(RRA\ t) \right) + p(RRA|IP) \cdot p(IP) \right]$$

of Part I crimes. For crimes reported in-progress (as all of these would presumably be), the chances of response-related arrest were found to be about 42 percent. Thus the increase in arrests would be .42 x .074 = .031 percent, only one-tenth of a standard deviation from the present response-related arrest rate of 2.89 percent. This increase would be simply too small to be measurable. More important, it is insignificant from a policy standpoint as well. Since this is the maximum possible increase in short reporting times and response-related arrests--and the real increase will probably be much less--it is evident that getting a pay phone to work and calling the wrong agency are extremely minor problems, at least in the four cities sampled.

APPENDIX G
DATA COLLECTION INSTRUMENT

card Φ3 (1 → 8)

CITIZENS OFFENSE REPORT REPLICATION STUDY

Police Executive Research Forum

A. RESPONDENT'S ROLE (MARK "X") (9)
___1 VICTIM
___2 VICTIM-CALLER
___3 WITNESS-CALLER
___4 CALLER

B. INTERVIEW TYPE (MARK "X") (10)
___1 Telephone
___2 Personal

C. INTERVIEW DATE
Mo. | Day | Yr
(11 → 16)

D. INTERVIEWER ID (17→18)

E. INTERVIEW STATUS: (19)
___1 Complete
___2 Complete thru SECTION III
___3 Incomplete at Q.___
___4 Refused
___5 Unable to contact
___6 Cannot locate
___7 Can't remember
___ Terminated (Ineligible)
___ Other ___________

1) Time interview began ___:___

2) Time interview ended ___:___

F. INTERVIEW LENGTH 2) - 1)
mins. (20 → 22)

G. RESPONDENT TYPE: (23)
___1 Security guard
___2 Campus police
___3 Other ___________

FOOTNOTES:

________ Site

________ CR#

1. Are you....................................	(24)	READ LIST UNTIL "YES" ANSWER ___3 A VICTIM? ___4 A WITNESS? ___5 A person who called the police but who was not otherwise involved..... (A CALLER)? ___ Other - Specify________
2. Did you personally call or contact the police to inform them of the crime?	(25)	___1 No (Skip to INSTRUCTIONS) ___2 Yes (PROBE - "You were the one who talked to the police over the phone?" If Respondent says police contacted personally, ask 2a; if not. skip to INSTRUCTIONS)
2a. How did you contact the police?	(26)	___3 Walked into police station ___4 Flagged police car } (DISCONTINUE ___5 Came by on routine check } INTERVIEW) ___ Other - Specify________

INSTRUCTIONS:

a) Compare answers in Qs. 1 and 2 with entry in Assignment Card Item A6. If there is a difference; reconcile the answers, make corrections, and enter footnotes.

b) If Respondent's role in Assignment Card A6 was VICTIM or VICTIM-CALLER and after reconciliation this Respondent is no longer identified as either type of victim, ask Qs. 4, 5, and 6 to identify a victim of this crime.

c) Refer to Q.2..... If answered "NO", ask Q.3.
If answered "YES", skip to Q.7.

3. Do you know anyone who might have called the Police Department on (Date) to report a (Type of Crime) ?	(27)	___1 No (If the Respondent is the VICTIM skip to Q.7. Otherwise - DISCONTINUE INTERVIEW) ___2 Yes

FOOTNOTES:

4. What is this caller's/the victim's name?	________
5. What is his/her address?	________ Street and Number ________ City State Zip
6. What is his/her telephone number?	________ Area Code Number

DISCONTINUE INTERVIEW WITH THIS RESPONDENT IF HE/SHE IS A WITNESS OR OTHERWISE INELIGIBLE

FOOTNOTES:

SECTION 1

Now I would like to ask you some questions about the (Specify crime).

	(28)
7. Did the crime take place where you live?	1 No (Skip to Q.9) 2 Yes
8. Was this	READ LIST UNTIL "YES" ANSWER (29-30) 03 Inside the house or the apartment? 04 Outside the house in the yard, or on an open porch? 05 In the garage or other building on your property? 06 In the driveway or the parking lot? 07 Entrance to the house or apartment? 08 On the street/sidewalk in front of the house. Other - Specify ________

SKIP TO SCREEN A

	(31)
9. Did the crime take place where you work?	1 No (Skip to Q.11) 2 Yes
10. Was this	READ THE LIST UNTIL "YES" ANSWER (32-33) 03 Inside or outside a store or other commercial property? 04 In a parking lot or garage? 05 Inside or outside a factory, office building, or other work area? 06 Inside or outside a tavern, restaurant, or other entertainment place? 07 At a park, playground, or other public recreation area? 08 Inside a school? Other - Specify ________

SKIP TO SCREEN A

FOOTNOTES:

	(34-35)
11. Where did the crime take place?	03 On a sidewalk, street or alley 04 Inside a private residence 05 Outside a private residence 06 Parking lot or garage 07 Inside a store or other commercial property 08 Inside a tavern, restaurant, or entertainment area 09 Park, playground, or public recreation area 10 Inside a factory, office building or work area 11 Inside a school 12 Inside a motor vehicle Other - Specify ________

SCREEN A . . . . Refer to Qs. 1 and 2 for Respondent's role and to Assignment Card Item A5 for type of crime.
VICTIM or VICTIM-CALLER of RAPE, ROBBERY, or ASSAULT, skip to Q.19, pg. 6.

12. Did you see, hear or become involved in this crime at any time while it was happening?	(36) 1 No 2 Yes (Skip to Q.19) - INVOLVEMENT CRIME
13. Did anyone else see, hear or become involved in this crime while it was happening?	(37) 1 No (Skip to Q.21)- DISCOVERY CRIME 2 Yes
.. Did this person take any action to report it?	(38) 1 No - DISCOVERY CRIME 2 Yes - INVOLVEMENT CRIME 7 Don't know

SCREEN B . . . . . Refer to Qs. 1 and 2 for Respondent's role,
a) VICTIM or VICTIM-CALLER, skip to Q.17.
b) CALLER, skip to Q. 21

15. What is the relationship of this person to the victim?

(39-40)

___ 03 Spouse
___ 04 Other relative
___ 05 Friend
___ 06 Acquaintance/neighbor
___ 07 Business associate
___ 08 Apartment manager or guard/tenant
___ 09 Salesperson or security guard/customer
___ 10 Stranger
(06–10: Skip to Q.17)
___ 77 Don't know
___ Other - Specify___

(If appropriate ask Q.16; if not, skip to Q.17)

16. Are they members of the same household?

(41)

___ 1 No
___ 2 Yes
___ 7 Don't know

17. What is the relationship of this person to you?

(42-43)

___ 03 Spouse
___ 04 Other relative
___ 05 Friend
___ 06 Acquaintance/neighbor
___ 07 Business associate
___ 08 Apartment manager or guard/tenant
___ 09 Salesperson or security guard/customer
___ 10 Stranger
(06–10: Skip to SCREEN C)
___ Other - Specify___

(If appropriate, ask Q.18; if not, skip to SCREEN C)

18. Are you and this person members of the same household?

(44)

___ 1 No
___ 2 Yes

SCREEN C . . . . . Refer to Q. 12, pg.4.
Answer is "No" ○, skip to Q.21.

