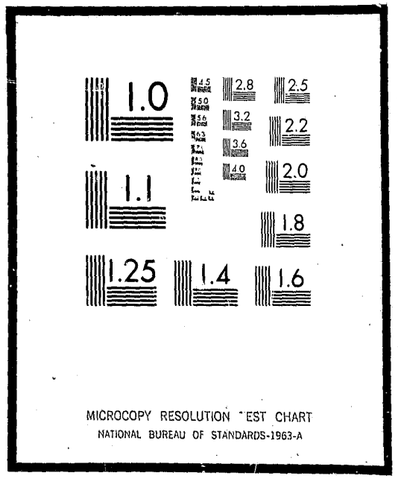

NATIONAL EVALUATION PROGRAM:

PHASE I REPORT

TRADITIONAL PREVENTIVE PATROL: AN ANALYTICAL FRAMEWORK AND JUDGEMENTAL ASSESSMENT

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TABLE OF CONTENTS

Preface i

Chapter One: The Patrol System: An Analytical Framework 1

I. Introduction 1

II. The Goals of Traditional Preventive Patrol and the Measurement of Patrol Effectiveness 4

A. Deterrence 5

B. Apprehension 8

C. Provision of Non-Crime Related Services 13

D. Provision of a Sense of Community Security and Satisfaction with the Police 18

E. Recovery of Stolen Goods 19

III. Strategic and Tactical Objectives: The Intermediate Goals of Traditional Preventive Patrol 22

A. Level of Visibility 24

B. Level of Predictability of Movement 25

C. Level of Response Time 26

D. Level of Preventive Patrol 27

E. Level of Service Provision 28

F. Level of Officer Compatibility with the Community 29

G. Level of Officer Knowledge about the Community 30

H. Level of Officer Misconduct and Corruption 30

IV. Patrol Imputs and Processes 31

A. The Deployment Process 32

B. Patrol Officer Supervision 33

C. In-Service Task Assignments 33

D. Characteristics of Patrol Personnel 35

E. Modes of Patrol Transportation 35

V. Assumptions Governing Traditional Preventive Patrol Operations 35

Chapter Two: An Orientation Toward Knowledge 66

I. A View of Social Science Research: An Idealized Frame of Reference 66

II. A Judgemental Assessment of Traditional Preventive Patrol: A Practical Approach 69

Chapter Three: Deployment of Patrol Units 71

I. The Establishment of Beat Boundaries 72

II. Dispatch of Patrol Units 76

III. Assignment of Additional Units to Patrol Beats 80

A. The Assignment of Additional Sworn Personnel 80

B. The Assignment of Non-Sworn Personnel 84

IV. Patrol Travel Routes 86

Chapter Four: Supervision of Uniformed Patrol Officers 90

I. Problems and Procedures of First-Line Supervision 91

A. Supervision: Organization and Policy Provisions 91

B. Supervision: Procedures of the Department 92

C. Conclusions Concerning Supervisory Practices 97

II. Corruption of Patrol Officers 98

A. Nature and Extent of Corruption Among Patrol Officers 98

B. Problems in Studying Corruption of Patrol Officers 99

C. Causes of Patrol Officer Corruption: Prevailing Theories 100

D. Countering Patrol Officer Corruption 102

Chapter Five: In-Service Task Assignments 105

I. Amount and Structure of Non-Committed Patrol Time 110

II. Selection of Task Assignments 112

III. Effectiveness of Different In-Service Tasks 113

Chapter Six: Characteristics of Patrol Officers 115

I. Racial Considerations in Patrol Assignments 115

II. Women on Patrol 118

III. Higher Education and Patrol Officer Performance 127

Chapter Seven: Modes of Patrol 131

I. Alternative Forms of Transportation: Realization of Patrol Goals 132

A. Effects Upon Apprehension 132

B. Effects Upon Deterrence 134

C. Effects Upon Provision of Non-Crime Services 135

D. Effects Upon Community Satisfaction 135

E. Effects Upon Recovery of Stolen Goods 136

II. Alternative Forms of Transportation: Implications of Operational Characteristics 136

A. Officer Safety 136

B. Officer Morale 136

C. Vehicle Availability 137

D. Economy of Operation 137

III. Alternative Forms of Transportation: Conclusions 138

IV. One- vs. Two-Officer Units: Realization of Patrol Goals 139

A. Effects Upon Apprehension 139

B. Effects Upon Deterrence 139

C. Effects Upon Provision of Non-Crime Services 139

D. Effects Upon Community Satisfaction 140

E. Effects Upon Recovery of Stolen Goods 140

II. One- vs. Two-Officer Units: Implications of Operational Characteristics 140

A. Officer Safety 140

B. Office Morale 140

C. Vehicle Availability 140

D. Economy of Operation 140

III. One- vs. Two-Officer Units: Conclusions 141

Chapter Eight: Conclusion: New Directions for Research 142

I. Subjects for Future Research 143

II. The Conduct of Future Research 148

Footnotes 151

EXHIBITS

Exhibit I -- The Traditional Preventive Patrol System 3

Exhibit II -- Measures of Effectiveness: Deterrence 9

Exhibit III -- Measures of Effectiveness: Apprehension 14

Exhibit IV -- Measures of Effectiveness: Provision of Non-Crime Related Services 17

Exhibit V -- Measures of Effectiveness: Provision of Community Security and Satisfaction with the Police 20

Exhibit VI -- Measures of Effectiveness: Recovery of Stolen Goods 23

Exhibit VII -- An Illustration of Assumed Interrelationships Among Patrol Goals 37

Exhibit VIII -- Prevailing Tactical and Strategic Assumptions 40

Exhibit IX -- A Universe of Assumptions Governing Deployment 45

Exhibit X -- A Universe of Assumptions Governing Patrol Supervision 50

Exhibit XI -- A Universe of Assumptions Governing In-Service Task Assignments 51

Exhibit XII -- A Universe of Assumptions Relating Officer Characteristics to Patrol Performance 53

Exhibit XIII -- A Universe of Assumptions Governing Modes of Patrol 58

Exhibit XIV -- A Hierarchy of Research Addressed to Public Policy 68

PREFACE

The University City Science Center has prepared this report as a part of the National Evaluation Program of the National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration. Its subject is "traditional preventive patrol," the routine movement of uniformed officers through defined beats; its purpose is to synthesize and evaluate available knowledge, separating opinion from fact, in an attempt to provide patrol administrators with a firm foundation upon which to base their decisions regarding the optimal use of patrol resources and to identify critical gaps in knowledge which are important to fill.

This volume presents an analytical model of the traditional preventive patrol system and a detailed assessment of knowledge concerning traditional patrol practices. In doing so, it builds upon and integrates the information presented within a preliminary report, Issues in Traditional Preventive Patrol: A Review of the Literature, with the analysis of information gained during site visits to police departments throughout the country and a review of relevant ongoing and completed projects. The assessment itself is presented in five discrete chapters addressing the subjects of deployment, task assignment, supervisory practices, modes of transportation, and patrol officer characteristics. The concluding chapter reflects upon the state of knowledge and points toward relevant future work which could be productively undertaken to enhance the quality of patrol activities throughout the country.

The information presented in this report was developed from an extensive review of available literature on patrol practices and from project reports setting forth the findings of research and program activities supported primarily by the Law Enforcement Assistance Administration and, to a lesser degree, by the Police Foundation. In this endeavor the project was assisted by the Criminal Justice Reference Service of LEAA, which provided a comprehensive set of abstracts of the general literature and research reports generated by funding from LEAA; and the Grants Management Information System of LEAA, which provided complete listings and abstracts of grant awards related to patrol practices.

Information was also developed through direct contact with all LEAA regional offices, discussions with State Planning Agency representatives, and a survey of some 300 police and sheriffs' departments throughout the country. Finally, site visits were made to 26 police and sheriffs' departments for the purpose of reviewing on-going programs which had come to the attention of the project staff and were believed either to be particularly representative of traditional patrol practices or to constitue significant or provocative innovations in patrol. Extensive telephone conversations were also held with representatives of many other departments.

All of the departments contacted were extremely cooperative and helpful. A special thanks is offered to the following departments, each of

which was visited by members of the project staff:

Alexandria Police Department, Alexandria, Virginia;

Arlington County Police Department, Arlington County, Virginia;

Boston Police Department, Boston, Massachusetts;

Cleveland Police Department, Cleveland, Ohio;

Cleveland Heights Police Department, Cleveland Heights, Ohio;

Denver Police Department, Denver, Colorado;

Fremont Police Department, Fremont, California;

Fort Worth Police Department, Fort Worth, Texas;

Harrisburg Police Department, Harrisburg, Pennsylvania;

Kansas City Police Department, Kansas City, Missouri;

Lakewood Department of Public Safety, Lakewood, Colorado;

Los Angeles County Sheriff's Department, Los Angeles, California;

Los Angeles Police Department, Los Angeles, California;

Menlo Park Police Department, Menlo Park, California;

Miami Beach Police Department, Miami Beach, Florida;

Multnomah County Department of Public Safety, Multnomah County, Oregon;

Oakland Police Department, Oakland, California;

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Orlando Police Department, Orlando, Florida;

Portland Police Bureau, Portland, Oregon;

Quincy Police Department, Quincy, Massachusetts;

Rochester Police Department, Rochester, New York;

San Diego Police Department, San Diego, California;

St. Louis Police Department, St. Louis, Missouri;

University City Police Department, University City, Missouri;

Worcester Police Department, Worcester, Massachusetts.

To all those who cooperated with us in the execution of our work for the National Institute, we would like to express our genuine appreciation. We are particularly grateful to the members of our advisory board, who, while having to respond to the needs of four interrelated projects in the area of patrol practices, have provided us with valuable assistance and guidance. They are: Sheriff Michael Canlis, Mr. Joseph Lewis, Dr. Elinor Ostrom, Chief James Parsons, Chief Rocky Pomerance, Mr. John Stead, Dr. Victor Strecher, and Mr. Eugene Zoglio. In addition, we would like to sincerely thank Dr. Richard Barnes, Mr. David Farmer and Mr. William Saulsbury of the National Institute of Law Enforcement and Criminal Justice, and Mr. Joseph Nay of the Urban Institue, whose interest and concern for the project has greatly facilitated our work. Needless to say, however, the analysis and conclusions contained within this report are those of the project staff alone -- review by others does not necessarily mean agreement on every point. Some of the conclusions may be quite provocative. If this report, while presenting the project staffs' synthesis of knowledge, also serves to provoke constructive discussion and debate and to focus attention upon the critical issues in patrol, then it will have made a contribution to the state of the art.

CHAPTER ONE

THE PATROL SYSTEM: AN ANALYTICAL FRAMEWORK

I. Introduction

Traditional preventive patrol is important. Approximately 60% of the sworn law enforcement officers in local and municipal police and sheriffs' departments in the United States are assigned to general patrol duties, and support of this function consumes a huge percentage of the approximately $5 billion projected as the 1975 municipal expenditure for police protection. In light of rising crime rates and the heightened public fear of crime, it is extremely important that police effectiveness be increased. The preponderant amount of police resources consumed by the patrol function means that a major burden for increasing effectiveness falls upon the patrol division.

In the past, increasing effectiveness has meant expanding capabilities, most particularly, increasing manpower and improving equipment systems. With the advent of the fiscal crisis facing the nation's local jurisdictions, a crisis exacerbated by the increased competition for scarce resources among all agencies of government, the emphasis must shift: rather than increasing the size of departments, better use must be made of existing resources. The productivity of police patrol operations — the ability to realize equal or higher levels of effectiveness without increasing expenditures — must be improved. New and more efficient approaches must be found to provide essential patrol services without increasing costs. Careful attention must be paid to determining the most effective way to utilize the resources at hand.

In theory, the patrol division offers the police administrator the greatest source of leverage in attempting to improve effectiveness and decrease costs, simply because it accounts for the majority of the department's expenditures and activities. The activities of the patrol division are many. They include the routine movement of uniformed officers on beats, tactical deployment of specialized units, response to crime and non-crime calls for service, writing reports, and testifying in court. Each of these general activities in turn subsumes a myriad of diverse tasks and responsibilities. Routine movement of uniformed officers, for example, may include traffic stops, door checks, providing information and directions, reporting broken street lights, watching for stolen cars, maintaining order and conducting surveillance to detect and intercept crimes in progress. Specialized patrol may include the deployment of old clothes squads, "swat" teams, and robbery and burglary units, each with a subject or crime specific orientation. Responses to calls for service range from rescuing animals, to taking reports at the scene of traffic accidents, to intervening in domestic disputes, to providing emergency medical services, to intercepting crimes in progress. Finally, report writing entails documenting the particular activities undertaken in accordance with departmental and legal requirements which may vary greatly according to the subject of the report. As a result of this diversity, patrol officers are called upon to be both generalists and specialists, and patrol divisions must accordingly be organized and operated so as to facilitate the provision of the highest possible quality of services regardless of the particular task at hand.

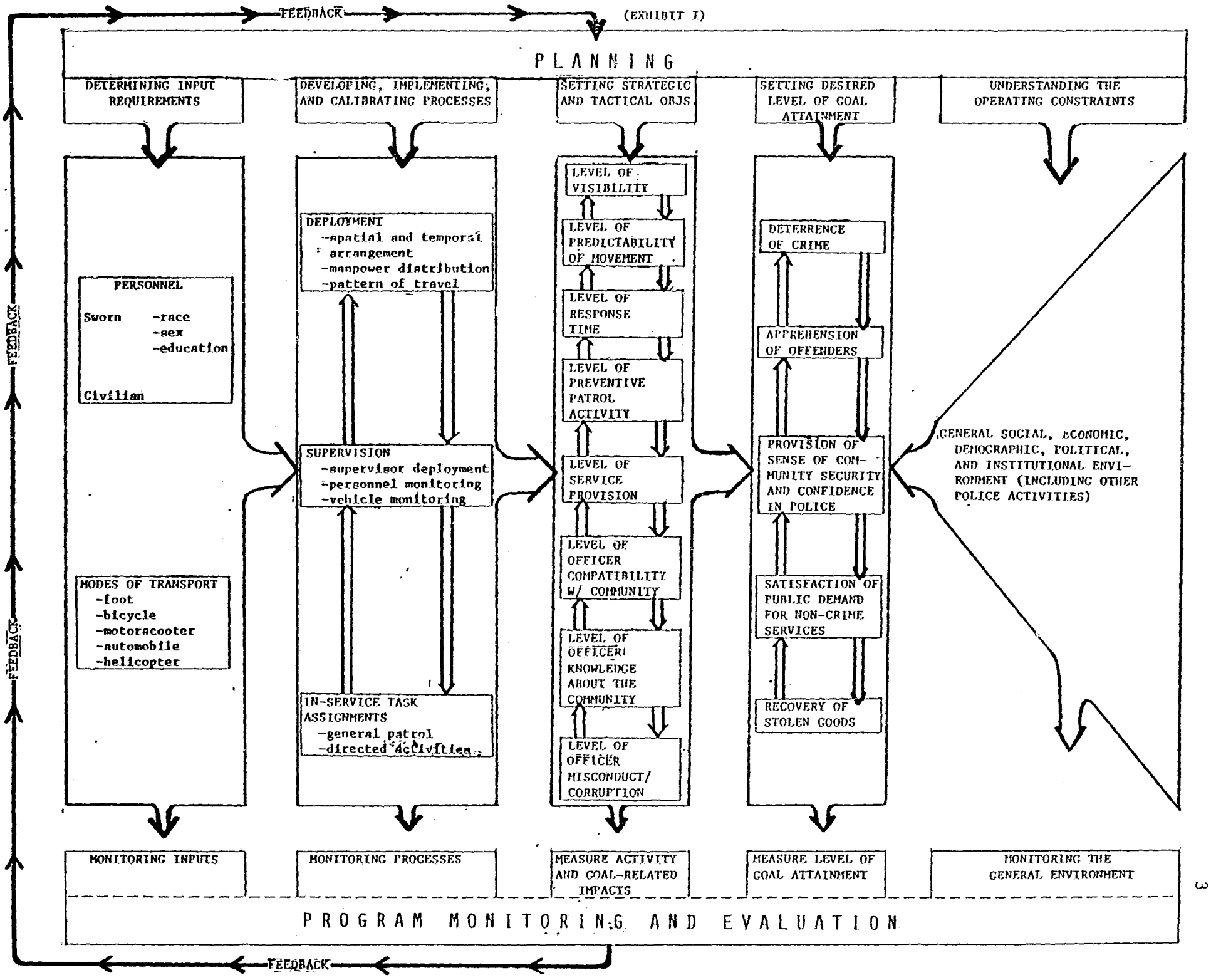
This study of traditional preventive patrol does not address the entire range of patrol activities. In one sense, considering the scope of the patrol

division's responsibilities, it is extremely limited, focusing only upon the routine movement of uniformed officers by vehicle or foot through defined geographic areas. The activities of the patrol officer pass beyond the scope of this analysis when the unit arrives at the location to which it was dispatched in response to a call for service, or when the officer goes out of service to handle a self initiated task. In addition, two permutations of the traditional patrol model are explicitly excluded. They are Neighborhood Team Policing, the deployment of locally autonomous, organizationally distinct teams of officers who provide the full range of police services on a neighborhood specific basis;[1] and Specialized Patrol, old clothes units, tactical squads, and the like.[2] Finally, this report deals only residually with the subject of crime analysis, the research and planning activity which provides the justification for many of the deployment and task assignment decisions of a patrol division.[3]

In an exclusionary sense, the present study is thus limited. In fact, it is restricted to an analysis of what the officers do when not responding to calls for service. To a degree, this is reflective of the attitude of most departments which view traditional preventive patrol as a residual activity. On the other hand, the scope of the study is extremely broad for it encompasses the myriad of non-response activities, patrol deployment characteristics, supervisory procedures, officer characteristics and transportation modes, which affect not only the quality of the traditional preventive patrol activity *per se*, but also the ability of the patrol division to provide the services and engage in the activities which have been excluded from this analysis.

In defining the traditional preventive patrol system, an attempt has been made to develop an analytical construct which identifies those factors which both affect the quality of patrol operations and are amenable to the control of police administrators. While the level of crime in the United States is a function of the general conditions of the society, the operation of the entire criminal justice system and the effectiveness of law enforcement and patrol activities, police officials have control only over the resources of their respective departments. Working only with the resources at hand, they may be continually frustrated by the fact that the effectiveness of their patrol efforts is being masked if not overwhelmed by factors beyond their control,[4] and by the fact that other activities of the department may themselves impact upon the effectiveness of the patrol division. This inquiry is explicitly oriented towards identifying knowledge about traditional preventive patrol which will assist departments in improving their patrol operations.

The flow chart depicted in Exhibit I presents the analytical definition of the patrol system which has been developed for use in this analysis. The chart identifies two major input categories: the characteristics of patrol officers and the modes of officer transportation; and, three patrol processes: (1) the deployment process; (2) the supervision process; and (3) the task assignment process. These inputs and processes combine in turn to define the ability of the patrol division to attain eight intermediate objectives, the strategic and tactical objectives of patrol, which include a department's desired level of: (1) patrol visibility; (2) predictability of officer movement; (3) response time; (4) preventive patrol activity; (5) service provision; (6) officer compatibility with the community; (7) officer knowledge about the community; and (8) officer misconduct and corruption. The model assumes that patrol administrators, on the basis of implicit and explicit assumptions, manipulate the resources at hand through the defined processes of deployment, supervision and task assignment in order to achieve the desired


FEEDBACK
(EXHIBIT I)
PLANNING
DETERMINING INPUT REQUIREMENTS
DEVELOPING, IMPLEMENTING, AND CALIBRATING PROCESSES
SETTING STRATEGIC AND TACTICAL OBJS
SETTING DESIRED LEVEL OF GOAL ATTAINMENT
UNDERSTANDING THE OPERATING CONSTRAINTS
PERSONNEL
Sworn -race
-sex
-education
Civilian
MODES OF TRANSPORT
-foot
-bicycle
-motoracooter
-automobile
-helicopter
DEPLOYMENT
-spatial and temporal arrangement
-manpower distribution
-pattern of travel
SUPERVISION
-supervisor deployment
-personnel monitoring
-vehicle monitoring
IN-SERVICE TASK ASSIGNMENTS
-general patrol
-directed activities
LEVEL OF VISIBILITY
LEVEL OF PREDICTABILITY OF MOVEMENT
LEVEL OF RESPONSE TIME
LEVEL OF PREVENTIVE PATROL ACTIVITY
LEVEL OF SERVICE PROVISION
LEVEL OF OFFICER COMPATIBILITY W/ COMMUNITY
LEVEL OF OFFICER KNOWLEDGE ABOUT THE COMMUNITY
LEVEL OF OFFICER MISCONDUCT/ CORRUPTION
DETERRENCE OF CRIME
APPREHENSION OF OFFENDERS
PROVISION OF SENSE OF COMMUNITY SECURITY AND CONFIDENCE IN POLICE
SATISFACTION OF PUBLIC DEMAND FOR NON-CRIME SERVICES
RECOVERY OF STOLEN GOODS
GENERAL SOCIAL, ECONOMIC, DEMOGRAPHIC, POLITICAL, AND INSTITUTIONAL ENVIRONMENT (INCLUDING OTHER POLICE ACTIVITIES)
FEEDBACK
FEEDBACK
MONITORING INPUTS
MONITORING PROCESSES
MEASURE ACTIVITY AND GOAL-RELATED IMPACTS
MEASURE LEVEL OF GOAL ATTAINMENT
MONITORING THE GENERAL ENVIRONMENT
PROGRAM MONITORING AND EVALUATION
FEEDBACK

intermediate goals, the optimal level of each having been set by the department. It is through the attainment of the intermediate objectives that the patrol division in turn realizes achievement of the five goals of patrol: deterrence, apprehension, service provision, citizen security and satisfaction, and stolen goods recovery. The ability of the patrol operation to achieve a desired level of goal attainment is, as has already been noted, constrained by the general social, economic, demographic, political and institutional environment in which the division operates.

In the following sections of this chapter the goals, intermediate objectives, processes and inputs of the traditional preventive patrol system, and the appropriate measures of objective and goal attainment are defined and described. The universe of assumptions linking inputs and processes to the attainment of objectives, and the attainment of objectives to the realization of goals are also identified. This chapter is followed by a description of the "orientation towards knowledge" which has been adopted to assist in the review and assessment of knowledge about the discrete inputs and processes of patrol. The judgemental assessment of these factors is presented in the succeeding chapters.

II. The Goals of Traditional Preventive Patrol and The Measurement of Patrol Effectiveness

Traditional preventive patrol is defined as the routine movement of uniformed officers by vehicle or on foot through delineated geographic areas. Patrol generally has five basic goals: (1) deterrence of crime; (2) apprehension of criminal offenders; (3) satisfaction of public demands for non-crime related services; (4) maintenance of a sense of community security and confidence in the police; and (5) recovery of stolen goods.[5] There is, essentially, a one-to-one correspondence between the goals of patrol and the over-all goals of police departments. The relative priorities of departmental goals and patrol-specific goals are also related. For both the department and its patrol division, deterrence and apprehension are of primary importance. Satisfaction of demands for non-crime services is usually considered to be of somewhat lower priority (except in the case of emergencies). The provision of a sense of community security and confidence is believed, in large part, to result from satisfactory attainment of the first three goals. Finally, the recovery of stolen goods, with the possible exception of stolen automobiles, appears to be of least importance.

The discussion that follows deals with each goal separately. Included is an examination of: the current state of knowledge regarding the contribution of various aspects of patrol to the attainment of goals; the measures commonly used to gauge goal achievement; and the difficulties encountered in determining patrol effectiveness and performance. The section also contains a detailed schematic summary of the benefits and drawbacks of each means of measuring patrol effectiveness. While each goal is considered individually, they are, in actuality, heavily interdependent; apprehension has a substantial impact on deterrence, community sense of security depends on the level of achievement of the other patrol goals, and so on. They are discussed separately here to simplify presentation, and because departments regularly emphasize some goals over others even though the interrelationships among them are recognized as important. The interdependency of goals is displayed in Exhibit VII which follows the material on effectiveness measures, which is included among those exhibits immediately following this chapter.

A. Deterrence

Deterrence and prevention are frequently, and incorrectly, linked as goals of patrol. Deterrence involves activities which are intended to influence the perceptions of potential criminals as to the likelihood of apprehension. Prevention is aimed at making criminal activity more difficult regardless of the perceived odds of apprehension. Preventive measures do have a deterrent effect by making crime more difficult: the time and effort necessary to commit a criminal act increases, thus heightening the offender's sense of vulnerability. And patrol activities, such as providing advice on security measures and personal safety or making arrests which lead to actual incarceration, do contribute to prevention. It should be emphasized, however, that the two goals are analytically distinct. As a patrol goal, deterrence is much more important than prevention. Patrol activities are most often designed to increase the probability of apprehension, thereby intensifying the perceived risks of crime and reducing its incidence; preventive activities are most often designed to deny access to specific criminal opportunities.[6]

Deterrence as a goal has provided the major impetus for the extensive deployment of a highly visible patrol force. It has generally been assumed that the conspicuous use of patrol units projects an image of police preparedness, efficiency, and omnipresence that discourages would-be criminals.[7] It has been assumed that higher levels of patrol visibility bring about higher levels of deterrence.[8]

The assumptions which have traditionally related the deployment of a highly visible patrol force to deterrence have recently been called into question. The results of the Preventive Patrol Experiment conducted in Kansas City indicate that changes in the levels of visible routine preventive patrol may have little impact on deterrence or on other patrol goals.[9] It has also been argued that only certain other types of crime can be deterred by patrol activities. Crimes such as homocide, assault, larceny, burglary, and rape are little affected by the deterrent aspects of patrol in that they are often committed in private places or in secret.[10] In fact, one study suggests that only about 40% of known crimes occur in locations where they can be observed by non-participants and thus potentially deterred by the police.[11] In short, it is suggested that if the crime is not observable, it cannot be deterred by patrol. This argument can be extended to imply that the deterrent effect of patrol diminishes as the amount of time declines that the perpetrator can be perceived to be in the act of committing a crime.

In the interest of improved deterrence capabilities, police departments have engaged in operational activities aimed at heightening the visibility of patrol and improving the effectiveness and deployment of the individual officer. Tactics have included: (1) the use of one-officer cars, motor scooters, increased foot patrol, take-home cars, and saturation and split patrol; (2) attempts to match officer characteristics such as race, language, special skills, and education with identifiable characteristics of their beats; and (3) the use of allocation and deployment models to direct patrol units to high crime locales, randomize patrol presence, and/or minimize response time throughout the city. However, the various allocation models are often based on opposing assumptions which are indicative of conflicting opinions regarding the relative merits of alternative approaches to deterrence. There is also very little evidence concerning how and to what degree officer characteristics and modes of patrol influence deterrence capabilities.

In addition to tactical procedures designed to enhance deterrence, departments have experimented with various supervisory procedures intended to increase the efficiency and insure the integrity of patrol personnel.[12] These efforts have been based on the assumption that the deterrent effect of patrol depends on the quality of individual officer performance and the maintenance of high standards of officer integrity. They have included the street deployment of supervisory personnel, frequent reassignment of patrol officers to other beats, and the utilization of a vehicle monitoring system.

Considerable effort has been expended to increase officer effectiveness and the deterrent level of patrol activity through stringent supervisory practices, but the experience of the Patrol Emphasis Program in Cleveland Heights, Ohio suggests that supervisory concerns may to a certain degree resolve themselves if the level of officer deployment reflects the actual or potential service demands. By keeping the officers busy while on duty, the demand for services is believed to enhance motivation and thus, may overcome some supervisory concerns.

Even though deterrence is considered by many to be the primary objective of police patrol and substantial resources have been devoted to improving the deterrent effect of patrol, there is no direct measure of deterrence available to administrators and researchers. There is no way to measure the number of crimes which are not committed due to the operations of routine preventive patrol. This inability to measure deterrence with a reasonable degree of certainty may partially explain why to date no significant relationship has yet been shown to exist between patrol activities and the deterrence of crime.[13] Without direct measurement, the relationship between the two must remain an inferred one, based largely on assumptions. The measures used by law enforcement agencies are indirect, and therefore, extremely problematic.

The techniques currently used by departments to measure the deterrent effect of patrol fall into two categories: (1) measures of crime and victimization rates; and (2) measures of patrol activity thought to be related to levels of deterrence. The following are examples of measures of deterrence:

- changes in the rate of reported crime:
  the rate of reported crime is assumed to be related to the rate of actual crime so that a decrease in the crime rate can be attributed to the deterrent effect of patrol operations.

- changes in the rate of victimization by type of crime:
  a decline in victimization rates is thought to be positively related to a heightened deterrent effect produced by particular patrol activities.

- increases in the level of criminal arrests:
  increased arrest rates are believed to indicate heightened patrol effectiveness to the potential criminal, and thus convey a greater likelihood of possible capture either in the course of or following commission of the crime.

— reduced patrol officer response time:
it is assumed that the criminal perceives the ability of police patrol units to respond quickly as an indicator of increased likelihood of apprehension.

— increases in aggressive actions by police:
the emphasis here is on activities such as stop and frisk or vehicle checks in which the effect of routine but careful checking of suspicious persons is thought to deter crime.

— equalized probability that a patrol unit will appear anywhere in the city at any given time:
uncertainty about the movement and likelihood of appearance of police patrol units is assumed to deter criminal activity.

The first two measures of deterrence (based on changes in reported crime rates and on changes in rates of victimization) are believed to be related to changes in the actual level of crime; the last five measures are related to police activities which are assumed to have a deterrent effect. Both types of indirect measurement exhibit notable inadequacies, but only the most significant drawbacks will be discussed here:

(1) Use of reported crime rates is of questionable value because the relationship between reported crime and actual crime is not clearly understood. The percentage of actual crime which is reported may depend at least as much on public confidence in the police as on the true level of criminal activity.

