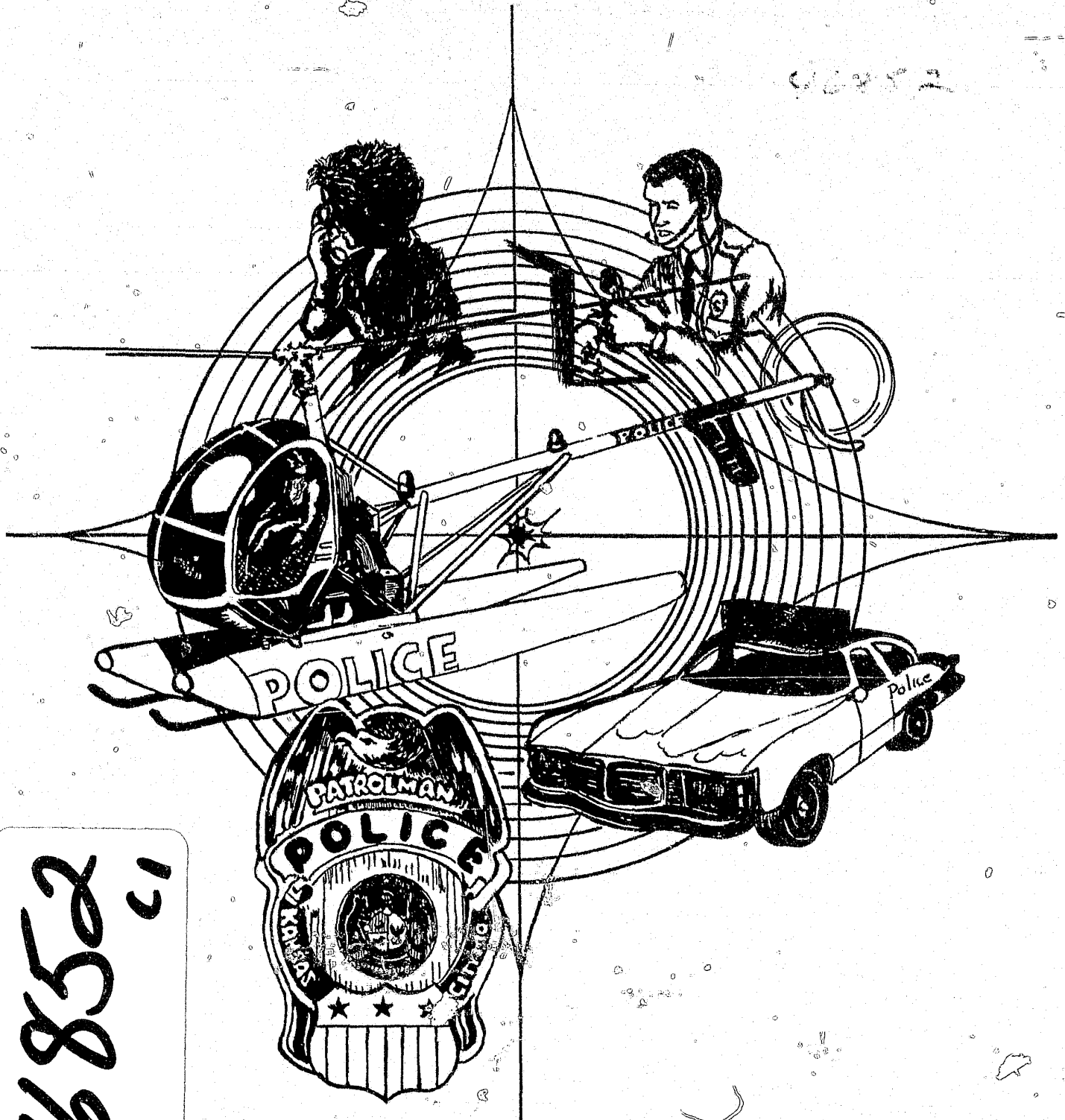
RESPONSE TIME ANALYSIS
EXECUTIVE SUMMARY



NSAS CITY, MISSOURI, POLICE DEPARTMENT
MARVIN L. VAN KIRK, CHIEF OF POLICE

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ABSTRACT

This research was initiated to evaluate assumptions regarding rapid police response as an effective operational strategy and to identify problems and patterns which account for citizen delays in reporting crimes to the police.

The design of the study and data collection spanned 3 years. Data for analysis were collected by civilian observers, communication tape analysts, and telephone and personal interviewers. Observers accompanied officers in the field to collect data on travel times and on-scene activities, while tape analysts collected dispatch times by timing verbal exchanges recorded on Communications Unit tape recordings. The interviewers questioned victims of crimes and citizens who reported crime and noncrime incidents to obtain reporting time data and to identify the problems encountered and patterns followed by those citizens who reported incidents or requested police service. The Part I crime calls which comprise the data base examined in this report came primarily from a target area selected for its high rates of robberies and aggravated assaults.

To analyze the relationships of response time to outcomes for Part I crimes, response time was conceptualized as consisting of three intervals, citizen reporting, communications dispatching, and police travel time. Variations in these intervals were then analyzed to see how they affected the probability of making an on-scene arrest, contacting a witness on scene, and how they affected recovery from injuries sustained during the commission of Part I crimes. Traditional patrol strategies were analyzed to see if they affected travel time.

Additionally, the problems citizens encountered when reporting crimes and the patterns or actions citizens followed prior to reporting were identified and analyzed for their effects on reporting delay. Relationships between citizens' social characteristics and reporting time and social characteristics and problems and patterns were also analyzed.

To see if the length of response time affected citizen satisfaction, police dispatch and travel times were again analyzed, along with other factors considered possible determinants of citizen satisfaction. These factors included citizens' social characteristics, how long citizens expected response to be, citizens' perceptions of how long response took, and how important citizens thought response time was to the outcomes of the incident they reported or in which they were involved.

Results indicated that reporting time was longer than either the time taken to dispatch a call or the time taken to travel to a call and nearly as long as the combined time taken to dispatch and travel to a call. Response time was found to be unrelated to the probability of making an arrest or locating a witness for the large proportion of Part I crimes that were discovered some time after the crime had occurred. For those crimes involving a victim or witness, reporting time was the strongest time determinant of arrest and witness availability. Travel time generally had a limited effect on these outcomes, though for some types of crime the influence was strong. Citizen satisfaction was more closely related to citizens' expectations and perceptions about response time than actual response time. Several problems citizens encountered and patterns they followed in reporting crime were identified and were found to produce delays in contacting the police. Voluntary actions by citizens explained more delays in reporting than did problems experienced by citizens in contacting police.

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PREFACE

Rapid police response has long been an accepted procedure in law enforcement. The need to reduce response time has served as justification for bolstering officer strength and for large expenditures on equipment. While it is not unreasonable to assume that rapid police response will produce more arrests, more witnesses, fewer serious citizen injuries, and more satisfied citizens, little empirical data exists which can support that assumption.

The Response Time Analysis study was designed to provide a comprehensive assessment of issues and assumptions regarding the value of police response to a variety of crime and noncrime, emergency and nonemergency, incidents. Specifically, two objectives were established for study:

1. Analysis of the relationship of response time to the outcomes of on-scene criminal apprehension, witness availability, citizen satisfaction, and the frequency of citizen injuries in connection with crime and noncrime incidents.
2. Identification of problems and patterns in reporting crime or requesting police assistance.

This is one in a series of reports which examine the nexus between the time taken by citizens to report crime or request police service, the time required for the police to process, dispatch, and respond to calls, and various outcomes related to police response. This volume summarizes the methodological design and data collection of the study and the analysis techniques and discussion of findings found in volumes one and two. Additional reports, which are currently in various stages of development, will focus upon the following areas:

1. An analysis of Part II crimes similar to that conducted for Part I offenses.
2. A prosecution and disposition follow-up of suspects who were arrested either on-scene or through subsequent investigation for both Part I and Part II crimes.
3. An analysis of "general service" calls including traffic, potential crime calls, e.g., alarms, disturbances, suspicious parties, etc., and noncrime medical-emergency incidents.
4. A summary of results presented in previous reports which provides an overall assessment of operational implications regarding the value of police response strategies.

Although technical treatment of data is necessary to perform statistical analysis of relationships studied, emphasis was placed upon preparing a report conducive to functional interpretation by police administrators. Administrative interpretation of findings regarding crime and noncrime incidents must include realization that only citizen-generated calls processed through the department's communications unit were eligible for inclusion in sample data analyzed. Calls resulting from officer self-initiated activities, citizen flagdowns, and either walk-in or phone-in self reporting of crimes were excluded from data analysis.

Unlike the more prestigious experimental research which controls outside factors which might influence predicted results, the design and implementation of the project methodology was exploratory. Hence, effort has been devoted to generating rather than testing hypotheses. It would not have been unprecedented to report all procedures as if they had resulted from sagacious insight and logical deduction. This, however, was not the case, and an effort has been made to report all deficiencies and deviations from the original design. Those instances where it was discovered after the fact that an alternative procedure might have produced a more desirable result have been documented.

It is hoped that while taking admitted limitations of the study into account, the questions stimulated by this research and the implications cited within might provoke serious discussion which will help improve police policies enabling police to serve the public more effectively.

Lt. Col. Lester N. Harris
Project Director

A NOTE ON RESEARCH DECISIONS

It is an axiomatic requirement in research design that decisions be made which may affect the findings and the conclusions ultimately reached. This study is no exception. Throughout the methodology and analysis volumes, these decisions have been documented and the rationale for the choice provided. In several instances, moreover, evaluations of alternative strategies have been given. This note will attempt to summarize the possible effects of some of the more important decisions made. It is hoped that this discussion will aid in both the substantive interpretation of the results and in the development of subsequent evaluations of police and public responsibilities in combating crime.

The decision to employ civilians to accompany police officers for data collection raised the issue that observers might affect response times. It was unclear, however, if an officer would respond more quickly to try to impress an observer or more cautiously to minimize the risk of observer injury, if an officer would respond more promptly to make the officer or the department appear to be more efficient or more slowly to emphasize the routine nature of much police work, etc. That officers did either consistently over 10 months of data collection is doubtful. Factors beyond the control of the officer such as road surface or traffic conditions, the seriousness of the call, the distance to be traveled, etc., probably all have a greater impact on response time than the presence of an observer.

If, however, field response was systematically influenced by the observers, the relationship of response time to the outcomes examined could not be. If the range of response times was broad enough to illustrate the effect of variation and the data were accurately recorded, the impact of time on the probability of favorable incident outcomes could be tested whether response was biased slow or fast. The use of civilian field observers assured precise time measurement, and the resulting variations were adequate to assess relationships.

As budget and time constraints demanded cost-effective observer deployment, the study focused on the primarily inner-city beats during the high-crime watches. This decision caused concern as to the representativeness of the sample. These beats tend to be of smaller geographic area, perhaps resulting in less delay in arriving at an incident than would be found in other sections of the city. This factor may have been offset, however, by the volume of serious calls typically received in inner-city beats. Regardless of these effects, however, the relationship of response to crime outcomes would not be altered.

A sample design which targeted high, violent crime beats also raised questions as to the representativeness of the citizens interviewed, their actions, and their attitudes. Residents of areas selected for observation tended to be less educated, have lower incomes, and be disproportionately black compared to residents of nontarget beats. In practice, however, the sample of respondents was not so highly restricted. In more than 1 of 10 calls, an accompanied officer was dispatched to a neighboring but nontarget beat. Additionally, victims of and witnesses to inner-city crimes often did not live there, but rather worked at or owned businesses in the area. The variation of social characteristics of the respondents was considerable; yet, over the range of the characteristics observed, few systematic differences in any outcome were noted.

Generalizing beyond a sample is always a tenuous issue, however. If concentrating data collection in high crime beats led to the identification of relationships that are valid only for these areas, the choice was most appropriate for the questions addressed. A random selection of target areas might have revealed more general, but less readily applicable principles. By the very nature of the selection process, the study focused upon the factors most likely to influence incident outcomes for the largest number of violent crimes. That these factors are not universally applicable may be a question for further evaluation.

A number of decisions in analysis have potential ramifications for the results. First, as reporting parties often provided inconsistent and conflicting estimates of the time delay in initially contacting the police, an objective means was sought to estimate this interval. In cases with no inconsistent estimates, the minimum delay reported was used. Since other studies have rather consistently indicated that individuals tend to give what they conceive to be socially acceptable answers, the delay in calling the police may have been further minimized. Second, the relationship between response and many of the outcomes examined did not appear to be linear. As a result, alternative functions were explored and the best approximation was reported, though each additional function tested increased the likelihood of accepting a chance relationship. Finally, as it seemed an unreasonable assumption that response should be the primary determinant of all on-scene arrests, a response-related arrest subsample was created by excluding arrests apparently stemming from other sources. While this procedure may appear inimical to the police community by creating low response-related arrest rates, including nonresponse-related arrests, which would rarely be affected by even long citizen reporting delays it might obscure the influence of response.

On balance, it appears that these decisions, as they were intended, enhanced the support for traditional assumptions. If citizens do tend to nullify the best efforts of the police with their procrastination, the delay was probably greater than the findings portray. If the response-related arrest rates are low, it was still only those cases which were affected by rapid response. If the study errs, it was probably in the direction of accepting chance, rather than rejecting true relationships. Despite this, little variance was explained, the statistical error was large, and the payoff of fast response for affected outcomes was small. If the bias injected by these decisions is taken to be serious, the evidence supporting the importance of response as a viable policy variable is further diminished.

CHAPTER ONE
OBJECTIVES AND METHODOLOGY

For years, many of the procedures used in police work have been based upon reasonable, but untested, assumptions. One of these assumptions is that rapid police response to calls will produce more arrests, more witnesses, fewer injured citizens, and a higher degree of citizen satisfaction with police service. Besides being considered essential to achieving these outcomes, law enforcement literature often refers to rapid response capabilities as a measurement of the effectiveness of a department.

In an effort to attain quicker response times, some law enforcement officials have increased the number of sworn personnel, purchased faster cars, and expended large amounts of money on sophisticated communications systems and other technological innovations. These efforts have been made, however, without the benefit of data which has established an empirical relationship between rapid police response and arrest, witness availability, or other meaningful outcomes.

According to Kakalik and Wildhorn (1971):

> . . . there are significant knowledge gaps which make it impossible to allocate as rationally as should be more than one billion dollars devoted annually to police patrol programs. Because of these knowledge gaps, police administrators currently must plan principally in terms of **input measures** (such as number of patrolmen on the street or number of patrol hours), although what they are trying to affect are **output measures** of police effectiveness (such as true crime rate, apprehension rates and speed and quality of service in response to calls for service). These knowledge gaps are one of the most important factors limiting the development of effective aids to police patrol decision making.