19. Can you recall what you were doing right before the crime took place?

(45)

___ 1 No (Skip to Q.22)
___ 2 Yes

20. What were you doing right before the crime took place?

(46-47)

___ 03 Working
___ 04 Walking
___ 05 Activities around the house
___ 06 Sleeping
___ 07 Entering/leaving residence/building
___ 08 Shopping
___ 09 Watching TV/listening to radio
___ 10 Getting out of car
___ 11 Driving/riding in motor vehicle
___ 12 Talking to the suspect
___ 13 Visiting
___ 14 Eating/drinking (in public places)
___ Other - Specify___

___ 77 Don't know

SKIP TO Q. 22

21. Where were you when the crime took place?

READ LIST UNTIL "YES" ANSWER

(48)

___ 3 At work?
___ 4 At home?
___ 7 Don't know
___ Somewhere else? Where?___

Throughout the interview we will be asking questions about the time when different events relating to this incident happened or the length of time it took them to happen. If you cannot give an exact time, we would like an estimate. We appreciate any help you can give us in arriving at the best times possible.

22. Do you know what time the crime began?

(49)

___ 1 No (Skip to Q.26)
___ 2 Yes

23. What time did the crime begin?

Date Hour Min.
AM
PM

day		hr.		min.	
ϕ	1				

(50 → 55)

FOOTNOTES:

READ LIST

24. Would you say this time is ...

(56)
3 Exact - within 1 minute?
4 Approximate - within 2½ minutes?
5 A rough estimate - within 5 minutes?
6 A guess - over 5 minutes?

25. Why do you think it was (Time from Q.23)?

(57-58)
03 Looked at clock/watch
04 Activity related to regular routine
05 TV show
06 Appointment
07 Radio program
08 No basis for answer
Other - Specify____________

SKIP TO Q.28

26. Could you tell me the earliest possible time the crime might have begun?

(59)
1 No (Skip to Q.28)
2 Yes

27. What time would that be?

Date Hour Min. AM PM

day		hr.		min.	
φ	1				

(60 → 65)

28. Do you know what time the crime ended?

(66)
1 No (Skip to Q.32)
2 Yes

29. What time did the crime end?

Date Hour Min. AM PM

day		hr.		min.	

(67 → 72)

30. Would you say this time is...

READ LIST
(73-74)
03 Exact - within 1 minute?
04 Approximate - within 2½ minutes?
05 A rough estimate - within 5 minutes?
06 A guess - over 5 minutes?

FOOTNOTES:

31. Why do you think it was (Time from Q.29)?

(75-76)
03 Looked at clock/watch
04 Activity related to regular routine
05 TV show
06 An appointment
07 Radio program
08 No basis for answer
Other - Specify____________

SKIP TO SCREEN D

32. Could you tell me the latest possible time the crime could have ended?

(77)
1 No (Skip to SCREEN D)
2 Yes

						card	
						φ	4

(1 → 8)

33. What time would that be?

Date Hour Min. AM PM

day		hr.		min.	

(9 → 14)

SCREEN D. . . . . a) Refer to Assignment Card Item A5 for type of crime.
RAPE ◯, skip to Q.55, pg.12.

b) Refer to Q.12, pg. 4.
Answer is "No" ◯, skip to SCREEN E, pg.9.

The next question will be asking for a length of time.

34. How long were you there while the crime was happening?

days		hrs.		mins.		secs.	

(15 → 22)

7 Don't know (Skip to Q.36)

35. Please tell me if you are certain or if this is an estimate.

(23)
3 Estimate
4 Certain

(24-25)

36. What were you doing while the crime was <u>actually</u> taking place?

- 03 Observed situation/nothing
- 04 Did as instructed by person committing the crime
- 05 Engaged in physical struggle
- 06 Took self protective measures
- 07 Working
- 08 Tried verbal persuasion
- 09 Called for help
- 10 Investigated the situation
- 11 Chased the suspect
- 12 Called police
- 77 Don't know
- Other - Specify________

SCREEN E . . . . . a) CALLER - skip to Q.45, pg. 11.
b) Refer to Qs. 12 and 14, pg.4
If one is answered "Yes", or, if INVOLVEMENT CRIME, skip to Q.53, pg.12.

(26)

37. Who discovered that a crime had taken place?

- 3 Respondent (Skip to Q.42)
- 4 Victim (Skip to Q.40)
- 5 Caller
- 6 Someone else
- 7 Don't know (Skip to Q.42)

SCREEN F . . . . . Refer to Qs. 1 and 2 for Respondent's role.
VICTIM or VICTIM-CALLER, skip to Q.40.

(27-28)

38. What is the relationship of this person to the victim?

- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor (Skip to Q.40)
- 07 Business associate (Skip to Q.40)
- 08 Apartment manager or guard/tenant (Skip to Q.40)
- 09 Salesperson or security guard/customer (Skip to Q.40)
- 10 Stranger (Skip to Q.40)
- 77 Don't know
- Other - Specify________

(If appropriate, ask Q.39, if not, skip to Q.40)

(29)

39. Are they members of the same household?

- 1 No
- 2 Yes
- 7 Don't know

(30-31)

. What is the relationship of this person to you?

- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor (Skip to Q.42)
- 07 Business associate (Skip to Q.42)
- 08 Apartment manager or guard/tenant (Skip to Q.42)
- 09 Salesperson or security guard/customer (Skip to Q.42)
- 10 Stranger (Skip to Q.42)
- Other - Specify________

(If appropriate, ask Q.41, if not, skip to Q.42)

(32)

1. Are you and this person members of the same household?

- 1 No
- 2 Yes

The next question will be about the time the crime was discovered.

42. What time did <u>you/this person</u> discover that a crime had taken place?

Date Hour Min.

AM
PM

day , hr. , min.

(33 - 38)

7 Don't know (Skip to Instruction after Q.44)

READ LIST

(39)

. Would you say this time is .....

- 3 Exact - within 1 minute?
- 4 Approximate - within 2½ minutes?
- 5 A rough estimate - within 5 minutes?
- 6 A guess - over 5 minutes?

(40-41)

44. Why do you think it was (<u>Time from Q.42</u>)?

- 03 Looked at clock/watch
- 04 Activity related to regular routine
- 05 TV show
- 06 An appointment
- 07 Radio program
- 08 No basis for answer
- Other - Specify________

SKIP TO Q.53 Pg. 12
WHEN RESPONDENT WAS INVOLVED IN OR DISCOVERED CRIME

FOOTNOTES:

45. Who told you that a crime had taken place?

(42)
- 3 Victim (Skip to Q. 50)
- 4 Witness
- 5 Caller
- Other - Specify ____________

SCREEN G . . . . . Refer to Qs. 1 and 2 for the Respondent's role.
VICTIM or VICTIM-CALLER ◯,
skip to Q. 48.

(Verify relationship if known)

46. What is the relationship of this person to the victim?

(43-44)
- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor
- 07 Business associate
- 08 Apartment manager or guard/tenant
- 09 Salesperson or security guard/customer
- 10 Stranger
- 77 Don't know
- Other - Specify ____________

(06–10: Skip to Q.48)

(If appropriate, ask Q. 47; if not, skip to Q. 48.)

47. Are they members of the same household?

(45)
- 1 No
- 2 Yes
- 7 Don't know

(Verify relationship if known)

48. What is the relationship of this person to you?

(46-47)
- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor
- 07 Business associate
- 08 Apartment manager or guard/tenant
- 09 Salesperson or security guard/customer
- 10 Stranger
- Other - Specify ____________

(06–10: Skip to Q.50)

(If appropriate, ask Q. 49; if not, skip to Q. 50)

.9. Are you and this person members of the same household?

(48)
- 1 No
- 2 Yes

Next, I would like to ask you about the time someone told you that a crime had taken place.