(2) Police patrol is only one of many factors influencing the rate of crime. This factor reduces the utility of crime and victimization rates as measures of deterrence and makes it difficult, although not impossible under experimental conditions, to attribute changes in these measures to changes in individual patrol operations.

(3) The use of categories and levels of patrol activity as indicators of deterrence is based on the untested assumption that these activities do have a definite effect on criminal behavior. As a result such measurement can tend to be self-justifying and circular in what it portrays. In some cases, continued and more intensive use of a particular patrol procedure may prove to be counter-productive in that it may draw limited resources from other operations of greater potential.

In sum, the goal of deterrence is of primary importance to patrol activities, but little is known about the relationship between patrol strategies and deterrence as at present there are no satisfactory measures for evaluating the effects of

patrol on deterrence. Departments throughout the country are expressing increasing concern about the problem. Unfortunately, however, further analysis will continue to be based on second order, surrogate indicators since non-events cannot be measured. Exhibit II summarizes findings regarding the merits of common measures of deterrence currently in use.

B. Apprehension

The second goal of patrol, apprehension of criminal offenders, is equal in importance to deterrence and closely related to it. When deterrence fails to prevent crime, the patrol force is responsible for apprehending the offender, and swift, efficient performance of this task is generally assumed to contribute to improved levels of deterrence.

In the context of this report, the definition of apprehension is restricted to arrests resulting from: (1) self-initiated actions by uniformed patrol officers following detection of a crime in progress or recognition of alleged offenders; (2) activities by direct, non-dispatched citizen requests to officers for service or assistance; and (3) officer response to calls for service which result in arrests due to "tactical surprise."[14]

It is commonly assumed that increasing the number of officers on patrol will lead to an increase in the number of crimes in progress detected and the number of suspects apprehended on the streets. Additionally, deployment and allocation procedures are believed to have an important influence on officer-initiated apprehension capabilities. Policy decisions of this type have included: (1) the deployment of either one- or two-officer cars based on assessments of the differences in their observational effectiveness and abilities in making arrests;[15] the utilization of allocation formulas either to increase patrol presence in high crime areas or to randomize their distribution in the hope of catching offenders off-guard; (3) the use of a variety of modes of transportation (e.g., foot, bicycle, helicopter, scooter, motorcycle, marked and unmarked cars) based on assumptions regarding their effectiveness in dealing with different forms of crime in varying types of locales; and (4) differential assignment of men and women to beats based on assumptions regarding the differences in the aggressiveness of male and female officers in relation to the demands and characteristics of specific patrol areas.

In an effort to increase apprehensions which result from citizen-initiated direct contact with officers, departments have attempted to foster the ready accessibility of officers to the public by adopting modes of transportation to the characteristics of patrol areas and by equiping officers with hand-held radios. Foot and scooter patrol are frequently used in business districts and other congested areas, and personal radios give officers freedom of movement in making contact with citizens. Departments have also been concerned with appropriately matching the ethnic, racial, and language skills of officers to patrol districts in an effort to increase rapport, respect, and cooperation between officers and members of the community they serve.

Emphasis on apprehension by tactical surprise has led to the use of allocation models designed to reduce response time and the use of priority screening of calls for those thought to offer the highest probability of offender apprehension.[16]

(EXHIBIT II)

MEASURES OF EFFECTIVENESS: DETERRENCE

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
Changes in the level and rate of reported crime	The rate and level of reported crime is directly related to the actual level of crime and as deterrence is a primary objective of preventive patrol, a change in the reported level of crime can be attributed to changes in the deterrent effect of patrol.	Preventive patrol is only one factor affecting the rate of crime, the level of crime deterrence, and in general, the degree to which crime can be effectively prevented. As the myriad of social, economic, demographic, and institutional factors come into play and affect the level of reported crime, the link between preventive patrol and the level of reported crime is at best a tenuous one. There is no evidence to relate directly the level of reported crime to the level of actual crime. The measurement of the deterrent effect of patrol necessitates a measurement of the amount of crime which did not occur. Changes in the rate of reported crimes can not be construed as a measure of the degree to which events did not happen. It only indicates the degree to which events which did happen came to the attention of the police.	There is no demonstrated validity or reliability associated with the statistics on reported crime as a measure of the deterrent effect of preventive patrol.
Changes in the level and rate of victimization by type of crime	The level and rate of actual victimization (as determined through victimization surveys) is directly related to the deterrent effect of preventive patrol.	The actual level and rate of victimization is a function of many social, economic, demographic and institutional factors of which preventive patrol is only one. As a consequence, it is not possible to differentiate and determine the degree to which preventive patrol *per se* effected changes in the rate and level of victimization. Measurement of the deterrent effect of patrol necessitates a measurement of events which did not occur. It is not possible to measure non-events.	As a measure of the deterrent effect of patrol, victimization studies may have considerable reliability and validity if it is possible to control for the other intervening variables. As a consequence, victimization studies may be of considerable value in the context of carefully controlled experiments designed to determine the differential impact of alternative patrol procedures. It is to be noted also that victimization studies are extremely expensive if properly executed and are therefore impractical as on-going measures of patrol effectiveness in the context of most departments.

(EXHIBIT II continued)

MEASURES OF EFFECTIVENESS: DETERRENCE
continued

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
Changes in the level and rate of criminal arrests.	It is assumed that an increase in arrest rates communicates to the would-be offender a heightened patrol effectiveness and a greater likelihood of capture. As a consequence it is assumed to deter crime. Arrest rates are therefore indirect measures of the deterrent effect of patrol.	The use of arrest rates assumes that the would-be criminal approaches the commission of a criminal act in a rational manner, taking into account good information on arrest rates of appropriate departments. There is very little basis for this assumption of rationality. Arrest rates are a function not just of preventive patrol, but also minimally of investigative activity. As such, they are not indicative of the deterrent effect of patrol as it is not possible to assign differential levels of importance to each contributing factor. The link between arrest rates and deterrence level is an untested assumption, and is self-serving to the department. Arrest rates do not provide a measurement of events that did not occur.	There is no demonstrated validity or reliability associated with changes in the level and rate of arrests as a measure of the deterrent effect of preventive patrol.
Patrol officer response time.	The rapidity of response time is assumed to communicate to the offender a likelihood of arrest. As a consequence, it is assumed that the lower the response time, the greater the level of deterrence resulting from patrol.	The use of response time assumes that the would-be criminal approaches the commission of a criminal act in a rational manner, taking into account good information on the response capability of the police. There is little basis for this assumption of rationality. With regard to most types of crime, it is the probability of detection during the criminal act and not the rate of response which is likely to affect the criminal's determination of his vulnerability to arrest. Response time as a measure of deterrence is an untested, self-serving measure which assumes a relationship which has not been demonstrated.	There is no demonstrated validity or reliability associated with changes in the rate of response time and the deterrent effect of preventive patrol.

(EXHIBIT II continued)

MEASURES OF EFFECTIVENESS: DETERRENCE
Continued

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
The level of patrol visibility and the level of aggressive patrol tactics (emphasis on such activities as stop-and-frisk and vehicle checks).	A highly visible patrol force and/or the careful checking of "suspicious" individuals communicate an increased level of police presence and activity suggestive of a heightened likelihood of capture. As a consequence, it increases the level of deterrence.	The evidence linking the level of patrol visibility to the level of deterrence is fragmentary and contradictory. Patrol visibility and the projected sense of officer presence is relevant only to the deterrence of detectable crimes, if relevant at all. The level of patrol and of aggressive activity as a measure of deterence is a self-serving justification of a status quo orientation to patrol.	The evidence linking the level of patrol visibility to the deterrent effect of patrol is spotty, and as such there is little demonstrated validity and reliability associated with its use as a measure of effectiveness. With regard to aggressive patrol activity, however, limited evidence suggests that aggressive patrol tactics (e.g., use of field interrogation) may have an effect on the level of suppressible crime. As a measure of effectiveness, the use of statistics on aggressive activities requires first that substantial efforts be made to calibrate its relationship with changes in crime rates.

The effectiveness of patrol in terms of apprehension can be judged by two measures — one direct and the other indirect. These are:

— changes in the number of arrests: (by type of situation and crime) made by uniformed officers as a function of the quality of arrest and the clearance rate.

— changes in response time of patrol units: (response to "priority" calls for service).

The first measure, change in the number of arrests, should not be treated as an absolute number although it commonly is. It requires qualification to determine the quality of arrest so that only procedurally correct arrests of offenders are counted. The most prominently proposed qualification is the number of arrests which survive initial screening as a proportion of the total number of arrests under consideration. The use of the "first screening" distinction is suggested as it minimizes the impact of prosecutorial and court discretion on the final disposition of cases. This method constitutes an attempt to determine whether or not the officer acted reasonably in making the arrest. Qualifying the number of arrests on the basis of case outcomes further along in the judiciary process may significantly underestimate the apprehension effectiveness of patrol operations; however, it may also be argued that not to qualify the statistics on the basis of final outcome may render the apprehension statistic a self-serving measure which can possibly present an inflated appearance of patrol effectiveness.

It is also necessary to qualify arrest data with regard to levels of crime. Crime clearance rates, for example, are the percentage of reported crimes accounted for by the number of arrests made by patrol officers. The total number of apprehensions is related to the level of crime in order to make a judgement regarding patrol effectiveness. Unless the rate of crime is known to be increasing or decreasing, it is impossible to interpret changes in the rate of apprehension. For example, if the level of apprehension rises, is it because there is a significantly higher level of crime, or is it because the patrol force is more effective in solving a constant or smaller number of victimizations? The difficulty in monitoring victimization rates closely and the problems involved in interpreting rates of reported crimes (as discussed above) also limit interpretation of data on the number of apprehensions achieved by departments.

The use of response time as an indirect measure of apprehension is based on a limited body of empirical evidence of somewhat questionable validity which indicates that reductions in response time can have a considerable impact on apprehension rates.[17] It has been reported, in one example, that a reduction in response time from 14 minutes to one minute can lead to a 62% increase in the rate of apprehension resulting from calls for service.[18] Based on findings of this nature, the use of response time, in and of itself, is becoming increasingly common as a measure of the apprehension effectiveness of patrol. However, while a relationship between response time and apprehension rates may exist, its use as a measure of goal attainment can be self-serving and deceptive. It shares this problem with most indirect measures of effectiveness.

In the near future more information should be available on the relationship of response time to patrol objectives. The Kansas City Police Department

is currently conducting a large-scale study of the question. While it is unwise to speculate prematurely about the results of research, preliminary and very tentative findings in the Kansas City study suggest that departments would do well to hold in abeyance judgements of effectiveness which are based on response time as a principal measure.[19]

In sum, while apprehension of criminal offenders is a primary goal of patrol operations, little is known about the relationship between patrol strategies and apprehension, and no satisfactory measures exist for evaluating the effect of patrol tactics on the rate of apprehension.

Exhibit III summarizes findings regarding the merits of common measures of apprehension currently in use.

C. Provision of Non-Crime Related Services

The fourth objective of traditional preventive patrol, provision of non-crime related services, involves activities such as: emergency ambulance and rescue service, intervention and assistance in minor domestic matters, license inspections, reporting needed repair of public property and utilities, and providing services such as taking reports for insurance purposes. The range of non-crime services "routinely" performed by uniformed patrol officers is indicated by a recent inventory which included over 3,000 different activities.[20]

Performance of non-crime related services has fallen to the police due to the general abstention of other governmental agencies, the tendency of citizens to call the police when unable to think of where else to turn, and the fact that the police are often the only available source of help. In the main, the police have accepted these non-crime tasks because their provision does not seem to undermine the effectiveness of patrol and can even be viewed as contributing to it, and because they perceived themselves to have little or no choice in the matter. Performance of these services was felt to enhance community satisfaction with police work, improve rapport between citizens and officers, and build a "constituency" for the police among the public at large. In addition, it is argued that the police should continue to provide these services since their basic capabilities and infrastructure allow them to do so more economically and efficiently than other governmental agencies.[21]

Non-crime related services have been provided in the past without hesitation by the police, but continuation of these services has recently come into question. As crime and fear of crime increase, provision of non-crime services has come to be seen as detracting significantly from the availability of patrol units for preventive patrol and response to calls for crime-related services.[22] The problem is of substantial magnitude: it has been estimated that the provision of non-crime related services combined with the performance of traffic duties and the policing of minor misdemeanors consumes from approximately two-thirds to three-fourths of the uniformed patrol officer's time.[23] It has been argued that this time could be more effectively spent on activities related to crime deterrence and criminal apprehension.[24]

In essence, the argument against police provision of these services

(EXHIBIT III)

MEASURES OF EFFECTIVENESS: APPREHENSION

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
Changes in the number of arrests by uniformed officers by type of crime.	Aggregate annual comparisons of arrest rates indicate changes in the effectiveness of the patrol function	Arrest rates alone, when there is no attempt to control for changes in the level of victimization or quality of the arrest are not indicative of effectiveness. Increases in the number of arrests as a measure of effectiveness may mask either a commensurate increase in crime or a decline in arrest quality. In addition, it provides motivation for making arrests with minimal grounds for so doing.	When reported in absolute terms, changes in arrest rates lack reliability and validity as measures of apprehension effectiveness.
The number of arrests by uniformed officers by type of crime divided by the number of reported crimes.	This ratio of arrests: level of crime activity controls for changes in the crime rate and yields a measure of performance which is related to the level of crime.	The number of reported crimes is an insufficient control as the relationship between the level of reported crime and the level of actual victimization is not known. As a result, it is not possible to interpret the statistic as it relates to the effectiveness of patrol. In addition, without controlling for arrest quality, a motivation is provided to the department for making arrests with minimal grounds.	The ratio $\frac{\text{arrests}}{\text{reported crimes}}$ lacks reliability and validity as a measure of apprehension effectivensss due to the fact that the number of reported crimes may not reflect the number of actual crimes.
The clearance rate: the percentage of the reported crimes accounted for by the number of arrests made by type of crime.	This measure reflects the fact that the same individual may be responsible for the commission of more than one crime. By computing the clearance rate achieved by the department, the arrests are reviewed with regard to the number of reported crimes and the result is a more accurate reflection of the apprehension effectiveness of the department.	The computation of clearance rates on the basis of reported crime neglects the fact that the level of reported crime is not reflective of the level of actual crime which only victimization surveys can yield. The use of clearance rates, without controlling for the quality of the arrest and of the subsequent charges brought, can be self serving to the department, motivating the department to attribute unsolved crimes to "available" suspects.	Due to the problems inherent in the utilization of reported crime rates and the failure to control for the quality of the arrest, this measure has no demonstrated reliability or validity as a measure of the apprehension effectiveness of the department.

(EXHIBIT III continued)

MEASURES OF EFFECTIVENESS: APPREHENSION
continued

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
A modified clearance rate; the percentage of actual victimizations accounted for by the number of arrests made by type of crime; i.e., $\frac{\text{Arrests}}{\text{Percent Victimization}}$	This ratio provides an accurate measure of apprehension effectiveness as it reflects the percentage of active crimes accounted for by the arrests.	This ratio neglects the need to control for the quality of the arrests and may create motivation to either arrest with minimal grounds or to attribute otherwise unsolved crimes to those arrested.	While taking into account the actual number of victimizations, this measure does not take into account the quality of arrests and therefore lacks reliability and validity as a measure of effectiveness.
The percentage of victimizations accounted for by the arrests which survive the "first screening."	This ratio controls both for the quality of the arrest and for the level of victimization. The use of "first screening" as the control for arrest quality is the best possible as it minimizes: 1) The degree to which unfounded arrests will affect the statistics, and 2) The degree to which non-crime related concerns of the prosecutorial and court processes themselves affect the statistics.		This ratio at present seems to be the best available measure of apprehension effectiveness. It is to be noted, however, that victimization studies are extremely expensive and may therefore be impractical for most departments.

maintains that they interfere with the effective achievement of more important goals of traditional preventive patrol, and as a result, may indirectly lower the level of community satisfaction with police performance.[25] It has been suggested that the performance of some of these services, such as traffic control and reporting of public utility outages, does not require the expertise of patrol officers and could be handled as well by non-sworn personnel, and that other non-crime activities, such as license inspection and resolution of minor domestic problems could be achieved more effectively and appropriately by other governmental agencies.

Proponents of curtailing police provision of non-crime related services, traffic functions, and the handling of minor misdemeanors do not disavow the importance of these functions *per se*, but rather, offer alternative means of handling the work. Proposed changes include: (1) referral of certain types of calls for service to other agencies;[26] (2) creation of new agencies[27] or divisions[28] to handle some tasks currently performed by patrol officers; (3) increased use of citizen auxiliaries[29] and non-sworn personnel;[30] and (4) establishment of systems to dispatch officers on a priority basis to calls for service.

While non-crime related calls for service have a substantial impact on the allocation of patrol resources, departments do not seem to adapt the strategies and tactics of patrol operations to them.[31] Rather, they work the provision of these services around the performance of other tasks, increasing the manpower allocated to districts in which the non-crime related service load is particularly heavy. Consideration of non-crime services is important in the context of the present report because of its potential impact upon the availability of manpower and equipment for crime-related routine patrol. However, since there is no empirically grounded research which quantifies the relationship between the number of officers deployed on crime-related patrol and levels of deterrence and apprehension, the extent and nature of loss due to non-crime services is unknown. In the jargon of economics, we do not know the marginal utility of the extra patrol officer.

Finally, the measures of effectiveness used to evaluate the contribution of patrol to the satisfaction of this goal are:

- activity counts: showing the number of non-crime related services provided, often as a percentage of the number of requests received for assistance.

- changes in the number and content of citizen complaints: concerning the failure to provide such services satisfactorily, if at all; and

- information from survey data: concerning the general quality of service provision and the satisfaction of the recipient with the performance of the police officer.

Exhibit IV summarizes findings regarding the merits of common measures of non-crime related service provision to the public.

(EXHIBIT IV)

MEASURES OF EFFECTIVENESS: PROVISION OF NON-CRIME RELATED SERVICES

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
Activity counts (typically as a percentage of the number of calls for service received),	The degree to which all calls for such services are responded to indicates the effectiveness of the police in providing such services.	This does not reflect the quality of response, only the fact of response. This measure does not control for the possibility that calls for service are not being made because of citizen perceptions that the response will be inadequate.	A measure which has high reliability and validity if and only if it can be supplemented with community attitude surveys measuring citizen satisfaction with services provided.
Attitudinal survey data of the general population and of individuals who have had non-crime related service encounters with the police.	Survey research utilizing appropriate scaling techniques provides a direct measure of citizen satisfaction with police services.	While yielding a measure of the number of people satisfied with the provision of services, and a measure of their reliance upon the police for same, it is extremely difficult to measure intensity of feeling.	A reliable and valid measure of the effectiveness of performance of non-crime related services, particularly when reflected upon in the light of data on the percent of calls for service responded to.
Police statistics reporting such things as the number and content of complimentary or critical correspondence received from the public.	Correspondence received by the department is indicative of the general effectiveness with which such services are performed.	Citizens that communicate directly with the police are not necessarily representative of the general population. In addition, there is no way of guaranteeing the integrity of the data base.	There is no demonstrated reliability or validity justifying the use of correspondence as a measure of effective service provision.

D. Provision of a Sense of Community Security and Satisfaction with the Police

The fourth goal of traditional preventive patrol, the provision of a sense of security to the community and the generation of a sense of community satisfaction with the police, is usually considered to be somewhat subsidiary to the preceding goals. Positive community attitudes toward the police are recognized to be related to the goals of deterrence and apprehension. It is normally assumed that effective attainment of deterrence, apprehension, and non-crime service provision will result in high levels of perceived community security and satisfaction with police activities; however, some operational tactics are assumed to contribute more to the attainment of this goal than others. It is, for example, commonly believed to be influenced by the level of police corruption, demeanor of patrol officers, and officer characteristics such as race, language skills, and sex. Generally, though, deterrence and apprehension by patrol operations are also assumed to serve the goal of citizen satisfaction and sense of security.

While the impact which varying levels of visibility, aggressive patrol, and the utilization of women have on community attitudes has been studied to a limited extent, the other assumed relationships remain untested.[32] Surveys of citizen attitudes toward the police have been conducted, but only a few studies have attempted to relate survey results on a before and after basis to specific changes in patrol operations.

The measures which have been used to determine the impact of patrol upon the level of community security and satisfaction have, to a degree already been suggested. They include:

— attitudinal data collected: from general population surveys and surveys of citizens who have had encounters with the police.

— attitudinal data inferred: from citizen complaints about the police, structured observations of police-citizen encounters, and officer response times.

Survey research provides a direct measure of citizen attitudes toward the police; however, surveys offer little information regarding the intensity of those attitudes. While in principle it is possible to use surveys to determine the impact of changes in patrol techniques upon the attitudes and feelings of the public, these measures have seldom been employed properly for this purpose. Accurate information on this relationship requires testing of attitudes prior to any change in techniques and subsequent retesting at an appropriate time after the change. The Kansas City Preventive Patrol Experiment, the Women in Policing Study, and the San Diego Field Interrogation Experiment employed these steps correctly, but there are still questions which can be raised concerning the quality of the first two of these surveys *per se*.[33] As a result of the limited number of before and after surveys, rather little is known about the relationship between patrol tactics and citizen attitudes.

The second type of attitudinal data, those inferred from complaints, structured observations and response times, are generated on the basis of assumed relationships. The number and tone of complaints received against patrol

officers is often used as an indicator of attitudinal dispositions. The problem in using this measure is that the number of complaints received can be influenced by both departmental procedures and by factors outside the control of the police, particularly media coverage. In addition, there is no basis for assuming that the complaints received have come from a representative sample of the population. Similar problems are faced in the use of structured observations of police-citizen encounters: it is at best immensely difficult to insure that observed encounters constitute a representative sample of all police-citizen contacts. One can never be certain how the presence of an observer might affect the number, type, and quality of observed interactions, and characterization of attitudes on the basis of observation is not a completely satisfactory procedure. While complaints and observation may point to specific concerns which should be addressed in attitudinal surveys, neither can be properly used as grounds for making general statements about public attitudes as a whole.

Finally, the use of response times as an indication of attitudes assumes that a community's sense of security is dependent on perceptions of the ability of the police to respond quickly to calls for service. While there is some evidence that response time is an important determinant of satisfaction with police services,[34] the relationship is not sufficiently well established to allow attitudes to be inferred from response time. Indeed, given the many dimensions contributing to the public's sense of security and feelings toward the police, it is doubtful whether indirect measures of attitudes, either individually or in combination, can ever be adequate.

In short, while measures of community attitudes exist, they have not been adequately used to test the impact of tactical changes on levels of citizen satisfaction and felt security. As a result, most of the reported relationships are based on uncertain assumptions.

Exhibit V summarizes findings regarding the merits of common measures of citizen security and satisfaction currently in use.

E. Recovery of Stolen Goods

The fifth goal of patrol is the recovery of stolen goods. This goal receives rather limited attention: except for the recovery of stolen cars, satisfaction of the goal appears to be most often achieved only incidentally to the realization of other goals. The location and recovery of stolen goods is primarily the concern of investigative personnel rather than patrol officers. The search for stolen automobiles, however, is a normal and frequently emphasized part of a patrol officer's routine. Tactical considerations in the performance of this function include an emphasis on traffic stops and spot checks, the use of special look-out sheets, and the deployment of two-officer cars for reasons of safety. The recovery of stolen goods as a goal loses much of its significance unless goods can be returned promptly to their rightful owners. Legal evidence requirements appear to have hindered police efforts to meet this objective.

Measurement of effectiveness in achieving the above objective is based on:

(EXHIBIT V)

MEASURES OF EFFECTIVENESS: PROVISION OF COMMUNITY SECURITY AND SATISFACTION WITH THE POLICE

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
Attitudinal survey data of the general population and of citizens who have had encounters with the police	Survey research, utilizing appropriate scaling techniques, provides a direct measure of the number of people in the community who feel secure and/or are satisfied with the services provided by the police	While yielding a measure of the number of individuals who feel secure and/or are satisfied with police services, it is extremely difficult to measure intensity of feelings.	A reliable and valid measure of the number of people who are satisfied with police services and/or who feel secure within the community.
Attitudinal data developed through structured observation.	Structured observations conducted by trained observers carefully recording data can yield reliable and valid information concerning the attitudes of citizens.	On the basis of a chance encounter it is not possible to infer the basic attitudes of the citizenry, even the ones of the moment. There is no way of controlling for the effect which the observer has upon the individuals party to the actual encounter. There is no way of guaranteeing the randomness of the encounters. If it is possible to generalize at all, it is only to the population having encounters with the police, and not to the general population.	There is no demonstrated reliability or validity justifying the use of structured observation to measure the attitudes of the citizenry with regard to police performance or sense of community security.
Officer response time.	The attitude of the citizenry towards the police and the sense of felt security is affected greatly by the rapidity with which officers respond to calls for service.	Officer response time is a self serving measure. The evidence supporting the link between response time and attitude is conflicting, and of questionable validity and reliability.	An indirect, inferential measure which has no demonstrated reliability or validity.

(EXHIBIT V continued)

MEASURES OF EFFECTIVENESS: PROVISION OF COMMUNITY SECURITY AND SATISFACTION WITH THE POLICE
continued

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
Police statistics reporting such things as the number of letters received either complimentary to or critical of the police.	The correspondence received by the police department is indicative of the general tone and feeling of the community.	Citizens that communicate directly with the police are not necessarily representative of the general population. In addition, there is no way of guaranteeing the integrity of the data base.	There is no demonstrated reliability or validity justifying the use of correspondence received as a measure of community attitudes.

— value of goods recovered.

— aggregate amount of goods recovered: as a percentage of the aggregate amount reported stolen.

— speed with which recovered goods are returned to owners.

The first two indicators are both direct measures. However, since neither is related to the total amount of stolen goods, but at best only to the reported amount, changes in the value or quantity of recovered goods may indicate either increased patrol effectiveness or possibly decreased effectiveness if the value or quantity of property stolen has also increased. The prompt return of recovered property is an important goal, but is not ordinarily the responsibility of patrol officers.

Exhibit VI summarizes findings regarding the merits of common measures of stolen goods recovery currently in use.

As indicated earlier, the goals of patrol are themselves intricately related to one another. The tactics and strategies directed at the realization of any one goal may either reinforce or interfere with efforts to attain others. The nature and direction of the interrelationships among goals are displayed in summary form in Exhibit . The relationships are expressed in terms of assumptions which are widely held by researchers and professionals. The lower left of the cross-support matrix displays aspects of goal interference; the upper right represents goal reinforcement. (This exhibit is included among those immediately following this chapter.)

III. Strategic and Tactical Objectives: The Intermediate Goals of Traditional Preventive Patrol

As discussed previously, traditional preventive patrol is only one set of activities affecting the level of goal attainment: realization of the five primary goals is also a function of: (1) the other activities of the patrol division (e.g., specialized patrol); (2) the activities of other divisions of the department; and (3) the social, economic, demographic, institutional, and political milieu in which the department is operating. As a consequence, traditional preventive patrol can have only a limited impact upon the level of goal attainment accomplished by the department. Analytically, the impact of traditional patrol upon goal realization can, as depicted in Exhibit I, be viewed as a function of the attainment of eight interrelated, intermediate, strategic and tactical objectives. They are the desired level of: (1) patrol visibility; (2) predictability of patrol unit movement; (3) patrol unit response time; (4) preventive patrol activity; (5) service provision; (6) officer compatibility with the community patrolled; (7) officer knowledge about the community; and (8) officer misconduct and corruption. Unlike the five goals of patrol, it is believed that the attainment of these intermediate objectives can be realized through manipulation of the resources of a department.

(EXHIBIT VI)

MEASURES OF EFFECTIVENESS: RECOVERY OF STOLEN GOODS

EFFECTIVENESS MEASURES	SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS	RELIABILITY AND VALIDITY
Value of goods recovered.	Directly measures the amount of goods recovered.	While typically reported, it is seldom if ever related to the value of goods stolen and as such does not provide a measure of effectiveness. The value of goods recovered is not necessarily related to the number of items stolen. As such, a high value recovery may mask the fact that most goods stolen are not recovered. The obverse also applies. The goal is not merely to recover stolen property, but rather to in turn have it restored promptly to its rightful owner. The measure does not reflect the return of goods.	No demonstrated reliability or validity as there is no attempt to relate this to the value lost. In addition the measure does not address the purpose of recovery.
Value of goods recovered as a percent of the value of goods stolen.	In relating value stolen to value recovered, this is a true reflection of the recovery-effectiveness of the police.	The value of goods recovered is not necessarily a reflection of the number of items stolen. The value of goods stolen as known to the police only reflects loss in reported crimes which can not be assumed reflective of total loss The measure does not indicate the degree to which goods are promptly restored to their rightful owners.	There is no demonstrated validity or reliability justifying the use of this measure. In addition, it does not measure the return of goods to owners which is a major purpose of recovery.
Number of items recovered and returned promptly to their rightful owners as a percent of the number of items stolen.	A true reflection of the effectiveness of recovery and return.	This measure does not reflect a concern for the value of the items stolen. It may be beneficial to prioritize recovery on the basis of value.	

The desired levels of attainment are based upon assumptions linking each intermediate objective to the attainment of one or more of the five basic goals. As such, a discussion of each intermediate objective has, in part, already been subsumed in the discussion of the five primary goals.

In constructing this analytical framework, the eight interrelated strategic and tactical objectives have been abstracted from the literature, program and project documents, and site visit interviews. They facilitate the analysis by providing a conceptual understanding of the composite activities of traditional preventive patrol.