Response time has been the subject of a limited amount of research. Some of these studies have produced results which suggest that rapid response will yield more arrests, and more satisfied citizens (Isaacs: 1967) (Furstenberg: 1971). What most research has not done, however, is identify how often the effectiveness of rapid police response is negated by citizens who delay before calling the police after a crime has occurred. Previous research has also failed to identify the proportion of calls in which rapid response could produce a meaningful outcome. What police administrators have been left with are often vague suggestions which support traditional assumptions regarding the value of rapid response but limited empirical data which can guide decision making concerning resource allocation and specific response strategies.

OBJECTIVES

The Response Time Analysis study was conceived as a comprehensive study which would provide baseline data necessary to assess the assumptions regarding the value of rapid police response. The objectives of the study:

1. Analysis of the relationship of response time to the outcomes of arrest, witness availability, citizen satisfaction with response time, and the frequency of citizens' injuries received in connection with crime and noncrime incidents.
2. Identification of problems and patterns in reporting crime and requesting police assistance.

Most previous studies have conceptualized response time as consisting of two intervals, dispatch time and travel time. Since it was unknown how citizen delays in reporting crime might affect the outcomes of response, this study included in its definition of response time a third interval, citizen reporting time. Reporting time was defined as the time from when a citizen discovered or was free from involvement in an incident until the police were contacted and the dispatcher understood the nature of the call and location to which an officer should be sent.

Besides being designed to determine what effects this reporting interval has on total response time and its outcome, the study was designed to identify factors which contribute to citizen reporting delays. Reasons accounting for citizen delays in calling the police were grouped as to whether they resulted from voluntary actions (patterns) or uncontrollable hindrances (problems).

Other studies have considered response time over when an officer arrived at a dispatched location. In this study, however, the definition

was expanded to include the time from when an officer exited his car at the dispatched location until the officer's investigation of the incident began.

METHODOLOGY

The target area in which data collection was conducted was selected to yield high rates of Part I crimes, particularly violent Part I crimes, since these crimes are of most concern to the public and law enforcement agencies. The target area included 56 of the 207 beat-watches* in Kansas City, Mo., selected for their high rates of robberies and aggravated assaults. Since homicides and rapes occur in relatively small numbers in Kansas City, Mo., compared to other types of Part I crimes, selection of beat-watches with high rates of robberies and aggravated assaults was expected to provide a data sample with more of the desired calls than if the areas were selected based on rates of all Part I crimes or even rates of all violent Part I crimes. Nonviolent Part I crimes occur with sufficient frequency that any area yielding high rates of violent Part I crimes would also produce adequate numbers of nonviolent Part I incidents.

Data Collection

The data collection process was divided into three basic components analogous to the three response time intervals. Observers riding with field officers collected travel time data; analysts collected dispatch time data from tape recordings made in the department's Communications Unit, and interviewers collected reporting time data from victims and other citizens who had reported incidents to police.

With information obtained by the field observers at the time of incident reporting, tape analysts could locate these calls on tapes which corresponded to the observed crimes, and interviewers could contact the citizens associated with the observed calls. By tying the data collection process together, response time could be calculated for particular calls from the time they originated until an officer had concluded his investigation. Field data were collected from March 1, 1975, until Jan. 2, 1976, while the other data collection processes extended into the spring of 1976.

Field Observations. Civilian field observers rode four, 8-hour tours of duty each week with police officers assigned to the city's upper 27th percentile of beat-watches, based upon 1974 robbery and aggravated assault crime data. Observers recorded times documenting officer dispatch, response, arrival, and citizen contact at the incident scenes. Pulsar watches with digital displays were used to record these times. Descriptions of on-scene activities such as arrests, the administration of first aid, and requests for ambulances were obtained along with the identities of crime victims and persons who reported the incidents to the police.

Tape Content Analysis. The Communications Unit of the Kansas City, Missouri, Police Department records all telephone conversations between citizens and dispatchers and radio conversations between dispatchers and field officers. Using information provided by the field observers, analysts were able to locate the recorded conversations corresponding with the incidents for which the field observers had collected data. Analysts recorded times pertaining to the initial connection between citizens and dispatchers, the length of time necessary for citizens to explain the nature and location of an incident, and the length of time required for a dispatcher to assign a field officer to a call.

Citizen Follow-up Interviews. Using the identities determined by the field observers, the citizens who were victims of observed crimes or who had reported the crimes or requested police service were contacted for interviews. Interviewers obtained data for determining the approximate time the crime had occurred or was discovered and how much time had elapsed between when the citizen discovered an incident or was free from involvement in an incident and then reported it to police.

Interviewers also questioned citizens about their expectations of police service, their satisfaction wtih police response time, and any problems they encountered when attempting to contact the police. If a citizen was injured during the commission of one of the observed crimes and taken to a hospital, the hospital was contacted about the length of stay required for the citizen. Interviewers also collected information about the social characteristics of citizens interviewed.

*A beat-watch is an 8-hour tour of duty in a beat (geographically defined area). There are three watches in each of the city's beats. There were 69 beats and 207 beat-watches in the city during the time of data collection.

Test Call. In addition to the other data collected, an experiment was conducted to determine the average length of time required to contact a dispatcher by dialing the department's direct Crime Alert number, by contacting the police administrative switchboard and having the call transferred to the dispatcher, or by dialing "O" for the telephone company operator and having the operator contact the police. Test calls were placed between 7 a.m. and 1 a.m., nine times a day, every day of the week.

CHAPTER TWO
ANALYSIS AND FINDINGS

DATA BASE

The Part I crime sample consisted of 949 eligible calls. By type of crime, they were distributed as follows: 10 rapes, 127 robberies, 84 aggravated assaults, 352 burglaries, 297 larceny-thefts, and 79 motor vehicle thefts.* Rapes, robberies, and aggravated assaults are classified as violent Part I crimes in the FBI Uniform Crime Report and made up 23.3 percent of the Part I crime sample for the study. The fourth violent Part I crime, homicide, was not represented in the study since no homicides were observed.

The 949 case sample was also divided into the two categories of discovery crimes and involvement crimes. Discovery crimes were those offenses detected by the citizen after the crime had occurred. Involvement crimes were those crimes in which a citizen saw, heard, or became involved at any point during the commission of an offense. If a witness to a crime reported the crime to police, then the crime was classified as an involvement case. If a witness to a crime did not report the crime, and it was subsequently discovered and then reported, then the crime was classified as a discovery case. The sample consisted of 62.3 percent discovery cases, all of them from the nonviolent crime categories, and 37.7 percent involvement cases, 137 from the nonviolent crime categories and 221 from the violent crime categories.

SOCIAL CHARACTERISTICS

Because of the possible influences individual social characteristics might have upon other variables in the analysis of response time, information was obtained on the social characteristics of victims, witnesses, and callers related to Part I crimes. This information was then used throughout analysis to determine the effects of social characteristics on such outcomes as the length of time taken to report crimes and citizen satisfaction with police response. The social characteristic variables used were as follows:

1. Length of residency in Kansas City, Mo.; median length of residency was 20.5 years.
2. Length of time at current address; median length of residency at current address was 3.1 years.
3. Population of community lived in most of citizen's life; 72.5 percent lived in cities over 500,000 with the remaining 27.5 percent fairly evenly distributed among the other nine categories of cities less than 500,000.
4. Tenure of residence; 46 percent owned, 44.7 percent rented, and 9.4 percent boarded.
5. Education; an average of 4 (high school complete) on a scale of 1 (grade school incomplete) through 9 (graduate work).
6. Income; an average of 8.98 on a scale of 1 through 13 with level 9 being incomes of $10,000 to $11,999.
7. Age; an average of 37.0 years on a range of 13 to 84 years.
8. Marital status; 53.3 percent married, 46.7 percent unmarried including those single, separated, divorced, or widowed.
9. Head-of-household; 74.9 percent classified themselves as head-of-household including 3.9 percent who said they shared the status.
10. Race; 54.8 percent white, 43.6 percent black, and 1.6 percent other.
11. Sex; 56.9 percent male, 43.1 percent female.
12. Social status of type of work; a median of 19.4 on a scale of 0 to 96.

ANALYSIS STRATEGY

Because of the variety of outcomes in this study, a variety of relationships had to be sought and investigated. The outcomes of arrest, witness availability, and injury are commonly associated with rapid response and the potential relationships to be tested were obvious. However, before problems and patterns could be related to response time, the commonly occurring problems and patterns first had to be identified. Citizen satisfaction is another outcome commonly associated with rapid response, but the other factors which were expected to affect satisfaction had to be controlled before the relationship of response time to satisfaction could be understood. The following section outlines the relationships which were being investigated for

*For brevity, from this point on, motor vehicle theft will be referred to as auto theft.

each of the outcomes tested and which are reported in following sections.

Section two provides a division of the total response time continuum into the time taken by citizens to report crimes, the time taken by dispatchers to process the information, and the time taken by officers to respond to the crime calls. For the dispatching process and officer responses, exact point times were obtained. Dispatching times were taken from Communications Unit tape recordings, and officer response times were obtained by civilian observers using digital display electronic wristwatches. The citizen reporting times were constructed from estimates obtained during subsequent interviews of the citizens who called police. If the citizens interviewed were not consistent in their estimations of how long it took to report a crime, the minimum reporting delay was used. Because of a few extreme delays in each of the three response time divisions, especially in the citizen reporting division, the median rather than the mean time is suggested as more representative of the time taken to report, dispatch, and respond to crime incidents.

The analysis of arrests and the availability of witnesses were similar in that both were attempting to discern if the speed of response determines whether an arrest will be made on scene or a witness will be available when police arrive. During the analysis of arrests, it became apparent that not all arrests resulted from rapid response. So that the relationship between response time and arrest could be more clearly understood, the arrest data were subsampled into response-related arrests. This procedure excluded arrests which resulted from factors other than rapid response, e.g., arrests resulting from a security guard apprehending a suspect before police were called. The analysis also looked for differences in the number of arrests for each type of crime.

In the section on the effects of patrol strategies, traditional patrol strategies were analyzed to see if they actually decreased response time and significantly affected the number of arrests. The factors analyzed included a) the distance an officer must travel; b) whether the officer was in or out of his car at the time of dispatch and whether the car was stationary or mobile; c) whether the officer used overhead lights and siren in response; d) the effects of one-officer and two-officer cars; e) if two cars responded, whether the first car arriving waited for a backup or proceeded to the crime scene; and f) the type of crime involved. Finally, these factors and the length of the reporting, dispatch, and travel times were tested for effects upon arrests.

The injury analysis attempted to determine if an injury incident receiving prompt emergency field treatment by an officer results in more rapid recovery, fewer impairments, and less need for specialized medical treatment compared to an injury of equal seriousness but receiving a slower response.

The problems citizens commonly encountered and their voluntary actions or attitudes (patterns) which resulted in significant delays in contacting police are identified in the problems and patterns section. The social characteristics of the reporting citizens were also examined to see if citizens with certain social characteristics were commonly involved in certain types of crimes and if those characteristics affected the types of problems they encountered or the patterns they displayed. The types of crimes were also analyzed to see if they affected the problems and patterns experienced by the reporting citizen or the length of reporting time.

The analysis of the process of citizen reporting examines four factors for their effects on reporting time. These factors were a) who called the police, i. e., a victim, a witness, or a third party who was not directly involved in the incident but who was requested to call by another citizen; b) whose telephone was used, i. e., a business, a personal (the victim's or someone else's), or a pay telephone; c) what telephone number was used, i.e., police emergency, police administrative, or "O" for the telephone company operator; and d) how the caller knew the number, i. e., telephone directory, operator assistance, having the number written down, or knowing the number from memory.

An examination was conducted to discern if the social characteristics or the urgency of an incident affected which telephone number the caller used or how the caller knew the number. The type-of-caller factor was also tested to determine if the length of reporting time was affected by whether the citizen calling the police was a victim, witness, or caller not involved in the incident. This section also includes the results of a test call experiment designed to record the average length of time necessary to contact a police dispatcher when using the police emergency number, police administrative number, or when contacting the telephone company operator and having the operator contact the police.

The final section in the chapter presents the relationship of citizen satisfaction to response time. To test this relationship, a number of other

factors thought to affect citizen satisfaction were also analyzed. These factors included a) the citizen's expectations and perceptions of police response time along with whether the citizen thought a faster response time would have produced a more favorable outcome to the incident; b) the citizen's social characteristics; c) the type of crime; and d) the officer's actual response time.

RESPONSE TIME

Of primary importance to the objectives of the study was the meaningful division of the total response time continuum into a smaller number of time intervals which could then be related to incident outcomes. Accordingly, the total time, from the point when either the citizen's involvement in the crime was ended or the citizen discovered the crime, to the point when an officer began an on-scene investigation, was divided into three main response time intervals: the reporting, the dispatch, and the travel time intervals.

By definition, reporting time began when a citizen was free from involvement in a crime or had discovered a crime and ended when a dispatcher had been contacted and knew both the nature of the crime and location to which the officer was to be sent.

Dispatch time began when the nature of the crime and the dispatched location were known and ended when the dispatch terminated or when the officer began responding to the call, whichever came first.

Finally, the travel interval began when the dispatch ended or the officer responded to the call, whichever came first, and ended when the officer began his on-scene investigation. On-scene investigation was considered to have begun when an officer was at the actual incident scene or when the officer contacted any citizen directly involved in the incident, whichever occurred first.

For each incident, the individual times were divided by the time for the total response time continuum. The means of these scores were used for determining the proportion each interval comprised of the continuum for each category. Reporting time comprised a large proportion of the total response time continuum. For all Part I crimes, it involved nearly one-half of the total time (48.1 percent) with a median time of 6 minutes, 17 seconds. By contrast, dispatch represented 21.0 percent and travel 30.9 percent of the continuum, with median times of 2 minutes, 50 seconds and 5 minutes, 34 seconds, respectively.

Figure 1-1 depicts the proportion of the total time involved in each of the response time intervals. As illustrated, the time taken to report a Part I crime consistently involved a greater proportion of the total response time than either dispatch or travel times for all crime categories assessed.

Figure 1-1 also permits a comparison of a time interval among the crime categories. Thus, proportionally, reporting time was shortest for involvement burglaries and longest for discovery larceny. Dispatch time was shortest for robbery and longest for discovery auto theft incidents, and the travel interval was shortest for assault and longest for discovery burglary. Overall, and in very general terms, the findings suggest that involvement crimes were reported more rapidly, received more prompt dispatching, and resulted in faster travel than incidents which were discovered.