50. What time was it when you were told that a crime had taken place?

Date Hour Min.
AM
PM

day	hr.	min.

(49-54)

7s Don't know (Skip to Q.53)

1. Would you say this time is ...

READ LIST
(55)
- 3 Exact - within 1 minute?
- 4 Approximate - within 2½ minutes?
- 5 A rough estimate - within 5 minutes?
- 6 A guess - over 5 minutes?

52. Why do you think it was (Time from Q.50)?

(56-57)
- 03 Looked at clock/watch
- 04 TV show
- 05 Radio program
- 06 Activity related to a regular routine
- 07 An appointment
- 08 No basis for answer
- Other - Specify ____________

3. How many persons were victims of this crime? (Including yourself)

Number of persons ☐☐ (58-59)
77 Don't know

SCREEN H . . . . . Refer to Assignment Card Item A5 for type of crime.
RAPE, ROBBERY, or ASSAULT ◯,
skip to Q.55.

4. How many of these victims were at the scene of the crime at the time it happened? (Including yourself)

Number of persons ☐☐ (60-61)
77 Don't know

5. How many persons committed the crime?

Number of persons ☐☐ (62-63)
77 Don't know

OOTNOTES:

SCREEN I . . . . . . Refer to Q. 12, pg.4.
Answer is "No" ,
skip to Q.72,pg. 15.

(64)

56. Did you see who committed the crime?

1 No (Skip to Q. 64)
2 Yes

(65)

57. Would you be able to recognize him/her/them if you saw him/her/them again?

1 No (Skip to Q.63)
2 Yes
7 Don't know

(66)

58. Do you know the name(s) of (any of) the person(s) who committed the crime?

1 No (CALLER - Skip to Q.72, pg.15)
2 Yes

(67→68)

59. What is the relationship of this person to you?

03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
(06–10: Skip to SCREEN J)
Other - Specify________

(If appropriate, ask Q.60; if not, skip to SCREEN J)

(69)

60. Are you and this person members of the same household?

1 No
2 Yes

SCREEN J . . . . . Refer to Qs. 1 and 2 for Respondent's role.
VICTIM or VICTIM-CALLER ,
skip to Q.63

(70→71)

1. What is the relationship between the victim and the person who may have committed the crime?

03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
(06–10: Skip to Q.63)
77 Don't know
Other - Specify________

(If appropriate, ask Q.62; if not, skip to Q.63)

(72)

62. Are they members of the same household?

1 No
2 Yes
7 Don't know

(73)

. Were you threatened either physically or verbally?

1 No
2 Yes

(74)

64. Did you leave the scene of the crime before the person who may have committed the crime left?

1 No
2 Yes (Skip to Q.72)
7 Don't know

(75)

. Do you know what time the person may have committed the ... me left the scene?

1 No (Skip to Q.69)
2 Yes

card ϕ 5
(1 → 8)

. What time did this person leave the scene?

. Date Hour Min.

AM
PM

day | hr. | min.
(9 → 14)

67. Would you say this time is .....

(15)
3 Exact - within 1 minute?
4 Approximate - within 2½ minutes?
5 A rough estimate - within 5 minutes?
6 A guess - over 5 minutes?

68. Why do you think it was (Time from Q.66)?

(16→17)
03 Looked at clock/watch
04 Activity related to regular routine
05 TV show
06 An appointment
07 Radio program
08 No basis for answer
Other - Specify ______

SKIP TO Q.71

69. How many minutes went by between your knowing of the crime and the time the person who may have committed the crime left the scene?

mins.			secs.		

(18 → 22)

6s Suspect did not leave
7s Don't know (Skip to Q.71)

70. Please tell me if you are certain or if this is an estimate.

(23)
3 Estimate
4 Certain

71. Was the person who may have commited the crime still at the scene when the police arrived?

(24)
1 No
2 Yes
7 Don't know

72. Did the police arrest anyone on or near the scene?

(25)
1 No
2 Yes
7 Don't know

73. Would you want to see the suspect(s) prosecuted?

(26)
1 No
2 Yes }
7 No opinion } (Skip to Q. 75)

74. Could you tell me why?

(27→28)
03 Know suspect personally
04 Suspect is juvenile
05 Only want the property restored or returned
06 Want restitution made
07 Fear reprisal
77 Don't know
Other - Specify ______

I would like to ask you some questions regarding what you did between the time the crime ended/you discovered the crime/you were told about the crime and the time the police were called/contacted.

75a. (Use 75b. for RAPE)
What was the very first thing you did after the crime ended/you discovered the crime/you were told about the crime (before the police were called)?

75b. Could you please tell me what you did before the police were called?

(29→30)
03 Police called/contacted (Skip to SCREEN K)
04 Left the scene
05 Chased the suspect
06 Took no action
07 Asked someone else to call the police
08 Investigated
09 Discussed situation (in person)
10 Telephoned someone other than the police
11 Restrained suspect (arrested suspect)
12 Became unconscious
13 Pushed alarm (Skip to SCREEN K)
Other - Specify ______

76. Could you please tell me what you did next (before the police were called)?

(REPEAT THIS QUESTION UNTIL RESPONDENT ANSWERS THAT THE POLICE WERE CALLED/CONTACTED. ENTER ANSWER CODES IN BOXES IN THE ORDER IN WHICH THE RESPONDENT GIVES EACH ANSWER.)

03 Police called/contacted
04 Left the scene
05 Chased the subject
06 Took no action
07 Asked someone else to call the police
08 Investigated
09 Discussed situation (in person)
10 Telephoned someone other than the police
11 Restrained suspect/ arrested suspect
12 Became unconscious
13 Pushed alarm
Other - Specify ______

(31→32)
(33→34)
(35→36)
(37→38)
(39→40)

FOOTNOTES:

77. In similar circumstances would you again do this/these things before the police were called/contacted.

(41)
1 No
2 Yes
7 Don't know

SCREEN K . . . . . Refer to Qs. 1 and 2 for Respondent's role.
VICTIM,
skip to SECTION II, pg. 20.

78. Who asked you to call/contact the police?

(42)
3 Respondent decided — VICTIM-CALLER, skip to SECTION II, pg.20; WITNESS-CALLER, CALLER skip to Q.84, pg.19
4 Victim (Skip to Q.83)
5 Witness
6 Someone else
7 Don't know (Skip to Q.83).

SCREEN L . . . . . Refer to Qs. 1 and 2 for Respondent's role.
VICTIM-CALLER
skip to Q.81

(Verify relationship if known)

79. What is the relationship of this person to the victim?

(43-44)
03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
(06–10: Skip to Q.81)
77 Don't know
Other - Specify ____________

(If appropriate, ask Q.80; if not, skip to Q.81.)

80. Are they members of the same household?

(45)
1 No
2 Yes
7 Don't know

FOOTNOTES:

(VERIFY RELATIONSHIP IF KNOWN.)

81. What is the relationship of this person to you?

(46-47)
03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
(06–10: Skip to SCREEN M)
Other - Specify ____________

(If appropriate, ask Q. 82; if not, skip to SCREEN M.)

82. Are you and this person members of the same household?

(48)
1 No
2 Yes

SCREEN M . . . . Refer to Qs. 1 and 2 for Respondent's role.
VICTIM-CALLER,
skip to SECTION II, pg. 20.