In a like manner, a representative universe of assumptions linking each intermediate objective to the attainment of each ultimate goal has also been constructed. In any single department it is quite possible that only a few of these intermediate objectives are explicitly identified or articulated, and that only a subset of the universe of identified assumptions are explicitly acknowledged. However, it is believed that many may be implicit in the operational reality of a patrol division, thereby providing the underlying rationale for the activities of patrol operations. In sum, departments seek to achieve a desired level of objective attainment on the basis of assumptions linking each objective to the attainment of one or more of the primary goals.

The eight intermediate objectives are defined below. The specific assumptions linking each objective to the primary goals are presented in Exhibit VIII. The statement introducing these exhibits should be kept clearly in mind when reviewing the assumptions.

A. Level of Visibility

The level of visibility is defined as the degree to which the immediate presence of the police within a community is projected by the routine movement of uniformed officers and marked patrol vehicles through a jurisdiction. The level of visibility should not be confused with the level of perceived police presence which is affected not only by visible patrol, but also by other police activities such as investigative, covert, community relations and public education work.

The level of patrol visibility can be changed by the manipulation of any of the inputs and processes of traditional preventive patrol: (1) deployment procedures affect the level of visibility by determining the number of units and officers assigned to defined areas, by designating their patterns of travel, and by defining dispatch practices throughout the jurisdiction; (2) supervisory practices have an impact on officer attentiveness to duty thereby affecting his observable presence and movement on the streets; (3) task assignments impinge on visibility by affecting the activities engaged in by officers; (4) transportation modes influence the citizen's ability to detect the presence of an officer or unit; and (5) officer characteristics are thought to affect the willingness of officers to project their presence within a community.

In practice, departments have attempted to manipulate modes of transportation and basic deployment and task assignment configurations in order to increase the level of patrol visibility in the community. They have varied the use of foot patrol and assigned additional patrol units to particular areas

where there is a high level of criminal activity or considerable citizen concern for additional services: Boston, Massachusets;[35] Washington, D.C.;[36] Fort Worth, Texas;[37] Portland, Oregon;[38] and Rochester, New York[39] are but a few examples where concentrated use of foot patrol has been adopted for these reasons. Helicopters, introduced in order to increase the level of patrol and response time, have also been found to communicate a "visible" patrol presence.[40] Another approach, used in such jurisdictions as Cleveland Heights, Ohio; Beloit, Wisconsin; Duluth, Minnesota; and Evansville, Indiana, has been to vary in the extreme the number of visible patrol units by time of day and day of week in order to increase the number of units during the times of highest activity on the street.[41] In addition, in Cleveland Heights more use is being made of one-officer cars in order to increase the number of units on patrol, and visibility is also being increased through the implementation of a take-home car program for officers who live within the jurisdiction.[42] (The state of the knowledge about the merits of these individual practices, as in the case for all examples cited throughout this section, will be discussed in the following chapters.)

Unlike the problems involved in the measurement of goal attainment, the level of visibility can be directly and effectively measured by cordon counts, the number of miles traveled, and citizen surveys directed at determining the level of perceived visibility. Indirect measurement is also possible by computing ratios which normalize the number of units deployed on the basis of population density or street activity patterns. It is noted that measurements based upon citizen surveys are somewhat problematic. Actual patrol officer or unit visibility may be confused in the mind of the respondent with perceived police presence and the level of individual awareness may be influenced by factors such as personal encounters with the police.

B. Level of Predictability of Movement

The level of predictability of movement is defined as the degree to which citizens are able to estimate the time at which a patrol unit will pass any given point within the jurisdiction. Predictability of movement is particularly affected by the specification of patrol travel routes and the selective dispatch of units to calls for service. In addition, it may be influenced by supervisory practices which monitor officer adherence to assigned routes and patrol guidelines.

While the concept of predictability of movement receives considerable attention in the literature on patrol deployment,[43] it seems to receive only marginal attention by departments. Patrol officer training programs normally direct officers to adopt non-repetitive, random patterns of movement in order to interject an element of uncertainty into the would-be criminal's calculations and heighten his fear of apprehension.[44] However, non-predictability is not commonly emphasized as a major factor contributing to the effectiveness of patrol. The only explicit attempt found in the course of this study is to minimize movement predictability occurred in the course of an experiment in Endina, Minnesota;[45] no explicit attempt to maximize predictability of movement was found. Foot patrol, however, given the limitations on the officer's mobility, results in highly predictable movement. Also, when officers under their own discretion tend to travel the same routes, the predictability of movement is heightened though a level of unpredictability is always present due to officer travel to and from points to which they are dispatched.

While random routes can be generated using simulation models,[46] in practice the measurement of movement predictability is extremely problematic except when the goal is to achieve high predictability through repetitive route assignment; in such cases, cordon counts and observation of officers may provide an adequate indication of adherence to routes. Where random movement is to be achieved through adherence to a defined randomly generated route of travel, adherence to that route can be monitored again by cordon counts or through, for example, the assignment of a call box sequence for officer call-ins — in such cases the call box is to the officer what a punch clock is to a watchman. In all other cases — where randomness and low predictability of movement are desired but routes are not prescribed — no firm, reliable measure seems to apply. Indications of randomness of movement may be gained, perhaps, through officer and community surveys to determine the degree to which the officer "seems" to be at the same places at the same or different times during the shift. Assumptions of low predictability may, however, be valid in patrol systems where the officers are assigned daily to different beats, since long term recurring patterns of movement do not have time to develop.

C. Level of Response Time

The level of response time is defined as the amount of time which elapses between the receipt of a call for service by the dispatcher and a unit's contact with the relevent situation at the designated location. Response time, in this context, includes only the rapidity of dispatch and the travel time of the officers to the destination. In general, as it is regarded here, response time is a function of the deployment, dispatch and task assignment practices of a department, and of the mode of transportation of officers.

Because of its considered importance, particularly with regard to response to emergency situations and its assumed impact upon the level of citizen satisfaction with the police and felt security in the community, reduction of response time has received considerable attention by departments throughout the country. While a comprehensive discussion of the efforts to reduce response time is contained in Chapter 2, "Deployment of Patrol Officers," examples of the types of activities engaged in range from the utilization of an automated vehicle monitoring system in St. Louis, Missouri, for the purpose of determining the unit nearest to the destination;[47] to the implementation of deployment and allocation approaches to match the levels of patrol to predicted levels of demand by time of day and/or day of week, as in Cleveland Heights, Ohio,[48] and Pueblo, Colorado;[49] to the use of beat sector redesign models in order to minimize travel time to calls for service and the likelihood of response queuing as in Quincy, Massachusetts.[50] In addition, helicopters have been introduced into patrol in order to reduce response time.[51]

Response time, as defined here, is subject to direct measurement by the dispatcher (in cooperation with the patrol officers). It entails monitoring the elapsed time from receipt of call to arrival at the destination, a point in time which can be designated by officer call-in upon arrival. Another, and more accurate measurement can be achieved by the use of observers. This was done in the forthcoming Kansas City, Missouri Response Time Study.[52]

Two types of statistics have been generated to measure response time. The first is the "average response time" statistic which is common to most

departments and presents the average time for all calls for service. The use of this statistic for analysis is problematic as it may mask the fact that while response to emergency situations is extremely fast, response to non-emergencies may be appropriately slow. A second disaggregated statistic measures response time by type of call. This appears to be more useful as it permits differentiation between types of calls for service, enables assessment of reasons for differential response times, and allows for evaluation of the impact of differential response times upon the outcome of the call for service. This type of measurement was used in the Kansas City, Missouri Response Time Study.

D. Level of Preventive Patrol

The level of preventive patrol is defined as the amount of time available for routine movement through an assigned beat by the patrol unit. In the aggregate, the amount of time available for patrol is affected by the number and types of calls for service (crime and non-crime), and the number and types of officer initiated actions. Given the time demands of calls for service and officer-initiated activities, the degree to which patrol time is equalized across beats and the amount of time available to individual officers for patrol within a given beat are primarily functions of the number of assigned officers, the boundaries of the beats, and the dispatch procedures.

In order to achieve or maintain a desired level of patrol activity, departments have increased the number of officers assigned to patrol duty, and/or authorized overtime work. Another approach has been to assign paid non-sworn civilians to respond to non-crime calls for services thereby freeing the time of sworn officers for patrol. This has been done in Worcester, Massachusetts;[53] Fremont, California;[54] and Rochester, New York.[55] In Cleveland Heights and in other cities with PEP programs, the level of patrol was increased during high crime times by allocating manpower on the basis of a time of day and day of week analysis of service demands.[56] This was also done in Pueblo, Colorado.[57] In Denver, Colorado, officers were assigned to patrol on motor bikes in order to increase the level of preventive patrol in a high crime area of the city.[58] In Quincy, Massachusetts, a patrol allocation model was utilized to redraw beats in order to equalize service demands and minimize response time, thereby, in theory, maximizing the amount of time available for patrol, and equalizing that time across all beats.[59] In Los Angeles County, California, helicopters have undergone extensive evaluation as a vehicle which may dramatically increase the patrol coverage afforded a department.[60]

The level of preventive patrol activity can be measured directly by using observers assigned to ride with patrol units, as was done in Kansas City, Missouri,[61] or by computing the residual amount of time left to officers while not responding to calls for service. The latter measurement is, however, problematic as it does not identify the activities of the officers while not responding to calls and, as a result, there is no way of knowing if the vehicle is parked or moving. To control for this, the level of patrol can be estimated on the basis of miles traveled by patrol vehicles as is being done in Cleveland Heights, Ohio.[62] Another approach to computing the level of preventive patrol is possible in St. Louis, Missouri, where a Vehicle Monitoring System allows direct, real time measurement of the movement of patrol vehicles.[63]

E. Level of Service Provision

The level of service provision is defined for the purpose of this study as a composite of the percentage of calls for service received by a department which are responded to by the dispatch of patrol officers and of the level of reported activities (e.g., traffic stops, building checks, road and light maintenance reports, etc.) engaged in by the officers. Indirectly it can also be described as the percentage of the patrol officer's time expended in responding to calls for service and engaging in these self-initiated activities.

Given the level and types of services demanded of and engaged in by the patrol officers, the ability of departments to respond to a given percentage of these calls is directly affected by: (1) the deployment configuration: the number and types of patrol units in the vicinity of the location to which the unit(s) is dispatched; (2) the dispatch procedures: the priority placed upon the call and the ability of the dispatcher to assign the closest and most appropriate unit to respond; (3) the task assignment orientation: the number of units available to undertake the type of service delivery called for; and (4) the mode of transportation: the ability of the vehicle to respond quickly and provide the needed flexibility. As such, the attainment of a desired level of service provision is closely intertwined with the attainment of the objectives of patrol activity level and response time.

In order to achieve this objective, departments have adopted explicit service level goals, with most departments adopting a policy of responding to almost all calls for service.[64] Departments have utilized deployment and allocation models in order to determine the appropriate configuration of units throughout the jurisdiction, thereby guaranteeing the level of unit availability to respond to citizen-articulated and officer-observed service needs without compromising the ability of the patrol units to maintain the desired level of preventive patrol. Quincy, Massachusetts;[65] Boston, Massachusetts;[66] Cleveland Heights, Ohio;[67] and Pueblo, Colorado[68] are but a few examples of the explicit utilization of models for this purpose. In addition, apart from the other benefits to be derived, the Miami Beach Police Department has adopted a 10 hour day and 4 day work week and has thereby effected an overlapping of shifts which increases the level of service patrol capability at various times of the day.[69] A similar plan was adopted in Fort Worth, Texas, in order, in part, to improve the level of service provision.[70]

Given the limited resources of departments, attempts have also been made to utilize more effectively the available patrol time by carefully planning the activities of uniformed patrol officers in order to meet the defined service needs of individual beats. Two interesting examples of such attempts occurred in the San Diego Community Oriented Policing program[71] and in the Kansas City, Missouri directed and interactive patrol programs.[72] A somewhat less structured effort is being made in University City, Missouri, through the adoption of the PREWARNS system as an approach to crime prevention. This program includes the *ad hoc* manipulation of patrol deployment configurations in order to match predicted service demands within different parts of the city.[73]

Still another approach to providing the desired level of services has included the utilization of civilian personnel as an adjunct to the patrol force. For example, in Worcester, Massachusetts[74] and in Fremont, California,[75] non-crime related duties and non-hazardous calls for service are being handled by civilian employees of the departments, thereby releasing the time of sworn

officers for crime related and potentially hazardous assignments.

Finally, due to increasing difficulty in providing the level of services demanded, departments are: assigning selected service activities normally handled by the patrol units to other less burdened divisions of the department, as in New Britian, Connecticut;[76] referring appropriate service calls for response or follow-up by more appropriate agencies as is commonly done throughout the country;[77] and ceasing to provide certain services as is exemplified by the decision of the Metropolitan Police Department of Washington, D.C. to no longer write reports in the event of minor traffic accidents.

Direct measurement of the level of service provision can be made by determining the percentage of calls responded to and by reviewing the activity logs of officers. To a degree, however, the latter measure is inadequate because there is no way of determining whether or not officers may have withdrawn from or ignored situations observed during patrol, situations into which they may have intervened but for some reason chose not to.

F. Level of Officer Compatibility with the Community

The level of officer compatibility with the community is defined as the degree to which the personal characteristics of patrol officers are felt to be important determinants of patrol effectiveness in different types of beats. The issue of compatibility is primarily concerned with the race, sex and language skills of patrol officers. (The influence which the psychological characteristics of officers has on beat assignments is not discussed in this report. With the exception of severe personality disorders, the effect of these characteristics on assignment practices appears to be mainly informal.)

Theoretically, the ability of departments to maximize officer-community compatibility rests upon the degree to which homogeneous beats can be defined and upon the availability of "matched" officers for assignment. While the importance of realizing such compatibility is mentioned in the literature,[78] in practice departments seldom explicitly attempt to match officer and beat characteristics. In part, the failure to do this is a result of equal opportunity and seniority considerations which militate against assigning minority officers routinely to the "most difficult" beats on a regular basis. The attempt to assign officers who know appropriate foreign languages to beats where these languages are spoken is the exception. For example, in Miami Beach, Florida, efforts are made to assign Spanish speaking officers to appropriate beats. It is also noted that, in an attempt to increase the quality of interactions between patrol officers and the citizenry, departments have experimented with the use of "blazers" in lieu of traditional uniforms and instructed officers in how to deal with the public. This practice is used in the police departments of Menlo Park, California[79] and Lakewood, Colorado.[80]

The measurement of race and language compatibility is straightforward: the attributes of the assigned officer and the beat need only be compared. There is a question, however, about functional compatibility, particularly as it concerns the sex of the officer, but also as it concerns, for example, white officers in black neighborhoods. Here the question is that of whether or not the officer will be accepted and respected by the community, and whether or not his other attitudes are compatible with the culture of the beat. Measurement of functional compatibility is quite difficult and costly. It depends

upon the construction of appropriate attitudinal scales and the administration of survey instruments. To a degree it may be possible to develop some data by using observers, as was done in the Washington, D.C., Women on Patrol Experiment.[81]

G. Level of Officer Knowledge about the Community

The level of officer knowledge about the community is defined as the degree to which an officer (1) is familiar with the service needs of an area; (2) can identify the places within the area which are particularly prone to problems requiring police intervention; and (3) is aware of the social, economic and cultural aspects of community life which will affect his ability to provide effective services to the public. Examples of some of the most interesting efforts to increase officer knowledge of the community are projects conducted in: Riverside, California, where officers, on a voluntary basis, participate in a community live-in program[82]; San Diego, California, where community oriented policing is being implemented[83]; and Kansas City, Missouri, where task forces are addressing the merits of directed and interactive patrol.[84] All of these programs place emphasis on an officer's knowledge and familiarity with the area of assignment.

Measurement of officer knowledge is possible by testing levels of beat information and reviewing essays describing and analyzing beat conditions. The procedure will remain problematic until such time as a relevant body of knowledge can be defined. It may be possible to infer degrees of knowledge regarding a beat on the basis of a consideration of the length of time which an officer has patrolled the same beat.

H. Level of Officer Misconduct and Corruption

The level of officer misconduct and corruption is defined as the degree of officer attentiveness to duty and compliance with the rules, regulations and ethical codes of the department. In a sense, the degree to which this objective is attained reflects upon the degree to which all other objectives are attained. The degree of compliance to duty has a significant impact on the quality of all activities.

Typically, departments have sought to recruit officers with higher educational levels, to instill a sense of responsibility through motivational programs, and to enforce adherence to departmental guidelines. Enforcement has been attempted through street deployment of supervisory personnel in order to establish the fact (or to project the image) of close supervision. In addition to monitoring patrol officer activity reports and the level of citizen complaints, an important departmental concern has been with maintaining low patrol officer/supervisor ratios. Also, it is not uncommon for departments to frequently rotate patrol officer beat assignments and partners for reasons related to officer attentiveness and corruption. Finally, it is noted that the Automatic Vehicle Monitoring system, as it is being tested in St. Louis, Missouri, offers departments an unprecedented opportunity to monitor on a real time basis the movement and activities of patrol officers. [85]

While some of the major innovations in patrol supervisory and motivational practices have occurred in the context of Neighborhood Team Policing Programs (and are thus not the subject of this report), some departments have recently attempted to supplement the traditional approaches to supervision or to alleviate the need for close on-going supervision in the context of the traditional preventive patrol model. For example, in San Diego, California, as part of the Community Oriented Patrol Program, the department sought to realize a greater degree of officer attentiveness to duty by allowing them a greater influence in the planning of beat activities.[86] In Cleveland Heights, Ohio, a similar objective was thought to have been realized, in part through an in-service motivational training program and in part through a deployment process which closely matches the number of officers assigned to duty to the anticipated activity needs of the shift.[87] In Menlo Park,[88] California, and Lakewood, Colorado,[89] the departments experimented with rank structure and uniform changes in order to enhance officer morale and thereby the quality of service provision.

The measurement of officer attentiveness to duty, misconduct and corruption is extremely problematic: while attitudinal tests provide insight into an officer's attitude towards his job and his level of job satisfaction, it is extremely difficult then to relate motivation and attitude to actual performance and activity; monitoring the level and type of complaints received does not provide a systematic, unbiased measure; a review of officer activity reports does not indicate what the officer did not do, or, for that matter, everything which an officer did do; and the reports of supervisory personnel are based largely on impressionistic information. On the assumption, however, that officer attentiveness and misconduct will reflect upon the level and quality of activity performed out on the streets and thereby impact upon the community's attitude towards the police, it may be possible to rely on community surveys to provide some insight into the level of officer responsibility. In Lakewood, Colorado, surveys were used for this purpose.[90]

IV. Patrol Inputs and Processes

In defining the concept of traditional preventive patrol and limiting the scope of this study, the analysis has focused upon three (3) patrol processes: deployment of units and officers; supervision of officers; and in-service task assignments; and upon two (2) input variables: the characteristics of patrol personnel and the modes of transportation for patrol. Taken together, these five factors are believed to be the major determinants of the ultimate effectiveness of traditional preventive patrol operations. Each aspect of patrol herein discussed has a direct impact upon the realization of the strategic and tactical objectives — the intermediate objectives — of patrol defined above, and through them, an indirect impact upon the degree to which traditional preventive patrol contributes to the realization of a department's five primary goals. By addressing each of these inputs and processes, traditional preventive patrol is being assessed at a disaggregated and micro level, and the analysis is focused on those variables which can be controlled by the police administration.

In the following pages each process and input is defined and the component elements of each are identified. The assumptions linking elements of each process and input to the attainment of the intermediate objectives are displayed in the exhibits following this section. In reviewing the assumptions,

the introductory explanation of the exhibits should, once again, be kept clearly in mind.

A. The Deployment Process

The deployment process defines the temporal and spatial arrangement of patrol units and officers within the jurisdiction. The consideration of patrol deployment includes an assessment of the major decision categories which have a direct impact upon the location and movement of the patrol units. From an analytical point of view, four aspects of the deployment process have been abstracted and defined. They are: (1) dispatch: the assignment of units to respond to calls for service; (2) the establishment of beat boundaries: the determination of the specific area within a jurisdiction to be patrolled by each assigned patrol unit; (3) the designation of the pattern of patrol unit travel: the determination of the routes to be followed by the units on patrol; and (4) the assignment of "extra" patrol units: the allocation of additional patrol units to particular areas of the jurisdiction to supplement the level of patrol coverage determined initially by the definition of beat boundaries.

These four aspects of deployment have been examined on a disaggregated basis in an effort to identify particular approaches and concerns reflected in each.

Dispatch has been disaggregated into four approaches which may be combined with one another in order to realize the "optimal" dispatch procedure. These four approaches are: (1) dispatch on an as-received basis: assignment of units to respond to calls for service in the order in which the requests are received by the dispatcher; (2) priority screening and referral: deferment of response by patrol units due to a decision that a more critical call should be handled first, or referral of a call to a more appropriate agency for response; (3) vehicle location and status screening: utilization of an advanced technological system in order to determine the most appropriate response unit on the basis of unit proximity to the location of the problem, and assessment of the importance of the activity of the unit at the time of dispatch; and (4) computer aided dispatch: retrieval by the dispatcher of pertinent data concerning the immediate vicinity of the response location to assist in a determination of the most appropriate number and type of units to dispatch.

The establishment of beat boundaries, the second aspect of the deployment process, has been disaggregated to reflect the five major considerations which are believed to affect a department's decision regarding the definition of the individual beats within the jurisdiction. These considerations are: (1) a determination of officer workload on the basis of the location, number, type, duration, and time of activities; (2) neighborhood boundaries: the inferred and derived borders of relatively closely-knit communities; (3) travel and response time: the amount of time which it takes to move by a defined mode through areas of the jurisdiction which, for any given distance, is a function mostly of traffic density at different times of the day, street width, and availability of direct routes; (4) population density, a major determinant of activity levels and sometimes used as a surrogate or supplement to workload analysis; and (5) the desired level of routine patrol: the amount of time which the department desires remain after all calls for service have been responded to.

Pattern of travel, the third aspect of patrol deployment, has been disaggregated to reflect three different approaches each of which either individually, or in combination with one another, may be adopted by a department. These approaches are: (1) officer discretion, which places the responsibility for determining the most appropriate route on the individual beat officer; (2) repetitive routing, which directs the assigned officer to travel repeatedly over the same course which was determined on the basis of workload, activity and service demand considerations; and (3) random travel, which emphasizes non-repetitive, unpredictable movement.

Finally, the assignment of extra patrol units has been disaggregated to consider three closely interrelated factors which may lead a department to increase the number of visible patrol units assigned to a particular beat. They are: (1) the degree to which the workload of individual beat officers excedes the ability of the officers to provide the desired level of service response; (2) changes in population density or characteristics which are believed to indicate a need for an increased level of visible patrol presence; and (3) the inability of the assigned patrol unit, given the level of services demanded, to maintain the desired level of routine patrol activity.

Taken together these four aspects of deployment and their 15 derivative sub-categories yield the configuration of officers patrolling within a jurisdiction. The particular assumptions linking patrol deployment to the strategic and tactical objectives of traditional preventive patrol are displayed in Exhibit IX.

B. Patrol Officer Supervision

The process of patrol officer supervision is defined to include those departmental practices engaged in for the purpose of maximizing officer attention to duty, guaranteeing officer conformance with tasks and assignments, and assuring the delivery of the highest possible quality of services. Three analytically distinct types of supervisory activities have been identified: first, the deployment of supervisory personnel in order to observe the conduct of officers on duty and suggest to them that they may be observed at any time during their tours; second, the monitoring of personnel, which includes a review of statistical information describing the officer's activities while on patrol and the review of citizen communications with the department concerning individual officer conduct; and third, monitoring of vehicular movement which is possible (beyond supervisory personnel deployment) only in those departments utilizing automatic vehicle monitoring and status screening systems. A major concern in the discussion of these practices is the degree to which they contribute to the intermediate objective of minimizing officer misconduct and corruption and through that objective to the realization of all others.

The major assumptions linking alternative supervisory practices to the strategic and tactical assumptions of traditional preventive patrol are included in Exhibit X .

C. In-Service Task Assignments

The activities of uniformed patrol officers assigned to general patrol duty can, at the highest level of generality, be divided into two categories

based upon their availability to receive and respond to calls for service. When the unit is available to receive and respond to a call for service it is considered to be in-service; having received a call, the patrol unit is "taken out-of-service" until the conclusion of the activity, at which time it again becomes available for dispatch. Conceptually, a patrol unit's in-service time is therefore the amount of time available when not responding to calls for service with one exception. In the course of a unit's in-service activities, if a situation which requires police intervention is observed, the officer may take the unit out-of-service for the duration of the incident.

During the interval when a unit is out-of-service, the activities of the officers are outside the scope of this study. While the characteristics of the out-of-service activities of patrol units have a significant impact upon deployment (as is clear in the discussion of deployment and personnel factors), this study focuses only upon in-service tasks and the process of in-service task assignment.

In-service task assignments can be divided into two analytically distinct categories, on the basis of the degree to which specific tasks are planned prior to the patrol shift. The first category, routine patrol, is the ongoing routine movement of the unit through the assigned territory for such general purposes as providing a visible presence within the community, gaining information about activities within the community which may be of interest to the department, identifying situations which may require immediate police intervention, and providing a capability for quick response to calls for service. The second category, directed activity, includes tasks performed by the patrol officer which, on the basis of a certain degree of planning, are either pre-determined by the officer with the advice and consent of patrol supervisors or are assigned to the officer to be carried out during the patrol shift. Within these categories range an almost endless array of activities, some of the most important and common of which are: field interrogations and interviews, crime and suspect oriented patrol, community relations, counseling citizens on crime prevention techniques, and work with specific segments of the population such as juveniles and the elderly.

In a consideration of in-service task assignments, both specialized patrol and neighborhood team policing can be conceptually viewed as permutations of the traditional preventive patrol model. The former typically places an emphasis on crime and suspect oriented, directed activities delegating them to a distinct squad which operates within the context of the general patrol division and to a greater or lesser degree coordinates its activities with those of the traditional preventive patrol units. The latter, neighborhood team policing, on the other hand, emphasizes the level of community specific planning by officers familiar with their beats in order to determine the optimal range of team activities.

The particular assumptions linking in-service task assignments to the strategic and tactical assumptions of traditional preventive patrol are displayed in Exhibit XI .

D. Characteristics of Patrol Personnel

The input variable "characteristics of patrol personnel" has been defined for the purposes of this study to include an assessment of the impact of an officer's race, sex, and educational level upon his or her ability to carry out assigned responsibilities under various sets of circumstances. The discussion of sex and race includes a consideration of both the degree to which these general attributes affect the quality of officer performance and the more limited concerns of equal employment opportunity. The analysis of officers' educational levels treats education in the context of widespread concerns about police professionalism.

In general, while officer characteristics can be considered as an analytically discrete category, the impact of race, sex, and educational level upon the realization of the intermediate and ultimate goals of patrol are profoundly affected by the processes of deployment and in-service task assignment: the characteristics of patrol officers are important determinants of the output of patrol only in terms of the placement of the individual officers within the community and their assigned activities.

The particular assumptions linking officer characteristics to the strategic and tactical objectives of traditional preventive patrol are displayed in Exhibit XII.

E. Modes of Patrol Transportation

The input variable "mode of transportation" is defined to include the means of conveyance used by uniformed patrol officers assigned to preventive patrol duty. The available types of modes include foot, two wheeled vehicles, four wheeled vehicles, and aircraft. The specific conveyances are foot, bicycle, motor bike, motor scooter, marked patrol cars (one and two-officer) and helicopters (when used for general patrol in coordination with uniformed and marked ground patrol units). Each mode of transportation has operating and structural characteristics which affect: the officer's comfort, morale, and safety; the vehicles' flexibility of use, economy of operation, and availability for service ; and the perceptions of the citizenry regarding the level and quality of service which they are receiving. These characteristics and their associated effects are considered to be more or less important depending upon the modes' actual pattern of use as defined by the processes of task assignment and deployment.

The particular assumptions linking Nodes of Patrol Transportation to the strategic and tactical objectives of traditional preventive patrol are displayed in Exhibit XIII.

V. Assumptions Governing Traditional Preventive Patrol Operations

In the preceding pages the primary goals of traditional preventive patrol were set forth, the strategic and tactical objectives of patrol were discussed, and the patrol processes and inputs which can be manipulated by patrol administrators in an effort to achieve these goals and objectives were defined. In an analytical sense, the decisions governing the actual patrol operations of any department reflect the administrator's implicit and explicit assumptions linking the various aspects of each input and process to the realization of the strategic and tactical objectives, and linking the attainment of these intermediate objectives to the realization of the five primary goals of patrol.

In the following pages a universe of assumptions is displayed showing the interrelationship between the primary goals of patrol; the linkages between the intermediate objectives — the strategic and tactical objectives of patrol — and the goals of patrol; and the linkages between patrol inputs and processes and the strategic and tactical objectives. The charts summarizing these "linking assumptions" present analytical constructs. They do not display facts or knowledge about patrol; rather, they display points of view and oftimes differences of opinion which exist regarding alternative approaches to patrol. They are intended not only to display assumptions, but also to highlight controversy. On the charts summarizing the assumptions regarding the processes of patrol, however, in order to achieve an economy of expression, the assumptions have been stated only in the positive. For each positive statement, one or more opposing statements can probably be generated.

In general, an attempt has been made here only to lay out a universe of hypotheses, assumptions and opinions, subsets of which appear to govern the actions of individual departments. No department or patrol administrator necessarily addresses all of these assumptions. It is believed, however, that in reviewing these charts, every patrol administrator will have an opinion regarding the relative merits of each. As a result, the belief system of any department regarding traditional preventive patrol, can be constructed by identifying that department's orientation towards each assumption. These displays should, therefore, facilitate a department's confrontation with the assumptions governing its activities.

Two final points regarding these exhibits are in order. First, the process of developing them involved abstraction from the literature, program and project reports, and site visit experiences, and a logical attempt to "create" an opposing or supporting assumption where none were explicitly found. Second, these charts do not purport to display a resolution of issues. An attempt to differentiate between opinion and fact is left to the substantive chapters addressing each input and process. The displays, however, will assist the reader in systematically thinking about traditional preventive patrol and its many interrelated components.