ARREST

One of the fundamental, but basically untested, assumptions of policing is that rapid police response can and does increase the probability of criminal apprehensions. One of the chief objectives of this study was to assess the relationship between the probability of arrest and the time taken to report, dispatch, and travel to the incident scene.

For the purposes of this study, arrest was defined as the transporting of a suspect to any specific location for the purposes of booking, questioning, or identification. This volume was limited to on-scene arrests, defined as those arrests made before initial investigation by the field officer was concluded, whether they were made at the incident scene, adjacent to it, or in flight from it. Also, on-scene arrests were included in the sample only if they were directly related to the Part I crime for which the officer took the offense report. Of the 949 Part I crime calls, 113 incidents, or about 11.9 percent, resulted in the arrest of 173 suspects on scene (100 adults and 73 juveniles).

An examination of the arrest sample indicated that many arrests stemmed from factors other than rapid response. Factoring out those arrests not directly related to response time had two benefits. First, it more clearly defined the impact of response time by specifying the proportion of on-scene arrests which could be attributed to rapid actions, and secondly, it more clearly revealed the relationship of response time to arrest by excluding arrests resulting from other sources.

Four exclusionary factors were established to segregate response-related arrests from arrests attributable to other factors. Arrests were

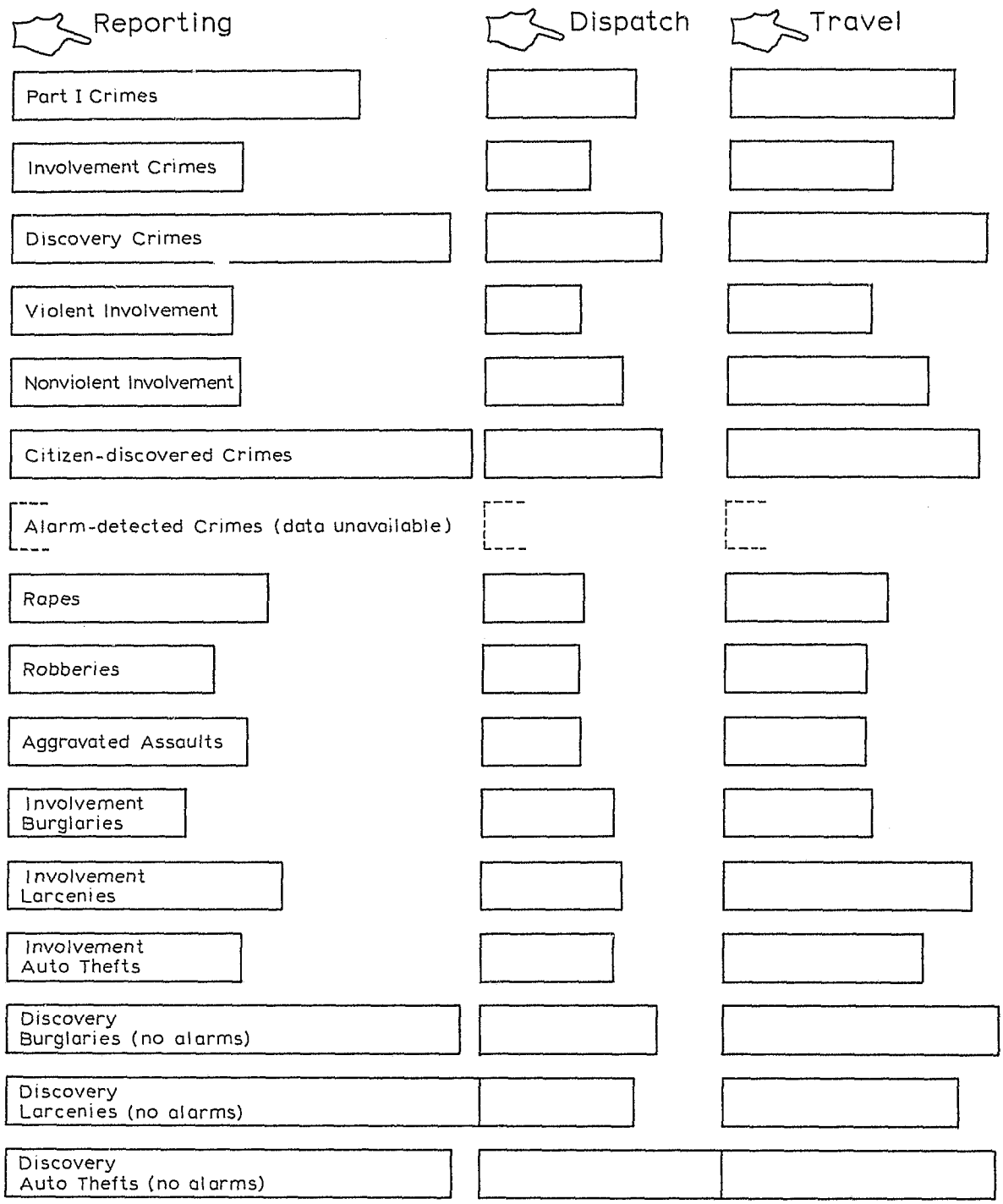


Figure 1-1.-- Proportional comparison of response time intervals for each crime category.

excluded from the response-related subsample if:

1. The suspect was apprehended by a security guard or private citizen prior to police involvement; 60 arrests in 45 calls were excluded for this reason.
2. The suspect's name or address was provided by the victim or a witness; 55 arrests in 38 calls were excluded for this reason.
3. The suspect turned himself over to the police; three arrests in three calls were excluded for this reason.
4. The suspect was rendered totally immobile by injuries received during the commission of the crime; one arrest in one call was excluded for this reason.*

Of the 113 calls resulting in the arrest of 173 suspects, only 35 incidents (31.0 percent) resulting in 58 arrests were not excluded by the criteria listed. In the remaining 69.0 percent of the calls in which arrests were made, the arrests could not be directly linked to rapid citizen and police responses.

Figure 1-2 illustrates the distribution of the arrest samples by type of crime. While discovery crimes comprised a large proportion of all Part I crimes, on-scene arrests were rare. Citizen-discovered crimes had particularly low arrest rates and response-related arrest rates, while involvement crimes showed significantly higher rates. For example, the nonviolent crimes of burglary, larceny, and auto theft were included in both the involvement and the discovery categories since they were sometimes witnessed and sometimes disovered. These crimes had a 42.0 percent arrest rate and an 11.5 percent response-related arrest rate when witnessed compared to 1.0 percent and 0.2 percent when discovered.

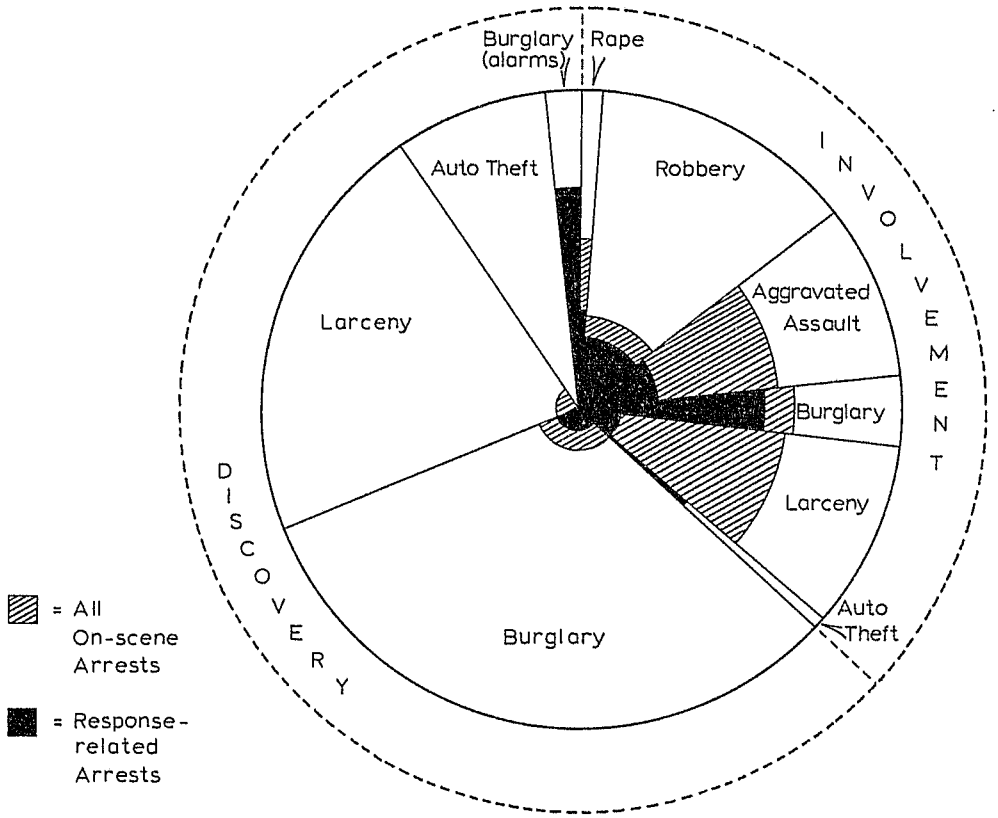
Although crimes detected by an alarm were technically considered discovery cases, as they lacked direct citizen involvement, they statistically and conceptually represented a separate category. Alarm incidents, unlike citizen discovered crimes, were detected in progress and the resulting arrest rates reflected this difference. However, it should be remembered that the Part I crime sample included only calls in which an offense report was written, and so does not reflect the large proportion of alarm instigated calls in which no apparent crime was committed.

At first, the differences between arrest and response-related arrest rates may seem surprisingly large. A closer examination of some of the individual categories can illustrate some of the factors which affect these differences. Within the nonviolent involvement crime sample, larceny had an arrest rate of 41.8 percent and a response-related arrest rate of 2.2 percent. Thirty of the 38 larceny arrests, however, occurred in shoplifting cases in which the suspect was apprehended prior to police involvement, so the arrests could not be considered response related. Aggravated assault, a violent involvement crime, had an arrest rate of 38.1 percent and a response-related arrest rate of 6.0 percent. The difference in arrest rates for aggravated assaults was due to the large number of arrests in which the suspects were relatives or neighbors of the victim and were identified by name or address. The single category which displayed the highest rate of response-related arrests was involvement burglary with 12 arrests in 35 cases for a response-related arrest rate of 34.3 percent.

As involvement crimes showed both faster response in terms of the time taken to report, dispatch, and travel to the incident and a higher proportion of cases resulting in arrest than discovery incidents, this type of crime difference was considered in assessing the role of police response in arrest rates. Arrests in discovery cases, it was found, were not related to response time. Rapid reporting of a discovered crime, prompt dispatching, and immediate arrival of an officer did not enhance the chances of making an on-scene arrest.

For involvement cases, however, rapid response did increase the likelihood of making an arrest, and the reporting interval was the primary time determinant of that arrest probability. Figure 1-3 depicts the relationship between the reporting interval and the probability of arrest, based on the proportion of involvement cases with an arrest or a response-related arrest. The probability of arrest was maximized with short reporting intervals, dropped rapidly, and then leveled off with increasing lengths of time. Similar relationships were found for each of the involvement crime categories for all arrests and response-related

*These four factors were not mutually exclusive so some arrests were disallowed for more than one reason. Figures which indicate the number of arrests disallowed for a particular reason may include arrests already excluded for one of the other three reasons. A net total of 119 arrests from 87 incidents were segregated from the response-related subsample.



Type of Crime	Data Base		Incidents with Arrests		Incidents with Response-related Arrests	
	N	Percent	N	Rate*	N	Rate*
INVOLVEMENT CRIMES	352	37.0	100	28.4	27	7.7
Violent Involvement	221	23.3	45	20.4	12	5.4
Rapes	10	1.1	3	30.0	1	10.0
Robberies	127	13.4	10	7.9	6	4.7
Aggravated Assaults	84	8.9	32	38.1	5	6.0
Nonviolent Involvement	131	13.8	55	42.0	15	11.5
Burglaries	35	3.7	16	45.7	12	34.3
Larcenies	91	9.6	38	41.8	2	2.2
Auto Thefts	5	0.5	1	20.0	1	20.0
DISCOVERY CRIMES	597	62.9	13	2.2	8	1.3
Citizen Discovered	582	61.3	6	1.0	1	0.2
Burglaries	302	31.8	5	1.7	1	0.3
Larcenies	206	21.7	1	0.5	0	0.0
Auto Thefts	74	7.8	0	0.0	0	0.0
Alarm Detected	15	1.6	7	46.7	7	46.7
Burglaries	15	1.6	7	46.7	7	46.7
ALL PART I CRIMES	949	-	113	11.9	35	3.7

*Percent of all cases by crime type.

Figure 1-2.-- Part I crime data base and arrest rates.