83. Why were you asked to call/contact the police?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Has nearest phone
04 More convenient for Respondent to call
05 Too emotional to act
06 Was injured and unable to call
07 Standard or company procedure
08 Couldn't reach phone
Other - Specify ____________

77 Don't know

(49-50) ☐☐
(51-52) ☐☐
(53-54) ☐☐

FOOTNOTES:

(VERIFY RELATIONSHIP IF KNOWN)

84. What is the relationship of the victim to you?

(55)

- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor (Skip to Q.86)
- 07 Business associate (Skip to Q.86)
- 08 Apartment manager or guard/tenant (Skip to Q.86)
- 09 Salesperson or security guard/customer (Skip to Q.86)
- 10 Stranger (Skip to Q.86)
- Other - Specify ____________

(If appropriate, ask Q. 85; if not, skip to Q.86)

85. Are you and the victim members of the same household?

(56)

- 1 No
- 2 Yes

FOOTNOTES:

SECTION II

We appreciate the care with which you have answered the questions so far. Please continue to be patient because we realize some of the questions may sound alike to you. Be assured that each one has a special purpose. Now, let's continue with some questions about the people you may have talked to between the time the crime occurred/you were told about the crime/you discovered the crime and the time the police were called.

86. Did you talk to anyone either in person or by phone before the police were called/contacted?

(57)

- 1 No (Skip to SCREEN T)
- 2 Yes
- 6 Didn't know when the police were called (Skip to SCREEN T)

The following questions are only about those people you talked to in person before the police were called.

87. How many people did you talk to in person before the police were called?

- 0s (Skip to Q.98)
- Number of people
- 77 Don't know

(58-59)

88. To whom did you talk (first)?

(60)

- 3 Victim (Skip to Q.93)
- 4 Witness
- 5 Caller
- 6 Suspect
- 8 Someone else
- 7 Don't know (Skip to SCREEN O)

(Verify if relationship is known)

89. What is the relationship of this person to you?

(61-62)

- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor (Skip to SCREEN N)
- 07 Business associate (Skip to SCREEN N)
- 08 Apartment manager or guard/tenant (Skip to SCREEN N)
- 09 Salesperson or security guard/customer (Skip to SCREEN N)
- 10 Stranger (Skip to SCREEN N)
- Other - Specify ____________

(If appropriate, ask Q.90; if not, skip to SCREEN N)

FOOTNOTES:

90. Are you and this person members of the same household?

(63)
___ 1 No
___ 2 Yes

SCREEN N . . . . . Refer to Qs. 1 and 2 for Respondent's role. VICTIM or VICTIM-CALLER ○, skip to Q. 93

(Verify relationship if known)

91. What is the relationship of this person to the victim?

(64→65)
___ 03 Spouse
___ 04 Other relative
___ 05 Friend
___ 06 Acquaintance/neighbor (Skip to Q.93)
___ 07 Business associate (Skip to Q.93)
___ 08 Apartment manager or guard/tenant (Skip to Q.93)
___ 09 Salesperson or security guard/customer (Skip to Q.93)
___ 10 Stranger (Skip to Q.93)
___ 77 Don't know
___ Other - Specify___________

(If appropriate, ask Q.92; if not, skip to Q.93)

92. Are they members of the same household?

(66)
___ 1 No
___ 2 Yes
___ 7 Don't know

93. Why did you talk to this person before the police were called/contacted?

(IF MORE THAN ONE ANSWER, PROBE FOR THE MOST IMPORTANT)

(67→68)
___ 03 Person was present/Respondent upset
___ 04 Wanted information
___ 05 Informed him/her of crime
___ 06 Person told Respondent of crime
___ 07 Wanted use of telephone
___ 08 Needed advice/didn't know what to do
___ 09 Company procedure
___ Other - Specify___________
___ 77 Don't know

SCREEN O . . . . . Refer to Qs. 1 and 2 for Respondent's role. VICTIM-CALLER, WITNESS-CALLER or CALLER ○, skip to Q. 95

FOOTNOTES:

94. Did this person call/contact the police before you talked to anyone else?

(69)
___ 1 No
___ 2 Yes (Skip to Q. 116.)
___ 7 Don't know

95. Did this person tell you to call/contact the police?

(70)
___ 1 No
___ 2 Yes (Skip to Q.97)

96. What did this person tell you?

(71→72)
___ 03 Discussed situation
___ 04 Nothing
___ 05 Suggested a course of action
___ 06 Of little assistance
___ Other - Specify___________
___ 77 Don't know

97. What did you do right after talking to this person?

(73→74)
___ 03 Called/contacted police (Skip to Q.116 pg.27)
___ 04 Talked to someone else in person
___ 05 Telephoned someone else
___ 06 Calmed oneself
___ 07 Took no action
___ Other - Specify___________
___ 77 Don't know

The next questions will be about those persons you TELEPHONED before the police were called.

98. How many persons did you telephone before the police were called/contacted?

0s (Skip to SCREEN R)
Number of persons ☐☐ (75→76)
77 Don't know

99. Whom did you telephone first?

(77)
___ 3 Victim (Skip to Q. 104)
___ 4 Witness
___ 5 Caller
___ 6 Suspect
___ 8 Someone else
___ 7 Don't know (Skip to Q.104)

(Verify if relationship is known)

100. What is the relationship of this person to you?

(78→79)

- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor
- 07 Business associate
- 08 Apartment manager or guard/tenant
- 09 Salesperson or security guard/customer
- 10 Stranger
- Other - Specify ____________

(06–10: Skip to SCREEN P)

(If appropriate, ask Q.101; if not, skip to SCREEN P)

101. Are you and this person members of the same household?

(80)

- 1 No
- 2 Yes

card ϕ6 (1 → 8)

SCREEN P . . . . . Refer to Qs. 1 and 2 for Responden't role.
VICTIM or VICTIM-CALLER, skip to Q.104

(Verify if relationship is known)

102. What is the relationship of this person to the victim?

(9→10)

- 03 Spouse
- 04 Other relative
- 05 Friend
- 06 Acquaintance/neighbor
- 07 Business associate
- 08 Apartment manager or guard/tenant
- 09 Salesperson or security guard/customer
- 10 Stranger
- Other - Specify ____________

(06–10: Skip to Q.104)

(If appropriate, ask Q.103; if not, skip to Q. 104)

FOOTNOTES:

103. Are they members of the same household?

(11)

- 1 No
- 2 Yes
- 7 Don't know

104. Why did you call this person before the police were called/contacted?

(12→13)

- 03 Informed him/her of crime
- 04 Needed assistance
- 05 Needed advice/didn't know what to do
- 06 Wanted information
- Other - Sepcify ____________
- 77 Don't know

SCREEN Q . . . . . Refer to Qs. 1 and 2 for Respondent's role
VICTIM-CALLER, WITNESS-CALLER, or CALLER, skip to Q.106

05. Did this person call/contact the police before you talked to anyone else?

(14)

- 1 No
- 2 Yes (Skip to Q.116)
- 7 Don't know

06. Did this person tell you to call/contact the police?

(15)

- 1 No
- 2 Yes (Skip to Q. 108)

107. What did this person tell you?

(16→17)

- 03 Offered assistance
- 04 Concurred with Respondent's act/intent
- 05 Was of no assistance
- 06 To talk to someone else
- 77 Don't know
- Other - Specify ____________

08. What did you do after talking to this person?

(18→19)

- 03 Called/contacted police (Skip to Q.116)
- 04 Telephone someone else
- 05 Other - Specify ____________
- 77 Don't know

(Verify if relationship is known)

100. What is the relationship of this person to you?

(78→79)

03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
Other - Specify ______

(06–10: Skip to SCREEN P)