EXHIBIT VII

AN ILLUSTRATION OF ASSUMED INTERRELATIONSHIPS
AMONG PATROL GOALS

NOTE: This exhibit provides an illustration of the interrelationship between patrol goals indicating how actions designed to enhance attainment of one goal may have both positive and negative effects upon the attainment of others. As explained on page 36, these assumptions are presented here in schematic form to facilitate the systematic analysis of patrol activities.

(EXHIBIT VII)

AN ILLUSTRATION OF ASSUMED INTERRELATIONSHIPS AMONG PATROL GOALS

GOALS	DETERRENCE	APPREHENSION
DETERRENCE	GOAL REINFORCEMENT / GOAL INTERFERENCE	The higher the level of apprehension, the greater the deterrent effect of patrol.
APPREHENSION	1. While high visibility may enhance the deterrent effect of patrol, it may also detract from the apprehension effect by diminishing the probability of intercepting a crime in progress. 2. The greater the commitment of patrol resources to investigative activities, the lower the commitment to general patrol, and the lower the level of deterrent effect. The obverse also applies.	GOAL REINFORCEMENT / GOAL INTERFERENCE
PROVISION OF NON-CRIME RELATED SERVICES	The greater the level of service provision, all else equal, the lower the level of resources available for patrol and the lower the level of deterrence. The obverse also applies.	The greater the level of service provision, the less time available for investigative activities and the lower the apprehension level. The obverse also applies.
COMMUNITY SECURITY AND SATISFACTION	1. The higher the level of aggressive patrol activity, the higher the level of deterrence, but the lower the level of citizen satisfaction. 2. As the level of satisfaction and security may derive more from the provision of non-crime services than from the deterrent effect of patrol, the greater the resource commitment to deterrence, the lower the level of citizen satisfaction.	1. The higher the level of aggressive patrol activity, the higher the level of apprehension, but the lower the level of citizen satisfaction. 2. As the level of satisfaction and security may derive more from the provision of non-crime services then from the apprehension effect of patrol, the greater the resource commitment to apprehension, the lower the level of citizen satisfaction.
STOLEN GOODS RECOVERY	1. Time spent on deterrent activities may decrease the ability of the force to recover stolen goods, and vice versa. 2. Time spent on aggressive patrol activities may alienate the community and interfere with the flows of information which may enhance the capability to recover stolen goods.	All else equal, attainment of goals of goods recovery and apprehension do not interfere with one another.

(EXHIBIT VII)

PROVISION OF NON-CRIME RELATED SERVICES	COMMUNITY SECURITY AND SATISFACTION	STOLEN GOODS RECOVERY
Service provision affords a heightened opportunity to develop citizen support and cooperation thereby enhancing the deterrent capability of the patrol force.	The higher the level of deterrence, the greater the feeling of security and the greater the level of citizen satisfaction with the police.	1. The higher the level of deterrence, the less the need to recover goods. 2. The more aggressive the patrol activities, the more likely the recovery of stolen goods (but not necessarily prompt return to rightful owner).
Service provision affords a heightened opportunity to develop citizen support and cooperation thereby enhancing the apprehension capability of the patrol force.	The higher the level of apprehension effected by patrol, the greater the level of felt security and satisfaction.	The higher the level of apprehension, the higher the level of goods recovery (but not necessarily prompt return to righful owner).
GOAL REINFORCEMENT / GOAL INTERFERENCE	The higher the level of non-crime related service provision, the higher the level of felt security and satisfaction.	Service provision affords a heightened opportunity to develop citizen support and cooperation, thereby enhancing the recovery capability of the patrol force.
As the levels of apprehension and deterrence may have more of an impact on citizen satisfaction and felt security than does the level of service provision, the greater the commitment of resources to service provision, the lower the level of felt security and satisfaction.	GOAL REINFORCEMENT / GOAL INTERFERENCE	The higher the level of goods recovery, the higher the level of felt security and satisfaction if and only if the goods are promptly returned to the rightful owner.
The more resources committed to the recovery of stolen goods, the less resources available for the provision of services. The obverse also applies.	As the recovery and return of stolen goods may have less an impact on felt security and satisfaction than the deterrance, apprehension and service provision activities, all else equal the more resources expended on goods recovery, the lower the level of felt security and satisfaction.	GOAL REINFORCEMENT / GOAL INTERFERENCE

EXHIBIT VIII

PREVAILING TACTICAL AND STRATEGIC ASSUMPTIONS

NOTE: This exhibit displays a universe of assumptions relating patrol strategies and tactics to the goals of patrol; subsets of this universe govern the operation of patrol divisions throughout the country. The validity of these assumptions is addressed in appropriate chapters of this report. As explained on page 36, these assumptions are presented here in schematic form to facilitate systematic analysis of patrol activities.

CONTINUED

1 OF 4

(EXHIBIT VIII)

PREVAILING TACTICAL AND STRATEGIC ASSUMPTIONS

GOALS / OBJECTIVES	DETERRENCE	APPREHENSION	PROVISION OF NON-CRIME RELATED SERVICES	COMMUNITY SECURITY AND SATISFACTION	STOLEN GOODS RECOVERY
LEVEL OF VISIBILITY	The higher the level of visibility, the greater the deterrent effect of the patrol force.	The higher the level of visibility, the less likely the patrol officer is to intercept a criminal in the act of a crime.	Visibility has little effect on service provision, all else being equal. The effect which does exist derives from the enhanced ability of the citizen to hail an officer on patrol.	The higher the level of visibility, the greater the sense of felt security and satisfaction with the police.	Through its impact on apprehension, the level of visibility affects goods recovery (but not necessarily the prompt return to the rightful owner).
LEVEL OF PREDICTABILITY OF MOVEMENT	The less able the would-be criminal is to predict the presence of the patrol unit, the higher the deterrent effect of the patrol activity.	The less predictable the movement of the patrol unit, the more likely that the unit will intercept a crime in progress and apprehend the perpetrator.	The level of predictability of movement has no effect on service provision, all else equal.	The level of predictability of movement has an indirect effect upon felt community security and satisfaction through its direct impact upon deterrence and apprehension.	Through its impact on apprehension, the level of predictability effects the level of goods recovery (but not necessarily the prompt return to the rightful owner).
LEVEL OF RESPONSE TIME	The lower the response time, the greater the deterrent effect of the patrol operation as the would-be perpetrator perceives a heightened probability of apprehension.	Particularly with regard to responding to criminal acts in progress, the lower the response time, the higher the probability of apprehension.	The lower the response time, the more rapidly the service can be performed. With regard to emergency medical situations and to other circumstances that could escalate into criminal acts, response time is critical to effective service provision.	The lower the response time to any and all calls for service, the greater the level of felt security and community satisfaction. (We note however that a step function exists with regard to perceptions of elapsed time. Therefore, small reductions in time are likely not perceived.)	Through its impact on apprehension, the level of response time affects the level of goods recovery (but not necessarily the prompt return to the rightful owner).

(EXHIBIT VIII continued)

PREVAILING TACTICAL AND STRATEGIC ASSUMPTIONS
continued II

OBJECTIVES \ GOALS	DETERRENCE	APPREHENSION	PROVISION OF NON-CRIME RELATED SERVICES	COMMUNITY SECURITY AND SATISFACTION	STOLEN GOODS RECOVERY
LEVEL OF SERVICE PROVISION	All else equal, the higher the level of non-crime related service provision, the lesser the availability of units for preventive patrol, and the lower the deterrent effect of the force.	All else equal, the higher the level of non-crime related service provision, the higher the response time to crime related calls for service and, therefore, the lower the probability of apprehension. In addition, non-crime related services detract from the time available to enforce local ordinances.		The higher the level and quality of service provision, the greater the level of felt security and satisfaction with the police.	Through its impact on apprehension, the level of service provision affects the level of goods recovery. In addition, the amount of time the unit spends out of service affects the time available to check for stolen cars.
LEVEL OF OFFICER COMPATIBILITY WITH THE COMMUNITY (SIMILARITY OF RACE AND LANGUAGE SKILL)	Countervailing Assumptions Held Equally: 1. Compatibility has no effect upon deterrence. 2. Compatibility enhances respect for the officer and thereby respect for the law, increasing the deterrent effect of patrol. 3. The higher the level of compatibility, the greater the likelihood of officer corruption and, therefore, the lower the deterrent effect.	Countervailing Assumptions Held Equally: 1. Compatibility has no effect upon apprehension. 2. Compatibility enhances apprehension level as it engenders increased community cooperation with the police. 3. Compatibility increases the likelihood of corruption and thereby has a negative effect upon apprehension of those so protected.	The greater the level of officer compatibility, the more efficiently and adequately the officer is able to provide non-crime related services.	The greater the level of officer compatibility, the greater the level of felt security and citizen satisfaction.	Through its impact on apprehension, the level of compatibility affects the level of goods recovery and thus there are countervailing assumptions.

(EXHIBIT VIII continued)

PREVAILING TACTICAL AND STRATEGIC ASSUMPTIONS
continued

OBJECTIVES \ GOALS	DETERRENCE	APPREHENSION	PROVISION OF NON-CRIME RELATED SERVICES	COMMUNITY SECURITY AND SATISFACTION	STOLEN GOODS RECOVERY
LEVEL OF PREVENTIVE PATROL	The higher the level of preventive patrol, the greater the deterrent effect of the patrol force. The more aggressive the activity of the patrol, the higher the deterrent effect due to the "communication" of increased presence and attentiveness to duty.	The higher the level of aggressive activity, the greater the level of apprehensions.	All else equal, the greater the level of aggressive activity, the less time available for the provision of non-crime related services.	Countervailing Assumptions Held Equally: 1. The greater the level of aggressive activity, the greater the level of security and satisfaction due to the increased level of attainment of the goals of deterrence, apprehension, and goods recovery. 2. The greater the level of aggressive activity, the more dissatisfied the general public as they come to view the police as a hostile force.	The more aggressive the patrol force, the greater the level of goods recovery (but not necessarily the prompt return to the rightful owner).
LEVEL OF OFFICER KNOWLEDGE ABOUT THE COMMUNITY	Countervailing Assumptions Held Equally: 1. The level of officer knowledge does not affect the level of deterrence (assuming a random patrol model). 2. The higher the level of officer knowledge, the more thorough the patrol of areas at times of high crime opportunity and, therefore, the greater the deterrent effect.	Countervailing Assumptions Held Equally: 1. The level of officer knowledge has no effect on the level of apprehension. 2. The greater the knowledge, the more likely the officer to intercept crimes in progress, and the more likely to be able to find a fleeing or hiding suspect and effect an area search.	The greater the level of knowledge, the more able the officer to provide effective and efficient services.	The greater the level of knowledge, the better able to tailor the patrol activity to the perceived needs of the residents, thereby enhancing their level of felt security and satisfaction.	Through its impact on apprehension, the level of community knowledge will affect the level of goods recovery, and thus the assumptions are contradictory. Note in addition, the level of knowledge enhances the ability to affect a search for stolen cars in particular.

(EXHIBIT VIII continued)

PREVAILING TACTICAL AND STRATEGIC ASSUMPTIONS

continued IV

GOALS / OBJECTIVES	DETERRENCE	APPREHENSION	PROVISION OF NON-CRIME RELATED SERVICES	COMMUNITY SECURITY AND SATISFACTION	STOLEN GOODS RECOVERY
LEVEL OF OFFICER CORRUPTION	The lower the level of corruption, the greater the deterrent effect of the patrol force.	The lower the level of corruption, the greater the apprehension level of the patrol force.	The lower the level of corruption, the greater equity of service provision.	The lower the level of corruption, the greater the level of felt security and satisfaction due to the increased level of attainment of all other goals.	The lower the level of corruption, the greater the level of goods recovery (but not necessarily the prompt return to the rightful owner).

EXHIBIT IX

A UNIVERSE OF ASSUMPTIONS GOVERNING DEPLOYMENT

NOTE: This exhibit displays a universe of assumptions concerning the efficacy of alternative approaches to deployment; subsets of this universe govern the operation of patrol divisions throughout the country. The validity of these assumptions is addressed in appropriate chapters of this report. As explained on page 36, these assumptions are presented here in schematic form to facilitate systematic analysis of patrol activities.

(EXHIBIT IX)

A UNIVERSE OF ASSUMPTIONS GOVERNING DEPLOYMENT

(EXHIBIT IX)

FACTORS / STRATEGIES	DISPATCH PROCEDURES (including such procedures as: dispatch to calls for service on an as-received basis; priority screening and referral; vehicle location and status screening; and computer aided dispatch.)	SETTING OF BOUNDARIES (including such considerations as: workload analysis; the definition of neighborhood boundaries; travel time; and population density.)	ESTABLISHING PATTERN OF TRAVEL (including such alternatives as: officer discretion; repetitive routing; and random travel.)	ASSIGNMENT OF EXTRA UNITS (including such considerations as: changes in anticipated workload and population density; and the utilization of civilian personnel.)
LEVEL OF VISIBILITY	1. AVM and status screening systems by controlling level of response facilitate maintenance of desired level of visibility across the jurisdiction. 2. Referral of non-crime related calls to other agencies or non-sworn personnel increases visibility of patrol units.	1. Boundaries determined on the basis of workload considerations maximize deterrent effect as they yield level of patrol visibility based on historical projections at total service demands. Visibility level becomes a function of incident density and yields increased visibility in areas of high demand. 2. Boundaries determined on the basis of population density equalizes visibility without consideration of incident levels. Travel time considerations affect the level of visibility regardless of population or workload considerations, as visibility of vehicle is a function also of speed and distance traveled.	1. Officer discretion improves deterrence as the officer, knowledgeable of potential targets within the beat, projects a level of visibility where it has the greatest effect. 2. Repetitive routes equalizes visibility across the routes traveled which themselves are determined on the basis of hazard formulas. Deterrence is maximized as visibility is maximized where it has the greatest effect. 3. Random travel equalizes visibility throughout beat combining equal visibility with high level of unpredictability thereby maximizing deterrence and apprehension.	1. Varying number of units assigned to a given beat on the basis of workload matches the level of visibility to the density of incidents and thereby maximizes levels of deterrence and community satisfaction and security. Note: this is a function of community perception over time. 2. An *ad hoc* approach to varying the number of units is realized by the magnetic draw of units into areas experiencing high demand thereby increasing visibility as a function of demand to enhance deterrence.
LEVEL OF PREDICTABILITY OF MOVEMENT	When level of predictability of movement is a function of assigned patterns of travel, AVM and status screening system facilitate maintenance of assigned route.		Random travel maximizes the uncertainty associated with the units arrival at a given location thereby maximizing the deterrent effect as the likelihood of intercepting crimes in progress is increased.	
LEVEL OF RESPONSE TIME	1. If availability of units is insufficient to allow immediate dispatch in response to all calls for service, dispatch on an as-received-basis may slow response to emergency situations and crimes in progress. 2. Priority screening facilitates immediate dispatch and thereby minimal response time to emergency situations and crimes in progress. 3. AVM systems and status screening permits determination of closest units for dispatch, minimizing response time. 4. Referral of non-crime related calls to other agencies or non-sworn personnel results in improved response time, since more units are available for dispatch.	1. Workload considerations, by placing units in proximity of anticipated incidents, minimize response time by minimizing distance. 2. Travel time considerations in setting boundaries minimizes response time by increasing density of units in congested areas.	1. Officer discretion, by yielding patrol travel in areas of potential targets, minimizes response time. 2. Repetitive travel on routes of high target density minimizes response time. 3. Random travel, by equalizing probability of movement across all points on beat minimizes response time given equal likelihood of incidents occuring at all points throughout beat.	Varying the number of patrol units within beats on the basis of workload projections minimizes response time by guaranteeing maximum availability of units for response, and by clustering units in vicinity of anticipated demands. Typical calculations establish the number of units necessary to respond to a level of calls for service within the desired response time.
	1. AVM systems assist in controlling level of response to calls and monitoring officer activity thereby assuring maximum time availability for patrol activity. 2. Referral of non-crime services results in increased levels of patrol activity, since more time is available for patrol.	Boundaries based on workload considerations modified on the basis of a "desired level of patrol" facilitate availability of units for aggressive activity.	Patterns of travel based on repetitive routes yield aggressive activities in areas of high crime probability thereby maximizing effectiveness. Patterns of travel based on officer discretion yield aggressive activities in areas of high crime probability.	Varying civilian and sworn officer levels on the basis of workload considerations and then taking into account the desired level of preventive patrol activity, provides for the availability of units for patrol. Number of units assigned are typically derived on the basis of calculations which determine the number of units necessary to respond to calls within a given amount of time. Availability for patrol is typically treated as a residual.

(EXHIBIT LX continued)

A UNIVERSE OF ASSUMPTIONS
continued

FACTORS / STRATEGIES	DISPATCH PROCEDURES (including such procedures as: dispatch to calls for service on an as-received basis; priority screening and referral; vehicle location and status screening; and computer aided dispatch.)	SETTING OF BOUNDARIES (including such considerations as: workload analysis; the definition of neighborhood boundaries; travel time; and population density.)
LEVEL OF SERVICE PROVISION	1. If availability of units is insufficient to allow immediate dispatch to all calls for service, dispatch on an as received basis may jeopardize the quality of service to a degree to which rapidity of response is important. 2. Priority screening facilitates immediate dispatch in response to emergency situations. 3. Computer aided dispatch facilitates determination of appropriate response. 4. AVM and status screening systems facilitate fastest response to emergency situations. 5. Referral of non-crime related services to other agencies or police divisions increases the amount of time available for crime-related services.	1. By setting boundaries to reflect the relative concentration of incidents across a jurisdiction, the proportional availability of officers to provide services of all types enhances the quality of service provision. 2. To the degree to which boundary considerations affect a minimization of response time, the provision of emergency services is facilitated. 3. By setting boundaries commensurate with neighborhood lines, officers become more cognizant of beat needs and the quality of services is thereby enhanced.
LEVEL OF OFFICER COMPATIBILITY WITH THE COMMUNITY	Computer aided dispatch facilitates assignment of appropriate officers if available and within reasonable distance to respond with the level of needed speed.	By setting boundaries commensurate with neighborhood lines, the ability to match officer characteristics to those of the community is facilitated due to homogeneity of beat population.
LEVEL OF OFFICER KNOWLEDGE ABOUT THE COMMUNITY	AVM and status screening systems facilitate the assignment of the beat units to calls within the beat and further enable the maintenance of beat integrity which serves to enhance the level of knowledge.	By setting boundaries commensurate with neighborhood lines, the ability of the officer to learn the needs, problems, and characteristics of the beat is facilitated due to beat homogeneity.
LEVEL OF OFFICER MISCONDUCT OR CORRUPTION	AVM and status screening systems allow dispatchers to monitor the activities of officers, thereby minimizing the opportunity for misconduct or corruption.	By setting boundaries commensurate with neighborhood lines and then matching officer characteristics to those of a homogeneous beat, the opportunity for corruption increases.

(EXHIBIT LX continued)

GOVERNING DEPLOYMENT
continued

ESTABLISHING PATTERN OF TRAVEL (including such alternatives as: officer discretion; repetitive routing; and random travel.)	NUMBER OF UNITS (including such considerations as: changes in anticipated workload and population density; and the utilization of civilian personnel.)
1. To the degree to which travel patterns effect a minimization of response time, the provision of emergency services is facilitated.	By varying the level of officers on the basis of workload projections, availability of officers for service provision is affected.
Patterns set on the basis of officer discretion allows an officer to apply his knowledge of the beat in patrol, yielding higher effectiveness. The lower the level of officer knowledge concerning the beat, the more efficacious the random pattern.	
Officer discretion in travel pattern creates a heightened opportunity to neglect patrol duty. Travel over assigned general routes can be more easily monitored.	By varying the number of units on the basis of workload considerations, officers perceive a heightened need for their presence, "best" use is made of their time, and a greater attention is paid to duty minimizing misconduct.

EXHIBIT X

A UNIVERSE OF ASSUMPTIONS GOVERNING
PATROL SUPERVISION

NOTE: This exhibit displays a universe of assumptions concerning the efficacy of alternative approaches to patrol supervision. Subsets of this universe govern the operation of patrol divisions throughout the country. The validity of these assumptions is addressed in appropriate chapters of this report. As explained on page 36, these assumptions are presented here in schematic form to facilitate the systematic analysis of patrol activities.

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL SUPERVISION (EXHIBIT X)

Objectives	(including a consideration of alternative approaches to officer call-in; street deployment of supervisory personnel; officer/supervisor ratios; and frequency of beat and partner rotation.)
LEVEL OF VISIBILITY	It is generally assumed that the greater the level of officer-supervisor contact and the greater the deployment of supervisory personnel, the more attention paid by officers to all aspects of duty and the more closely officer activity conforms to the desired quality and level. The primary, generally applicable, countervailing assumption is that by adjusting the level of officers deployed on the basis of projected need, the heightened level of activity and sense of importance provides increased motivation and attention to duty which substitutes to a degree for intense supervision. Additional countervailing assumptions noted where appropriate.
LEVEL OF PREDICTABILITY OF MOVEMENT	
LEVEL OF RESPONSE TIME	
LEVEL OF PATROL ACTIVITY	
LEVEL OF SERVICE PROVISION	Frequent beat reassignment detracts from the officers level of knowledge about the beat and diminishes the quality of service provision.
LEVEL OF OFFICER COMPATABILITY WITH COMMUNITY	Ability to match officer and beat characteristics is undermined by the frequent reassignment of beats.
LEVEL OF OFFICER KNOWLEDGE ABOUT COMMUNITY	Level of officer knowledge about beat is limited in situations where frequent reassignment of beats is practiced.
LEVEL OF OFFICER MISCONDUCT AND CORRUPTION	Increased motivation and activity accomplished by basing the number of units on duty on projected level of need by time of day; can substitute for a certain degree of supervision.

EXHIBIT XI

A UNIVERSE OF ASSUMPTIONS GOVERNING
IN-SERVICE TASK ASSIGNMENTS

NOTE: This exhibit displays a universe of assumptions concerning the efficacy of alternative approaches to in-service task assignments. Subsets of this universe govern the operation of patrol divisions throughout the country. The validity of these assumptions is addressed in appropriate chapters of this report. As explained on page 36, these assumptions are presented here in schematic form to facilitate the systematic analysis of patrol activities.

A UNIVERSE OF ASSUMPTIONS GOVERNING IN-SERVICE TASK ASSIGNMENTS (EXHIBIT XI)

OBJECTIVES	(including a consideration of dispatched crime and non-crime related responses, officer initiated activities, and routine preventive patrol responsibilites.)
LEVEL OF VISIBILITY	1. A clear differentiation between response and patrol responsibilities maintains the integrity of the preventive patrol function and as such the level of desired patrol visibility. 2. Individual initiatives; e.g., aggressive patrol, reinforces the perception of visibility. 3. Task specific patrol activities, as opposed to routine patrol, convey a level of visibility commensurate in impact to that of general patrol while making optimal use of officer time and by placing officers in areas of highest need. 4. Routine preventive patrol communicates the highest level of visibility.
LEVEL OF PREDICTABILITY OF MOVEMENT	A clear differentiation between response and patrol responsibilities facilitates maintenance of desired level of predictability of movement throughout beats, because the activities of a predetermined number of units are not disrupted by calls for service.
LEVEL OF RESPONSE TIME	1. A clear differentiation between response and patrol responsibilities facilitates fastest response to calls for service. 2. Task specific patrol activities, selectively placing officers in areas being victimized by particular types of crimes, minimizes response time to calls for service from those areas. 3. Traditional undifferentiated patrol force facilitates fastest response.
LEVEL OF PATROL ACTIVITY	1. A clear differentiation between response and patrol responsibilities facilitates attention of the non-response units to preventive patrol and to aggressive patrol activity and guarantees maintenance of the desired level of patrol. 2. General patrol force can effectively engage in desired levels of preventive patrol activity as long as a sufficient number of units are in service.
LEVEL OF SERVICE PROVISION	1. A clear differentiation between response and patrol responsibilities facilitates specialization of response units and enhances the quality of all service responses while enabling a careful monitoring of service level. In addition, the non-response units engaged in patrol can act on the basis of individual initiatives to further enhance service provision. 2. Routine patrol force can effectively provide desired level of services both through response and through individual initiatives. 3. Task specific patrol activities planned on the basis of comprehensive knowledge of the community facilitates provision of the most appropriate quality and level of services.
LEVEL OF OFFICER COMPATABILITY WITH COMMUNITY	1. Task specific patrol orientation permits greatest compatibility of officer activity with community. 2. Task assignments can be effectively accomplished irrespective of officer compatibility
LEVEL OF OFFICER KNOWLEDGE ABOUT COMMUNITY	Individual initiatives which include officer attention to learning about the beat, enhance officer knowledge of the beat.
LEVEL OF OFFICER MISCONDUCT AND CORRUPTION	General patrol activity with no direction or emphasis on individual initiatives or aggressive activity provides greatest opportunity for misconduct and corruption. This may be mitigated if the number of officers deployed is determined on the basis of need by time of day.

EXHIBIT XII

A UNIVERSE OF ASSUMPTIONS RELATING
OFFICER CHARACTERISTICS TO PATROL PERFORMANCE

NOTE: These exhibits display a universe of assumptions concerning the relationship between officer characteristics (race, sex, educational level, and civilian status) to patrol effectiveness. Subsets of this universe govern the officer utilization practices of patrol divisions throughout the country. The validity of these assumptions is addressed in appropriate chapters of this report. As explained on page 36, these assumptions are presented here in schematic form to facilitate the systematic analysis of patrol activities.

(EXHIBIT XII)

A UNIVERSE OF ASSUMPTIONS RELATING OFFICER CHARACTERISTICS TO PATROL PERFORMANCE: RACE

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
Matching an officer's race to that of the community to be patrolled improves police/community relations, facilitates the development of a working rapport with the community stimulating cooperation, enhancing officer knowledge and thereby increasing the effectiveness of all aspects of patrol.	Racial characteristics have little impact upon the ability of officers to perform effectively in any neighborhood. As minority neighborhoods are ofttimes felt to be the "toughest" assignments, considerations of race adversely effects morale of minority officers. Consideration of race limits deployment flexibility, thereby detracting from overall effectiveness.
In some instances, a failure to match racial characteristics communicates to the community a sense of an occupying force and adversely impacts on effectiveness.	It is the activity and not the race of the officer that communicates a negative image to the community.
Increased assignment of minorities to patrol, regardless of the degree of community match achieved, improves the overall image of the department and thereby enhances the performance of all functions.	Increased recruitment, assignment and promotion of minorities without regard to performance or tenure adversely effects department morale.

(EXHIBIT XII: cont.)

A UNIVERSE OF ASSUMPTIONS RELATING OFFICER CHARACTERISTICS TO PATROL PERFORMANCE: SEX

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
Women are capable of performing the entire range of patrol duties equally as well as men.	Women do not have sufficient physical strength or stamina to carry out many of the duties of a patrol officer. Women are not sufficiently respected by the community in the role of patrol officer to gain citizen compliance and cooperation. Women by temperament and disposition are not sufficiently aggressive to perform effectively as patrol officers.
The emotional and temperamental makeup of women serves to diffuse potentially dangerous situations.	The characteristics of women's emotional makeup and the lack of community respect for them as patrol officers and their physical limitations create a high probability that otherwise benign events will escalate into serious confrontations.
Considerations of equal employment opportunity suggest that if any women are capable of performance equal to that of minimally satisfactory males, all women should have the opportunity to be considered for patrol assignments.	Officer selection criteria are not adequate to differentiate sufficiently between women and therefore the selection of any women would lead to an intolerably high probability of poor performance.
Women are capable of handling certain types of patrol activities better than men, e.g., domestic disputes and juvenile problems.	Domestic disputes and juvenile problems are a small subset of patrol activity. For these purposes, women should be assigned to special divisions and not to general patrol.

(EXHIBIT XII: cont.)

A UNIVERSE OF ASSUMPTIONS RELATING OFFICER CHARACTERISTICS TO PATROL PERFORMANCE: HIGHER EDUCATION

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
Higher education for patrol officers (beyond high school) improves every aspect of patrol performance which requires discretionary consideration of the officer.	Higher education has no impact on the ability of the officer to perform effectively on any aspect of patrol. Rewarding officers for higher education detracts from officer morale as officers believe that equal jobs and equal performance merit equal pay. Higher education serves to bias officer selection against inclusion of minorities in the force.

(EXHIBIT XII: cont.)

A UNIVERSE OF ASSUMPTIONS RELATING OFFICER CHARACTERISTICS TO PATROL PERFORMANCE: CIVILIANS

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
Civilian personnel on patrol: Can effectively respond to non-crime related calls for service and can perform non-crime related support functions. Dispatchers are able to determine with a high degree of accuracy when a call can be safely and effectively responded to by a civilian officer.	Civilian personnel on patrol: Are in ever-present danger when responding to calls for service due to the possibility that any call has an associated probability of confrontation and conflict, and there is no assurance that dispatchers can differentiate between calls with a sufficient degree of accuracy to assure officer safety. (The inability of the dispatcher to so differentiate derives in part from the frequency with which needs are inaccurately described by callers.)
Are able to generate a positive rapport with the citizenry and gain increased knowledge regarding all aspects of the community due to the positive, non-adversary nature of all of their interactions with the public.	Generate no better rapport with the public than does a good patrol officer and detract from the public's confidence with the police due to the public's perception of an un-equipped cadre of police officers.
Enhance the morale and effectiveness of sworn officers who no longer are called upon to respond to "junk" calls or to perform "non-police" services. They are thus better able to concentrate on crime-related activity.	Detract from officer morale by placing upon them the added burden and responsibility of "keeping and getting the civilians" out of trouble.
Enhance the quality of non-crime related service provision due to a positive orientation towards the performance of such services by civilian personnel.	Detract from the overall quality of services due to the inability of the civilian to undertake and provide the full range of police responsibilities.
Facilitate the provision of non-crime related services to the public at a reduced cost to the department.	Result in only marginal cost reductions which are by no means sufficient to justify the loss of police capability which could have been attained had the number of sworn officers been increased in lieu of utilizing non-sworn personnel.
Increase the overall level of public satisfaction with the police due to the improved quality of non-crime related service provision, the more positive rapport developed with the civilian cadre, and the more positive attitude toward service provision demonstrated by the civilian officers.	Detract from the level of public satisfaction with the police due to the public's perception of an un-equipped, unqualified and un-sworn officer cadre.