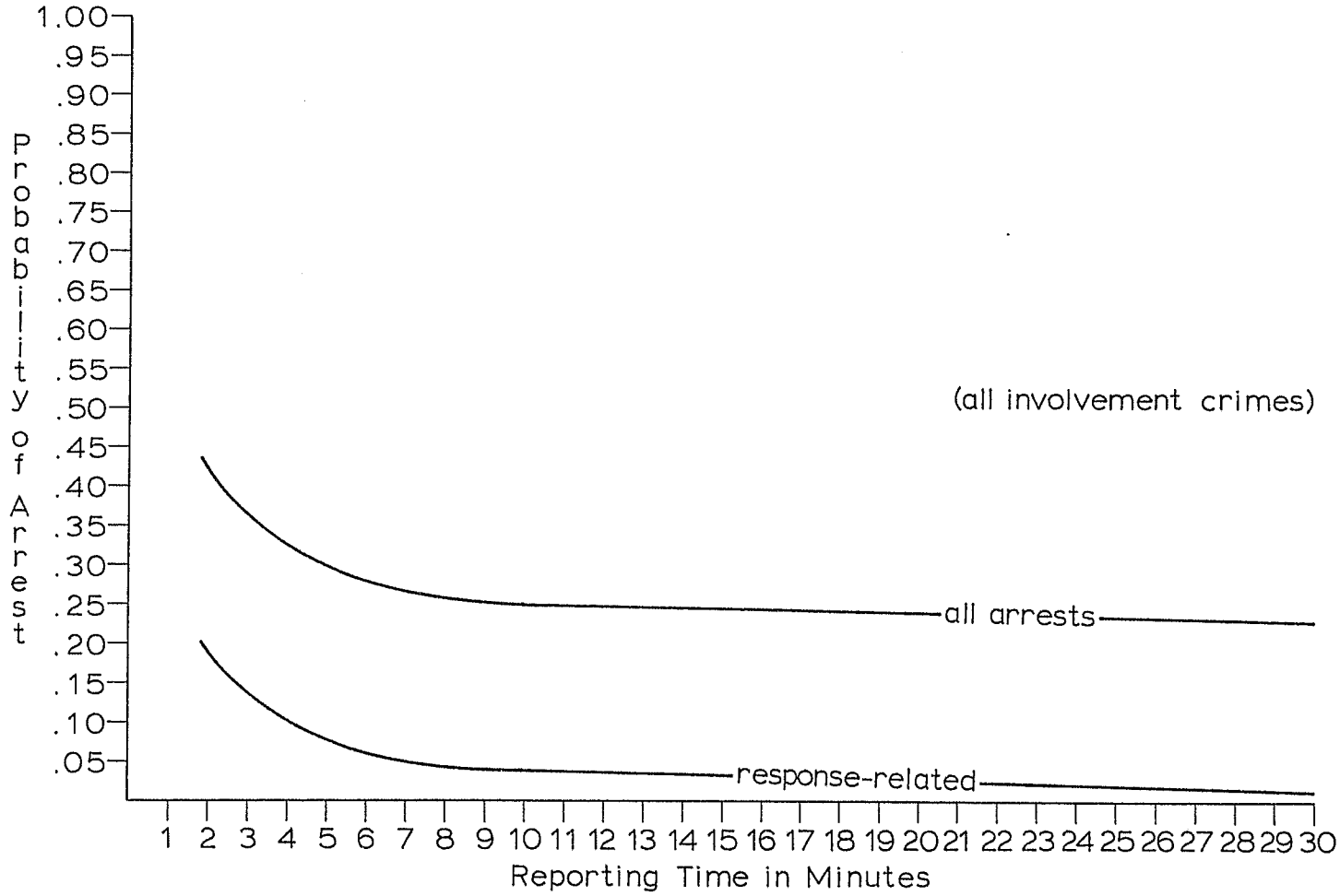


Figure 1-3.-- Probability of an arrest or a response-related arrest for Part I involvement crimes at reporting times of 0 to 30 minutes.

arrests; rapid reporting improved the probability of an arrest, but the impact dissipated after a few minutes of reporting delay.

Although the dispatching interval was not found to be related, the time taken traveling to the incident scene did influence the likelihood of a response-related arrest in involvement cases. Furthermore, travel time was found to have its greatest impact on nonviolent involvement crimes, specifically involvement burglaries. Figure 1-4 shows the relationships between the probability of a response-related arrest and travel time for violent, nonviolent, and all involvement incidents. The chance of a response-related arrest in nonviolent Part I crimes was strongly influenced by the time taken to travel to the incident, dropping as time increased, while the probability of a response-related arrest in a violent crime incident was more constant and less affected by travel time.

Reporting time so significantly affected the chances of making on-scene arrests that it was reasoned long reporting delays might prevent any response-related arrests, regardless of how quickly the call was dispatched or how quickly the officer traveled to the call. To assess this possibility, the involvement cases were divided into those reported quickly (1 to 2 minutes, N = 114), those reported less rapidly (3 to 9 minutes, N = 117), and those with lengthy reporting delays (10 minutes or longer, N = 113.).

Dispatching time was unrelated to the probability of arrest or response-related arrest at any length of reporting. Travel, however, showed varying relationships to arrest depending upon the length of reporting time, and these associations are illustrated in Figure 1-5. Rapid citizen (1 to 2 minutes) increased the probability of a response-related arrest regardless of the length of officer travel time. When an intermediate delay in reporting was involved (3 to 9 minutes), a relatively high probability of arrest was predicted only if travel time was very short, and the predicted arrest rate dropped rapidly with increasing lengths of travel time. Finally, if significant delays in reporting were involved (10 minutes or more), no relationship between the travel interval and response-related arrests was identified.

PATROL STRATEGIES AND THEIR EFFECTS ON RESPONSE TIME AND CRIME OUTCOMES

A number of patrol procedures in the Kansas City, Missouri, Police Department are based on the assumption that rapid police response is essential to the outcome of a crime. Part of the rationale behind beat design is to distribute offficers throughout the population to minimize the distance they must travel to an incident and so minimize the travel time. Dispatchers are also directed to dispatch the nearest available officer to the scene. Since most patrol cars have only one officer, two one-officer cars are generally dispatched to potentially dangerous situations, but a two-officer car is dispatched when available to minimize the delay waiting for a backup car. When two one-officer cars are dispatched, the officer arriving first will sometimes "bust the call" (e.g., respond to the incident scene and initiate action before arrival of the backup officer) if the situation demands immediate action.* Officers respond Code One, lights and siren, for calls in which rapid response is deemed necessary by the dispatcher. Each of these procedures has a potential impact on police response time to an incident.

Several variables were identified which were expected to affect travel time. Distance traveled, determined by the location of an officer relative to the location of a dispatched call at the time of dispatch, was expected to affect travel time. The effect of type of crime on distance traveled was tested. Other factors expected to affect travel time were as follows: a) whether a one or two-officer car was dispatched to the incident; b) whether the call was busted; c) whether a Code One response was authorized; d) whether the officer was in or out of the car at the time of dispatch and if in the car, whether the car was stationary or mobile.

Travel time, distance traveled, and the several variables potentially affecting them were assessed as predictors of the probability of arrest. Whether the crime could be viewed on routine patrol and this variable's effect in combination with whether the call was busted were also examined. The effect of reporting time, previously established as a significant predictor of arrest, was examined relative to these other factors.

Results indicated that the distance traveled

*The department's two one-officer car procedure requires that the first officer arriving at the dispatched location wait for an assisting or backup officer before initiating action at the scene of the incident.

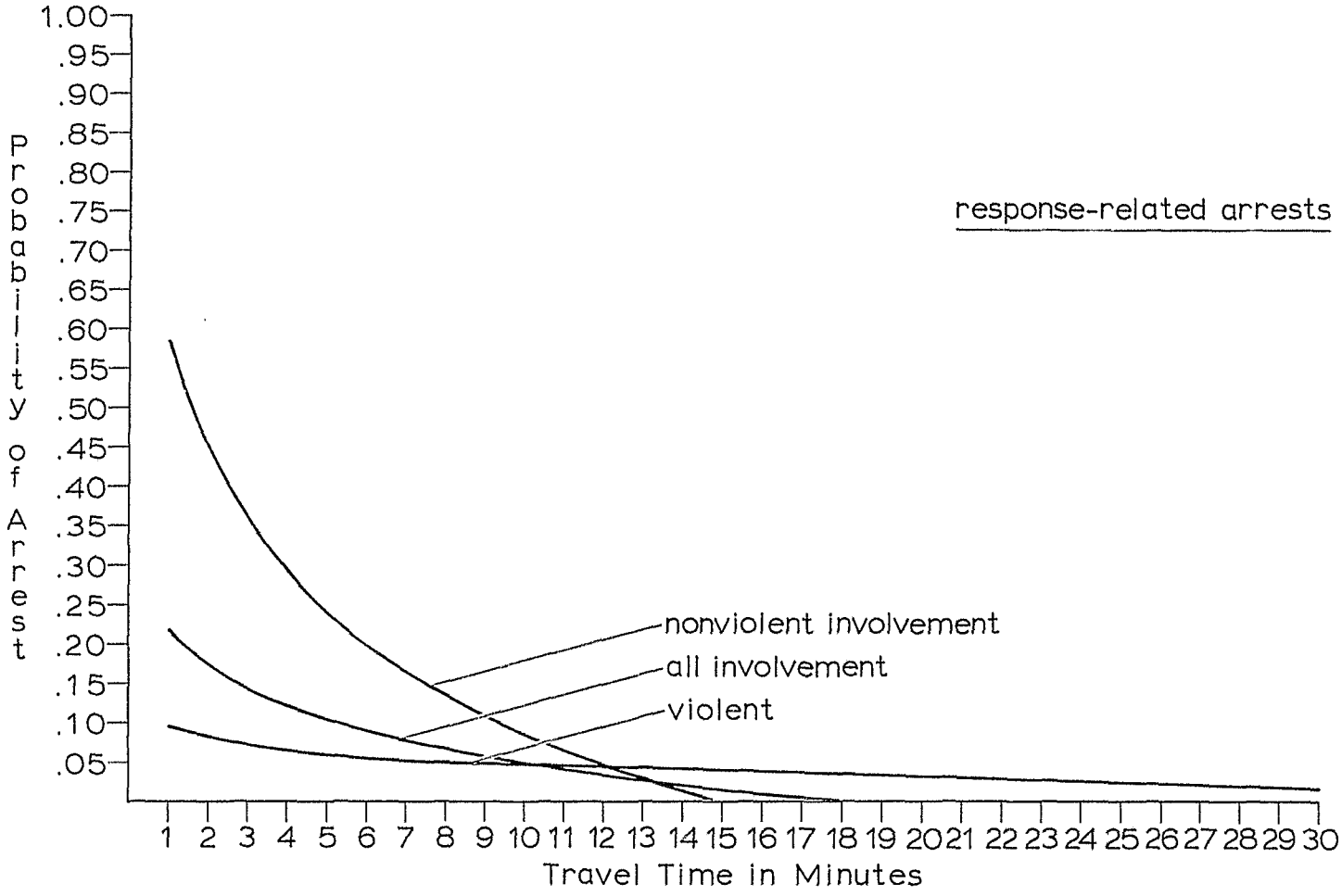


Figure 1 - 4.-- Probability of a response-related arrest for all Part I involvement crimes, violent crimes, and nonviolent involvement crimes at travel times of 0 to 30 minutes.

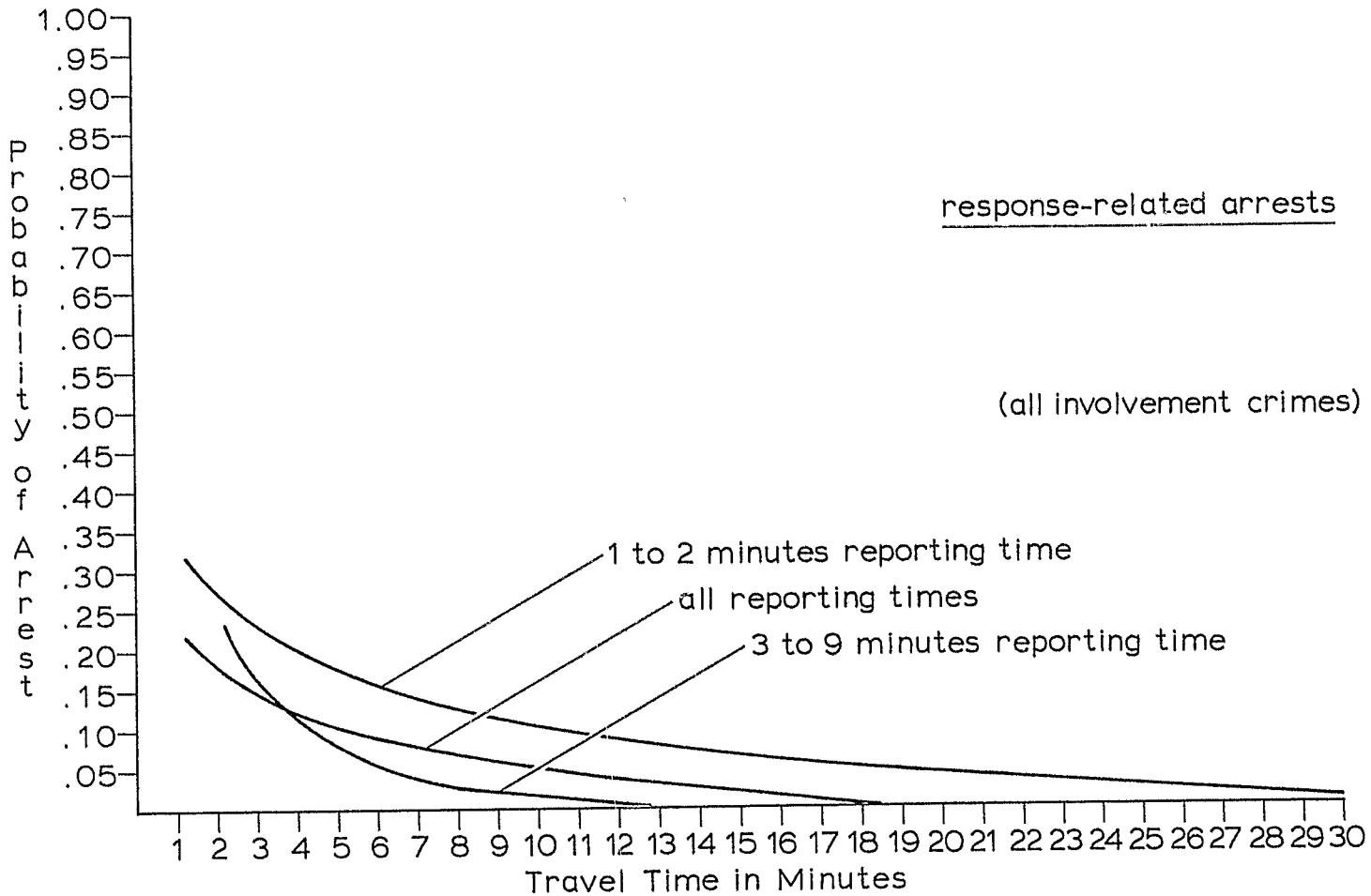


Figure 1-5.-- Probability of a response-related arrest for Part I involvement crimes, Part I involvement crimes reported in 1 to 2 minutes, and Part I involvement crimes reported in 3 to 9 minutes at travel times of 0 to 30 minutes.

was significantly longer if the officer was dispatched to a beat other than the one in which the officer was located.

Distance, not surprisingly, was significantly related to travel time, with longer distances being associated with longer travel times. Although distance was not significantly affected when officers were dispatched to an incorrect beat (to an address outside of the beat of the call), travel time did increase significantly. Shorter travel times were also associated with Code One calls, and with busted calls. In general, involvement incidents resulted in more rapid field response than discovery incidents, with the single exception of involvement larcenies which received travel intervals comparable to the discovery incidents.

Type of crime and reporting time were previously found to be significant predictors of the probability of all arrests. The only other variables significantly related to arrest were whether a crime was committed in patrol view and the affect of this variable in combination with whether the call was busted. Arrest was most likely when the crime was in patrol view and the call was busted, and least likely when it was in view but not busted. In addition to type of call, and travel time, relationships already noted, only one variable was significantly related to the probability of a response-related arrest. Calls to which an officer responded Code One resulted in more response-related arrests than non-Code One calls.