(If appropriate, ask Q.101; if not, skip to SCREEN P)

101. Are you and this person members of the same household?

(80)

1 No
2 Yes

card ɸ 6

(1 → 8)

SCREEN P . . . . . Refer to Qs. 1 and 2 for Responden't role.
VICTIM or VICTIM-CALLER, skip to Q.104

(Verify if relationship is known)

102. What is the relationship of this person to the victim?

(9→10)

03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
Other - Specify ______

(06–10: Skip to Q.104)

(If appropriate, ask Q.103; if not, skip to Q. 104)

FOOTNOTES:

103. Are they members of the same household?

(11)

1 No
2 Yes
7 Don't know

104. Why did you call this person before the police were called/contacted?

(12→13)

03 Informed him/her of crime
04 Needed assistance
05 Needed advice/didn't know what to do
06 Wanted information
Other - Sepcify ______
77 Don't know

SCREEN Q . . . . . Refer to Qs. 1 and 2 for Respondent's role
VICTIM-CALLER, WITNESS-CALLER, or CALLER, skip to Q.106

105. Did this person call/contact the police before you talked to anyone else?

(14)

1 No
2 Yes (Skip to Q.116)
7 Don't know

106. Did this person tell you to call/contact the police?

(15)

1 No
2 Yes (Skip to Q. 108)

107. What did this person tell you?

(16→17)

03 Offered assistance
04 Concurred with Respondent's act/intent
05 Was of no assistance
06 To talk to someone else
77 Don't know
Other - Specify ______

108. What did you do after talking to this person?

(18→19)

03 Called/contacted police (Skip to Q.116)
04 Telephone someone else
05 Other - Specify ______
77 Don't know

SCREEN R . . . . . Refer to Q.s 1 and 2 for Respondent's role.
VICTIM ◯,
skip Q.114

(20)

109. Who helped you decide to call/contact the police?

3 Respondent/ no one (Skip to Q.116)
4 Victim (Skip to Q.116)
5 Witness
6 Someone else

SCREEN S . . . . . Refer to Qs.1 and 2 for Respondent's role.
VICTIM-CALLER ◯,
skip to Q.112

(Verify if relationship is known)

(21-22)

110. What is the relationship of this person to the victim?

03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
(06–10: Skip to SCREEN T)
77 Don't know
Other - Specify ____________

(If appropriate, ask Q.111; if not, skip to SCREEN T)

(23)

111. Are they members of the same household?

1 No
2 Yes
7 Don't know

FOOTNOTES:

(Verify if relationship is known)

(24-25)

112. What is the relationship of this person to you?

03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
(06–10: Skip to SCREEN T)
Other - Specify ____________

(If appropriate, ask Q.113; if not, skip to SCREEN T)

(26)

113. Are you and this person members of the same household?

1 No
2 Yes

SCREEN T . . . . . Refer to Qs. 1 and 2 for Respondent's role.
VICTIM-CALLER, WITNESS-CALLER, or CALLER ◯,
skip to Q.116

(27-28)

114. Who called/contacted the police?

03 Spouse
04 Other relative
05 Friend
06 Acquaintance/neighbor
07 Business associate
08 Apartment manager or guard/tenant
09 Salesperson or security guard/customer
10 Stranger
(06–10: Skip to Q.116)
77 Don't know (Skip to Q.120)
Other - Specify ____________

(If appropriate, ask Q.115; if not, skip to Q.116)

(29)

115. Are you and this person members of the same household?

1 No
2 Yes

116. Did you/this person have any trouble in reaching the police?

(30)

1 No — Respondent is VICTIM, skip to Q. 120. Respondent is VICTIM-CALLER, WITNESS-CALLER, or CALLER, skip to Q. 123.
2 Yes
7 Don't know (Skip to SCREEN U)

117. What kind of trouble did he/she/you have in reaching the police?

(31→32)

03 Had to find the number
04 Put on hold
05 No answer
06 Wrong number
07 Line busy
Other - Specify ______

77 Don't know

I'd like to ask about the time it took (use Q.117 answer)

118. How long did it take to solve this problem?

days | hrs. | mins. | secs.
(33 → 40)

7s Don't know (Skip to SCREEN U)

119. Please tell me if you are certain or if this is an estimate?

(41)

3 Estimate
4 Certain

SCREEN U . . . . . Refer to Qs. 1 and 2 for Respondent's role.
VICTIM-CALLER, WITNESS-CALLER, or CALLER,
skip to Q.123

FOOTNOTES

120. Why didn't you personally call/contact the police?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Respondent frightened/upset
04 Police already called
05 Respondent injured
06 Wasn't important
07 Respondent did not know crime had occurred
08 Routine for security guard to call
09 Not Respondent's responsibility
10 No phone available
11 Alarm pushed
12 Searched for suspects/investigated
13 Suspect restrained Respondent/suspect present
Other - Specify ______

77 Don't know

(42→43) (44→45) (46→47) (48→49) (50→51)

121. If no one had called/contacted the police, would you have tried to call/contact them yourself?

(52)

1 No
2 Yes (Skip to SCREEN V.)

122. Why wouldn't you have called them yourself?

(53→54)

03 Private or personal matter
04 Not important enough
05 Respondent knows suspect/suspect's family
06 Respondent upset
Other ______

77 Don't know

SCREEN V . . . Refer to Q.86, pg.20.
Respondent answered, "Didn't know when police were called",
skip to 176, pg.41

Now I would like to ask you about the length of time between when you knew a crime had been committed and the time the police were called/contacted.

123. How much time went by between your knowing of the crime and the time someone/you called or contacted the police?

days | hrs. | mins. | secs.
(55 → 62)

7s Don't know (Skip to SECTION III)

124. Please tell me if you are certain, or if this is an estimate?

(63)

3 Estimate
4 Certain

SCREEN W . . . . . Refer to Qs. 1 and 2 for Respondent's role.
a) Respondent is VICTIM, skip to SECTION III pg.37.
b) Respondent is VICTIM-CALLER, skip to Q.126

125. Why did you decide to get involved in this incident?

(IF MORE THAN ONE ANSWER, PROBE FOR THE MOST IMPORTANT)

(64→65)

03 Relative involved
04 Friend/neighbor/acquaintance involved
05 Respondent's duty/responsibility
06 Was asked to
07 Humanitarian reason
08 Already involved
Other - Specify ______

77 Don't know

126. Was it difficult for you to decide to call the police?

(66)

1 No (Skip to Q.131)
2 Yes

The next question asks for the amount of time you spent making this decision.

127. How much time did you spend in making this decision?

days | hrs. | mins. | secs.