EXHIBIT XIII

A UNIVERSE OF ASSUMPTIONS GOVERNING
MODES OF PATROL

NOTE: These exhibits display a universe of assumptions concerning the efficacy of alternative modes of patrol transportation; subsets of this universe govern the selection of modes by departments throughout the country. The validity of these assumptions is addressed in appropriate chapters of this report. As explained on page 36, these assumptions are presented here in schematic form to facilitate systematic analysis of patrol activities.

EXHIBIT XIII

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL MODES: MARKED PATROL CAR

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
The marked patrol car maximizes police visibility in the community, thereby enhancing the deterrent effect of patrol function.	The marked patrol vehicle places a barrier between the police officer and the citizen and has an adverse effect upon the level of police/citizen interaction, the level of of office rapport with the citizenry, the level of officer information about his beat, and the level of citizen satisfaction with the police. Other modes of patrol, particularly in high density commercial and residential areas, are significantly more productive. The level of patrol visibility has little impact upon the ability of the police to deter crime. High patrol visibility detracts from the potential for tactical surprise, thereby lessening the probability of intercepting crimes in progress. In high density commercial and residential areas, foot patrol or a scooter/bicycle variation provides greater visibility than does the marked patrol car. High patrol visibility in minority areas creates an image of a "hostile" or "occupying" force.
The marked patrol car provides the greatest amount of patrol officer mobility.	Motor scooters, motorbikes and bicycles provide greater maneuverability in congested areas.
The marked patrol car maximizes the amount of territory which an officer can effectively patrol.	Vehicular patrol over an extensive area reduces the level of an officer's familiarity with his beat. The larger the area patrolled in an automobile, the lower the intensity of coverage in an area. It is necessary to weigh the amount of territory covered against the quality of patrol. Particularly in high density residential and commercial areas, the automobile places a barrier between the police officer and the citizen, thereby inhibiting police/citizen interaction.
The marked patrol car maximizes the safety of the officer while on patrol.	The level of danger associated with officer patrol by foot, motor scooter/bicycle is grossly exaggerated particularly when officers are equipped with hand-held radios.

(EXHIBIT XIII: cont.)

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL MODES: MARKED PATROL CAR

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
The marked patrol car maximizes the officer's personal comfort and morale.	The personal comfort of the officer which is maximized by the patrol car is not a sufficient reason for sacrificing the effectiveness of patrol. By isolating the officer from the community, the automobile deprives the officer of a major source of job satisfaction.
The marked patrol car facilitates the carriage of equipment and passengers, allowing for great flexibility in officer response.	Particularly when backup capability is readily available due to the utilization of hand-held radios, the need for the routine carriage of heavy or extensive equipment is considerably exaggerated.
The station wagon is a variant of the patrol car which further facilitates multipurpose utilization of the vehicle without detracting from the above listed advantages. Additional capabilities would include: ambulance use, equipment transport, canine transport...	This is a consideration only for those jurisdictions with a limited number of vehicles and little vehicle specialization. Otherwise, there is no justification for the increased cost.

(EXHIBIT XIII: cont.)

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL MODES: FOOT PATROL

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
In high density commercial and residential areas,- foot patrol: Provides maximum officer visibility, thereby increasing the deterrent effect of patrol, the level of citizen-felt security, and the level of citizen satisfaction with the police.	Officer visibility has limited if any effect upon the level of effective deterrence. Foot patrol provides less visibility and less sense of presence than vehicular patrol on a given beat, and the diversion of officers from vehicles detracts from the overall level of presence and visiblity throughout a jurisdiction. This diminishes the overall level of citizen-felt security and satisfaction with the police.
Maximizes officer/citizen contact and the level of police knowledge about the particular beat.	Increased officer/citizen contact on a foot beat increases the opportunity for officer corruption and thereby detracts from the overall effectiveness of the department. Officer/citizen contact is not important to the effective provision of police services.
Maximizes the order maintenance function of the police by facilitating reductions in loitering, disturbances, etc...	Has no greater impact on order maintenance than does vehicular patrol, but rather confines the cabability to the limited area of a foot beat and to the predictable presence of the officer.
Increases the level of citizen-felt security and satisfaction with the police.	Provides less visiblity and, therefore, less sense of presence than vehicular patrol on a given beat, and diminishes the overall level of felt citizen security and satisfaction throughout the jurisdiction.
When coordinated with vehicular patrol on a given beat, provides for the most comprehensive and effective coverage.	Detracts from the overall coverage which could be achieved by a total commitment to vehicles and increases the cost of patrol without improving its overall effectiveness.
Results in heightened officer morale and level of job satisfaction due to officers' continued contact with the citizenry and his increased sense of responsibility.	Detracts from officers' morale because they feel it is ineffective and outside the mainstream of police work. Officer prefer automobile patrol because it enhances their ability to respond to "hot" calls and is substantially more comfortable and less tiring.

(EXHIBIT XIII: cont.)

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL MODES: BICYCLE PATROL

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
In high density commercial and residential areas, bicycle patrol provides the level of visibility, presence and citizen-police interaction which are the advantages of foot patrol (see "A Universe of Assumptions Governing Patrol Modes: Foot Patrol") while compensating for the disadvantages of foot patrol upon officer mobility, response time, the amount of territory which can be patrolled, and officer fatigue. Bicycle patrol further facilitates the ability of the patrol officer to apprehend some fleeing suspects due to its increased speed (over foot) and the silence of its operation.	While compensating for some of the disadvantages of foot patrol, the realized improvement is only minimal, and the bicycle has the following additional disadvantages: Detracts from citizen satisfaction with the police and citizen sense of security due to the negative image which the public has of bicycles as an appropriate vehicle for patrol. Has an adverse impact on officer morale as officers do not regard the bicycle as an appropriate patrol vehicle.
In parks and on bicycle trails, provides the most effective means of transportation for the patrol officer.	In parks and on bicycle trails, a motor scooter would prove a more effective vehicle due to increased speed and a minimization of officer fatigue.

(EXHIBIT XIII: cont.)

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL MODES: MOTOR SCOOTER

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
In high density commercial and residential areas, motor scooters: Provide levels of visibility, presence, and citizen-police interaction similar to foot patrol (see "A Universe of Assumptions Governing Patrol Modes: Foot Patrol") without sacrificing officer mobility or response time, detracting from the amount of territory which can be covered by the patrol officer, and causing officer fatigue. In sum, the motor scooter combines all of the advantages of foot patrol without its disadvantages, and is the optimal vehicle for patrol in this type of area.	Motor scooters provide less officer/citizen contact than foot patrol; provide less visibility and less presence than do automobiles; are unsafe in traffic, at high speeds and in the rain or snow; have an adverse effect upon officer morale as the officers do not consider them to be appropriate vehicles for patrol.

(EXHIBIT XIII: cont.)

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL MODES: HELICOPTER

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
For use in urban and suburban areas, the helicopter is an effective vehicle for general patrol activities as it: Permits wide ranging and accurate surveillance of an urban area and is particularly valuable in detecting certains types of offenses. Facilitates rapid response to calls for service, and enables surveillance of suspects until such time as apprehension can be effected by ground units. It is also safer than automobiles as a vehicle for high speed chases. In general, the surveillance and detection capabilities of the helicopter is considered equivalent to that of two to six ground officers.	The helicopter should be used as a response vehicle and as a crime-specific vehicle, as its general patrol utility appears somewhat limited and its operation is extremely expensive. The helicopter's effectiveness may depend upon the ability to coordinate its activities with those of ground units, and this may be difficult to accomplish. The response time of the helicopter is extremely low only if it is already airborne. If it must respond from the ground, it is very slow. While perhaps effective in detecting types of misdemeanors, particularly vandalism, prosecution is jeopardized due to the arresting officer not being the same as the officer observing the violation. The noise level effected is extremely high, as is the intensity of surveillance lights. This leads to community dissatisfaction.

(EXHIBIT XIII: cont.)

A UNIVERSE OF ASSUMPTIONS GOVERNING PATROL MODES: ONE-OFFICER CARS

SUPPORTING ASSUMPTIONS	OPPOSING ASSUMPTIONS
In all but the most dangerous and hostile neighborhoods, one-officer units are able to conduct patrol as effectively as two-officer units provided that sufficient and rapid back-up is available when needed.	In all neighborhoods the officer patrolling alone is hesitant to take individual initiative, fearing an inability to control situations without the support of a partner. As a result, the quality of patrol and the level of aggressive activity is less for the one-officer cars.
Dispatchers are able to discriminate among calls for service sufficiently well to provide a high degree of certainty so that, when necessary, more than one unit will be dispatched in response to calls to provide sufficient back-up.	Many situations have a certain associated probability of escalating into confrontations demanding the attention of more than one officer. Risk of that support not being available is intolerable.
Officers assigned to one-officer units are more attentive to duty, not being distracted by conversation.	Officers in two-officer units are more attentive to duty, as they monitor each other's performance.
One-officer units can observe as much activity and "crime opportunities" as two-officer units. In addition, two one-officer units will outperform one two-officer unit with only a marginal increase in costs.	The driver of a one-officer units must pay close attention to driving and can not adequately observe the area of patrol.
One-officer cars are a more economical and efficient use of manpower. The increased cost necessitated by the purchase and maintenance of additional cars is inconsequential in light of the derived labor savings.	One-officer cars result in a decrease in officer productivity and safety.

CHAPTER TWO

AN ORIENTATION TOWARD KNOWLEDGE

The purpose of this assessment of traditional preventive patrol practices, as it was viewed by the project staff, was to review the practices and writings in the field and, by separating opinion from fact, to define that body of knowledge and information which can provide substantial guidance to policy makers, i.e., empirically grounded information which can provide a basis for policy decisions affecting the patrol practices of departments. Ideally, such an assessment of knowledge requires that reported findings be judged first to determine whether or not the research supporting the conclusions was executed in a reliable and valid manner. If properly executed, it is then necessary to determine the degree to which the research findings can be generalized and applied efficaciously to other departments and jurisdictions which were not themselves the subject of the study. Finally, given the type and scope of completed research, it is possible to consider the specific needs of policy makers in identifying the research which can then be designed to build upon the identified knowledge base and relevant information.

In evaluating the research quality, general merits, and applicability of work in the area of traditional preventive patrol, the research staff used a seven step research hierarchy as a frame of reference. By explicitly presenting this hierarchy, it is hoped that the reader will become acquainted with the specific evaluation concerns of the project staff. The hierarchy itself presents a structural frame of reference: theoretically, by classifying research in accordance with its place on the hierarchy it would be possible not only to evaluate its merits and general applicability, but also to determine the most appropriate design for future work. In practice it was not used as a deterministic tool for evaluating research, but rather as a set of intellectual guidelines for going at the task. As such, no attempt was made to classify every project and research effort — time and resource limitations did not allow for this task. Instead, the hierarchy was used to set the intellectual tone of this work. It explicitly focuses attention not only on the content of knowledge, but also on its quality and the limits of its utilization. It therefore provides a heuristic framework for what was a more limited and scaled-down approach to this judgemental assessment. Following a review of the hierarchy, the actual orientation of this judgemental assessment is presented.

I. A View of Social Research: An Idealized Frame of Reference

A seven step hierarchy of social science research has been adopted as an aid in assessing the quality and relevance of existing information on patrol operations. By reviewing each piece of work with this hierarchy as a frame of reference, it is possible to take a step toward judging the significance of the research. Having first reviewed the manner in which the research design was actually implemented, judged the adequacy and merit of its findings, a study can then be considered with regard to its place on the hierarchy.

Characterization of research on patrol in accordance with this hierarchy enables an assessment of the merits and relevance of reported results, suggests the point at which information on a particular aspect of patrol is sufficient to justify moving the nature of inquiry to a higher level of inquiry, and assists in a general determination of the degree to which the study of patrol operations can be viewed as a cumulative enterprise. The research hierarchy[90] is composed of seven levels. Its content is summarized in Exhibit XIV.

The first level, the most basic type of research, consists of observation, opinion, and awareness. On the basis of assumptions and experiences, conclusions are drawn about some aspect of patrol operations and its contribution to the effectiveness of patrol. Findings based upon "observation," while often interesting and provocative, have the least merit and form the weakest basis for structuring or orienting a patrol operation. They do, however, provide the basis for selecting variables which should be the focus of correlation analysis or even more sophisticated inquiry. In general, most of the research on patrol is of this type. Unfortunately, all too often operational conclusions are drawn on the basis of research at this level.

The second level consists of the application of single correlation analysis to identify and confirm hypothesized relationships between single patrol variables and patrol effectiveness. This form of analysis helps to systematize variables and may serve to direct further inquires and to suggest an operational focus for the department. In its simplicity, however, it neglects questions of interdependency between many patrol variables or operating factors which could better be examined simultaneously through the use of multiple correlation analysis, the third level of inquiry. While both single and multiple correlation analysis can be suggestive of the degree to which changes in patrol operations have been related in the past to different levels of patrol effectiveness, cause and effect relationships can not be inferred. Such analysis, however, provides a strong foundation for generating interesting hypotheses which are more appropriately addressed in experimental or causative research.

The fourth level, experimental or causative research, consists of the careful and deliberate manipulation of patrol operations in order to determine whether or not a change in the effectiveness of patrol results from a given change in the conduct of patrol activity. This type of research is of great value to the policy-maker, for it suggests that a given change in patrol procedures will result in a directional change in patrol effectiveness. Experimentation on patrol is becoming more and more common and has recently focused on determining the impact of officer characteristics, patterns of deployment, and patrol tactics on patrol effectiveness.

While experimental research is of great value, it is also very difficult to accomplish successfully. Firm conclusions regarding the impact of experimental changes in patrol operations on patrol effectiveness depends on the careful control of potentially confounding factors. Due to the rigor and complexity of such studies, the validity of results implied by their methodology, and the extensive documentation provided, such studies are subject to more in-depth and careful examination than research found at other levels of the hierarchy.

A HIERARCHY OF RESEARCH ADDRESSED TO PUBLIC POLICY*

TYPE	CHARACTERISTIC
1. Observation	Awareness of a relationship between patrol effectiveness and some other variable without specific examination of the nature, direction or strength of the relationship
2. Single Correlation	Findings of relationship between a single, independent operational variable and patrol effectiveness; suggests the focus of patrol policy.
3. Multiple Correlation	Findings of relationship between multiple independent variables and patrol effectiveness; suggests the focus of patrol policy
4. Causation	Demonstration of correlation plus theoretical basis for arguing the direction and scope of causation in such a way as to indicate that a given change in patrol procedures would produce a change in the effectiveness of patrol in a predictable direction.
5. Elasticity	Given correlation and causation, an estimation of elasticity offers a specific prediction as to the magnitude of change in the effectiveness of patrol which would result from a given change in an independent variable.
6. Sensitivity to Policy Change	Analysis predicting that a stated change in public expenditures would yield a predicted increase in the effectiveness of patrol.
7. Optimizing Policy	Research demonstrating that a given balance of expenditures and other resources across the independent variables would yield the most cost-effective mix of patrol variables.

Research and findings in the area of police patrol can be characterized in accordance with the above hierarchy to provide a preliminary assessment of the state of knowledge regarding traditional preventive patrol.

*See William McGreevey et. al., The Policy Relevance of Recent Social Research on Fertility (Smithsonian Institution, 1974, Washington, D.C.).

EXHIBIT XIV

The fifth level, elasticity research, is closely akin to experimentation. Research at this level indicates not only the direction of causal relationships, but also provides an estimate of the degree of improvement in patrol effectiveness which could be expected from a given degree of change in the conduct of patrol operations. The only attempts which we have found of "elasticity" research on patrol are those of relating differentials in officer response time to changes in the outcomes of calls for service.

The sixth and seventh levels on the hierarchy go beyond the specification of causal relationships. Step 6 considers the ability of the policy maker to undertake particular changes in patrol operations and to realize the benefits predicted. Cost-benefit analyses which deal only with single operational variables are involved. Finally, the seventh level, economizing research, extends the consideration of capability and cost effectiveness from the consideration of single operational changes, to the consideration of a wide range of options in an effort to optimize resource utilization.

II. A Judgemental Assessment of Traditional Preventive Patrol: A Practical Approach

Basically, utilization of the hierarchy as a frame of reference reflects a belief that if research is to produce results meaningful to the policy maker, it should proceed from the careful observation of the phenomenon under consideration, to a detailed understanding of the interdependence among the relevant variables, to experimental research in which promising hypotheses are tested in an effort to determine causal relationships. Referencing this hierarchy contributes to a goal oriented approach to answering the question, "What is known about traditional preventive patrol?" In accordance with the direction so provided, an attempt has been made, as discussed earlier, to identify the objectives of patrol and the measures which are used to determine the effectiveness of patrol operations in realizing these objectives. An attempt has then been made to assess present knowledge concerning the relationship between the effectiveness of patrol and the activities of patrol, i.e., the relationship between the outputs of patrol operations (e.g., the contributions of patrol operations to the attainment of departmental goals) and the inputs and processes of patrol (e.g., the characteristics of patrol officers, equipment, and activity). To accomplish this assessment, as has also been discussed, an intervening set of strategic and tactical objectives had to be defined as it is believed that these objectives constitute the link between patrol operations and goal attainment. As such, the definition of knowledge regarding patrol became a two step process: first, an assessment had to be made of information regarding the impact of inputs and processes upon the attainment of intermediate objectives; second, a similar assessment had to be made of information regarding the impact of differential levels of attainment of the intermediate objectives upon the realization of the goals of patrol. Analytically, the first step, the inputs and processes of patrol were defined as the independent variables, and the intermediate objectives of patrol as the dependent variables; in the second step, the intermediate

objectives became the independent variables and the goals of patrol the dependent variables. Theoretically, then, research findings would be considered useful only when they linked changes in inputs and processes to changes in the level of objective attainment and in turn to changes in the level of goal attainment.

In reviewing the research and projects in the area of traditional preventive patrol, however, the project staff found only a small body of empirically grounded research amenable to a rigorous evaluation. At the same time, a wide body of "experiential findings" was confronted which were extremely pertinent to the considerations of the study and could neither be ignored nor dismissed as merely unsubstantiated opinion without doing an extreme disservice to practitioners who are sensitive to the problems which they daily confront and are doing a good and seemingly effective job in resolving them. In reviewing this body of experience, the project staff relied upon its best judgment regarding the merits of the reported conclusions. In general, when experiential conclusions were (or could be) drawn which were consistent with well documented research findings, consistent with the perceived experiences of several departments, or based upon a logic and set of considerations which seemed compelling, such conclusions were, in the judgement of the project staff, considered to constitute "knowledge." As a result, the following chapters constitute a truly "judgmental" assessment which presents the best documentation possible for what oftimes may be provocative opinions of the project staff.

CHAPTER THREE

DEPLOYMENT OF PATROL UNITS

Deployment practices are one of the major determinants of patrol effectiveness. Deployment, the assignment of patrol units to geographic areas and the dispatch of these units to calls for service, involves: (1) the determination of the size and boundaries of patrol beats; (2) the specification of the dispatch procedures; (3) the assignment of "extra" units to established beats, and (4) the determination of patrol travel routes within beats. The orientation of the department towards each of these interrelated factors of patrol deployment has a substantial influence on the achievement of all patrol objectives, particularly upon the level of patrol visibility; the predictability of officer movement within the assigned beat and throughout the jurisdiction; the level of preventive patrol; and the level of service provision. In sum, deployment practices determine the location and travel patterns of patrol officers, thus setting the context in which they carry out task assignments, interact with the public, and are monitored by supervisory personnel. As a result, deployment may have a greater, more pervasive and more significant impact upon the effectiveness of patrol operations than any other aspect of patrol.

The primary purpose of a department's deployment practices is to achieve and maintain a level of patrol activity which guarantees a rapid and appropriate response to calls for service while providing a level of general patrol activity sufficient to affect deterrence and apprehension. Deployment practices may also provide for: (1) the equalization of workloads among patrol units; (2) optimal and equitable service provision throughout the jurisdiction; (3) homogeneity of patrol beat populations; and (4) heightened officer motivation and attentiveness to duty.

In concept, this definition of deployment is consistent with patrol operations across the country. In practice, however, there are considerable differences in patrol operations due to variations in emphasis placed by individual departments upon the strategic and tactical objectives of patrol.

In general, the deployment practices of a department are established through a basic two step analysis which first, calculates the amount of patrol time required to achieve patrol objectives over specified periods of time (or shifts) and second, assigns the required number of appropriate units to geographic areas (or beats). Following this analysis which determines the basic spatial and temporal configuration of the patrol units, the desired travel pattern within the beats is established along with the orientation towards dispatch. Before proceding with a discussion of deployment, three general cautionary notes must be made.

First, in principle, patrol time requirements are initially calculated without reference to available resources; these time requirements are then translated into an appropriate or "ideal" number of patrol units, each of which is assigned to a beat. In practice, however, budgetary and administrative constraints usually limit the patrol force to levels below those believed necessary by police administrators to achieve patrol objectives.[1] The initial calcualtions of patrol time requirements are often greater than available patrol resources and, consequently, they are typically adjusted downwards on the

basis of a revised set of priorities and objectives, some of which are explicitly acknowledged while others are either explicitly or implicitly deemphasized.

Second, it is emphasized that the specified deployment pattern of a department becomes merely an abstraction if patrol officers do not adhere closely to beat boundaries, dispatch procedures, and prescribed routes. It is necessary, for example, for patrol officers to know the boundaries of their beats and this knowledge cannot be assumed. Patrol officers in San Diego were found to be frequently unaware of their beat boundaries.[2] This is not a unique case. In addition, it is quite common for patrol units to respond on their own initiative to calls outside of their beats even though not dispatched. Finally, patrol officers and supervisors often perceive the deployment practices of their department to be inadequate and will, on an *ad hoc* basis and without proper authority, modify them in the belief that a more effective patrol pattern will result. In general, however, it is assumed here that the effectiveness and integrity of prescribed deployment procedures depends upon the maintenance of beat boundaries and adherence to dispatch procedures and assigned travel routes. The enforcement of such prescriptions are a function of the supervisory practice.

Third, it is important to keep in mind that individual officers have considerable flexibility and discretion, even while following prescribed deployment practices. For example, the degree of aggressiveness often varies among and within beats; that is, while following the same deployment guidelines, officers can and do vary the methods and the amount of time spent on patrol to stop and interrogate people. In addition, variations in something as basic as the style of driving can affect the realization of patrol objectives. Generally, patrol "style" can vary among units and this leads to actual deployment differences among beats.

These cautionary notes emphasize the complexity of the deployment process and stress that only infrequently is it possible to make firm, unqualified statements about the relative effectiveness of various methods of patrol. In considering the discrete discussions below, they should be kept clearly in mind.

I. The Establishment of Beat Boundaries

Beat boundaries typically circumscribe geographic areas in which single units are to patrol. The most common patrol unit is a one or two-officer marked car which has the following responsibilities within each beat: answer calls for service, complete task assignments, and conduct preventive patrol. When a beat is found to be too large or busy for a single unit to patrol effectively an "extra" unit often is assigned to it. This is far more common than dividing beats into smaller one-unit areas, although a few departments maintain this practice.[3]

The establishment of beat boundaries is the principal deployment decision. To a considerable degree all other deployment decisions follow from the geographic distribution of patrol units. The guiding principle behind the establishment of beat boundaries is to equalize workloads among patrol units; that is, to allocate the patrol force in direct proportion to a jurisdiction's patrol requirements.

The concept of proportional distribution is not new. As early as 1909, Chief August Vollmer in Berkeley, California, assigned his patrol force in accordance with the number of anticipated calls.[4] Although the beats varied considerably in size, the total number of expected calls in each was approximately the same. The principle of workload equalization, or proportional distribution, is still the basis for the establishment of beat boundaries. Other criteria of secondary importance are: (1) minimizing response times; (2) providing optimum levels of service across the jurisdiction; (3) matching officer characteristics to special patrol requirements within the beat; (4) maintaining boundaries of historical or political importance; and (5) accounting for physical barriers (e.g., a depressed highway, a one-way street, or a bridge). In sum, the determination of beat boundaries is based upon these factors, although their relative importance varies considerably among departments.

While simple in concept, the practice of workload equalization, or proportional distribution, is extremely difficult and subject to considerable uncertainty. The most difficult issue to resolve is: "What activities are to comprise patrol workload and how is the workload to be allocated to patrol units?"

Workload requirements are most commonly estimated through the use of some form of workload or hazard formulas. Hazard formulas *per se* attempt to identify all police "hazards" throughout the jurisdiction, these being any factors which are believed likely to induce an incident requiring some police action.[5] Each hazard is assigned a weight which reflects both its relative importance and the amount of time required to handle the potential incident. This allows computation of an index of required patrol activity. Boundaries are then drawn so that the "activity indices" of all beats are approximately the same. Hazards to consider have included: crimes and attempted crimes, arrests, street miles to patrol, business types, and population characteristics.[6]

Workload formulas are based on the same general concept as hazard formulas, but extend the range of factors believed to require some police action. In principle, workload formulas specify the activity indicators associated with the full range of patrol activities. Such factors have included: population density, school population, special problems of residents, number of businesses, and parkland.[7] Usually, the terms "hazard" and "workload formulas" are treated synonomously, since departments have considerable latitude in selecting the factors which determine patrol requirements. If a distinction between them is desired, the term "hazard" can be used to refer only to crime-related factors, such as banks which might be robbed, bars where fights might occur, and stadiums where crowds congregate. "Workload formulas" could be thought of as expansions of hazard formulas where factors accounting for the total patrol service requirement are taken into consideration.

The proportional distribution of patrol units is largely based upon estimates of the time it takes a patrol unit to complete specified activities, e.g., patrolling a street, handling a call, stopping a traffic violator, interrogating a suspicious person, and conducting uncommitted patrol. Allocating manpower according to the absolute time required to perform a satisfactory quality of police service is, however, generally assumed to be impractical, because the time needed for routine patrol is not known.[8] Since absolute time requirements are not known, the usual practice is to proportionately allocate available patrol resources to workload rather than have workload computations dictate the "needed," but probably unavailable, resources. Strict adherence to a workload formula cannot easily be justified unless the formula is continually updated: routine preventive patrol requirements must be reviewed regularly and the time required to complete service calls and investigations must be updated.[9]

While hazard and workload formulas may be satisfactory theoretical constructs, there are a number of serious shortcomings associated with their application: (1) The additive weighted combinations of hazards and other factors affecting police patrol do not reflect highly complex social relationships nor the relative importance of single factors; (2) Such formulas reflect the past rather than forecast future problems; (3) Meaningful effectiveness measures are not related to operational policies; and (4) Nothing is said about the total size of the patrol force.[10] Stated differently, hazard and workload formulas preclude descriptions of highly complex relationships and do not relate police activities to the achievement of patrol objectives.[11] It is generally acknowledged that hazard and workload formulas and the resulting patrol distributions do not relate patrol strength to effectiveness measures, only to activity measures. One result of this is that activity indicators may suggest the need for additional patrol in high arrest areas where, in fact, actual needs may be in those areas with relatively fewer arrests by over-worked personnel.

Workload formulas are necessarily complex if they are to account for all the activities required to accomplish patrol objectives. This complexity contributes to a general reluctance to restructure beats as patrol requirements change.[12] As the factors used to compute original workload requirements change, beat boundaries no longer serve their original purpose of proportionally distributing workload throughout the jurisdiction. One way to facilitate rapid adjustments to changing workloads is, in effect, to simplify the workload formula. Although this terminology was not used, this was accomplished in Cleveland Heights, Ohio, through its Police Patrol Emphasis Project.[13] There, patrol units are assigned to duty on the basis of a single criterion: previous and therefore expected levels of officer-dispatched and self-initiated activities. This has resulted in radical variations in the number of patrol units on the street, ranging from as many as 21 on evening shifts to as few as four in the early morning. Calls for services are projected by time of day and day of week and units assigned accordingly. This has led to considerable decreases in the rate of crime, with no negative reactions from the community. Although supervisors and officers initially were skeptical of the program, they have come to agree with the administration that this is an effective way to assign patrol units to beats.

A similar program in Minneapolis, Minnesota, however, is being

criticized within the department as not being comprehensive enough. The argument presented by the internal planning staff is that very important patrol functions are being ignored, and that deployment on the basis of self-initiated activities and dispatched calls will result in increases in crime and citizen dissatisfaction.[14] An internal study has been initiated to determine which factors should be incorporated into workload formulas.

Even in those departments which attempt to incorporate a wide range of factors in deployment decisions, the predominant factor is the number of expected service calls. The patrol force may later be adjusted to account for population density and business characteristics after service call requirements are thought to be met. The time available for preventive patrol, the time available for uncommitted movement throughout the streets, is computed as a residual; that is, the time not spent on service calls, special tasks, citizen requests, and administrative tasks is, *ipso facto,* assumed to be spent on preventive patrol. One reason for treating preventive patrol as a residual is that there are no proven guidelines which indicate how much time must be devoted to traditional preventive patrol for it to be effective in terms of realizing the goals of patrol. Another reason is that the handling of critical service calls is believed by most to be of the highest priority.[15]

There have been several attempts to predetermine and then guarantee a level of non-dispatched preventive patrol activity. These attempts can be defined as efforts to "split" formally the patrol force into two functions, one responsible for service calls and the other for preventive patrol. This split can be accomplished by either fixing the proportion of time individual patrol units have to spend on preventive patrol or assigning different tasks to different patrol units.