WITNESS AVAILABILITY

Analysis of the relationship between response time and the availability of witnesses determined if shortening response time increased the probability of a witness being contacted at the scene. This study defined witness availability as contact between the field officer and at least one witness to the crime, other than the victim, before the conclusion of the initial investigation.

Of the 352 involvement cases in the data base, 171 (48.6 percent) had at least one witness available at the scene. This compared to 26 of the 597 discovered Part I crimes (4.4 percent) in the data base. The 171 witnessed involvement cases consisted of 110 of the 221 (49.8 percent) violent cases and 61 of the 131 (46.6 percent) nonviolent involvement crimes. The 26 discovered crimes with witnesses consisted of 14 burglaries, 11 larcenies, and 1 auto theft. In those instances, the witness did not contact the police while witnessing the crime but returned to the scene after seeing police arrive and then provided information about the earlier observation.

Besides examining the relationships between the reporting, dispatch, and travel intervals and witness availability for Part I crimes in general, the relationships were analyzed for discovery crimes, involvement crimes, violent crimes, nonviolent involvement crimes, and for the six individual crime categories for involvement crimes. No relationship was found between response time and whether a witness was available in discovery incidents, so further analysis was limited to involvement crimes.

The relationship between reporting time and witness availability was stronger than that for the other two intervals. As reporting time increased, the probability of a witness being contacted decreased. The curve illustrating the relationship between reporting time and witness availability for all involvement cases is shown in Figure 1-6. The relationship between reporting time and witness availability was similar for violent and nonviolent crimes and for the individual crime categories.

When no relationship was found between the dispatch interval and witness availability, an assessment was made to see if the dispatch interval and witness availability were related when the reporting interval was short. The total number of involvement crimes was divided into thirds, according to the length of reporting time, as was done in the arrest analysis. The significance of the relationship between the dispatch interval and witness availability was tested within each of the time division. Regardless of the length of reporting time, dispatch time was still not significantly related to witness availability.

A weak relationship was found between travel time and the probability that a witness would be available. The relationship strengthened slightly when only violent crimes were analyzed, and no relationship was found for nonviolent crimes only.

Figure 1-7 compares the two equations predicting witness availability from travel time for all involvement cases and for violent involvement crimes only. The probability of a witness being contacted for violent cases with short travel time was greater than for all involvement cases, but dropped rapidly as travel time increased so that when travel time was more than 3 minutes, 26 seconds (38.9 percent of the involvement cases), the equation for all involvement cases predicted a higher probability of contacting a witness than the equation for violent cases. The relationship between the travel interval and witness availability

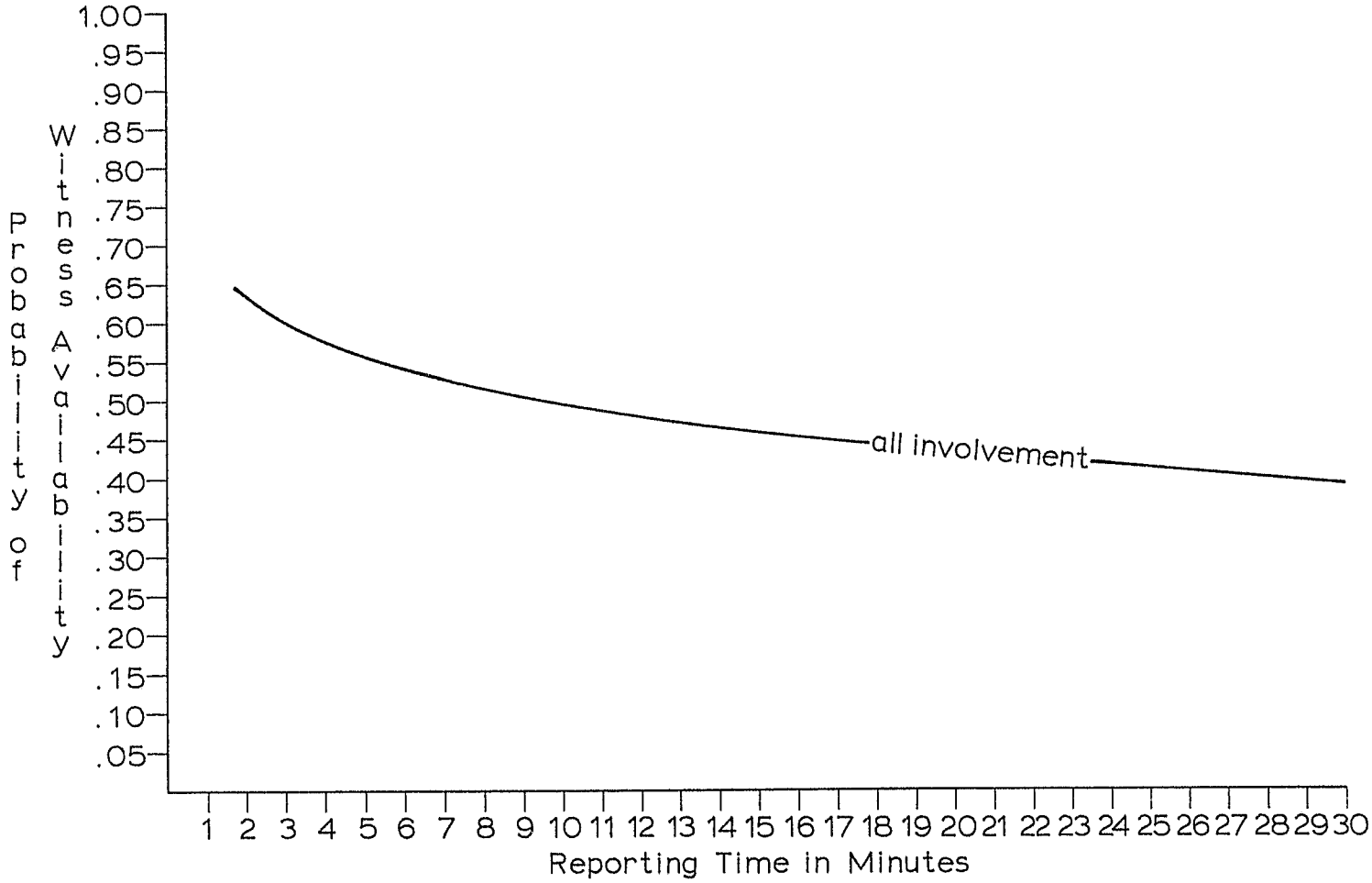


Figure 1-6.-- Probability of witness availability for Part I involvement crimes at reporting times of 0 to 30 minutes.

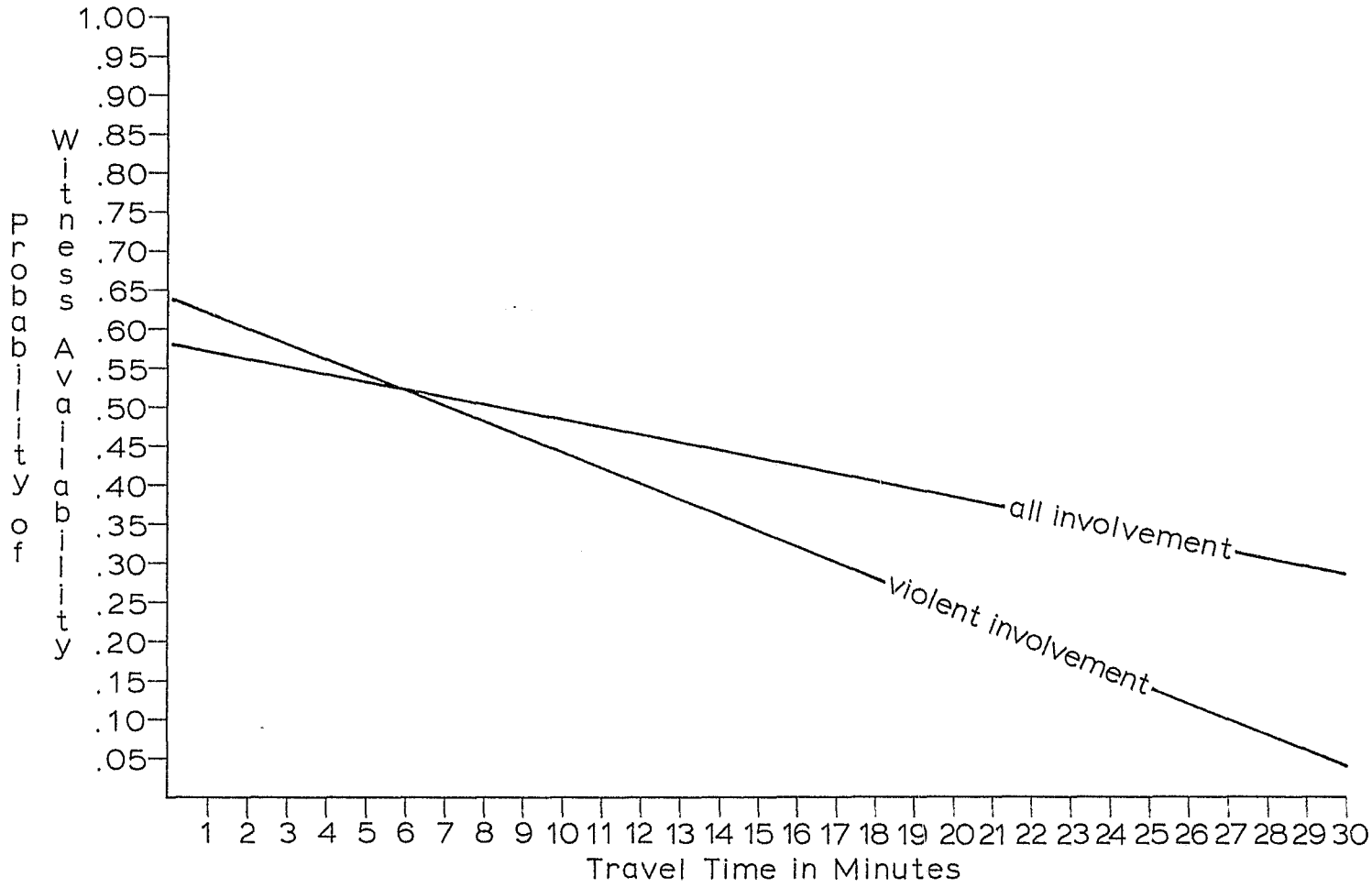


Figure 1 - 7.-- Probability of witness availability for Part I involvement crimes and violent crimes at travel times of 0 to 30 minutes.

did not appear to differ by type of crime for involvement cases.

Since the impact of the travel interval could also potentially decrease with an increase in reporting time, cases were again grouped into thirds and halves, according to the length of reporting time, and analyzed to determine if a significant relationship existed between travel time and witness availability in the various groups. The relationship failed to reach a level of significance for any of the groups.

Conclusions drawn from this analysis of the relationship between response time intervals and witness availability should be tempered by one consideration. The extent of officers' efforts to search for witnesses may affect the witness-response time relationship.

INJURY

Rapid police actions have been cited as a means of reducing both the frequency and severity of citizen injury. For example, it has been assumed that officers who arrive quickly may intercept a violent crime in progress or settle a dispute before it escalates into an injury-producing confrontation. For those cases in which injuries are sustained before the police are called, rapid response is also presumed to limit the potential inpairments of the injury by expediting the handling and transporting of the individual. As virtually no empirical evidence has been previously gathered to test these assumptions, this study was an exploratory effort to test the impact of reporting, dispatch, and travel times on injuries sustained in Part I crime incidents.

Injuries were sustained in 105 of the 949 Part I crime incidents (11.1 percent) with a total of 114 citizens being injured. More than 90 percent of the injury incidents (95) involved a weapon, and 64 of the 105 incidents with injuries (61.0 percent) resulted in the hospitalization of one or more injured parties. In 13 of the incidents requiring hospitalization, however, the citizen was transported to the hospital prior to police contact, eliminating any possible effect of rapid response.

For those citizens not transported to the hospital prior to reporting, an index was developed to assess the seriousness of the injury. It was based on the citizen's reported and apparent impairment and the type of field treatment administered by the officer. The index ranged from two, indicating a minor injury for which field treatment was given, to eight and showed an average seriousness rating of 3.99 for the 92 incidents with field injuries.

One significant assumption underlying the presumed importance of response time in injury cases has been that citizen reporting, police dispatching, and officer travel are responsive to the demands of the situation; that is, serious injuries require expedient reporting and rapid police response if these actions are to affect injury outcomes. The seriousness of the injury, as indicated by the index, was found to be significantly related to both the dispatch and travel times, such that increasing ratings of injury seriousness correlated with increasingly shorter dispatch and travel intervals. However, the time taken to report the injury incident was not related to its seriousness; serious injuries were not reported more promptly than minor injuries.

The primary assumed effect of response on injuries already sustained has been that if two injuries are equal in seriousness, the incident receiving the more prompt emergency field treatment should result in more rapid recovery, fewer chronic impairments, less specialized medical treatment, etc. Operationally, this was tested by analyzing the effect of response time on the type of hospital treatment required for a level of seriousness. Rapid reporting, dispatching, or travel did not affect the length and type of hospital stay. The lack of effect may be due more to the limited sample size and the lack of variation in hospital stay than any true independence of response and injury effects. Only 51 cases involved the hospitalization of a citizen who was not hospitalized prior to police contact, and a majority of those received emergency room treatment only.

PROBLEMS AND PATTERNS

The significant reporting delays identified in this study focused attention on a response time interval which previously received little attention. Not only was citizen reporting time for Part I crimes lengthy, it also appeared to be the time interval which exerted the most significant effect on the probability of an on-scene arrest and the availability of witnesses. Furthermore, the likelihood of making an on-scene arrest appeared to be largely predetermined by the time police were contacted, in that rapid reporting enhanced the chance of arrest, while longer reporting delays negated the effect of even immediate police response.

To understand the delays involved during the reporting interval, it was first necessary to identify the actions of citizens from the time they were able to call police about a crime until initial

contact with the police dispatcher was made. The identified actions were divided into eight patterns and five problems. Generally, patterns were defined as voluntary actions taken prior to or in the process of reporting and the attitudes which affected them, while problems were conceived to be uncontrollable hindrances encountered.

In addition to analyzing the relationships of these problems and patterns to response time, an analysis was conducted to determine if the social characteristics of the reporting citizen influenced the patterns the citizen followed or the problems they encountered that prevented rapid reporting.