(67 → 74)

7s Don't know (Skip to Q.129)

128. Please tell me if you are certain, or if this is an estimate?

(75)

3 Estimate
4 Certain

129. Why was deciding to call/contact the police difficult for you?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Respondent knows the suspect(s)/suspect's family
04 Wondered if someone else should be called
05 Juvenile suspect
06 Nothing could be done
07 Not important enough
08 Fear of reprisal
09 Other - Specify ______

77 Don't know

(76→77)
(78→79)

card ϕ 7
(1 → 5)

130. What caused you to finally decide to call the police?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Suspect would not return property
04 Anger
05 Advised by someone
06 Physical discomfort
07 Didn't know what else to do
Other - Specify ______

77 Don't know

(9→10)
(11→12)
(13→14)

131. After you made up your mind to call/contact the police, did you immediately place the call/contact them?

(15)

1 No
2 Yes (Skip to Q.137, pg. 31)

132. Why didn't you call/contact the police immediately after you made up your mind to call them?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 No phone available
04 Telephoned or talked to other person
05 Fear of reprisal
06 Waited for other parties involved
07 Other - Specify ______

77 Don't know

(16→17)
(18→19)
(20→21)
(22→23)
(24→25)

133. Was there any further delay before you called/contacted the police?

(26)
1 No (Skip to Q.135)
2 Yes

134. What caused this delay?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Telephoned or talked to others
04 Personal business
05 Sought information
06 No telephone available
07 Sought out telephone
08 Was afraid
09 Waited for other parties involved
10 Phone in use or out of order
11 Knew suspect/located suspect
Other - Specify ______

(27-28) (29-30) (31-32) (33-34) (35-36)

135. Altogether, how long did it take you to reach a telephone/the police after you decided to call/contact them?

hrs. | mins. | secs.
(37 - 42)

7s Don't know (Skip to Q.137)

136. Please tell me if you are certain or if this is an estimate?

(43)
3 Estimate
4 Certain

This next question is asked to obtain information on the time you called/contacted the police.

137. What time did you call/contact the police?

Date Hour Min.
AM
PM

day | hr. | min.
(44 - 49)

7s Don't know (Skip to SCREEN X)

FOOTNOTES:

READ LIST

138. Would you say this time is . . .

(50)
3 Exact - within 1 minute?
4 Approximate - within $2\frac{1}{2}$ minutes?
5 A rough estimate - within 5 minutes?
6 A guess - over 5 minutes?

39. Why do you think it was (Time from Q.137)?

(51-52)
03 Looked at clock/watch
04 Activities related to regular routine
05 TV show
06 Appointment
07 Radio program
08 No basis for answer
Other - Specify ______

SCREEN X . . . . . a) Refer to Qs. 1 and 2 for Respondent's role.
VICTIM-CALLER of a RAPE
skip to Q.142

b) Refer to Qs.13 and 14 for Crime type.
DISCOVERY CRIME
skip to Q.142

40. Was the crime still taking place at the time you called/contacted the police?

(53)
1 No
2 Yes (Skip to Q.142)
Don't know (Skip to Q.142)

41. Why didn't you call/contact the police while the crime was taking place?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Respondent involved in crime
04 Uncertain of situation
05 Was being physically restrained
06 Out of fear
07 Happened too fast
08 No telephone available
09 Chased suspect
10 Was calling for help
11 Didn't know that crime had occurred
Other - Specify ______

77 Don't know

(54-55) (56-57)

142. Did you use or attempt to use a pay phone?

(58)
1 No (Skip to SCREEN Y)
2 Yes

143. Did you have trouble in using the pay phone?

(59)
1 No (Skip to Q.147)
2 Yes

144. What was the trouble?

(60→61)
03 Didn't have correct change
04 Phone out of order
05 Phone missing
06 Couldn't find one
Other - Specify ________

145. How did you solve this problem?

(62→63)
03 Went to another pay phone
04 Went to someone else's phone
05 Went to own phone
06 Went to business phone
07 Used victim's phone
08 Got change
09 Borrowed money
Other - Specify ________

SCREEN Y . . . .a) Refer to Q. 2a, pg. 1.
If there is any answer recorded (Respondent talked to police other than by telephone) ○, skip to Q.150, pg.34.
b) Refer to Q. 75, pg.16.
Answer is "Pushed alarm" ○, skip to SECTION III, pg. 37.

146. Whose phone did you use to call the police?

(64)
3 Own phone
4 Business phone
5 Someone else's phone
Other - Specify ________

FOOTNOTES:

147. Which number did you use to call the police?

(65)
3 911 or Crime Alert Number
4 Dialed "0" (Operator) (Skip to Q. 149)
5 Administrative
Other - Specify ________
7 Don't know (Skip to Q.149)

148. How did you find out about this number?

(66→67)
03 Written by telephone
04 Telephone directory
05 Knew number/or had it handy
06 Companion/Someone else knew number
07 Asked operator
Other - Specify ________
77 Don't know

149. How many times did the telephone ring before someone at the Police Department answered?

Number of rings
77 Don't know
(68→69)

150. Did the first person at the Police Department whom you talked to take the information concerning the crime?

(70)
1 No
2 Yes (Skip to Q. 152)
7 Don't know

151. On this call/contact, how many people at the Police Department did you talk to before someone took the information?

Number of people
77 Don't know
(71→72)

Now I would like to ask you about the length of time it took for someone at the Police Department to begin to take the information.

152. How long did it take from the time you reached them until someone at the Police Department began to take the information?

mins. | secs.
7s Don't know (Skip to Q. 154) (73 → 76)

153. Please tell me if you are certain or if this is an estimate?

(77)

3 Estimate
4 Certain

card ϕ 8
(1 → 8)

154. What did you tell the person at the Police Department who took the information?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Incident had occurred
04 Property loss, description
05 Requested general assistance
06 Incident in progress
07 Holding suspects
08 Possible crime incident
09 Requested investigation assistance
10 Officer could be sent but Respondent thought it would do no good
11 Described suspect
12 Direction to scene of crime
Other - Specify ______

77 Don't know

(9→10) (11→12) (13→14) (15→16) (17→18)

155. Did the person at the Police Department who took your information tell you how long it would take a police car to arrive?

(19)

1 No (Skip to SCREEN Z)
2 Yes
3 Police would not be out (Skip to SCREEN Z)
7 Don't know
9 Not applicable (Skip to SCREEN Z)

156. What did the person at the Police Department say about how long it would take a police car to arrive?

(20→21)

03 Be right out
04 Be there in a few minutes
05 Be there as soon as possible
06 Delay of specified duration
07 Delay of unspecified duration
08 Be there immediately
09 Police already there
Other - Specify ______

SCREEN Z . . . . Refer to Q. 2a, pg. 1.
(Respondent "contacted" police) ◯ skip to Q. 158.

Now I would like to ask you about the length of time you were on the phone with the Police Department.

157. How long did you talk on the phone from the time someone answered (at the Police Department) until you hung up?

mins. secs.
(22 → 25)

75 Don't know (Skip to Q.158)

157a. Please tell me if you are certain or if this is an estimate?

(26)

3 Estimate
4 Certain

158. How satisfied were you with the way the Police Department handled your telephone call/ the contact? Overall, were you satisfied or dissatisfied?

(27)

Dissatisfied - PROBE - Would this be:

1 Very dissatisfied
2 Moderately dissatisfied
3 Slightly dissatisfied

Satisfied - PROBE - Would this be:

4 Slightly satisfied
5 Moderately satisfied
6 Very satisfied

159. Why were you (Use Q. 158 answer)?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN?)

03 Efficient handling
04 Quick response
05 Had no complaint/ met expectations
06 Slow response
07 Were courteous
08 Were concerned
09 Had difficulty in understanding or making themselves understood
10 Prompt action promised
11 Asked too many questions
12 Impolite/disinterested
Other - Specify ______

(28→29) (30→31) (32→33) (34→35) (36→37)

FOOTNOTES:

SCREEN AA . . . . . Refer to Q. 155, pg.35.
Answer is "3" (Police would not come out),
skip to Q. 189.

SECTION III

The next questions will be about how long it took the police to arrive.

160. How long did you expect it would take the police to arrive after the call to/contact with the Police Department was made?

days | hrs. | mins. | secs. (38 → 45)

6s Did not know police were called (Skip to Q. 165)
7s Don't know

161. Did the police come out in response to the call/contact?

(46)
1 No (Skip to Q. 161)
2 Yes

162. Did you see when the police arrived after the call/contact was made?

(47)
1 No (Skip to Q. 174)
2 Yes

Now I'd like to ask when the police arrived.