One recent example of an attempt to fix the ratio of preventive patrol to total patrol time was made in Arlington County, Virginia.[16] Here, the working assumption was that the time spent on preventive patrol should be twice that spent on answering calls and making arrests. Service calls and arrest projections were made, the time required to handle each was then estimated, and the total workload in hours was computed. Total patrol requirements, according to the predetermined 2-1 ratio, were to be triple the amount of time estimated to be required to handle service calls and non-traffic arrests. Beat boundaries were to be adjusted so that each unit had approximately the same workload. The selection of this relatively simple technique was made after a careful review of the applicability of large-scale simulation and resource allocation techniques. These more sophisticated techniques were explicitly rejected by Arlington County police officers because they were judged to be oriented towards a limited approach to handling service calls rather than a preventive patrol strategy.[17]

After the estimates of needed patrol units were made, it became evident that the available resources were insufficient. Adjusting the beats to satisfy the resource requirements for the "split" would have increased the number of beats beyond the resource limitations of the department. Because of this and certain administrative problems, split patrol was not implemented.

In 1966, St. Louis, Missouri, established beats by determining the time required to handle all service calls. A service call model was used to

predict the number of calls which would be received from each beat, and a queuing model was used to determine the number of units which would be required on the street to handle with no delay 85% of the calls received by the police dispatcher.[18] These units were, in effect, subtracted from the total number of units available and the remaining units were assigned to preventive patrol. Beat boundaries were, in effect, established to facilitate the answering of service calls. The service call model updated the expected number of calls on a monthly basis, and the patrol force was adjusted accordingly. Although average response time did drop, there is little conclusive evidence about the impact of preventive patrol *per se* on the other aspects of patrol.

More recently in Los Angeles, California, as a part of the implementation of what is to be a large scale deployment system, beats were restructured to reduce response time.[19] Existing units were reassigned to beats in order to facilitate the handling of calls. Preventive patrol is now treated as a residual activity, i.e., as something to be done while not answering calls. The effect of this system upon response times is uncertain.

In sum, it is generally accepted that the establishment of beat boundaries should begin with a calculation of patrol time requirements. These calculations can account for any expected patrol activities, such as responding to calls, patrolling streets, checking businesses, and talking with people. In doing so, each department identifies those activities which are to be the responsibility of the patrol division. In practice, however, departments tend to place primary emphasis upon the prompt handling of service calls when setting beat boundaries. While this emphasis could lead departments into situations where beat boundaries do not reflect the complete range of patrol requirements, experience to date does not suggest any perceived reduction in the achievement of the generally accepted patrol objectives. This suggests that establishing beat boundaries so as to handle service calls promptly may be a simple first-order criterion for effective deployment.

II. Dispatch of Patrol Units

Beat boundaries are customarily established with the intent of providing a specified capability to handle citizen calls for service in that beat. The dispatch of units to calls for service requires a system which: (1) provides a means through which a citizen can request assistance; (2) selects those requests for which a police response is considered to be appropriate; (3) identifies the patrol unit to dispatch; (4) dispatches the unit to the call; (5) indicates when the call has been completed; and (6) disposes of requests which do not require police assistance.

The basic hypothesis which today guides dispatch procedures is, generally stated: reduction in response times to calls for service improves patrol effectiveness. To citizens and police alike, this hypothesis has considerable intuitive appeal; that is, it seems that the quicker a patrol unit arrives at the location of a call for service, the more efficiently the crime or emergency in question will be handled.

This popularly accepted hypothesis is often based upon work conducted in Los Angeles in 1966.[20] Communications data were analyzed which indicated

when patrol officers reported that they received and arrived at a call. These analyses showed that arrests resulted in 62% of all cases (when crimes were in progress) where response time was less than one minute. Although conclusions concerning the effect of response time on the outcomes of calls were presented very cautiously in the study, it has provided the justification used by many police administrators to focus their deployment practices on the reduction of response times. Such conclusions, however, cannot be considered valid, for reasons which include the following: (1) the original data gathering effort was not a part of an experiment to determine the effects of variations in response times; (2) the data were reported by the patrol officers, with various distortions possible; (3) activities before and after the times reported by the officers were not accounted for; and (4) less than 30% of the "on-scene arrests" could be related to response times.

This benchmark study of reponse times does not, in fact, justify any elaborate attempts to reduce response time, particularly at the expense of other patrol objectives. It did, however, support further research into the causal effects of response time and how it is influenced by reporting and dispatch procedures.

A more recent study in Syracuse, New York, used data from police officers who estimated the elapsed time between the reporting of a crime to the police and its occurrence.[21] This study showed that less than 25% of the crimes were reported within two minutes of their occurrence, while over 70% were reported 10 minutes or more after their occurrence. This suggests strongly that only a very small proportion of the crimes reported to the police would require rapid response times, due to the time elapsed between occurrence and reporting to the police.

This study, too, can be criticized. Problems of subjectivity in police officer reporting were not addressed. Also, variations in the different types of crime were not accounted for. It does, however, point out that the factors affecting response time which are presently under the direct control of the police cover only a part of the time which elapses from the occurrence of a crime to when a citizen reports it.

The issue of response time has, in many ways, become central to the dispatch procedures which have been and are now being used. Until recently, patrol units were generally dispatched to calls in the order that they were received. A citizen would telephone the police, and the police operators would select those requests which warrented police assistance. These requests were then sent sequentially to dispatchers who would then make assignments to units not on call. Requests which did not warrent a police response were often discarded. This practice proves to be satisfactory so long as a sufficient number of units is available to respond to all calls promptly. When calls are delayed due to the unavailability of units, however, criminal apprehensions may drop, emergencies may go unattended, and citizen satisfaction may decline. Also, police morale and fatigue may be affected. Recently, the dramatic increase in the level of calls for service prompted police administrators to search for ways to improve the dispatch of patrol units. Police administrators and researchers alike began to express dispatch objectives in the following way: A patrol unit is to be at the scene of x per cent of all calls in less than y minutes.

Some early attempts to reduce the delays resulting from the queuing of sequential calls was to prioritize calls. Priority screening of all calls by police operators is thought to improve patrol response to crimes in progress, potentially violent or hazardous situations, and medical emergencies. The dispatch of patrol units according to a predetermined order of importance has been shown to be a potentially straight-forward and relatively simple way of responding quickly to high-priority calls. Efforts in Boston[22] and St. Louis[23] to prioritize calls have resulted in reductions in response time, although the effects of these reductions upon apprehensions, emergencies, or citizen satisfaction are not clear.

A system of prioritizing calls requires, in principle, a policy which dictates how those calls which do not warrant a police response should be disposed of. One way, clearly, is to ignore them. Another more responsive approach being considered is to assign calls not believed to require a police presence to non-sworn personnel in the police department or to other agencies, thereby maintaining a patrol force capability to deal with high priority situations. Assigning calls to non-sworn personnel or other agencies, in principle, reduces the service load of patrol units. Also, it is believed that referral may improve the quality of service, since non-sworn personnel or representatives from other agencies may be better qualified to handle the situation. While many departments claim to refer certain calls to other agencies, it is not clear how universal this practice is or what effect it actually has on patrol.[24]

A number of departments have, however, experimented with the routine assignment of non-crime related calls to non-sworn police personnel. In Worcester, Massachusetts,[25] and Fremont, California,[26] non-sworn police personnel are routinely assigned to street duty to increase the amount of time available to sworn officers for dealing with crime-related problems and improve the provision of non-crime services. These efforts have, in fact, resulted in reductions in response time to certain crime-related calls and improvements in services to non-crime related calls.[27]

Improved dispatching has been the objective of several attempts to "split" the patrol force into two functions, one handling calls for service and the other patrolling.[28] Although these efforts were originally postulated as a means of guaranteeing a minimum preventive patrol capability, in practice they often became dedicated to reducing response times to an increasing number of calls. The patrol time which was to concentrate on preventive patrol often was eroded by an increase in the number of dispatches.

The above approaches to improving dispatch, in concept, do not require a large commitment to a sophisticated technology. The administrators of an increasing number of departments have, however, decided that the most effective way to improve dispatch is through the use of large-scale data processing systems which, for example, analyze patrol and related activity, forecast workloads, and assign patrol units. The experiences of a number of jurisdictions, including St. Louis,[29] Los Angeles[30] and San Diego,[31] with sophisticated data processing systems have fostered considerable interest in what is commonly referred to as "computer-aided dispatch." Here, data describing the characteristics of address and locations are stored in a computer file and updated on a regular basis. Data can include items such as the location of crimes, the history of calls, demographic and physical characteristics, type of establishment,

and places frequented by criminals and suspects. One concept of computer-aided dispatch is to have the dispatcher enter into the computer the address or location of where a service call is requested. Information describing the location is automatically retrieved and reviewed by the dispatcher and transmitted to selected patrol units. Such information is assumed to aid the dispatcher in making the most appropriate assignment. Also, this background information is assumed to aid the dispatched unit in handling the call and adjacent units in continuing their general patrol. While systems of this type are being considered, their actual value awaits evaluation.

Perhaps the most dramatic and sophisticated experiments to improve dispatch are associated with the use of Automatic Vehicle Monitoring (AVM) systems. Generally, the AVM system monitors the location and status of patrol units and displays this information on screens in the dispatch center. Thus dispatchers have continually updated information on the location and status of all patrol units. Dispatch is thought to be improved by AVM systems as they allow dispatchers to select and dispatch quickly the most appropriate patrol unit (usually the unit closest to the location of the call), thus reducing response time.

In St. Louis, Missouri, a test of an AVM system which automatically updated and displayed a patrol unit's location and status every two seconds has been completed in one district. During the test, dispatchers monitored patrol units on an uninterrupted basis, dispatching those units which were closest to the location of the call. Average response times to calls were reduced, some dramatically.[32] Acceptance of the system by supervisors and patrol officers has been mixed. A survey taken while the system was being installed indicated that 67% of the officers in the test district were either favorable or ambivalent towards the use of the AVM system. A second survey, taken during the AVM test, indicated that 60% of the officers disapproved of the AVM system.[33] There was also considerable dissatisfaction with the AVM system by non-sworn personnel in the dispatcher's officer, as evidenced by hostile comments, a decrease in radio courtesy, and indifference to the proper use of the AVM console. Further, patrol officers and sergeants expressed feelings of harrassment by the dispatchers. Sergeants perceived a loss of authority. Patrol officers apparently gave false position and status reports. In sum, the AVM system test caused a considerable amount of dissatisfaction among patrol officers and sergeants.[34] Their fears appear to be based on the assumption that patrol and supervisory discretion would be drastically reduced.

It is difficult to determine how the AVM system affected dispatch in St. Louis, or in other jurisdictions such as Stamford, Connecticut,[35] and Wichita, Kansas,[36] for a number of reasons. Such systems are often accompanied by the introduction of other equipment, such as the hand-held radio, which also can affect dispatch procedures. They increase the willingness of officers to leave their cars by allowing them to maintain constant contact with the dispatcher. The influence of hand-held radios on dispatch procedures has seldom been considered in evaluation of the effectiveness of AVM systems. The effect of the changing attitudes of patrol officers and supervisors is not understood. Also, it appears that command-level officials may, in fact, want the AVM capability even if it does not make considerable improvements in dispatching. Although the possibilities of using the AVM system to centralize the command of patrol units are evident and discussed,[37] they have not been incorporated into any AVM experiments.

It is evident that police administrators are attempting to improve dispatching by reducing response times with little explicit regard to other patrol objectives. This emphasis could result in workload shifts among beats in ways not reflected by the original criteria used to establish beat boundaries. Also, the perceptions and expectations of both citizens and patrol officers may change. The current emphasis on improving dispatch procedures *per se* has not, however, been shown to appreciably degrade achievement of the range of patrol objectives.

III. Assignment of Additional Units to Patrol Beats

Most departments are reluctant to change beat boundaries, even as the need for patrol requirements may change considerably over time. A combination of tradition, inertia and analytical difficulties generally precludes an on-going assessment and adjustment of beat boundaries.[38] In order to meet changing patrol requirements without adjusting boundaries, extra units often are assigned to patrol within an established beat. The most common form of assigning extra units to a beat is to increase the number of uniformed patrol officers in response to increases in crime. Recently, however, a number of departments have routinely assigned non-sworn personnel to patrol. Therefore, in this context, additional units may be either sworn or non-sworn personnel; in either case, the amount of patrol time increases.

Saturation patrol is a common expression which can be used to describe the assignment of additional patrol units to those beats which are believed to require more patrol coverage.[39] The unit originally assigned to the beat, in effect, shares its patrol responsibilities with one or more additional units. These patrol units may be assigned for the entire shift or only part of it. Also, duties may vary widely.

A. The Assignment of Additional Sworn Personnel

A current example of saturation patrol is underway in St. Louis.[40] Here, the objective was to deter crime, particularly burglaries and crimes against the person, by saturating high crime areas with foot patrol officers. An administratively flexible unit was formed of officers working overtime. Except for one geographic area, officers were moved around the city according to shifting crime rates; they were not permanently assigned to one patrol beat. As a result, patrol emphasis varied over the course of the experiment, including: shopping centers, daylight residential burglary, robbery/purse snatching, and nighttime residential and business burglary. The evaluation of the Overtime Foot Patrol project showed reductions in property crimes and increases in crimes against the person.[41] The reasons for these reported increases and decreases are not known. Businessmen reported that they favored increased foot patrol. This was a reasonably sized effort (125 officers assigned to Overtime Foot Patrol out of a total force of 2,200), yet it was acknowledged that it was not very effective. Even its overall costs were questioned.[42] One conclusion which is forming the basis for other foot patrol projects is that plain clothes officers on foot are much more effective in making apprehensions than uniformed officers.

In Portland, Oregon, patrol officers saturated the "skid row" area in order to reduce the victimization of the transients and residents who tended

to cluster there. The typically inebriated frequenters of the skid row area proved to attract highly mobile and professional criminals who traveled the West Coast, living off the proceeds of their robberies. It was found, too, that many of the proprietors of taverns, flop houses, grocery stores and other businesses in the area were unintentionally contributing to the problem by not notifying the police of potentially criminal situations. On the basis of this analysis, the decision was made to deploy two-officer foot patrol units in a small, two-three block area of skid row and enlist citizen support for the units. The patrol strategy was called Operation CRIMP -- Crime Reduction Involving Many People.[43] Overlapping beats were patrolled between 1:00 p.m. and 11:30 p.m., with the regularly assigned patrol cars supporting them whenever time permitted.

An informal evaluation found that there was a marked decrease in the target crimes throughout the skid row area. The decrease was the most dramatic in those blocks which were patrolled most intensively. Moreover, officers working the beats reported that they were making an unusual number of "good" arrests, and that a number of known criminals appeared to be avoiding the area. Contrary to earlier fears, the business community did not suffer financially. Business actually improved, probably because of a greater sense of security among area patrons.

Although Project CRIMP appeared to be effective, care must be taken not to overgeneralize from the results of this small scale project. In essence, CRIMP involved saturation of a very small, atypical high crime area and the result was an understandable reduction in crime. One problem generally associated with this form of saturation patrol is displacement of crime from the area being patrolled to adjacent areas. This, however, did not appear to happen in CRIMP, since it was directed toward a very specific type of criminal activity which is less likely than others to be displaced.

The Sector/Beat/Support System in Pueblo, Colorado, permits the assignment of "support cars" to areas where the potential for crime is predicted to be high.[44] These units, in effect, saturate beats on an as-needed basis. Support cars provide general back-up for the assigned units, the result being that both answer calls and patrol. Support cars also have major responsibilities beyond patrol, including crime scene processing and follow-up on all but major crimes.

The Sector/Beat/Support System is not a project or an experiment -- it is the overall method of patrol. Police administrators believe that the 5% increase in crime and the 42% clearance rate justify continued use of the system.[45] A formal evaluation of how this type of saturation contributes to patrol effectiveness has not been made.

Saturation patrol often is undertaken on a more informal, *ad hoc* basis than the examples given above. In Miami Beach, Florida, extra units are regularly assigned to retiree neighborhoods and shopping areas on the days when social security and pension checks arrive.[46] Patrol supervisors in University City, Missouri, regularly direct their units to saturate student residential areas, shopping centers, and retiree neighborhoods during those times when the potential for crime is high.[47] Saturation patrol in these and many other cities is not viewed as a project or an experiment, but as one aspect of a flexible patrol strategy.

A more traditional approach to the assignment of extra units to patrol is found in Omaha, Nebraska. Here, a Special Events Unit assigns officers throughout the city to deal with incidents of short-term duration such as: (1) patrol in high-crime areas; (2) selective traffic enforcement; (3) stake-outs and surveillances; (4) service of arrest and search warrents; (5) escort and security of VIP visitors; and (6) any "special events."[48] Assignments are made at each shift's roll call for designated periods of time.

The Special Events Unit is regarded favorably throughout the police department. Patrolmen and detectives appreciate the internal support. Businessmen tend to support the Unit. An evaluation to isolate the effectiveness of the Special Events Unit *per se* has not been available, due to the fact that the Unit acts as a support to the total patrol force.[49]

These approaches to saturation patrol are based upon conclusions about anticipated increases in the potential for crime. Such conclusions can either be based upon highly formalized statistical techniques or a general knowledge of the cycles of crime-inducing events. In any event, efforts are made to forecast the occurrence of crimes. Another approach to saturation patrol rejects ongoing analyses in favor of a strategy which automatically draws patrol units into beats which are busy. This strategy, called magnetic patrol, assigns units from beats which are not busy to beats where the assigned unit is unable to handle effectively all service calls.[50]

Under conditions of magnetic patrol, when a unit cannot handle all service calls in its beat, the dispatchers will assign a unit from an adjacent or near-by beat to assist it. This "extra" unit will stay in the beat, answering calls and patrolling until dispatched elsewhere to handle a call. It may be dispatched back to the original beat or to another beat where that patrol unit is unable to handle all service calls. Generally when shifts change, each patrol unit begins its patrol activity in its assigned area. It will move to another only when there is a service call which cannot be handled by the patrol unit originally assigned to it. Magnetic patrol, or variations of it, is discussed in the literature and by patrol supervisors, but no actual tests appear to have been documented.

A number of departments have arbitrarily assigned a marked police car to each member of the patrol force to use both off duty and on duty. Although this is perhaps outside the commonly accepted range of strategies and tactics which are associated with deployment, it can increase dramatically the number of patrol cars on the street. In such a take-home program, patrol officers typically keep the cars at their residences, drive them to and from work, and use them for personal business while off duty. Even when off duty and not in uniform, radio contact is maintained with the dispatcher. The patrol officers are generally expected to respond to emergencies in their immediate area. Although not required to do so, some off-duty officers may advise the dispatcher of their general location. The jurisdiction pays the total purchasing and operating expenses of the car.

In 1969, the Indianapolis Police Department initiated the Police Fleet Plan, where each patrol officer was assigned a marked car to use 24 hours a day. The plan resulted in a 7% increase in total patrol time, the equivalent of approximately 28 additional patrol officers. The annual cost was approximately $450,000. Beyond this, there are no valid data describing the effects of the

Police Fleet Plan; the program was put into effect with no evaluative task.

One evaluator later attempted to create a retrospective evaluative framework.[51] Three program goals were deduced: (1) prevent crime, (2) increase police clearance rate, and (3) prevent automobile accidents and decrease the associated personal injuries and deaths. Secondary objectives included the improvement of police officer morale and citizen-perceived satisfaction with the police. Based upon a series of "retrospective projections" of crime, the analyses showed that some crimes, such as auto theft, purse-snatching, and "outdoor" crimes declined. Larcenies, burglaries, and total crimes continued to rise. The projections which were used are not valid for any comparisons.

The Police Fleet Plan appeared to be supported by the patrol officers, as measured by refusals to take higher paying jobs in the department which required giving up the car. Aside from the problems in the "retrospective projections," it is not possible to state how the Fleet Plan affected crime and auto accidents, as other major changes were made in the department. A new sector-beat system was implmented, which changed the department's overall patrol strategy. Also, 68 more officers were hired during the time the Fleet Plan was in effect. The decrease in auto thefts could perhaps be partially attributed to the new steering-lock system which was being installed on all new General Motors cars. In sum, it was not possible to isolate retrospectively the effects of the Fleet Plan.

The Plan and its evaluation did not consider many of the operational characteristics of patrol. Two items which appear to deserve careful attention in any major change in patrol, but were ignored here, are the changes in the effective size of beats and response times which resulted from the extra units. Also, it seems that increased stress upon the officer and his family should have been taken into account. Listening to radio calls and responding to emergencies when on personal business or relaxing could, it seems, be somewhat aggravating.

Although the evaluation did not support the replication or continuation of the Police Fleet Plan, the assignment of cars on a 24-hour basis to patrol officers does not seem to detract from patrol effectiveness.

In sum, there are a variety of ways to increase the level of police presence and activity in particular beats by manipulating the assignment of sworn officers. In addition, visible police presence throughout a jurisdiction can be augmented by the use of take-home patrol cars. The relative merits of these various procedures are largely unknown, although there is some limited evidence which suggests that a substantial increase in the level of patrol in a given area can have at least a temporary effect on the amount of suppressible crime in that area.[52]

B. The Assignment of Non-Sworn Personnel

Another approach to increasing the level of patrol activity involves the assignment of non-sworn personnel to street duty. This provides a relatively economical way of increasing police presence and it relieves sworn officers of duties which are not believed to require their skill and authority. The use of non-sworn personnel in this capacity has recently been tried by several departments.

In Rochester, New York, there was an expressed desire to increase the level of foot patrol without degrading other patrol activities. To accomplish this, a combined sworn and non-sworn foot patrol project called PAC-TAC -- Police and Citizens Together Against Crime -- was put into effect. PAC-TAC assumed that: (1) the deployment of sworn and non-sworn foot patrol teams would increase citizen satisfaction with the police department; (2) non-sworn personnel, because of their familiarity with the areas patrolled, would provide officers with useful information and insights; (3) the program would serve to better acquaint citizens with the nature of police work and police officers with the character of the communities in which they work; and (4) patrol units would have more time for dealing with crime-related problems.[53]

A deliberate effort was made to attract racial and ethnic minorities and women, the final selection of non-sworn officers having approximately an equal number of both sexes and a good representation of minorities. The non-sworn personnel were assigned to duty with a police officer approximately two nights per week. These units patrolled four hours per day during the evening hours. The non-sworn personnel had no police authority. However, they handled the radio communications for the teams and assisted their sworn partners in any way deemed appropriate. The department made no special effort to screen any calls going to the PAC-TAC units; they handled all types of calls. Although PAC-TAC units patrolled in all types of neighborhoods, there was no attempt to concentrate their patrol in areas where police/community relations were sensitive.

Although the project's evaluation has yet to be released, it was considered to be a success by both the sworn and non-sworn officers involved in PAC-TAC and the community. In fact, there were a number of instances in which citizens specifically requested that PAC-TAC units respond to their calls and there were requests that the teams be assigned to specific neighborhoods.

In spite of its generally positive reception, the project was criticized because the sworn officers were assigned to the PAC-TAC units on an overtime basis. This led to criticisms of the program as a "cynical public relations gimmick" designed to pay participating officers "easy money" while paying their civilian partners very little.[54] Despite this criticism, PAC-TAC appears to have operated successfully for more than two years with few problems.

Another similar project in Rochester was the Community Service Officer (CSO) Program, where Model Cities residents were assigned to handle a wide range of non-crime related police duties in their neighborhoods and assist sworn officers in any way appropriate. The evaluation showed that CSO's relieved or assisted police officers on a large number of calls (2,215 during a seven-month period), demonstrated their ability to resolve potentially dnagerous situations, and provided effective police-related services to the community.[55]

However, the CSO program ended with a great deal of controversy. A law suit was brought by CSO participants who wanted to join the department as sworn officers but did not meet departmental standards. The suit charged discriminatory hiring practices, and the plaintiffs won. The department is now under court order to bring minority representation in the ranks of sworn officers up to 25% of the total force.

Although all involved admit that the CSO project was poorly planned and led to unforseen consequences, the use of civilians to augment patrol again appeared to improve police services.

A similar program now underway in Fremont, California, hires non-sworn personnel as patrol officers to handle non-hazardous tasks. Although the primary objective is to improve police services, other objectives are to encourage minority recruitment and to provide a means of self-evaluation for those interested in becoming sworn officers. Through the Field Service Officer (FSO) program, non-sworn personnel are assigned to beats according to workload calculations. Patrol is in one-officer cars. FSO's are in uniforms and marked cars, although both are distinctive from those of sworn officers. FSO's are presently supervised by patrol sergeants, but plans are underway to establish a supervisory FSO rank.[56]

The evaluation of the FSO program showed that for three months in 1973, FSO's represented 18% of the total patrol force and completed 22-24% of the computed workload. Both the department and the community appeared to support the project. This support could perhaps be attributed to the continued involvement of sworn officers, FSO's and the community in the planning and implementation processes.

In Worcester, Massachusetts, non-sworn personnel were assigned to patrol for the explicit reason of releasing sworn officers to specialized robbery and burglary squads. In this program, for every three civilians assigned to the patrol force, one sworn officer was assigned to a specialized unit. Perhaps as much as 40% of the preventive patrol workload is handled by civilians, with no apparent decrease in patrol effectiveness.[57]

A more traditional approach to the use of non-sworn personnel is found in the Multnomah County, Oregon, Sheriff's Department. The Sheriff's Reserve operates 6-8 hours per day to supplement the patrol force during busy morning and evening hours. Usually there are four two-officer cars on the street every evening. They conduct routine patrol, assist units on service calls, and handle house checks and other non-criminal incidents assigned to them. Also, they are prepared to respond to natural or man-made disasters. The reserve has its own command structure, with ranks leading up to captain. It is supervised by a sergeant. It is not viewed as an avenue for entry into the department; however, it does have a high attrition rate, with members resigning to take full-time positions in other police departments.[58]

Although the Sheriff's Reserve has never been evaluated, it is generally viewed as making a useful, if somewhat peripheral, contribution to patrol operations.[59] The only criticisms of the reserve come from the police union, which opposes the use of volunteers in permanent law enforcement-related positions. The most that can be said about the reserve is that it does not cost the department much to run, has not created any significant problems, and is generally believed to be worthwhile.

Recent efforts of departments to augment their patrol force with non-sworn personnel have, for the most part, been successful in the sense that patrol effectivenss did not noticeably drop. Also, there was little concerted opposition to the use of non-sworn personnel after they began their patrol activities. However, it must be noted that many of the efforts undertaken to augment the patrol force with non-sworn personnel deal with a number of issues only loosely associated with preventive patrol *per se*. A primary issue is the quick resolution of the effect of past discriminatory recruitment and promotion practices. Many departments are attempting, some voluntarily and some under court order, to increase the representation of racial minorities on the force. The increased use of racial minorities in non-sworn positions on the patrol force may be serving the needs of the department in two ways: first, rapid minority recruitment into the non-sworn ranks may satisfy certain legal and administrative needs; and second, patrol in a non-sworn capacity may be a useful training and screening process.

The use of personnel who clearly represent the interests of minoirites in the community is also somewhat symbolic in that it demonstrates an attempt to deal with community interests which many believe to have been abused or ignored. If viewed in cynical terms, the use of non-sworn personnel on patrol could be described as a way to "buy into" a community. Their use could also be described as an attempt to increase the scope and flexibility of patrol. The evidence to date supports the use of non-sworn personnel in dealing with complicated patrol-related problems.

IV. Patrol Travel Routes

In principle, patrol effectiveness can be directly linked to each patrol unit's travel routes through assigned beats. The location of a patrol unit within a beat dictates the amount of time required to respond to a call. The frequency with which a unit passes certain locations may affect the level of criminal activity which occurs there and citizen satisfaction with the police. Although there has been little empirical work concerning the effectiveness of different ways of selecting travel routes *per se*, it is possible to discuss the three patterns which seem to dominate patrol: (1) travel at the discretion of the patrol officer; (2) repetitive travel along a defined route; and (3) random travel.

Patrol officers, for the most part, are indoctrinated with the idea that they should patrol in non-repetitive patterns. Although guided by this principle, the most prevalent method of route selection appears to be officer discretion. Patrol officers, with some guidance from their supervisors, select their routes according to a variety of factors, including: schedules and expected events, presence of certain individuals, changing activity within the beat, day and time, calls for service, and reported crime. This approach, although difficult to document, is generally accepted as an effective way to maintain high levels of visibility and to assure an appropriate response to calls for service. However, this assumption is largely unsubstantiated. There is little evidence which relates the travel routes individually selected by patrol officers to any patrol objective. However, an experiment in San Diego suggests that giving individual patrol officers considerable discretion in selecting patrol strategies and tactics improves patrol effectiveness.[60] There is also considerable anecdotal evidence to suggest that patrol units frequently tend to select routes on the basis of comfort and minimum work.[61]

Repetitive travel, where a patrol unit follows the same approximate route, is often found in areas of high crime or high crime potential. Although referred to in different ways, repetitive patrol is assumed to increase visibility and reduce response times.[62] A common example of this is the patrol of a "strip" which contains bars and burlesque theatres, and is frequented by prostitutes and pimps. Another example of a "strip" is high-density residential high-rises which have main entrances off of a single street. Repetitive patrol also may take place in shopping centers on weekends, retirement communities, student housing, and commercial areas. Some of the patrol activity in Portland, Oregon; Miami Beach, Florida; and University City, Missouri, can be classified as repetitive patrol. Project CRIMP in Portland, the patrol of the skid row area, appears to be highly repetitive.[63] The patrol of the resort areas and retirement communities in Miami Beach at certain times also appears to be repetitive.[64] Certain residential and commercial areas are patrolled in a repetitive fashion at times in University City.[65]

It is not clear how repetitive patrol affects visibility as such, but it has been found to reduce response time to service calls. Also, crime appears to be deterred in the areas being patrolled in this manner.[66] Many citizens comment favorably on repetitive patrol, apparently liking the idea that a patrol unit comes by "...every 30 minutes."[67] Repetitive patrol is seldom implemented as a formal patrol strategy; it usually is based upon an officer's discretion or supervisory instructions.