The eight patterns in reporting, in order of their frequency of occurrence, were as follows:

1. Delay due to talking to another person (448 cases, 47.7 percent).
2. Delay due to investigating the incident scene (170 cases, 17.9 percent).
3. Delay due to telephoning another person or receiving a call (98 cases, 10.3 percent).
4. Delay due to waiting or observing the situation (81 cases, 8.5 percent).
5. Delay due to being unsure about police assistance (70 cases, 7.4 percent).
6. Delay due to chasing the suspect (65 cases, 6.8 percent).
7. Delay due to apathy (62 cases, 6.5 percent).
8. Delay due to contacting security (48 cases, 5.1 percent).

The five problems in reporting, in order of their frequency of occurrence, were as follows:

1. Delay due to public communications problems (221 cases, 22.2 percent).
2. Delay due to not being informed or being misinformed about the incident (106 cases, 11.2 percent).
3. Delay due to fear of reprisal or emotional shock (100 cases, 10.5 percent).
4. Delay due to police communications problems (60 cases, 6.3 percent).
5. Delay due to injury (57 cases, 6.0 percent).

Some of the problems and patterns may have actually occurred more often than is indicated in the sample because citizens preferred not to report them. For example, delay due to injury was a relatively objective problem variable and was recorded regularly in the offense reports and observer's survey instruments while such variables as delay due to apathy and delay due to being unsure about police assistance depended entirely upon a citizen's inclination to report such a feeling.

Problems and patterns in reporting were also found to be related to the type of crime. In general, the delays due to chasing a suspect, waiting or observing the situation, injury, fear of reprisal or emotional shock, and public communications problems were associated with involvement crimes. Those variables related to discovery incidents were the delays due to investigating the incident scene, contacting security, apathy, and not being informed or being misinformed about the incident. The remaining problems and patterns were not significantly related to the type of crime.

Associations between social characteristics and type of crime, social characteristics and problems and patterns, and social characteristics and reporting delay were not strong. Only marital status showed a consistent effect with reporting time, with married individuals reporting more rapidly than nonmarried persons (this group included those separated, divorced, and widowed, as well as those who had never married).

Problems and patterns in reporting, on the other hand, were found to be strongly connected to reporting delays, even when the differences due to type of crime were considered. Six of the eight pattern variables were significantly related to reporting delay were delays due to:

1. **Apathy.** Citizens exhibiting this pattern typically indicated that they did not think the incident was personally important, or that they did not want to get involved in the incident or take the responsibility of calling the police.
2. **Being unsure about police assistance.** Most frequently, citizens cited the feeling that the police could not help because there was no evidence. A second justification for this delay was that the police might think the incident was unimportant or would not want to help.
3. **Contacting security.** This action was commonly taken because it was company policy to contact a superior or security guard prior to reporting the crime to the police, although almost as many citizens reported taking this action rather than calling directly in the absence of any company policy.
4. **Investigating the incident scene.** This delay commonly resulted from citizens trying to enumerate missing articles, search for missing property, etc., prior to telephoning the police.
5. **Telephoning another person or receiving a call.** Citizens generally indicated that they called a second party (or another person

called them) in order to obtain advice, assistance, or additional information concerning the incident.

6. **Waiting or observing the situation.** Often the reason for waiting or observing the situation was related to a search for additional information about the seriousness of the incident and the need for police assistance.

The significantly related problems were those delays due to:

1. **Injury.** This problem occurred when physical injuries to the reporting party or the necessity of giving first aid or transporting another person to the hospital precluded immediate reporting.
2. **Not being informed or being misinformed about the incident.** In almost all cases with this problem, the reporting parties indicated that the delay was due to the fact that they had not been immediately informed of the crime by the person who had discovered or who was involved in it.

Although each of the remaining problems and patterns in reporting related to some loss of time, the delay involved was not significant. Those variables not significantly related to reporting delay were the delays due to talking to another person, chasing the suspect, fear of reprisal or emotional shock, public communications problems, and police communications problems.

PROCESS OF REPORTING

It was suspected the actual process citizens utilized to contact the police might have some effect upon the length of the reporting interval, in addition to problems and patterns. Four elements of the reporting process were identified. They were as follows:

1. Who called the police.
2. Whose telephone was used.
3. What telephone number the caller used.
4. How the caller knew that number.

Citizen-callers were classified as victim-callers, witness-callers, and callers. The majority of citizen-callers were victims (70.3 percent), another 8.8 percent were witnesses, and 20.9 percent were callers only.

The 724 citizen-callers interviewed were asked whose telephone they used to call the police. Nearly half of the 716 citizens responding said they had used their own home telephone (48.7 percent). Other responses included use of a phone at the citizen-caller's place of business (28.2 percent), a telephone belonging to someone else (14.7 percent), or a pay telephone (7.3 percent).

There were three numbers which most citizens used to contact the police dispatcher to report a crime, the "Crime Alert" number, the police administrative number, and "O" for the telephone company operator. The Crime Alert number is a direct line to the police dispatchers. The administrative number connects the caller with the department switchboard. Calls to this number were transferred to dispatchers over an intradepartmental extension. Calls to the telephone company operator are transferred directly to dispatchers through the Crime Alert number once the operator has received a request for service. Six-hundred-nine (84.1 percent) of the citizen-callers responded to the question of which telephone number they dialed to reach the dispatcher. Of those, 600 dialed one of the three numbers, Crime Alert (38.7 percent); police administrative (28.6 percent); telephone company operator (31.2 percent). The other nine callers (1.5 percent) used some other number.

Those citizen-callers who dialed the Crime Alert number or police administrative number were asked how they knew the telephone number. There were 530 citizens eligible for the question, including 115 who remembered using one of the two numbers but who did not remember which of the two numbers they had used. Of the 522 citzens answering the question, 517 gave the following answers:

1. The citizen-caller or someone with the citizen-caller knew the number (204 cases, 39.1 percent).
2. The citizen found the number in the telephone directory (118 cases, 22.6 percent).
3. The number was written down and was accessible to the citizen-caller (115 cases, 22.0 percent).
4. The citizen-caller obtained the number from the telephone company operator (80 cases, 15.3 percent).

Each of the four variables was analyzed for proportional variations in social characteristics between categories. The variations in social characteristics that were established between the various categories were consistent with those one would logically anticipate. For example, those persons who used a business telephone were more likely to be married, have a job with higher socioeconomic status, and have more education than those who used either their home phone or someone else's telephone. Citizen-callers using either the Crime Alert or the administrative

numbers had lived at their present address longer on the average, had jobs with higher socioeconomic status, had more education, and higher mean incomes than those who dialed the telephone company operator to reach the dispatcher. Citizen-callers who knew the number from memory and those with the number written down had lived in Kansas City, Mo., longer on the average than persons who consulted the telephone directory.

When a telephone exchange is designated for police emergency calls, the assumption is made that citizens can distinguish between calls which do or do not warrant use of the emergency number. To test this assumption, Part I crime incidents were divided into four categories according to an urgency of call index based on the following criteria:

1. Calls made while the crime was still in progress and incidents in which a citizen was injured but not transported to the hospital were considered the most urgent (140 cases).
2. The remaining violent crimes were ranked second in urgency (122 cases).
3. Nonviolent involvement crimes not included in the first category were ranked third (111 cases).
4. Discovered Part I crimes, excluding crimes detected in progress by alarm, were considered least urgent (576 cases).

No relationship was found between the telephone numbers used and the urgency index. This indicates citizens, on the average, did not decide on the number used to contact police based upon the urgency of the incident.

A separate test call experiment yielded data measuring the average length of time required to reach the dispatcher using the three telephone numbers available. The total time to reach the dispatcher was shortest for calls placed through the Crime Alert number ($X = 19.91$ seconds). Calls placed through the police switchboard operator ($X = 30.39$ seconds) reached the dispatcher more quickly than those made through the telephone company operator ($X = 38.19$ seconds).

The role of the type of citizen-caller was examined for its impact on reporting time. Reporting time was shorter for witness-callers than for either victim-callers or callers. The possibility that the shorter reporting time of witness-callers could be attributed to the type of crime or the kind and frequency of problems and patterns of reporting experienced was examined. Although it appeared that the problems and patterns of reporting differed for witness-callers and that the type of crime accounted for some of the variation in reporting time, other factors, as yet unidentified, also appeared to contribute to differences in the length of the reporting interval for types of citizen callers.

CITIZEN SATISFACTION

Responding rapidly to most calls has long been considered a policy necessary to maintain citizen satisfaction with delivery of police service. To test this assumption, other factors were assessed to determine if they influenced a citizen's satisfaction more than the amount of time taken by the police to respond. These factors included the social characteristics of the respondents, their expectations of how long response time would be along with their perceptions of how long it was, their perceptions of how important it was for the police to respond rapidly to their particular call, the actual dispatch and travel times, and the type of crime involved.

Data on citizen satisfaction were obtained from the citizen interviews. Citizens were asked, "How satisfied were you with the time it took the police officer to arrive after you called? Were you...very satisfied, moderately satisfied, slightly satisfied, slightly dissatisfied, moderately dissatisfied, or very dissatisfied?"

In general, most citizens in the Part I crime sample expressed some satisfaction with police response time, and a large proportion were "very satisfied." Approximately 86.8 percent of the respondents were satisfied: 70.2 percent were very satisfied, 14.7 percent were moderately satisfied, and 1.9 percent were slightly satisfied. The remaining 13.3 percent of the respondents who expressed dissatisfaction were distributed as follows: 5.2 percent were slightly dissatisfied, 2.4 percent were moderately dissatisfied, and 5.7 percent were very dissatisfied.

Analysis revealed that the strongest determinant of citizen satisfaction was a citizen's perceptions and expectations of police response. A citizen's expectation of police response time was measured by the question, "About how long did your expect it to take the police to arrive after the call was made?" The average expectation response time was 23 minutes with a standard deviation of 3 hours, 46 minutes. The variability of the data was due to a few extreme values, e.g., a victim of a larceny who waited a week to report the crime stated he expected the police to wait a week before responding to it. The median time of 10 minutes for expected police response time was

probably more representative of citizens' expectations in general.

A citizen's perception of police response time was indicated by asking, "About how long did it take the police to arrive after the call was made?" Responses to this inquiry yielded a mean time of 14 minutes with a standard deviation of 45 minutes. The median time was 10 minutes, 16 seconds.

The difference between perceptions and expectations of police response time was found to be a strong determinant of citizen satisfaction. If a citizen perceived police response to take longer than had been expected, the citizen was less satisfied than if the response was perceived to be shorter than expected. Additionally, the magnitude of this difference compared to the citizen's expected time was important. A citizen was more dissatisfied if police response was expected to take 10 minutes and perceived that it took 15 minutes, than if the citizen expected a response of 60 minutes and perceived that it took 65 minutes. Even though the difference in both cases was 5 minutes, in the latter case, the additional delay after the expected time of police arrival comprised a smaller proportion of the total expected police response time than in the former.

The second most important determinant of citizen satisfaction was the citizen's perception of how important response time could have been to obtain a favorable outcome for the incident. Citizens were asked, "If the police had arrived more quickly, do you think it would have made a difference in the outcome of the incident?"

Citizens indicated in 826 cased whether they thought faster response time would have made a difference in the outcome of the incident. In 707 of these cases (85.6 percent), respondents indicated that they thought a faster response would not have altered the result of the incident. The primary reasons given for this belief were 1) The crime had already been committed and the suspects were gone; 2) the incident had gone undetected for a relatively long period of time; and 3) response was already fast enough. In the remaining 119 calls (14.4 percent), respondents felt a faster response could have changed the outcome, and the main reasons given were 1) a suspect might have been apprehended; 2) the presence of the suspect warranted a faster response; and 3) the length of response gave the suspect time to flee.

It was found that citizens who thought the situation warranted faster police response were, not surprisingly, less satisfied than those who thought police response was either irrelevant to the incident's outcome, or that it was already fast enough. Furthermore, citizens who believed that a faster response could have altered the outcome tended to overestimate police response time. The difference between perceived police response time and actual police response time was significantly larger for these citizens than for citizens who did not think a faster response time would have made a difference. This tended to increase the discrepancy between perceived and expected police response time, resulting in more dissatisfaction with police response times.

CHAPTER THREE
CONCLUSIONS AND IMPLICATIONS

CONCLUSIONS

Some basic conclusions concerning the relationship of response time to incident outcomes are suggested by the findings presented in this study. First, although some patrol strategies affect police response time, a large proportion of Part I crimes are not susceptible to the impact of rapid police response. Secondly, for that proportion of crimes that can be influenced by response time, the time taken to report the incident largely predetermines the effect of police response time. Thirdly, the factors which produce reporting delays are primarily citizens' attitudes and voluntary actions rather than uncontrollable problems they encounter. Fourthly, if reporting time is not so long as to hamper police efforts, prompt field officer response has significant impact on certain types of crimes but limited impact on crime outcomes in general.

Explicit in the arguments for increasing or altering resources to reduce response time is the assumption that rapid response time is essential in producing favorable crime outcomes in a substantial proportion of serious crimes. However, this assumption is dubious, given the results of this study.

A large proportion of all Part I crimes (62.3 percent in this study) are discovered after the crime has occurred and the suspect has left the scene (discovery crimes). The chances of making an on-scene arrest or of locating a witness to the crime were not enhanced by rapid response. Generally, citizens who discovered incidents indicated that faster police response could not have affected the outcomes, and they were not dissatisfied with response time. Moreover, citizens are generally not as dissatisfied with slower response times to crimes discovered after occurrence than incidents in which they were involved.

The remaining proportion of Part I crimes (37.7 percent in the present study) consists of those incidents in which a victim or witness was involved during the commission of a crime (involvement crimes). The effect of response time varies with the outcomes examined and with the type of involvement crime. However, consistent among the findings was the importance of the time taken to report the crime as a determinant of its on-scene outcome. Since the act of reporting precedes dispatching and officer travel time, the potential impact of police response time can be largely predetermined by the speed of citizen reporting. Yet, half of the involvement crimes were not reported within 5 minutes following the occurrence of the crime.

Rapid reporting can increase the chances of making an on-scene arrest for all types of Part I involvement crimes. In general, an involvement incident reported in 1 minute has a 10 to 15 percent higher probability of an arrest than if reported in 5 minutes. The chance of making an on-scene arrest in nonviolent involvement incidents, especially involvement burglaries, is more strongly influenced by reporting time. The probability of a response-related arrest in an involvement burglary is 40 percent higher when it is reported within 1 minute than when it is reported at 5 minutes or more. For all types of involvement crimes, reporting time longer than 5 minutes has very little impact on the probability of an on-scene arrest; the chance of making an arrest in an incident reported at 5 minutes is little better than one reported at 10 minutes or more.