163. How long did it take the police to arrive after the call/contact was made?

days | hrs. | mins. | secs. (48 → 55)

7s Don't know (Skip to Q. 165)

164. Please tell me if you are certain or if this is an estimate?

(56)
3 Estimate
4 Certain

FOOTNOTES:

165. What time was it when you saw the police arrive?

Date Hour Min. AM PM

day | hr. | min. (57 → 62)

7s Don't know (Skip to SCREEN BB)

166. Would you say this time is . . .

READ LIST
(63)
3 Exact - within 1 minute?
4 Approximate - within 2½ minutes?
5 A rough estimate - within 5 minutes?
6 A guess - over 5 minutes?

167. Why do you think it was (Time from Q. 165)?

(64→65)
03 Looked at clock/watch
04 Activity related to regular routine
05 TV show
06 Appointment
07 Radio program
08 No basis for answer
Other - Specify ______

SCREEN BB . . . . . . Refer to Q. 160
Answer is "Did not know police were called",
skip to Q. 169.

168. How satisfied were you with the time it took the police officer to arrive after the call/contact was made? Overall, were you satisfied or dissatisfied?

(66)
Dissatisfied - PROBE - Would this be:
1 Very dissatisfied?
2 Moderately dissatisfied?
3 Slightly dissatisfied?

Satisfied - PROBE - Would this be:
4 Slightly satisfied?
5 Moderately satisfied?
6 Very satisfied?

169. After they arrived, how long was it before the police first talked to you?

hrs. | mins. | secs. (67 → 72)

6s Didn't talk to respondent (Skip to Q. 171)
7s Don't know (Skip to Q. 171)

FOOTNOTES:

170. Please tell me if you are certain or if this is an estimate?

(73)

3 Estimate
4 Certain

---

(74)

171. If the police had arrived faster, do you think it would have made a difference?

1 No
2 Yes (Skip to Q. 173)
7 Don't know (Skip to Q. 174)

---

172. Why do you feel that it would not have made a difference?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

____
____
____
____

03 Incident committed
04 Suspect gone
05 Suspect still on scene
06 Suspect apprehended
07 Incident undetected for a period of time
08 Arrived quickly
09 Not a rush situation
10 Lack of interest of officers
11 Police did all they could
12 Property was recovered
Other - Specify ________

____

77 Don't know

(75-76) (77-78) (79-80)

SKIP TO Q. 174

card ϕ 9

(1 → 8)

---

173. What difference do you think it would have made?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

____
____

03 Might have apprehended suspect on scene
04 Injuries might have been prevented
05 Property might have been recovered
Other - Specify ________

____

(9-10) (11-12) (13-14)

FOOTNOTES:

74. After the police arrived, what did you want them to do while they were there?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

____
____
____
____

03 Investigate/check things out
04 Apprehend suspect (remove from scene)
05 Pick up suspect being held for police arrival
06 Search for suspect
07 Question/talk to Respondent
08 Take evidence (fingerprints, etc.)
09 Little/nothing
10 Provide assistance (Advice, information, medical help)
11 Take report
12 Broadcast information/ bulletin
13 Question/talk to suspect
14 Inventory missing items
15 Question persons in area
Other - Specify ________

____

(15-16) (17-18) (19-20) (21-22) (23-24)

---

175. What did the police actually do after they arrived at the scene?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

____
____
____
____

03 Investigate/check things out
04 Apprehend suspect (remove from scene)
05 Pick up suspect being held for police arrival
06 Search for suspect
07 Question/talk to Respondent
08 Take evidence (fingerprints, etc.)
09 Little/nothing
10 Provide assistance (Advice, information, medical help)
11 Take report
12 Broadcast information/ bulletin
13 Question/talk to suspect
14 Inventory missing items
15 Question persons in area
Other - Specify ________

____

(25-26) (27-28) (29-30) (31-32) (33-34)

176. How satisfied were you with the way the police officer(s) handled the situation after they arrived at the scene? Overall, were you satisfied or dissatisfied?

(35)

Dissatisfied - PROBE - Would this be:

1 Very dissatisfied?
2 Moderately dissatisfied?
3 Slightly dissatisfied?

Satisfied - PROBE - Would this be:

4 Slightly satisfied?
5 Moderately satisfied?
6 Very satisfied?

177. Why do you feel (Use Q. 176 answer)?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Did their job well/as well as possible
04 Responded quickly
05 Were polite
06 Performed as expected
07 Police did not do enough
08 Were concerned/interested
09 Dissatisfied with officer's assessment
10 Officer did more than expected
11 Police did nothing
12 Slow response time
Other - Specify ________

77 Don't know

(36-37) (38-39) (40-41) (42-43) (44-45)

178. What did you think at the time of this first contact with the police, the result of their investigation would be?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Nothing would be done
04 Suspect would be caught
05 Suspect would not be caught
06 Guilty would be prosecuted
07 Property would be recovered
08 Injured would be hospitalized
09 Property would not be recovered
10 Report would be filed
11 Suspect would be released
12 Recurrence would be prevented
Other - Specify ________

77 Don't know

(46-47) (48-49) (50-51) (52-53) (54-55)

179. What do you now think the final result of the police investigation will be?

(ASK "ANYTHING ELSE?" UNTIL "NO". ENTER ANSWER CODES IN BOXES IN ORDER GIVEN.)

03 Nothing will be done
04 Suspect will be/was caught
05 Suspect will not be caught
06 Guilty will be/was prosecuted
07 Property will be/was recovered
08 Injured were hospitalized
09 Property will not be recovered
10 Report will be/was filed
11 Suspect will be/was released
12 Recurrence will be prevented
Other - Specify ________

77 Don't know

(56-57) (58-59) (60-61) (62-63) (64-65)

SCREEN CC . . . . . . Compare answers to Q.178 and 179. Same ◯ skip to Q. 181.

180. What made you change your mind?

(66-67)

03 Lack of police action to date
04 Positive police actions
05 Lack of evidence
06 Opinion of others
Other - Specify ________

77 Don't know

(Mark "Yes" for RAPE VICTIM/VICTIM CALLER without asking.)

181. Were you or anyone else injured as a result of the crime?

(68)

1 No (Skip to Q. 185)
2 Yes
7 Don't know (Skip to Q. 185)

FOOTNOTES:

(Use Q. 182b. wording for RAPE VICTIM.)

ENTER CODES IN BOXES

182a. Who was injured?

182b. Who was injured besides yourself?

(ALWAYS MARK VICTIM IN ADDITION TO ANY OTHERS)

03 Respondent - Victim
04 Victim
05 Someone else
06 Police officer (Skip to Q. 185)
77 Don't know

(69-70) ___
(71-72) ___

183. Did the officer give first aid to you or someone else?

(73)
___ 1 No
___ 2 Yes
___ 7 Don't know

184. Was an ambulance called to the scene?

(74)
___ 1 No
___ 2 Yes
___ 7 Don't know

185. Before this incident have you ever had any contact with the (Site) Police Department?

(75)
___ 1 No (Skip to Q. 189)
___ 2 Yes

186. How many times?

77 Don't know

(76-77)

187. What was the reason for the last contact you had with the police?

(78-79)
___ 03 Was victim
___ 04 Traffic offense
___ 05 General assistance
___ 06 Was witness
___ 07 Was suspect
___ Other - Specify ______________

card 1 0
(1 - 8)

FOOTNOTES:

188. How satisfied were you with the result of that contact? Overall, were you satisfied or dissatisfied?

(9-10)
Dissatisfied - PROBE - Would this be:
___ 01 Very dissatisfied?
___ 02 Moderately dissatisfied?
___ 03 Slightly dissatisfied?