Patrol routes can also be selected randomly. Much of the literature on preventive patrol asserts that randomness is one of its essential attributes. Random patrol procedures are justified on the basis that this form of patrol is perceived by potential offenders as being unpredictable: they are unable to guess the movement and location of the patrol unit and, therefore, will be more reluctant to commit a crime than they otherwise would have been.[68] Until recently, random patrol usually meant encouraging the individual patrol units to patrol in a non-repetitive fashion. The experience and intuition of the patrol officers, perhaps guided by information obtained from their fellow officers and supervisors, were considered to be sufficient for making patrol routing decisions.

One approach to the development of a formal random patrol model assumed that 50% of all crimes are committed in a way that is observable by a patrol unit.[69] A random patrol algorithm was then constructed which would predict the level of preventive patrol required to insure a given probability of immediately apprehending a criminal at a given, accessible location. The major consideration in this model was the "observability" of the crime. The model was based upon two time estimates: (1) the time it takes to commit a crime, and (2) the time it takes to patrol the protected area once. Given these two values, the probability of detecting a crime was predicted. The model showed that decreases in the time required to patrol an area (e.g., from 60 minutes to 10 minutes) increase the probability that a crime will be detected. In theory, this decreased patrol time can be accomplished by either reducing the size of the beat area or by increasing the speed of the vehicle.

This model, however, offers little assistance to those who wish to utilize random patrol procedures. A major shortcoming of the model is the assumption that any type of crime can take place anywhere in the area that is accessible to the patrol unit and that the likelihood of a specific type of

crime happening at any particular location is the same for any other location. It is here that the limits to the practical application of such a random patrol model become evident. Simply, this assumption holds only for perfectly homogeneous areas, where the potential for every type of patrol-related incident is equally distributed across the jurisdiction. Except in very small geographic areas within a jurisdiction, the potential for patrol-related incidents varies widely. For example, burglaries will not take place unless there is a resident or working population. Another problem is the impracticality of assuming that a vehicle's speed should be increased to the levels required to improve patrol coverage. First, there are physical limits on the speed a patrol vehicle can maintain at any given time. Second, it can be assumed that as a vehicle's speed increases above a certain point, the observation capability of the officer diminishes. This alone contradicts one of the major assumptions supporting preventive patrol.

Even if these methodological shortcomings can be overcome, the application of a pure theory of random patrol does not seem to improve measurably the deterrence of crime or the apprehension of criminals.[70] Although there appeared to be a number of theoretical and practical problems associated with random patrol, it was one of several innovations adopted in Endina, Minnesota.

Random patrol procedures were utilized in Endina with the objective of reducing response times. The basic approach was to define beat areas with equal crime potential, and then to assign to the units patrolling within those beats a "random" route of travel developed on the basis of a computer-generated random number series. Numbers were assigned to various points throughout each beat, and the model then defined the sequence of travel between the points. Patrol units were to travel through the assigned beats in the way prescribed by the random model. Half of the city was then patrolled on the basis of the random model, and the other half, the control area, was patrolled in the traditional way. Application of the random patrol model was reported to have resulted in a 40% reduction in response time.[71]

Random patrol was only one of several improvements which were being made to the patrol force: training was intensified, public support was solicited, planning was improved, and police manpower was increased. Also, considerable competitiveness developed between those patrol units which were using the random patrol procedures and those using traditional patrol procedures. As a result, response times dropped in both the random patrol and control areas even before the experiment was initiated. The integrity of this experiment does not permit firm conclusions to be made about random patrol. However, since response time *increased* dramatically when the random routing procedure was phased out at the end of the experiment, it is possible to suggest that a random model alone may improve response time.

In sum, experiments with random patrol models may offer considerable insight into the problem of deploying the patrol force. Attempts to equalize "intercept probabilities" could lead to the use of new criteria for structuring beats, dispatching, and assigning extra patrol units.[72] Aside from the theoretical problems, the computation of intercept probabilities is perplexing. First, they are quite low. For example, if an area is patrolled once an hour and the time required to commit a crime is three minutes, then the probability of intercepting a crime cannot be expected to exceed 3/60th's, or 5%. Second, there has been no study of existing intercept probabilities which is necessary for a comparative analysis. Studies of the concept of intercept probabilities

could be a simple, unobtrusive way to improve the understanding of preventive patrol.

There has been little empirical work undertaken to measure the effects of alternative travel routes *per se* upon the achievement of patrol objectives. Experience suggests that patrol officers and supervisors, working together, can develop discretionary guidelines for route selection which, minimally, do not visibly detract from the achievement of patrol objectives. Various forms of repetitive patrol in small areas with high crime potential, which may more accurately be thought of as forms of saturation patrol, may deter crime and increase citizen satisfaction. Very little can be said about the effect of randomly selecting travel routes upon patrol. Since the routes taken by patrol units are such an integral part of patrol strategy and tactics, most inquiry into the effectiveness of alternative travel routes should probably be incorporated into larger experiments which consider other factors affecting deployment.

* * * * *

In conclusion, deployment practices provide the operational framework for the conduct of preventive patrol. From a "technological" point of view, present equipment and knowledge are sufficiently sophisticated to permit the fine manipulation of deployment configurations so as to reflect with a high degree of accuracy the assumptions, desires and concerns of patrol administrators. However, relative to this capability, very little is known about how alternative deployment patterns are related to the attainment of the basic goals of preventive patrol. This represents a significant and, at the moment, unresolvable problem. There has been very little research into the effects of different deployment techniques and systems on variations in the levels of attainment of the strategic and tactical objectives of patrol and through them to changes in the overall effectiveness of the patrol division. As a result, while a great deal is known about the technical aspects of deployment, there is very little definite knowledge concerning the ultimate impact of various approaches to deployment upon any of the goals and objectives of patrol, aside from the ability to respond to calls for service.

Exhibit IX displays the range of assumptions which currently govern deployment practices. Most of these assumptions are untested and many are in conflict with each other. They are presented in the analytical framework in order to stimulate systematic thinking about deployment practices.

CONTINUED

2 OF 4

CHAPTER FOUR

SUPERVISION OF UNIFORMED PATROL OFFICERS

The effect that deployment plans, task assignments and modes of transportation have upon patrol is significantly impacted by the character and caliber of supervisory practices. In principle, the purpose of patrol supervision is to insure that deployment patterns are maintained, assigned tasks are performed well, and particular vehicles are used effectively -- in short, that officers are doing their jobs. Such assurances are particularly necessary because of the problems posed by two realities of police work. The first is that patrol officers are delegated substantial power by society -- power over the lives and property of individuals. The second is that officers typically spend large percentages of their time in the field either alone or with a partner: they are not subject to continual detailed supervision. For these reasons, it is widely believed that supervision is necessary in order to assure that organizational policy is carried out, that organizational objectives are met, and that extraordinary powers of the individual patrol officer are not misused.

Administrators have traditionally relied upon a "para-military" model of supervision -- with control and observation over "street" personnel as tight and close as circumstances permit. Recently, however, a few administrators have been moving toward a "participatory management" approach, emphasizing officer initiative in patrol activities and officer involvement in the decision-making process. As a department approaches the strict para-military model, patrol officer/supervisor ratios tend to be small, observation of field activities and review of written reports are stressed, officers are required to maintain on-going communication with the dispatcher or station house, and officers are rotated among beats (and sometimes partners) essentially on a random basis. These practices are generally believed to improve performance and minimize misconduct and corruption. Under conditions of participatory management, there tends to be less emphasis on close supervision and more on structured patrol time, less on detailed review of reports and more on assessment of beat conditions, less on continual communication with the dispatcher and more on participation in staff conferences, and the like. However, participatory management occurs nowhere in a pure form, but only in some departments as isolated instances of limited departures from the "para-military" model.

The actual purposes of supervision are not always well-defined or expressed. Supervision is assumed, for example, to encourage more alert patrol, increase responsiveness, improve community relations, and inhibit corruption. The need for effective supervision is widely acknowledged, but valid experimental data about its contribution toward the attainment of patrol objectives is unavailable. The literature can be characterized as descriptive or observational in nature without any formal evaluations. The literature provides only "unproven" conclusions based on *ad hoc* professional experience.

This chapter discusses the supervision of patrol officers in two sections: the first considers the problems and procedures involved in the

first-line supervision of uniformed patrol officers; the second examines the causes of patrol officer corruption and various supervisory measures for coping with the problem.

I. Problems and Procedures of First-Line Supervision

The supervision of patrol officers is usually the direct responsibility of immediate supervisors -- corporals or sergeants, depending on the particular rank structures of departments. Such immediate or first-line supervisors serve as the link between management and labor. Their position in the organizational hierarchy gives them the direct responsibility for maintaining communication between patrol officers and administrative officials. Sergeants convey policies and goals set by management (lieutenants and above) to officers; similarly, they convey results of activities performed by officers to management. To characterize adequately the nature of this supervision, it must be viewed from two perspectives: (1) that of the organization and policy of the department; and (2) that of the procedures of the department. Under the former heading are institutional arrangements for achieving departmental goals such as structuring activities in terms of "unity of command" and "singleness of purpose" -- textbook terms found in most standard books on police administration. Under the latter are such considerations as officer observation and evaluation, day-to-day management control practices, and long-term management control practices.

A. Supervision: Organization and Policy Provisions

Supervision, accomplished through a well-defined bureaucratic structure, attempts to incorporate such features as unity of command and singleness of purpose. As a bureaucratic organization, administered through lines of hierarchical authority, management and policy control results from an arrangement whereby each level or rank of officer is responsible for those below it and accountable to those above it. Furthermore, the duties and responsibilities of each rank are carefully delegated through an elaborate written directive system, any violations of which provide grounds for disciplinary action.[1]

(1) Unity of Command

Direct line supervision is generally considered to guide and control behavior in the most effective way if each patrol officer is accountable to only one supervisor. This organizational arrangement, or unity of command, avoids having patrol officers being answerable to all sergeants.[2] (Such a rule may be broken in emergency situations where ranking officers move into a beat area that is not their initial assignment.)

In order that control and guidance remain adequate, administrators, whenever possible, have established low officer/sergeant ratios. Although any such ratio is arbitrary, the one generally cited is 8:1 for one-officer patrol or, for two-officer patrol, 12:1 (or 6 pairs of officers to one supervisor).[3]

There have been isolated instances of departure from the application of the principle of unity of command. One such experiment, conducted by the New York City Police Department, provided for the deployment of higher ranking officers. "Operation 25" was implemented during a period of six to nine months in 1953, during which time rookies were supervised by captains as well as sergeants.

The captains, patrolling the areas in radio-equipped scout cars, responded to various calls where they interviewed the officers on the scene, questioning them about the circumstances of the crime and the reasons for the action taken.[4] The experiment, however, involved rookies rather than tenured officers with conclusions drawn in terms of crime reduction rather than behavior modification. The experiment did not reach any valid conclusions about supervisory styles and their effectiveness.

(2) Singleness of Purpose

Conventional wisdom in patrol literature and administrative thinking is that guidelines should be promulgated for departmental personnel so that, by channeling activity into the efforts and objectives of the department, a "singleness of purpose" can be realized. The written directive system in policy agencies is typically elaborate as it defines policy, establishes procedures, sets forth rules and regulations, and interprets court decisions.[5]

Despite the attempt at comprehensiveness, the written directive system has been found to offer rather limited guidance to patrol officers for their actual task assignments. The police administrator often formulates ambiguous or equivocal policies because so much definition depends upon the particular circumstances of time, place, event, and personality.[6]

B. Supervision: Procedures of the Department

Various supervisory procedures are utilized by departments to insure that organization and policy guidelines are adhered to. Such procedures command the attention of first-line supervisors, district or precinct officials, and officials specifically designated by the larger organization. First-line supervisors are responsible for both the observation of officer activities and the review of written reports. District or precinct officials, with input from first-line supervisors, utilize practices which, on a day-to-day basis, serve to prevent and control serious misconduct. These practices include scheduled call-ins, rotation of beats, transfer policies, and the like. And specifically designated officials assigned to headquarters, with information obtained from outside sources as well as from first-line supervisors, conduct long-term investigations of cases of officer misconduct.

(1) Observation and Evaluation

Observations of subordinates' activities and reviews of their reports[7] form the basis on which patrol officers are either "rewarded" -- given high performance ratings, promotional recommendations, preferred assignments, and recommendations -- or "punished" -- given poor ratings, undesirable assignments, or perhaps suspended. As the rank closest to the patrol officer, the first-line supervisor is often considered to have the most control over such processes. He is the individual to which the officer is the most responsive.[8]

Observation by first-line supervisors is of two types: (1) overt, in which the supervisor responds to officers' calls or patrols with them; and (2) covert, where the supervisor observes officers from places of concealment or questions citizens concerning police actions. Regarding the efficacy of either approach, the following hypotheses are posed. On the one hand, some believe that the mere presence of supervisory personnel in the field has a significant

effect on officer performance and accountability.[9] Evidence supporting such a view has been gathered in a study of serious infractions in three major cities. It was found that rates of infractions are generally lower where close supervision is exercised by sergeants in the field.[10] On the other hand, some argue that close supervision leads to poorer rather than better work by subordinates.[11] Among the reasons cited are that officers tend to modify their performance in reaction to their perceptions of subjective and arbitrary supervisory evaluations or that officers tend to refrain from taking initiative for fear of committing infractions for which they may be punished.[12]

The sergeants' review of reports prepared by the patrol officer is of critical importance since these reports serve not only as evaluations of overall departmental effectiveness but also as the basis for the justification or revision of policy. A typical set of reports which must be completed by a patrol officer includes: (1) Daily Log (brief, concise record of an officer's tour of duty); (2) Field Contact Report (record of information concerning the activities of persons interrogated and vehicles stopped); (3) Traffic Enforcement Citation (traffic ticket); (4) Vice Control Report (record of information about vice activities); (5) Incident Report (documentation of minor non-crime incidents or violations of municipal codes); (6) Case Report (documentation of any situation involving law violations); and (7) Arrest Report (documentation of any arrest).[13] Departments are constantly seeking improved methods of reporting. One reason for this is to reduce the amount of time spent by patrol officers in completing reports, the assumption being that time not spent filling out forms is used to patrol. A second reason for wanting to develop new methods of reporting is to assure that certain administrative needs are met, including more effective allocation of existing manpower and assessments of existing programs.[14]

The importance of the type of reporting method used for supervision was shown in an experiment in the Los Angeles County Sheriff's Department. As a substitute for filling out daily activity logs, deputy sheriffs checked activities completed with an electrographic pencil on IBM cards. These cards were then run through light-sensitive scanners which read and recorded the activities which had been completed. The Mark Sense Reporting System was supposed to have resulted in faster and more accurate statistical reports, more detailed information on radio car activity, and information for traffic analysis on a daily basis. Also, the system was supposed to be cheaper than tabulating data from the old daily logs. While the second objective of economy was met, the first of improved reporting was not. The project was abandoned after one year. Since there had been no training program for sergeants and administrators in the interpretation of data, they derived from it less information than they had previously. Procedures for the use of the old daily log system had been well-established with both patrolmen and supervisors understanding how the recorded data would be interpreted. The new system led only to considerable confusion and misunderstandings on the part of supervisory and administrative personnel.[15]

Both observation of activities and review of written reports serve as the basis for evaluation of officer performance. With respect to procedures utilized for such evaluations, it seems that no effective evaluative instrument has been developed which relates officer performance to officer and departmental effectiveness. Furthermore, it seems that no evaluative instrument has been developed which objectively assesses the tasks performed by the officer; instead,

there results much subjective input from the immediate supervisor. The Los Angeles Police Department, among others, has been searching for an objective system of rating in which bias will not be reflected. The department instituted an "incident report" on which a sergeant would record all activities, favorable and unfavorable, of officers under his command. This practice, however, was discontinued when the reports were discovered to be solely negative. This was then replaced by the sergeant's daily log (a chronological account of the sergeant's daily activities) from which an officer's performance is derived; the results were higher performance ratings for patrol officers.[16]

Aside from giving poor performance ratings to officers, which reduce chances for promotion and often result in assignment to undesirable duties, supervisors may take further action and refer allegedly serious infractions to higher officials or the internal review board.

First-line supervisors, as the evidence appears to indicate, are the departmental officials to whom patrol officers are the most responsive. Officer output tends to be directly related to that which is demanded. In other words, officers' perceptions of the standards on which they are evaluated appear to constitute an extremely important determinant of their behavior.[17]

(2) Day-to-Day Management Control Practices

Various management control procedures or systems are utilized by departments for purposes of either preventing infractions or modifying behavior. Examples of these procedures are scheduled call-ins, assignments and transfer policies, rotations of beats and partners. These traditional approaches reflect the para-military model which is widely used in the police service, and they are utilized in conjunction with first-line supervisors' observations of activities and reviews of reports. Other approaches, such as structured patrol time, staff conferences, and group decision-making, are being developed as aspects of "participatory management."

The requirement that patrol officers call in at scheduled times to either the dispatcher or their station house is facilitated by the assignment of portable radios to the officers. Similarly, two-way radios, used whenever possible, permit constant communication between officers and dispatchers.[18] Other equipment, such as an Automatic Vehicle Monitoring (AVM) system, records and displays the location and status of patrol units -- thereby permitting continual, detailed supervision. A major problem with such a system has seemed to be officer dissatisfaction from fear of having "Big Brother" watch over them.[19]

Another supervisory approach is the assignment and transfer policies of patrol officers with poor records (many infractions) to high crime areas. This is an approach which represents real sanctions to most police officers. The value of this approach, however, has been called into question by a study of three major police departments (Boston, Chicago, and Washington, D.C.). The observation of 38% of the total black and 46% of the total white officers in these departments revealed that four out of ten were involved in at least one of the serious violations of drinking and sleeping while on duty, neglect of duty by unauthorized time away from duty for other than police matters, and falsification of information concerning police matters; and the rate of officer deviance was higher among those assigned to high-crime-rate areas than among others.

The implication is that the transfer program is resulting in poor police service in the higher crime areas.[20] However, this objection to the practice is not convincing because the higher deviance rate in high-crime precincts may be a function of the environment rather than the caliber or motivation of the officers assigned there.

Another management control procedure is the provision for rotation of beats and partners. Frequent rotations, some argue, have a dual purpose: (1) patrol improves because the officers are more alert and do not waste time with their partners; and (2) corruption declines as the officers do not have control of the beat and do not have strong ties with their partners.[21] Opponents of beat rotation argue that patrol effectiveness declines since officers do not have the requisite knowledge of their beats.[22]

Some of these traditional approaches, those derived from the para-military model, have recently been questioned. A study conducted in the Miami, Florida, Police Department revealed that patrol officers are subjected to severe boredom and lack of sensory stimulation. As a result, officers utilized a number of ways to cope with these feelings, most of which involved actual violations of departmental rules and regulations.[23] Furthermore, officers have felt that they are being "used" by departmental officials, without being given any opportunity to contribute to the organizational goals.[24] The need seems to be not that of tighter control but, instead, that of participatory management and more structured patrol time; these objectives seem to be realized, to a certain extent, in the following programs.

A form of participatory management is evident in the Community Profile Development Project conducted in the Northern Division of the San Diego Police Department where officers were assigned to fixed beats. From November, 1973, to September, 1975, staff conferences were held as an alternative to the traditional quasi-military roll-call. Opinions and attitudes of the patrol officers were solicited by first-line supervisors and disseminated upward throughout the command structure. From these open discussions of the area's problems and possible patrol strategies, more effective administrative policies were formulated. Some of these policies concerned how the first-line supervisor assesses his subordinates' performance. Rather than conducting a day-to-day evaluation of the standard measures of officer productivity, as obtained through observation of officers' activities and reviews of their reports, supervisors made an on-going evaluation focusing on the relationship between the quality of officers' patrol work and the beat conditions. The findings were that the experiment led to increased squad communication and coordination, more suitable and reliable performance evaluations by supervisors, and increased work motivation.[25]

Another program, conducted by the Cleveland Heights, Ohio, Police Department, made the following changes in its patrol program in order to improve the quality of patrol: (1) held an in-service motivational training course emphasizing patrol objectives in the community; (2) established a "Patrol Investigator" position similar to that of master patrolman and provided those officers a small salary increment; and (3) made drastic changes in the deployment system of the department, varying the number of one-officer units by time of day and day of week in accordance with the anticipated level of service demanded by the public. By deploying in relation to the level of activities and by giving purpose to officers' patrol function, as well as by offering recognition for exceptional performance, it has been felt that the level of job satisfaction and, as a

consequence, the degree of attentiveness to duty has increased.[26]

These challenges to traditional approaches promise improved effectiveness. The provisions for strict control by monitoring officer activities and by providing officer transfers and rotations have been giving way to forms of participatory management and a lesser amount of unstructured time during patrol.

(3) Long-Term Management Control Practices

Various attempts have been made to expand the sources of information available to departments concerning the activities of their street personnel. Such attempts have included solicitation of citizens' complaints, utilization of civilian review boards and internal affairs divisons, encouragement of officer self-help, and so on. A generally accepted opinion is that the present supervisory practices allow serious infractions by police officers to go unpunished. Some attribute this to rigid and over-protective civil service regulations and others to powerful police unions.[27] Additionally, there is a tendency for officers and first-line supervisors to insulate each other from what is perceived to be unwarranted outside pressures.[28]

The active solicitation of citizen complaints was undertaken in the Oakland, California, Police Department. In December, 1965, and January, 1966, bulletins were mailed to religious and civic organizations with the request that any complaints against the police be filed. The procedures for making these complaints were described in detail, and the increased filing of complaints began immediately. The result of this was that the Oakland Police Department's Internal Affairs Division investigated as many as 408 citizen-initiated complaints in 1966, judging 115 (28%) of them as valid.[29] Yet without the data for 1965, these findings are inconclusive.

Another approach, the civilian review board, has been attempted in Philadelphia, New York City, and Washington, D.C. Civilian review boards have the responsibility to adjudicate citizen complaints by either dismissing them as groundless or by recommending them for departmental discipline.[30] Effectiveness of this form of supervision depends upon the accessibility of the review process to the public and the ability of the department to act on the board's recommendations. These boards are often viewed with deep emotion by police officers, and controversy over their use is often extensive.[31]

Most sizeable departments utilize internal affairs divisons. These divisions have the responsibility for investigating instances of deviant officer behavior. Much of the work is initiated by citizen complaints, but a few departments insist that a proportion of internal affairs cases should be self-initiated.[32] There is a dearth of evaluative data about the operations of internal affairs units, since the investigations are of a confidential nature.[33]

The Oakland, California, Police Department has gone a step further in their methods for handling officer violence. Action Review and Stress Panels have been established -- which are composed of officers who help fellow officers handle potentially violent situations more effectively. The project accomplishes two goals: (1) a cut in the cost of disciplinary action, both to the individual officer and to the department in pay and manhours lost; and (2) the utilization of a positive, rather than a punitive, approach. The selection of officers as

subjects for Action Review Panels is accomplished in three ways: by officer volunteers, by supervisor requests, and by invitations to participate after an accumulation of ten or more "resisting arrest" and/or "assault or battery on a police officer" incidents during a twelve-month period. Members of the panels include six of the subject officers' peers -- patrolmen in line divisions -- who help the officers develop self-awareness of their problems through discussion. The subject officers for Stress Panels include those who, after having attended Action Review Panels, continue displaying negative patterns of behavior. These panels include eight members -- from department officials to deputy district attorneys; they specifically identify the officers' problem areas and critically analyze their approach, style, demeanor, and attitude. Neither panel functions as a disciplinary unit -- and all resultant discussion and information is kept in strict confidence.[34]

An approach to the problem of supervision which has been proposed, though never attempted in this country, is the appointment of an ombudsman who has the responsibility and power to conduct investigations of individual grievances. This is thought to be one way to eliminate some questionable administrative policies which lead to inequitable, arbitrary, and protective supervisory practices.[35]

Management control seems to depend on the accessibility of information. It depends on such factors as whether the officer is assigned the case by the dispatcher or is alerted by a private complainant, whether the officer completes a report or settles the case informally, whether the internal control systems are fully open to the community or are confined solely to the ranks of the police department.[36] The reality is that, whatever the sophistication and extent of the management control practice, there is necessarily a limit on its effectiveness over field activities in which discretion is an inherent feature.

C. Conclusions Concerning Supervisory Practices

Most of the literature is descriptive or observational in nature. The supervisory changes which have been documented have not been formally evaluated, making it impossible to state with any reliability what, in fact, each accomplished. Specific shortcomings are apparent in the various projects. The Los Angeles Police Department's "Sergeant's Daily Log," New York City's "Operation 25," and Cleveland Height's "Patrol Emphasis Program" were not evaluated; the Los Angeles County Sheriff's Department's "Mark Sense Reporting System" was improperly implemented; and San Diego's "Community Profile Development Project" is being evaluated, but the report is not yet available. As a result, the impact of attempts to either assess or change many current supervisory practices while maintaining effective control is not known.

One additional point must be made. Until now, the emphasis has been on the general belief that better supervision leads to better officer performance as measured by individual officer performance ratings, reports, "quota" realization, citizen complaints, and the like. It has also been assumed that better individual officer performance contributes to better overall performance of the department in terms of the five basic goals of patrol: deterrence, apprehension, provision of non-crime related services, provision of felt security and community satisfaction, and the recovery of stolen goods. However, there have not been any well-executed attempts to test and validate empirically the relative

merits of alternative supervisory practices *vis-a-vis* the attainment of either the intermediate objectives of patrol or the overall goals of the patrol divisions. Changes in supervisory practices have been tentatively related to changes in individual performance, but relationships between changes in practices and performance and changes in levels of objective and goals attainment have not been established. As a result, little is known about the relationship and little can be said, therefore, about the overall merit of alternative patrol supervisory practices.

II. Corruption of Patrol Officers

Corruption of patrol officers is considered to be one of the most critical problems confronting police officials. There is virtually universal consensus that corruption is destructive to all aspects of patrol operations: apprehension and deterrence efforts suffer due to pay-offs; the morale of uncorrupt officers may be damaged by their perceptions of corruption around them; the status of police work is degraded; and citizen respect for and cooperation with police officers is diminished. Visible and/or pervasive corruption is also thought to place senior police officials in extremely precarious positions. More police chiefs have been scandalized or fired as a result of the detected corruption of patrol officers than by perceived rapid increases in crime.[37]

A. Nature and Extent of Corruption Among Patrol Officers

The total amount and exact nature of patrol officer corruption has never been determined; however, impressionistic evidence, drawn mainly from investigations of police scandals, suggests that the problem is widespread. For example, the Knapp Commission found extensive corruption in the New York City Police Department. Its final report states that a rookie coming on to the force faces a situation in which "it is easier for him to become corrupt than to remain honest."[38] Field studies conducted by the President's Commission on Law Enforcement and the Administration of Justice present a similar picture. They reveal that in numerous departments across the country a significant number of officers are engaged in criminal activities.[39]

These recent official findings have been confirmed by independent scholars and journalists. One in-depth study of a large urban department concluded that the pressure on patrol officers is such that "they know that the only way a policeman can be honest in the exacting way required by his oath of office is to resign."[40] Another highly regarded study of four big city departments found that "during any year a substantial minority of all police patrol officers violate the criminal law..."[41] Finally, it has been estimated that approximately one-half the take from illegal gambling in the United States goes for bribes to law enforcement officials. If the estimate is at all accurate, the figure could easily exceed the total wages paid to all police officers in the country.[42] In short, although precise evidence is lacking, corruption is widely perceived to be a serious and sometimes overriding problem in patrol operations.

B. Problems in Studying Corruption of Patrol Officers

The unfortunate quality of current knowledge about corruption is primarily a function of two related problems: a lack of consensus on its operational meaning, and the absence of adequate research techniques to investigate it.

Discussions of corruption frequently fail to define its various levels and dimensions, and often treat it in concert with other types of police deviance such as brutality and incivility. It is important to distinguish corruption from other types of misconduct. The rationale behind them is normally quite different. For example, brutality is frequently a form of emotional outlet, while corruption is more often an instrumental activity motivated by a desire for financial gain. While they may frequently be found to coexist, there is no necessary analytical reason why one should involve the other. A patrol officer, or a department, can be corrupt without being brutal and vice versa.

Corruption is a multifaceted phenomenon which encompasses activities ranging from accepting a free cup of coffee or a discount on a meal to active involvement in narcotics traffic and premeditated theft. Yet there is a distinct tendency, expecially common in the media, to treat it as if it were all of one piece. Any and all transgressions of the strict legal and ethical standards governing police work are cited as evidence of corruption *per se*, and on this basis a patrol officer, or even an entire department, may be indelibly labelled as corrupt. It is, of course, true that the police occupy a unique place in society and are quite properly held to rather rigid standards of conduct; however, while simple comparisons of reality with an abstract ideal may provide the impetus for action, they offer rather little guidance in understanding and coping with the problem.

Patrol officers themselves recognize the existence of various types and levels of corruption when they speak, for instance, of the difference between "on the arm" and "on the pad," and their lead might well be followed. There is a need to know: not only why some officers go bad while others remain clean, but why some become much more corrupt than others; not only that corruption is widespread, but how and why it varies from department to department; and not only that many officers are corrupt, but whether any of them ever reform and if so for what reasons. Only in the most superficial sense is corruption a black and white issue and we treat it as such to the detriment of our understanding of the problem and our ability to control and, hopefully, eliminate it.