To increase on-scene arrest attributable to response time, involvement crimes would have to be reported in less than 5 minutes. If such a reduction could be realized, a modest increase in involvement arrests in general, and a substantial increase in arrests for involvement burglary in particular, could be expected. Holding reporting time to less than 2 minutes could increase arrests due to police response time by nearly 10 percent, if dispatching and travel times were unchanged. At present, however, the probability of arrest due to rapid response is virtually nil in more than one-half of the involvement crimes because of the length of citizen reporting delays.

The probability of locating a witness on scene is also related to the time taken by the citizen to report an involvement incident. Police response to an involvement crime which is reported within 1 minute has nearly a 10 percent greater chance of producing a witness than the same incident reported at 5 minutes. The likelihood of contacting a witness continues to drop slightly with increased reporting time, so the probability of locating a witness after a reporting delay of 30 minutes is about 15 percent less than the probability at 5 minutes. This general relationship

holds for each type of involvement crime.

The delay in reporting a Part I crime to the police can be traced primarily to the voluntary actions (patterns) of citizens prior to their telephoning the police and their attitudes about the personal importance of the incident and the need for police assistance. Actions taken prior to reporting which result in significant delays include telephoning another person, waiting or observing the situation, investigating the incident scene, and contacting a supervisor or a security guard. When asked why these actions were taken before telephoning the police, citizens often cited the need for additional information or assurance that the incident required police intervention. Hesitancy to take personal responsibility and indecision concerning the need for police assistance were also cited as reasons for reporting delay. One or more of these patterns were reported in 42.3 percent of the crimes.

Two circumstances not controllable by the reporting party (problems) were also related to delay: injury to the reporting party or another citizen requiring first aid, and being misinformed, e.g., thinking police had already been called, or not being informed of the incident. One or both of these problems were reported in 16.5 percent of the crimes. However, many of the problems that have been assumed to be the chief determinants of delays were not found to be related. Problems with public communications systems or problems with police communications and the effect of fear of reprisal or emotional upset were not significantly related to reporting delays in general. Although they undoubtedly resulted in some loss of time, these delays were insignificant compared to the effects of citizen apathy or the indecision concerning the need for police assistance.

Dispatch time was not related and travel times were relatively minor in determining the probability of an on-scene arrest. Although the chance of making a response-related arrest for involvement crimes increased with shorter times required to reach the incident scene, the effect was due primarily, if not entirely, to the strong relationship between travel time and response-related arrests for involvement burglaries. The probability of arrests in involvement burglaries was more than 40 percent higher when travel time was 1 minute than when 5 minutes, and more than 60 percent higher a 1 minute than at 9 minutes.

The strong relationship between travel time and response-related arrests for involvement burglaries may result from the characteristics of the crime. Whereas violent involvement crimes entail a confrontation between the suspect and a victim, a burglar purposely avoids a confrontation and may not be aware of having been detected and the crime reported.

These characteristics make involvement burglaries particularly susceptible to the effects of rapid response if these burglaries are witnessed and reported quickly. However, burglaries are infrequently detected during occurrence, and witnessed burglaries comprised a small percentage of all reported Part I crimes (less than 4 percent) and a small proportion of all burglaries (less than 10 percent).

Shorter travel times produce a greater proportion of witnesses for violent involvement crimes only. The probability of finding a witness decreased more than 15 percent for each 10-minute increase in police travel time for rapes, robberies, and aggravated assaults. This relationship was not found for burglaries, larcenies, and auto thefts. Also, dispatching time does not affect the likelihood of finding a witness on scene for any Part I involvement crime.

Rapid police response time based upon the need to assist injured victims has been somewhat overshadowed by an emphasis toward making an arrest in relation to Part I crimes. Results indicate, however, that there were more cases in which a person sustained injury of sufficient seriousness as to require hospitalization (5.4 percent) than arrests resulting from rapid reporting, dispatching, and officer response (3.7 percent) for all Part I crimes. Although there was no difference between serious and nonserious injury cases concerning the time taken in citizen reporting, serious injury calls received more rapid dispatching and field response than cases in which injuries were not serious.

Neither dispatch nor travel time is strongly associated with citizen satisfaction with response time. Citizen satisfaction with response time is dependent on whether citizens perceived response time to be faster or slower than they expected. Situations in which faster response time could not make a difference were distinguished by citizens from those in which it could. In general, citizens were satisfied (86.8 percent) with police response time, and 70.2 percent of the citizens reported being "very satisfied."

Several patrol strategies affect police travel time. They include whether an officer is in or out of the car at the time of dispatch, whether emergency equipment (lights and siren) are

utilized in response to calls, and whether the officer in a one-officer car waits for a backup officer. The distance traveled and whether an officer dispatched to the call was in the beat in which the incident occurred also influenced officer response time. Yet, involvement crimes, though they have a greater potential for response-related outcomes, do not have shorter travel distances than discovered incidents.

While these conclusions suggest certain actions be taken, they also suggest refraining from other actions. Although massive expenditures to reduce police dispatching and travel time do not appear justified, the reduction of response capabilities is not recommended either. Rather, strategies regarding the speed of response and response resources need to be refined for operational purposes and implemented when warranted. It is important to realize that rapid police response is not necessary to all calls. Rather, inspection of data indicates that it is appropriate only to a small proportion of serious Part I crimes. The differences between types of crime have to be recognized, and alternate procedures developed for those crimes unaffected by fast response. More emphasis needs to be placed on the reporting portion of the response time continuum, both as a determinant of those calls requiring rapid police response and as a potential bottleneck which impedes the flow of information. More attention must also be paid to persons reporting crimes and their problems and less to the system used. The implications that follow suggest some directions that might be explored toward improving the operational effectiveness and efficiency of present police strategies.

IMPLICATIONS

Many project reports produced following investigation of topical police issues conclude by simply presenting the findings of the research conducted. More often than not, these results inform both police administrators and law enforcement academicians either of relationships that were not found to be significant or of practices that do not work. Therefore, police administrators are left somewhat suspended concerning concrete application of research results.

This project was designed to provide logical suggestions and inferences deduced from the disciplined interpretation of research findings. Therefore, the following section provides both constructive comment and critical appraisal of procedures and assumptions associated with the value of rapid police response strategies in relationship to Part I crimes.

The findings suggest that the effectiveness of procedures predicated upon the presumed relationship between rapid police response time and favorable crime outcomes is and will remain limited until certain qualifications of that relationship are understood. The implications are, therefore, critical of certain police practices and investments in resources which are likely to be ineffective because they fail to consider the limitations of the assumptions upon which they rest. Some findings, however, also reveal relationships not generally considered important by police practitioners, which if approached constructively, could provide the basis for new programs intended to improve police effectiveness. Because these relationships were not anticipated during the initial study design, data necessary for comprehensive program development were not collected. The types of programs which can best capitalize upon the relationships of the findings are, therefore, speculative, and additional research may be necessary before successful programs are developed and implemented.

- **Because of the time citizens take to report crimes, the application of technological innovations and human resources to reduce police response time will have negligible impact on crime outcomes.**

The assumed importance among police administrators of a rapid response capability to deter or displace crime has been perpetuated through intuitive appeal and findings such as those presented in the special report prepared for the President's Commission on Law Enforcement and Administration of Justice published in 1967. Given analysis of data presented in this report, however, the impact of new techniques to facilitate rapid police response is questionable because of a failure to consider the time citizens take to report crime.

Having ignored the issue of citizen reporting patterns, efforts to reduce response time have concentrated primarily upon improving dispatching procedures and hastening officer travel. Concern with the latter emphasis has included a variety of approaches, the most simple of which are the addition of sworn personnel and the establishment of "auxiliary" units to relieve regular officers from responding to mundane calls

for service. These measures are intended to provide a more responsive and experienced corps of regular officers for emergency calls. Increased personnel also provides for more two-officer cars while maintaining the frequency of random patrol in the same jurisdictions. This eliminates the delay of waiting for a backup car when more than one officer is needed to respond to a call.

Although the findings indicate that distance is an important consideration in affecting response time, the deployment of officers throughout the city in a beta design minimizing travel distance to emergency calls may not be cost effective, given the relatively low frequency of high priority calls and the unequal geographic distribution of those high priority calls. As an alternative, crime analysis units could be used to monitor the geographic distributions of emergency calls, and patrol cars could be assigned either to stationary posts or to patrol specific areas where optimal response time can be achieved for those areas where the demand for emergency service is high. Obviously (as was the basis for observer deployment) the probability of emergency crime occurrence is higher for some areas of the city than others, and the variation is substantial; to deploy units without consideration of this factor is both ineffective and inefficient. By deploying cars to respond to areas with a high frequency of emergency calls, police administrators may sustain or possibly even improve outcomes with less cost for manpower and equipment.

Emphasis on technology to reduce response time has inspired a variety of innovations. One of the most notable and among the more costly has been the implementation of 911 telecommunication systems in several large cities. Although 911 may be valuable for administrative, managerial, or psychological purposes, its relative merits in reducing response time are suspect for the following reasons: a) The time required to phone the police is of miniscule significance compared to the time citizens take in reaching a decision to call; b) some citizens are incapable of reporting crimes promptly following their involvement because of injury, emotional trauma, or physical restraint; and c) fewer calls to report violent crimes were placed through the department's "Crime Alert" emergency number than through the telephone operator and the department's administrative number.

Other innovations which rely to varying degrees upon the assumed importance of rapid response have resulted in software "queueing" programs, construction of computer-simulated beat configurations, installation of computer-aided dispatching equipment, and design implementation of automated vehicle location systems. **It is not the potential benefits of such innovations which are in question but their relative effectiveness, given citizen delays in crime reporting.** In a disproportionate number of cases, citizen reporting time determines the probability of achieving a response-related outcome, e.g., on-scene arrest.

Given the possibility that citizens may never achieve desired reporting potentials, additional work is warranted to explore alternative technological methods and improve existing alarm capabilities which report crime quickly and accurately. Because department data indicates that approximately 88 percent of alarm calls are false, city ordinance requirements and state legislation needs to be assessed to determine policy implications for the periodic inspection and maintenance of alarm systems in order for police departments to provide a cost-effective response to alarm calls.

- **Procedures developed to discriminate accurately between emergency and nonemergency calls will achieve more productive outcomes if coordinated with patrol resource allocation.**

Although the department screened emergency and nonemergency calls during data collection, this effort did not result in the desired effect (except in crimes involving injury). Incidents that were reported more quickly were not necessarily handled more promptly despite the greater probability for a favorable outcome. There was no relationship between citizen reporting times and police response time in incidents involving a citizen. This is not, however, an unexpected finding because citizen reporting, communication dispatching, and police travel time constitute independent events.

Given this finding, short term efforts to improve police effectiveness must address more efficient management of existing police resources until further research has been conducted. Procedures designed to accurately discriminate calls in which rapid police response might increase productivity should be designed, tested, and evaluated. Information about whether a crime is in progress or likely to occur; how much time has elapsed between suspect flight and reporting; the number of suspects; whether anyone is injured, and if so, how seriously; a physical description of the suspect including color and type of clothing, whether the suspect was armed,

direction of the suspect's flight, etc., needs to be collected and standardized. If effective screening procedures can be developed, response to calls could be made according to established priorities.

It has been often assumed that the stacking of calls would result in citizen dissatisfaction with police service. Results suggest, however, that citizen satisfaction can be influenced by having dispatchers tell citizens when to expect an officer. Public relations could be further enhanced by ensuring that officers always arrive before expected. Findings suggest that high levels of citizen satisfaction with police response time can be sustained by setting expectations regarding officer contact. **Latitude exists within departments to experiment with stacking procedures if there is accurate screening to discriminate emergency from nonemergency incidents.**

Through the simple courtesy of telling citizens when to expect the officer, citizens may remain satisfied when their calls are delayed because of other priorities, and the noncommitted time of officers can be structured when not on call. The proper management of delayed response procedures to nonemergency incidents would allow for sufficient reserve strength to respond to emergency situations in which meaningful outcomes might be realized. Strength could be increased by reassigning officers from low to high priority calls for service times not necessarily by watch, and by the employment of civilian station clerks to take telephone and walk-in-reports, and civilian police service workers to handle field calls in which the presence of a regular officer is not needed. More police manpower would then be available for problem-oriented programs. Coordination of screening procedures with the allocation of available patrol resources should increase the probability of response-related outcomes by insuring that a car is available to respond once a crime has been reported in close proximity to the time of occurrence.

Only a small amount of time in an 8-hour tour of duty would actually be required to be spent in response to emergency incidents by officers held in reserve for such purposes. Although emergency response officers must be confined to activities from which they can immediately extricate themselves, the remaining time could be committed to surveillance, patrol, and crime analysis to discern patterns of crime occurrence.

Until more in-depth analysis of other than Part I crime data has been completed, the types and stacking priorities of calls requiring rapid response cannot be fully determined. Other areas to be explored in subsequent analysis of Response Time Analysis study data include Part II crime, potential crime calls (prowlers, disturbances, suspicious parties, nature unknown, etc.), noncrime medical emergencies (attempted suicides, vehicular involving serious injury and other casualty calls, etc.), and general service calls. Current findings suggest, however, that departments can exercise considerable flexibility in experimenting with the establishment of stacking and priority procedures for nonemergency Part I crime calls. Other research appears to corroborate the Response Time Analysis study's findings. Wilmington, Delaware's Split-Force Experiment (Tien, Simon, Larson: 1977), Worchester, Massachusetts' Police Service Aids Programs (Tien, Larson: 1975), and Kansas City, Missouri's Directed Patrol all have procedures of stacking calls according to priorities, structuring officers' time, and/or using civilian personnel to deal with nonemergency calls without a reduction in citizen satisfaction.

- **Because direct and rapid police response by nondispatched officers to robbery scenes is not effective in achieving response-related arrests, alternative response strategies for robberies should be developed, tested, and evaluated.**

The general negation of conventional response procedures to obtain positive police outcomes for most Part I crimes is supported by the preponderance of evidence presented thus far. This general negation, however, suggests alternative conceptualizations regarding traditional thought of police response tactics. Analysis of data suggests a need to alter the type of response strategy for the type of offense committed. For example, rapid police response to and around the scene of an involvement burglary is shown as critical in producing response-related arrests. Robberies, however, do not appear to be effectively amenable to similar police response procedures given the fact that only six response-related arrests resulted from the 127 robbery incidents reported in the sample (4.7 percent).

Further explanation regarding the relatively low probability of achieving response-related arrests for robberies is found by examination of the time citizens took to report robberies. Inspection of data for 43 commercial, 18 residential, and 66 street robberies indicated median reporting times of 2 minutes and 3 seconds, 5 minutes and 19 seconds, and 6 minutes and 12 seconds, respectively.