Satisfied - PROBE - Would this be:
___ 04 Slightly satisfied?
___ 05 Moderately satisfied?
___ 06 Very satisfied?
___ Other - Specify ______________

189. How satisfied are you with your Police Department in general? Are you satisfied or dissatisfied?

(11-12)
Dissatisfied - PROBE - Would this be:
___ 01 Very dissatisfied?
___ 02 Moderately dissatisfied?
___ 03 Slightly dissatisfied?

Satisfied - PROBE - Would this be:
___ 04 Slightly satisfied?
___ 05 Moderately satisfied?
___ 06 Very satisfied?
___ Other - Specify ______________

190. What do you think the Police Department should do to encourage the public to report crimes?

(13-14)
___ 03 Respond quickly
___ 04 Publicity/educate public
___ 05 Can't make public get involved
___ 06 Improve officer's image (courtesy, community trust, etc.)
___ 07 Police doing all they can/it's up to the public
___ 08 Prosecute suspects
___ 09 911 number
___ 10 Be more efficient and capable
___ 11 Keep victims informed of case progress
___ Other - Specify ______________

FOOTNOTES:

(15)

191. When a citizen calls to report an incident which does not require immediate action, do you think it is all right for the citizen to be advised that a police car will not be there right away?

___ 1 No (Probe for comments)

___ 2 Yes (Probe for comments)

___ 7 No opinion

FOOTNOTES:

SECTION IV

These last few questions will be about you and your background.

(16)

2. Where do you live?

City State

___ 3 Site city
___ 4 Same state as site
___ 5 Out of site state
___ 8 Refused

193. How long have you lived in (city) in years and months?

yrs. | mos.
(17 → 20)

SCREEN DD . . . . . If Q.192 same as the Site ◯, skip to Q. 196.

(21→22)

94. How often do you come to (Site) ?

03 Daily
04 Weekly
05 Monthly
06 Every 3-6 months
07 Once a year
08 First time
Other - Specify ___

195. What is the reason you usually come to (Site)?

(23→24) READ LIST

___ 03 Work/Business
___ 04 Shopping
___ 05 Recreation/Leisure
___ 06 Family
___ 07 School
___ Other - Specify ___

. How long have you lived at your present address?

yrs. | mos.
(25 → 28)

(29)

7. Do you own, rent, or board?

___ 3 Own
___ 4 Rent
___ 5 Board
___ 6 Without payment of cash rent
___ 8 Refused

198. Which of the following categories comes closest to the type of place you lived in most of your life?

READ LIST

(30-31)

- 03 In open country but not on a farm ?
- 04 On a farm ?
- 05 In a small city or town (under 50,000) ?
- 06 In a medium-size city (50,000 to 250,000) ?
- 08 In a suburb near a large city ?
- 09 In a large city ?
- 77 Don't know
- 88 Refused

199. How old are you?

77 Don't know

(32-33)

200. What is the highest level of school you have completed?

(34-35)

00 None

1st through 12th grades

01	07
02	08
03	09
04	10
05	11
06	12

Business/technical school beyond high school

13 incomp. 14 complete

College

13	15
14	16

Graduate/Professional School

17

77 Don't know

201. Last week were you working full time, part time, going to school, keeping house, or what?

(INDICATE ONE ANSWER ONLY. IF MORE THAN ONE RESPONSE, MARK SMALLEST CODE THAT APPLIES.)

(36-37)

- 03 Working full time
- 04 Working part time
- 05 With a job but not at work because of temporary illness, vacation, strike
- 06 Unemployed, laid off, looking for work
- 07 Retired
- 08 In school
- 09 Keeping house
- Other - Specify

202. What kind of work do you/did you normally do? That is, what is/was your job called?

(38-40)

9s Never worked (Skip to Q. 205)

203. What do/did you actually do in that job? Tell me, what are/were some of your main duties?

204. On what shift do you usually work?

(41)

- 3 Day
- 4 Evening
- 5 Night
- 6 Rotate
- 8 Refused

205. Are you . . . .

READ LIST

(42)

- 3 Married ?
- 4 Separated ?
- 5 Divorced ?
- 6 Widowed ?
- 7 Never married ?
- 8 Refused

206. Are you the head of the household?

(43)

- 1 No
- 2 Yes (Skip to Q. 208)
- 3 Joint head (Skip to Q. 208)
- 8 Refused

207. How are you related to the head of the household?

(44-45)

- 03 Spouse
- 04 Son/daughter
- 05 Parent
- 06 Brother/sister
- 07 Other relative
- 08 Unrelated
- 88 Refused

__. How many persons are living in this household?

Number of persons

(46-47)

JOTNOTES:

(DO NOT ASK UNLESS YOU DO NOT KNOW.)

209. Are you male or female?

(48)
- 3 Male
- 4 Female
- 8 Refused

(DO NOT ASK UNLESS INFORMATION CANNOT BE OBTAINED FROM OBSERVATION OR PREVIOUS RECORDS.)

210. Are you . . . .

(49→50) READ LIST
- 03 White?
- 04 Black?
- 05 Spanish/American?
- 06 Oriental?
- 07 American Indian?
- 08 Other
- 77 Don't know
- 88 Refused

211. What is the yearly total income for all related household members/your yearly total income?

(51→52)
- 03 Under 1,000
- 04 2,000 - 2,999
- 05 3,000 - 3,999
- 06 4,000 - 4,999
- 07 5,000 - 5,999
- 08 6,000 - 6,999
- 09 7,000 - 7,999
- 10 8,000 - 9,999
- 11 10,000 - 12,499
- 12 12,500 - 14,999
- 13 15,000 - 17,499
- 14 17,500 - 19,999
- 15 20,000 - 22,499
- 16 22,500 - 24,999
- 17 25,000 - 49,999
- 18 50,000 and over
- 77 Don't know
- 88 Refused

212. Is there anything you would like to add?

(53)
- 1 No
- 2 Yes - Specify ______

(Continue in footnotes)

FOOTNOTES:

(ASK ON PERSONAL INTERVIEW ONLY)

213. Please give me a telephone number at which you can be reached.

Area Code Number

214. What time would you say this interview began?

Hour Min. AM PM

7s Don't know

hr. min. (CONVERT TO D.C. TIME) (54 → 57)

215. What is your best estimate of how long this interview has taken.

7s Don't know

mins. (58 → 60)

GRACIOUSLY THANK THE RESPONDENT IN YOUR OWN WORDS AND RECORD THE EXACT TIME HERE:

Hour Min. AM PM

FOOTNOTES:

SECTION V

Interviewer's Observation. DO NOT ASK!

216. In general, what was the attitude of the Respondent towards the interview?	(61) ___ 1 Hostile ___ 2 Indifferent and bored ___ 3 Cooperative but not eager ___ 4 Cooperative and eager
217. What is your perception of the quality of data obtained from this Respondent?	(62) ___ 1 Very bad ___ 2 Moderately bad ___ 3 Slightly bad ___ 4 Slightly good ___ 5 Moderately good ___ 6 Very good
218. Is there anything you can add which may help in the analysis of the information on this interview?	(63) ___ 1 No ___ 2 Yes - Specify ____________ ____________

FOOTNOTES:

END