Of special concern for programmatic implications, however, was the minimum time taken for citizen reporting and police dispatching to occur. This value was identified as being 1 minute and 29 seconds for robberies other than those reported in progress.* The significance of this delay was evaluated by conducting field tests with police officers who traveled in conformance to posted speed limits through mixed commercial and residential areas of the city for periods of up to 5 minutes.

Results of this exercise revealed that a potential "head start" advantage of at least three-quarters of a mile or approximately 9 blocks from the scene of a crime could be attained by a mobilized robbery perpetrator in approximately 1 minute. This distance could be reached before the police dispatcher was initially notified that a robbery had "just occurred." The situation becomes even more ominous when the time required for dispatched officer response to robbery scenes is added to reporting and dispatching delays.**

The sum of these factors overwhelmingly suggests that response tactics such as high-speed travel by nondispatched officers directly toward the areas immediately surrounding robbery scenes (saturation) are generally unproductive in attempting to apprehend robbery perpetrators. What is effective for dealing with involvement burglaries appears, therefore, ineffective in dealing with robberies, and particularly those cases involving perpetrators who escape in automobiles.

The question thus becomes what type of rapid police response, if any, might be more effective in apprehending robbery perpetrators? Answers at this point become very speculative without further study and testing. The scope of the Response Time Analysis study did not include the testing of alternative response strategies, but one example is provided for illustrative purposes.

The alternative described is based upon the assumption that robbery perpetrators, although safely removed from the crime scene, will seek sanctuary to "let things cool down." Sanctuaries might include the perpetrator's home or that of an associate, a tavern, or a "strip where the action is," etc. The tactical response by nondispatched officers to robbery incidents could therefore focus on areas of likely sanctuary such as neighborhoods where high densities of suspected robbery perpetrators reside or are known to frequent, rather than focusing on the crime scenes and their immediate proximity as is presently done. The development of such an alternative response procedure would most certainly necessitate establishing community beat profiles based upon the best and most current of street crime intelligence, as well as systems for rapidly disseminating information relative to basic perpetrator identities, e.g., race, clothing, vehicle description, etc. The development of community-based "mug" books of known robbery perpetrators might also be of value in narrowing the field for possible patrol interception and follow-up investigative purposes. The development of such an alternative response strategy would also necessitate some modification in basic goals and objectives relative to the apprehension of perpetrators, notably that robbery perpetrators might be better caught as they return to their residences or other known sanctuaries and not at the scene of their crimes.

- **Long range research efforts must address reasons explaining voluntary actions by citizens which account for reporting delays and alternative methods of developing more effective reporting procedures.**

Immediate attention must be focused upon the responsibility of each citizen to report crime and suspicious persons or situations to the police without delay. Examination of citizen reporting patterns disclosed that many citizens who were capable of reporting crimes promptly following their involvement in or discovery of such offenses failed to do so. This research indicated that voluntary actions of citizens contributed to reporting delays, e.g., chasing suspects, confer-

*Only 8 of the 127 robberies (6.3 percent) were reported in progress, and only one of those 8 resulted in a response-related arrest. The six response-related arrests of suspects involved in robbery incidents, including the one reported in progress, were either made through patrol interception (four cases) or at adjacent locations in which the perpetrators had already fled from the scene of the crime (two cases).

**Because many robberies are broadcast over all communications frequencies before designated officers are officially dispatched, response to robbery locations may begin before specific officers are assigned.

ring with friends, neighbors, or relatives about whether or not the police should be notified, personal investigation of an area after having discovered that a crime was committed. Additional research should be conducted to determine if citizens could be influenced to report faster. Information obtained from this work could be used in the formulation of public education programs designed to decrease citizen reporting delays and thereby improve police effectiveness. Results presented have clearly demonstrated relationships between citizen reporting times and probabilities of achieving response-related crime outcomes.

Unless police departments have initiated serious efforts to solicit citizen cooperation in the prompt reporting of criminal offenses, the departments must share some responsibility for the inactions or delayed actions of the citizens they serve. Police administrators concerned about citizen problems and decision delays in reporting crime could obtain pertinent information by requiring police officers to take a special report following completion of an offense report, or having "inspection teams" sample offense reports for citizen follow-up interviews. Information pertaining to problems encountered in calling the police, the time taken to report a crime, if anyone else was consulted before a decision was made to call the police, dispatcher demeanor, the number used in calling, etc., could be collected. Additional items might probe citizen expectations regarding police service.

Information thus obtained could be systematically analyzed to evaluate the extent of problems encountered, if any, in reporting crimes, times taken and explanations given which describe delays in citizen reporting, and citizen aspirations and expectations regarding police service. Administrative monitoring of results should suggest policy implications regarding operations procedures and, having identified problem areas, development of programs which stimulate communications and establish mutual expectations and responsibilities between the police department and citizens. Motivating citizens to participate in crime detection and rapid reporting may be the most effective tool police officials have. Without it, sophisticated communications and response systems are handicapped. Only with citizen cooperation can the full potential of technological innovations be realized. As Goldstein has pointed out in his recent book, *Policing a Free Society:*

> Whatever the police do in attempting to control serious crime, they must recognize just how much their efforts depend upon the citizen cooperation and participation . . . Police efforts to achieve a higher degree of citizen involvement may be the single most important means the police have available to them for coping with crime. A 5 or 10 percent increase in the involvement of all citizens in a community could possibly prove of much greater value in combating crime than a 50 or 60 percent increase in the number of police officers or an equally large investment in technical equipment. (Goldstein, 1977, p. 62).

SUMMARY

Results from this research suggest a departure from traditional views of response time as consisting of only communications and dispatch processing and police travel time. Provincial orientations of the response time issue have resulted in leaps to solutions before problems were identified and analyzed. Emphasis in past research was therefore directed toward technological treatments of police capabilities without consideration of victim reporting practices.

Analysis of data presented in this report indicates that favorable crime outcomes could be attributed to involvement crimes which comprised only 37.7 percent of the total sample. Citizen reporting was quick enough for potential on-scene criminal apprehensions in 18 percent of all Part I crimes. Police response time primarily affected the probability of arrests in involvement burglary incidents (3.7 percent of the sample), most of which were reported in close proximity to the time of occurrence. Injuries, a potential outcome in all violent crimes, occurred in 9.7 percent of the incidents. Witness availability was a potential outcome in all involvement crimes. Of the 352 involvement crimes, 171 (48.6 percent) produced witnesses. These outcomes were not meaningful for any of the discovery cases. Although evidence preservation could be suggested as an equally important outcome, it was not tested. Citizen satisfaction with police response time was a viable outcome for all types of crime, but it was determined by citizens' expectations and perceptions of police response time, and citizens expected response time to be slower for discovery than for involvement crimes.

Results from this research further suggest that citizen satisfaction with the time required by departments to respond to calls can be influenced by providing citizens with expectations regarding the time of officer contact. Using findings from this and other research which has questioned the limited value of conventional patrol for purposes of crime deterrence, police administrators and informed researchers should have more latitude to construct patrol strategies or alternatives to patrol **per se.** For example, the San Diego, California, Police Department's Community Beat Profiling Program, the New Haven, Connecticut, Police Department's Directed Deterrent Patrol Program, the Wilmington, Delaware, Police Department's Split-Force Experiment, the Rochester, New York, Police Department's Team Policing Program, and the Police Foundation's preventive patrol experiment exemplify major innovative efforts to improve police effectiveness. The Kansas City, Missouri, Police Department's Directed Patrol Program, currently being conducted, is strongly supported, given empirical documentation that citizen satisfaction with police time is not diminished. This program also demonstrates that workload is, for the most part, predictable. Thus, patrol supervisors can forecast, with relative certainty, response-related needs and that portion of their resources which can be channeled into directed patrol activities.

Perhaps the most significant result pertains to delays in citizen reporting of incidents in which a rapid police response could have been productive. The bolstering of manpower and equipment to increase on-scene arrests and witness availability will produce negligible impact until citizen reporting times improve significantly. Until citizens begin to report crimes more expeditiously when they are capable and when prompt reporting could influence police performance, delays on the part of citizens will continue to hamper police effectiveness. Thus, citizens will not derive total benefit from the investment of tax dollars for police service.

The value of contemporary rationales underlying operational strategies predicated upon the assumed importance of rapid response will remain suspended until replications are conducted to confirm delays by citizens in the reporting of crime incidents. Lack of confidence in the criminal justice system could account for variation in citizen delays between cities.

However, if replications verify substantial delays by citizens in reporting crimes, research to test the potential effectiveness of public education programs aimed at reducing citizen delays in reporting would be indicated. Public education programs might not, however, suffice as mass panaceas for significant reductions in crime-reporting delays. Alternative reporting methods including technological innovations warrant serious examination to improve the time required to report a crime.

If police capabilities are to be used efficiently, concerted efforts must address methods to establish better rapport between police agencies and citizens regarding mutual responsibilities. Effort must be initiated by police departments to develop information exchange between the department and the people they serve in order to realistically assess citizens' aspirations and expectations in relation to the department's resources.

GLOSSARY

ARREST—The transporting of a suspect to any specific location for the purpose of booking, questioning, or identification.

BEAT—The smallest geographically designated area for the purpose of patrol to which one officer is assigned.

BEAT-WATCH—An 8-hour patrol watch in a beat. There are three watches per day in each beat, making a total of 207 beat-watches for the 69 beats in the city.

BUSTED CALL—Any dispatched call in which the first of two officers dispatched responds to the incident scene without waiting for the arrival of the backup officer, or any call in which an officer not assigned responds to the scene before the arrival of the officially dispatched officer.

CALLER—Any citizen whose call to the police initiated a response to an incident but who was not involved in the incident as a victim or a witness.

CITIZEN-CALLER—Any citizen, victim, witness or caller, whose call to the police initiated a response.

CITIZEN EXPECTATIONS—The length of time a citizen expects response to a call to take.

CITIZEN PERCEPTIONS—The length of time a citizen has perceived that response to a call has taken.

DISCOVERY CRIME—Any crime which occurred unobserved, or if witnessed, the witness did not report the crime.

DISPATCH TIME—The time from when a dispatcher understands the nature and location of a call until an officer acknowledges the end of the dispatch assigning him to the call or has begun response to the call, whichever comes first.

FIELD INJURY—An injury to a citizen who was not transported to the hospital before arrival of police.

INITIAL INVESTIGATION BEGINS—When an officer made contact with a citizen directly related to a crime incident or when the officer arrived at the actual scene of the crime.

INVOLVEMENT CRIME—Any crime in which a citizen saw, heard, or became involved between the time the suspect began committing the crime and the citizen was free from involvement in the crime.

NONTARGET BEAT—Those beats not included in the target area. This involved 34 of the city's 69 beats. The nontarget beats were excluded from the target area because none of the three beat-watches within the beat fell within the upper 27th percentile of beat-watches based upon combined numbers of robberies and aggravated assaults in 1974. Observers were not assigned to these beats.

NONVIOLENT CRIMES—As defined in the FBI Uniform Crime Report, the crimes of burglary, larceny, and auto theft.

OBSERVER—Any of nine civilians employed by the Kansas City, Missouri, Police Department to accompany officers in specially designated beat-watches and collect data pertinent to the study.

ON-SCENE APPREHENSION—The apprehension of a suspect in flight from, adjacent to, or at the scene of an incident before the conclusion of the initial investigation of the call. The arrest must have been directly related to the crime for which an officer wrote his offense report.

PART I CRIME—As defined in the FBI Uniform Crime Report, the crimes of homicide, rape, robbery, aggravated assault, burglary, larceny, and auto theft.

PATTERNS IN REPORTING—Those voluntary actions taken prior to or in the process of reporting and the attitudes which affected them.

PROBLEMS IN REPORTING—Uncontrollable hindrances encountered prior to or in the process of telephoning police.

REPORTING TIME—The time from the end of a citizen's involvement in or discovery of a crime or noncrime incident until a dispatcher had been contacted about the incident and understood the nature of the incident and location to which an officer should be dispatched.

RESPONSE TIME COMPONENT—Any of eight lengths of time identified as occurring within the reporting, dispatch, and travel intervals and comprising the total response time continuum. The components were as follows: 1. crime begins until citizen involvement ends. 2. discovery of a crime or citizen involvement ends until initial connection with police dispatcher. 3. initial connection until information about the nature and location of the call is understood by dispatcher. 4. information about the nature and location of the call available until dispatcher calls for location of a specific car or any car in the vicinity. 5. dispatcher calls car until dispatch assigning car to call is terminated. 6. dispatch terminates until officer begins his response to the call. 7. officer responds until arrival at dispatched location. 8. arrival until initial investigation begins.

RESPONSE TIME CONTINUUM—The total length of time elapsed from the end of citizen involvement in or discovery of a crime or noncrime incident until a police officer begins his initial investigation of the incident. The time period includes the time necessary for a citizen to report an incident, for a dispatcher to assign an officer to the call, and for the officer to travel to the scene of the incident.

RESPONSE TIME INTERVAL—One of three lengths of time which correspond to the three processes followed in reporting, dispatching, and traveling to a call for police service. The three intervals making up the entire response time continuum are the reporting, dispatch, and travel intervals and are synonymous with reporting time, dispatch time, and travel time.

RESPONSE-RELATED ARREST—The arrests which resulted from rapid response. This excludes arrests made after a citizen apprehended a suspect, when the suspect's name or address was provided by the victim or a witness, when the suspect was unable to leave the scene because of an injury, or when the suspect turned himself over to police.

TARGET AREA—The area included in 35 of the city's 69 beats which contained the 56 beat-watches comprising the upper 27th percentile of beat-watches based upon combined numbers of robberies and aggravated assaults for 1974.

TARGET BEAT—Any beat which fell within the target area and to which observers were deployed for collection of data.

TRAVEL TIME—The time from when an officer acknowledged the end of a dispatch assigning him to a call, or when the officer began response to a call, whichever came first, until the officer began his initial investigation of the call.

VICTIM—The citizen against whom a crime was committed. Unlike most statutory definitions, the victim of a commercial robbery, by study criteria, would be the clerk held up at the business and not the individual or corporate owner of the business.

VICTIM-CALLER—The victim of a crime whose call to police also initiated police response.

VIOLENT CRIME—As defined in the FBI Uniform Crime Report, the crimes of murder, forcible rape, robbery, and aggravated assault.

WITNESS—Any citizen, other than a victim or suspect, who saw, heard, or became involved in a crime or noncrime incident at any point during its occurrence.

WITNESS AVAILABILITY—Contact between a field officer and at least one witness to a crime other than the victim, before the conclusion of the initial investigation of a call.

WITNESS-CALLER—A witness to a crime whose call to police initiated police response.

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