The second difficulty involved in studying corruption is substantially less tractable than the first. Most standard social science methods do not lend themselves very well to the examination of illicit activities. As a result, investigators have been forced to rely primarily on informers for their data and, unfortunately, it is terribly difficult to validate information obtained from such sources. Informers must be taken more or less as they are found and their perceptions and disclosures need to be carefully considered in the light of their personal stake in the matter at hand. Also, even the most open and apparently honest informer can have trouble providing an accurate picture of activities ranging beyond those in which he is or was directly involved.[43]

Despite the problems entailed in using informers, rather few alternative methods have been tried. Reiss and his associates found a seemingly

substantial amount of illegal activity in their structured observations of patrol officers at work.[44] However, it is extremely hard to imagine how open observation could unearth more than a fraction of existing corrupt activity. Another scholar has boldly suggested that it is not all that difficult to discover police corruption. He points out that if corruption is widespread, then awareness of it must, of necessity, also be widespread.[45] There is, no doubt, some truth to his comment, but to be useful, investigations of corruption must move beyond its mere discovery to an examination of its character, incidence, and changing complexion over time. Only with this level of specificity can the success of efforts to cope with the problem be evaluated.

The development of techniques for studying corruption is an immensely difficult task which is much in need of creative work. As with so many aspects of patrol, research is currently hampered by the lack of a clear-cut definition of the problem, and valid, cost-effective means for measuring its impact. Until these difficulties have been surmounted, discussions of the subject will, of necessity, remain at an impressionistic and largely subjective level.

C. Causes of Patrol Officer Corruption: Prevailing Theories

The difficulties involved in defining and measuring corruption, great as they are, have not led to any noticeable reluctance in identifying its causes. There is a lengthy and sometimes contradictory list of factors which are often mentioned as supposedly contributing to police corruption.

The traditional approach to the issue focuses on the individual origins of illegal activities. It views corruption in terms of the personal and moral deficiencies of the officers involved. The problem is seen as an individual responsibility which does not necessarily reflect on the department as a whole. This so-called "rotten apple" theory appears in numerous texts on police work and has been a particular favorite of police administrators in responding to allegations of corruption.[46] Former Commissioner Murphy resorted to it frequently in attempting to answer the charges of the Knapp Commission.[47] In essence, it allows the police to explain to the public and to themselves the persistence of a condition which they feel incapable of controlling.

In recent years the "rotten apple" theory has been subjected to a great deal of criticism. The Knapp Commission explicitly rejected it, an influential scholar termed it a "plausible half-truth," and a well-known police chief observed that recent research has exploded the myth of the rotten apple.[48] Indeed, the theory has gone from being an explanation to being frequently identified as part of the problem. The National Advisory Commission on Criminal Justice Goals and Standards stated that the most important factor contributing to corruption is the general attitude which resists acknowledging the extent of its existence and inhibits the self-examination necessary to alter the conditions which permit it to flourish.[49]

This is a rather harsh indictment of a theory which contains at least a kernel of truth. Certainly, individual factors such as avarice and moral character need to be considered in explaining corruption; however, in recent years a new and partially conflicting theory has emerged which stresses the importance of social context as a causal influence on corruption.

In its most general form, this approach views the corruption of patrol officers as a natural consequence of society's demands for illegal services. It has often been observed that crime is very much an American way of life[50] and that since the police do not function in a vacuum there is really little wrong with law enforcement that is not also wrong with society as a whole.[51] This observation, while doubtlessly true, is not terribly helpful to a police administrator trying to run a clean force.

On a more specific and useful level this approach concentrates on the importance of corruption-oriented cliques in supporting and fostering illegal activities. Corrupt subcultures are thought to develop from a disjunction between the personal goals sought by patrol officers (e.g., financial rewards, job satisfaction, status, and prestige) and the availability of adequate, legitimate means (e.g., promotions, pay raises, etc.) for their realization. The blockage of legitimate access to valued goals, coupled with oft-noted feelings of alienation and isolation from the community at large, leads to the exploration of other routes, and for the patrol officers these are not at all difficult to find.[52] Opportunities for corruption are literally thrust upon them.

Opportunity in combination with motivation leads to corruption and a subculture develops, almost naturally, around the norms and rationalizations used to legitimate clearly illicit behavior. Subcultures serve to justify corrupt activities, protect their members from discovery and, perhaps most damaging of all, act as a means of introducing recruits to the potential profits of their new occupation. In these rather sociological terms, corruption can be viewed as a process which feeds on itself until it eventually encompasses an entire department. Even those officers who are not directly involved are pulled into its web by their reluctance to expose their friends and colleagues.

This process has been frequently elevated to a position of paramount importance in explaining corruption.[53] However, emphasis on the personal frustrations of patrol officers as a cause of corruption needs to be supplemented by an appreciation of the extreme demands placed on them by society. Not only are they held to strict ethical standards (much stricter, it might be noted, than those applying to most other occupations), but they are also required to perform tasks for which they have insufficient power and resources, and rather ambivalent support from the communities they serve.

The problem is particularly evident in attempts by uniformed patrol officers to police vice, a major source of police corruption. The obligation to enforce morals laws creates a serious dilemma for the patrol officer. Departments often place great emphasis on vice activity as evidence of their honesty and incorruptability. However, it is extremely difficult for uniformed patrol officers to make vice arrests. Frequently they are obliged to engage in questionable and even illegal activities such as perjury on warrant affidavits, planting evidence, and illegal searches in order to make arrests of rather doubtful significance to the courts, the public, or even themselves. In the process, they are placed in an environment where close supervision is difficult if not impossible and where opportunities for graft abound. The result is often the development of understandable feelings of cynicism and alienation in an atmosphere which provides a ready and profitable outlet for their expression.[54]

It is difficult, at this point in time, to gauge the relative explanatory powers of different theories of corruption. They are presently

cast more in the form of speculative notions rather than systematic, well-thought-out assumptions and hypotheses. While the traditional "rotten apple" explanation places much too much emphasis on individual moral character and has often been used as much to cover up corruption as to explain it, the sociological group-oriented approach sheds little light on the crucial question of why some officers are corrupted while others remain clean. Indeed, the sociological analyses often leave one wondering how there could be any honest cops at all given the unhappy conditions of police work.

Although frequently presented as conflicting approaches they can, perhaps, best be viewed as providing two different levels of explanation -- one emphasizing the immediate causes of corruption such as individual characteristics, lax supervision and inadequate recruitment practices; and the other concentrating on latent causes such as community norms and mores, and informal police subcultures. At present, there is a clear need to extract from these two approaches a set of explicit, testable, and policy-relevant hypotheses. Until this has been accomplished we must content outselves with some interesting, if rather free-flowing speculations on corruption, none of which are supported by much in the way of hard data. Future progress in our understanding would seem to require a more definite and systematic specification of the factors impacting on corruption and the development of means for measuring them.

D. Countering Patrol Officer Corruption

The disagreement found in discussions of the causes of corruption does not carry over into considerations of its consequences. Here there is virtually universal consensus that corruption is destructive to all aspects of patrol. It does tremendous damage to morale, brings formal rules and procedures into contempt, degrades the nature and status of police work, and diminishes community respect for and cooperation with law enforcement agencies. It also exerts a disturbing influence on the distribution of police services, and can place senior administrators in extremely precarious positions. Finally, it is generally recognized that corruption works like a cancer in police departments; even small seemingly harmless transgressions can contain the seeds of a major scandal.

Attempts to analyze a phenomenon often end up as explanations of why it cannot be other than it is. The causes of corruption are so many and complex and its ramifications so difficult to unravel that it is easy to come away from an examination of the problem with a rather pessimistic prognosis concerning abilities to control and eliminate it. Several authorities in the field have fallen victim to this fatalistic frame of mind. Sayre and Kaufman in their influential study of politics in New York City conclude that the Police Commissioner eventually comes to accept the fact "that police corruption is endemic to his organization, and that he is fortunate if he can prevent its reaching epidemic proportions."[55] And, in a similar vein, Neiderhoffer is convinced that "the forms of graft quietly condoned by most policemen will prove impossible to eradicate."[56]

These negative predictions may well prove out to be true, but they offer small comfort or assistance to police administrators who must cope with controlling corruption, however impossible the task might be, nor have they dampened the efforts to devise strategies and tactics for dealing with the

problem. A great many proposals for change and reform have emanated from commission reports and independent studies of corruption, and many have been implemented by departments. In summary form these include:

1. Psychological screening of police candidates to weed out those most likely to engage in corruption;[57]

2. Increased emphasis on the indoctrination of officers in a code of ethics;[58]

3. Regular surveillance and investigation of police behavior by an independent investigative agency;[59]

4. Emphasis on high arrest and ticketing rates to reduce the prospect and suspicion of corruption;[60]

5. Elimination of the common practice of assigning poorer officers to high crime areas where temptation is greatest;[61]

6. Increase in salaries to reduce temptation;[62]

7. Creation of opportunities for lateral mobility between departments to enhance opportunities for promotion;[63]

8. Changes in the laws covering victimless crimes to remove a major source of corruption;[64]

9. Vigorous prosecution of officers caught engaging in corrupt activities;[65]

10. Prosecution of citizens caught offering bribes;[66]

11. Rotation of officer beat assignments and partners.[67]

While lengthy, this represents only a partial list of possible remedies. And, as is so often the case, there are benefits and drawbacks to each of them. For example, the use of an investigative agency while a potentially valuable technique for controlling corruption, might also have serious consequences for morale. Every patrol officer, however honest, is guilty of violating some departmental rule or regulation, and the spectre of being constantly watched and possibly informed on could create an extremely hostile and apprehensive atmosphere. It would also be quite costly. The rotation of officer beat and partner assignments could make it much more difficult for officers to develop and solidify the contacts necessary for systematic graft, but it would also increase the managerial headaches involved in manpower allocation and substantially reduce the familiarity of officers with their beats.

The New York City Police Department has recently had to contend with an apparently substantial and certainly well-publicized corruption problem. The department has responded by trying a number of techniques for coping with the problem and, hopefully, preventing its reoccurrence. It has greatly increased the number of officers assigned to internal affairs, and instructed supervisors of the possibility that their subordinates are engaged in corrupt activities.

Supervisors are requested to constantly monitor various signs of corruption, such as large numbers of illegally parked cars outside certain establishments or licensed premises open after hours, in an effort to make countering corruption an active and recognized part of daily supervision.[68] In addition, the department has sought to instill in its officers a sense of moral obligation to refrain from corrupt practices. This is done through integrity workshops in which small groups of officers explore the problem of corruption and its negative impact on both themselves and the public.[69] While the department has attempted to combat corruption through these and other measures, the lack of adequate measures of corrupt activity makes it extremely difficult to gauge their effectiveness.

In sum, the present state of knowledge about patrol officer corruption is not sufficiently detailed and reliable to premit any very definite conclusions concerning the relative merits of various approaches to dealing with the problem.[70] The John Jay School of Criminal Justice is currently conducting a NILECJ/LEAA-funded study of police corruption which promises to fill some of the gaps in current knowledge. Certainly, little can be accomplished in the absence of better and more detailed knowledge.

CHAPTER FIVE

IN-SERVICE TASK ASSIGNMENTS

Traditional preventive patrol is frequently viewed as an essentially undifferentiated activity involving the routine movement of patrol units through their assigned areas when not handling calls for service. As the third chapter indicates, deployment decisions are normally made on the basis of calls for service workloads with rather little attention devoted to the use of officers' non-committed time (e.g., the portion of time that a patrol unit is available to take calls from the dispatcher). In actuality, however, there are a myriad of specific activities which officers can perform while on preventive patrol. Although the range of these activities is almost endless, some of the most important and common include: aggressive patrol, crime- and suspect-oriented patrol, community relations work, counseling citizens on crime prevention techniques, and assisting specific segments of the population such as juveniles and the elderly. This chapter discusses the availability of officers' time for the performance of non-call for service activities, methods for selecting appropriate tasks, and current knowledge about the effectiveness of particular in-service activities.[1]

Questions concerning the effectiveness and most appropriate use of non-committed patrol time have been with us for years. In the 1930's, Bruce Smith expressed concern about the effectiveness of inservice patrol activities: "Police are agreed that uniformed patrols discourage the commission of certain types of criminal acts, but even this elementary proposition lacks scientific demonstration."[2] Decades later, the President's Commission on Law Enforcement and the Administration of Justice voiced a similar concern when it noted in discussing preventive patrol that, "there is little evidence on how much crime is thereby prevented or on how much would be prevented with alternative patrol tactics."[3] The uncertainty about the effectiveness of in-service patrol activity has been accompanied by a debate over the most appropriate range of activities. O.W. Wilson emphasizes the utility of a wide variety of tasks, both crime- and non-crime related, and warns against tendencies toward the over-specialization of their performance,[4] while others argue that the patrol force should not be burdened with non-enforcement duties and that patrol could be much improved by narrowing its focus.[5] Finally, the National Commission on Productivity has underscored the importance of these issues by concluding that increasing patrol time and maximizing its impact represent significant means of improving police productivity.[6]

The findings of the recently completed Kansas City Preventive Patrol Experiment have given these long-standing questions a new sense of urgency.[7] The experiment sought to test the effectiveness of routine preventive patrol *per se*. It involved the year-long manipulation of the levels of preventive patrol within 15 beats which were divided into three matched groups: reactive beats in which officers were only to respond to service calls, and preventive patrol was eliminated; control beats in which patrol was maintained at a normal level; and proactive beats in which preventive patrol was increased to two or three times its normal level. Only the amount of routine preventive patrol was varied; the specialized activities of tactical, K-9 and helicopter units and the like continued at normal levels in all three types of beats.

The study attempted to determine the influence of these different levels of preventive patrol on the incidence of crime, citizens' fear of crime and citizens' satisfaction with police services. Specifically, it addressed the following hypotheses:

-- crime, as reflected in victimization surveys and reported crime data, would not vary by type of patrol;

-- citizen perceptions of police services would not vary by type of patrol;

-- police response time and citizen satisfaction with response time would not vary by experimental area; and

-- traffic accidents would increase in the reactive beats.[8]

These principal hypotheses were examined through the use of a number of different data sources including: victimization surveys, officer surveys, reported crime rates, participant observation of patrol officers, monitoring response times, and arrest and traffic data. The experiment reported that different levels of preventive patrol appeared to have little effect on the levels of crime, delivery of police services, and citizen sense of security and satisfaction with police services. In particular it discovered that:

-- the experimental conditions had no significant impact on the crimes traditionally considered to be deterrable by preventive patrol;

-- there were no consistent and significant differences in the rates of reporting crime across experimental conditions;

-- there were few differences across experimental conditions in citizen attitudes toward police services;

-- overall, citizen fear of crime was not affected by experimental conditions;

-- the experimental conditions had no significant effect on either police response time or citizen satisfaction with response time; and

-- no significant differences in traffic accidents and injuries were apparent.[9]

In brief, the experiment's conclusion was, in Chief McNamara's words, that "routine patrol in marked police cars has little value in preventing crime or making citizens feel safe."[10] This conclusion does not mean, as the study clearly warns, that police activity does not have an important impact on the level of crime, nor can it be used as a justification for reductions in the level of policing.[11] However, it does suggest that there is a need to reexamine the traditional view of preventive patrol as the mainstay of police work.

The preventive patrol experiment has generated a considerable amount of controversy.[12] Some of the controversy seems to be motivated by the challenging, perhaps even threatening, nature of the study's conclusions; some appears to be the result of the unfortunate premature media exposure which it received; and some of it flows from a legitimate concern about the adequacy of the experiment's methodology and, consequently, the validity of its findings. In order to evaluate properly the experiment, it must be assessed from two points of view: the first considers its merits as a piece of research; the second considers its implications regarding the feasibility of innovations in patrol.

From a methodological point of view, the most significant questions concern the study's experimental integrity. The experiment represented an effort to examine various possible effects of different levels of routine preventive patrol. In the authors' words, "The primary purpose of the preventive patrol experiment was to measure the differential impact of alternative levels of patrol coverage (proactive, reactive and control)."[13] The amount of time spent on patrol in the three different sets of beats was, thus, the critical experimental variable.[14] Unfortunately, however, the study did not report differences in the total amount of time spent patrolling the experimental beats. There was no direct check on the maintenance of experimental conditions and this calls the validity of the study's findings into serious question.

The study did make use of a number of indirect measures of the maintenance of experimental conditions including:

-- informal contacts with a portion of the criminal subculture in Kansas City to determine the extent, if any, of its members' awareness of the experiment;

-- citizens' perceptions of police visibility derived from survey data;

-- interviews with patrol officers and participant observers;

-- officers' estimations of adherence to experimental guidelines;

-- the number of out-of-service incidents handled in the experimental areas; and

-- patrol manpower levels in these areas.[15]

On the basis of these measures the authors conclude that experimental conditions were, on the whole, maintained quite well and that in the reactive beats the amount of time spent on routine patrol was reduced by 50 to 60 per cent, while patrol time in the proactive beats was increased by 250 to 300 per cent and remained at its normal level in the control beats.[16] It would seem, at least to these reviewers, rather difficult to reach these conclusions on the basis of the above measures of experimental integrity, none of which, either alone or in combination with the others, provides more than a very indirect and uncertain indication of the levels of preventive patrol in the experimental areas. As a result, there is room for considerable doubt about the degree to which the experiment actually manipulated levels of patrol activity.

This doubt is enhanced by certain factors which raise questions about the actual reduction of patrol presence in the reactive beats - the beats which appeared to be of greatest concern to the experimenters and to those who have reviewed and used the experiment's results.[17] For instance, many of the beats were quite small ranging in size from .58 square miles to 6.51 square miles with a mean area of 2.14 square miles,[18] and they were dispersed throughout the experimental area so that they bordered the proactive and control beats. Since patrol beats are generally artificial constructs, meaningful to the police but not to the average citizen, it is questionable whether they were sufficiently large and whether there was sufficient differentiation between them to influence citizen and "would be" criminal perceptions of the relative intensity of patrol within and between them. There are no research findings which indicate how far an individual must be from a patrolled area before perceiving that his immediate vicinity is not being patrolled. Consequently, it is uncertain whether the distances in the experiment were great enough to have much impact on perceptions.

In addition, there is considerable ambiguity concerning where the units withdrawn from the reactive beats were patrolling when not responding to calls for service. The experiment's guidelines permitted them to patrol the perimeters of the reactive beats.[19] To the extent that this was done, it could function to further reduce the effective size of the reactive beats and also to increase the level of visible patrol on the borders of the control and proactive beats. Finally, there was a reported tendency for units to over-respond to calls for service in the reactive beats.[20] This raises questions about where the additional responding units came from. To the degree that they came from either the control or proactive beats, the amount of patrol in those areas would be below the desired level of intensity. This suggests the hypothetical possibility that response patterns could have contributed to a convergence in the levels of patrol activity in the three types of beats, thereby possibly accounting for the repeated lack of impact of the different experimental conditions upon citizen satisfaction, reported crime, victimization rates, etc. The possibility of such convergence is reinforced by the fact that response times and distance traveled in response to calls for service were reported not to have varied by type of beat.[21] These problems increase concerns about whether the variable of patrol was manipulated sufficiently for there to have been any identifiable impact on the factors supposedly influenced by patrol. Unfortunately, the study did not include measures which would permit these concerns to be laid to rest.

Other criticisms which do not pertain to experimental integrity can also be directed against the study. For example, the sample sizes for the community and, especially, the commercial surveys were quite small,[22] causing the researchers to resort to admittedly problematic statistical techniques in their analysis.[23] This raises questions about the extent to which the findings can be generalized to the community as a whole. However, this problem and others pertaining to the use of particular measurement techniques are definitely of secondary importance compared with the absence of direct, unambiguous measures of the maintenance of experimental conditions, and the basic design problems already raised. Without such measures, and given the design problems, there is no way of making a satisfactory determination of the values of the principal experimental variable and, as a result, the experiment's conclusions cannot be accepted as valid and reliable.

It would, however, be a serious mistake to dismiss the significance of the experiment solely because it failed to adhere to the canons of experimental methodology. While flawed, it contains some extremely valuable insights into the feasibility of innovations in patrol, insights which have sometimes been lost in acrimonious debates about the experiment's merits. It demonstrated that it was possible, at least in one department, to make apparently substantial, although uncertain, changes in patrol activity without seriously jeopardizing community security and satisfaction with police services. The indirect measures of experimental integrity, although inadequate from a research point of view, in combination with extensive interviews with individuals involved in the experiment were sufficient to persuade at least these reviewers that the conduct of patrol was altered and that the alterations may have been considerable. The principals in the experiment are convinced that the levels of patrol were manipulated to a "significant" but indefinite extent. However, even if the levels were only slightly changed, the manner in which patrol was conducted was still affected in a number of ways. For example, response patterns to service calls were altered which in turn affected actual deployment configurations; officers patrolling in violation of the experimental guidelines had to adjust their activities to avoid detection; and supervisory practices had to be changed to meet experimental demands. Since the experiment lacked adequate controls, it does not point to the acceptable limits or appropriate directions of change. However, it does suggest that departments can safely take a flexible approach to patrol and that it seems both possible and worthwhile to consider and attempt variations in the traditional model of patrol.

The presence of considerable potential flexibility in patrol operations finds further confirmation in the recent experiences of the Cleveland Heights, Ohio, Police Department. As part of its Patrol Emphasis Program the department has instituted a radically new deployment scheme. In mid-1974, prior to the initiation of PEP, the department deployed a similar number of units to all shifts. Following a careful analysis of workload demands by day of week and time of day (using a 168 hour graph of patrol activity) the patrol force, along with other departmental resources, was redeployed so that as many as 21 units are on duty during peak hours and as few as four during slack times. This dramatic shift in deployment has been accompanied by a 12 per cent reduction in reported crime from the first 10 months of 1974 to the same period of 1975 and, as far as the department has been able to determine in the absence of survey data, citizen response to the new deployment system has not been negative.[24]*

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* The reported findings of PEP, despite their inadequacy from a research point of view, tentatively suggest that the Kansas City Preventive Patrol Experiment may not have attempted to manipulate levels of patrol sufficiently for observable consequences to have occurred. In Cleveland Heights, where there was a substantial increase in patrol on certain shifts, the level of reported crime declined impressively. Since reported crime is affected by many factors, of which patrol is only one, it cannot be concluded that the changes in the level of patrol were causally related to changes in the rate of reported crime, but their covariance does provide food for thought, especially in light of similar relationships which have been discovered elsewhere.

(continued on next page)

In sum, the preventive patrol experiment and the patrol emphasis program suggest that departments may have considerable latitude in which to experiment with different approaches to routine preventive patrol. They do not point to the extent of this latitude or the appropriate directions for experimentation, but they do indicate that new approaches can be tried without undo risk. This raises a set of important and provocative questions, to wit: how much non-committed patrol time is available and how can this time be increased and organized into segments of useable length; how should decisions be made about the most appropriate use of non-committed time; and, what is presently known about the effectiveness of various types of in-service activities? These questions are currently being addressed in a number of efforts at task-oriented innovation in departments across the country.

I. Amount and Structure of Non-Committed Patrol Time

The opportunity to assign specific in-service tasks to patrol units depends, to a large extent, on the amount of non-committed time which a department's patrol force has available. This apparently varies substantially from department to department and by day of week and time of day. For instance, the Kansas City Police Department reports that on the average approximately 60% of its patrol officers' time is non-committed,[28] and in Chicago it was discovered that for a one-month period patrol officers were available for dispatch during 86% of their time on duty.[29] On the other hand, some departments appear to have substantially less non-committed patrol time. A study of patrol activities in Long Beach, California, found that only 35.8% of an officer's time was non-committed,[30] and the departments in Omaha and Anchorage report that less than one quarter of their officers' time is available for in-service activities.[31]

The total amount of non-committed time is, however, a deceptive figure. It can vary substantially by time of day and day of week depending on the degree to which the number of units deployed on different shifts accurately reflects the actual call for service workloads. For example, an average non-committed time statistic of 60% may mask the fact that during

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For example, Operation 25, conducted in New York City in 1954, found that when patrol strength in a single precinct was more than doubled, the level of reported crime declined considerably.[25] Similar, although less dramatic, results were obtained in a 1966 Rand study which increased patrol manpower substantially in one New York precinct, while holding it constant in control precincts. Again, reported crime declined in the experimental area.[26] While there are methodological problems with both studies, especially with Operation 25, their imperfect findings led James Q. Wilson to conclude that, "The results of the two New York projects were sufficiently striking and consistent to warrant entertaining the belief that very large increases in police patrols may reduce 'outside' or 'street' crime, at least for a short period of time."[27]

These two studies, plus the recent experiences in Cleveland Heights, lead one to wonder whether the differentials in the levels of patrol which were actually experienced in the Kansas City experiment were sufficiently large to constitute a reasonable test of patrol effectiveness. Unfortunately, since the experiment lacked adequate measures of the level of patrol, the question must remain unanswered.

peak periods there may be little if any uncommitted time, while during other times it may be as much as 90%. It is also typically fragmented by calls for service. This makes it difficult for patrol units to undertake planned activities and tasks and concentrate on performing them effectively.

A number of departments have recently tried some promising approaches to increasing the amount of non-committed time available to patrol units and structuring this time into segments of useable length. One common approach involves the use of non-sworn personnel on patrol as a means of improving the performance of certain types of non-hazardous duties and releasing sworn officers' time for concentration on crime-related tasks. In Worcester, Massachusetts, nearly 40% of all calls for service are being effectively handled by non-sworn personnel, thereby freeing sworn officers for greater participation in specialized units.[32] In Cleveland, Ohio, volunteer citizen auxiliaries patrol their neighborhoods over 3,000 hours per month, thus allowing sworn officers to concentrate on crime-related tasks.[33] And, in Fremont, California, non-sworn field service officers are handling non-hazardous tasks with apparent success.[34] In these departments the use of civilians has provided a comparatively inexpensive way of increasing the level and diversity of patrol activity.

Split patrol is another method of organizing patrol time which has received a considerable amount of recent attention. An on-going experiment funded by NILECJ/LEAA in Wilmington, Delaware, is examining the efficacy of split patrol as a means of improving the response to calls for service while at the same time facilitating uninterrupted concentration on patrol activities. This is being attempted by dividing the patrol force into two sets of units, one of which responds to all service calls, leaving the other free to concentrate on non-dispatched patrol duties. Split patrol appears to be a promising technique for restructuring patrol activities; however, assessment of its effectiveness must await the results of the Wilmington experiment.[35]

Over the years, there has also been a substantial amount of discussion about increasing patrol time by offering certain types of service calls directly to other agencies. This is viewed as a means of divesting departments of tasks which are not directly related to law enforcement. At present, dispatchers in most departments divert a certain number of calls to other agencies, and most departments instruct their officers to make referrals when appropriate; however, few, if any, have managed to rid themselves of the responsibility for responding to most requests for service regardless of the nature of the problem.[36]

There has also been some interest in handling certain types of calls either entirely over the phone or by appointment at a time which does not interfere with the performance of other tasks.[37] If citizens could be educated to accept the practice, handling calls on this basis would seem to be a potentially valuable technique for organizing patrol time; however, to date, we are aware of no efforts, experimental or otherwise, to try it.

Efforts to restructure non-committed patrol time can be inhibited by legitimate concerns about possible negative effects on response times. It is commonly thought that a certain amount of non-committed time must be

kept available so that patrol units will be able to respond immediately to calls for service. The desire to achieve low response times provides a major impetus behind many deployment and task assignment practices; however, the contribution of response time to the attainment of the goals of patrol is rather uncertain. Its effects are being examined in an on-going NILECJ/LEAA-funded study in Kansas City, Missouri. The results of this study will hopefully provide firmer grounds for determining the extent to which the organization and use of non-committed patrol time should properly be constrained by response time considerations.

II. Selection of Task Assignments

The above programs represent attempts to increase and organize non-committed patrol time; they do not focus on the specific types of activities which could provide for the most effective use of this time. Traditionally, the ambiguous, situation-specific and unpredictable nature of patrol work combined with the fragmentation of time to make the planning and execution of specific in-service activities extremely difficult.[38] Recently, however, the problem has been addressed in different ways by several departments.

For example, in Kansas City, Missouri, task forces made up of patrol officers and supervisors are developing patrol strategies and tactics directed at the solution of specific crime and non-crime related problems. Their work on directed patrol (e.g., patrol aimed at achieving certain predetermined objectives) and interactive patrol (e.g., directed patrol with a particular emphasis on increasing the level of positive police/community interaction) represents attempts to provide a focus for patrol officers' activities during their non-committed time.

Directed patrol involves patrol officers in designing and implementing patrol activities which are based on a careful and continuous analysis of the police-related problems in the communities they serve. Emphasis is placed on specific patrol strategies and tactics developed through a decentralized decision-making process which is supported by a sophisticated crime analysis system. As such, it constitutes more of an orientation toward patrol planning than a set of predefined patrol activities. The program is currently moving into an operational phase with attention initially focused on efforts to reduce residential buglaries and armed and strongarm robberies.

Interactive patrol is similar in many respects to directed patrol, but it has a more specific emphasis on improving police/community relations. It has included the use of community security surveys, citizen instructors in local schools, and citizen ride-a-longs, patrol officers as instructors in local schools, and community input into the planning process. Both programs are explicitly intended to foster a more critical and reflective orientation toward the use of non-committed patrol time. And, as might be expected, the major difficulty which has been encountered in implementing them is the fragmentation of this time by service calls which makes it difficult to plan specific activities and concentrate on their effective performance.[39]

Another approach to the identification of specific tasks for performance during patrol officers' non-committed time is being implemented in

San Diego.[40] The entire patrol force is being trained in the process of Community Oriented Policing. Community Oriented Policing seeks to alter the patrol officer's role by placing primary responsibility for the development and implementation of patrol strategies and tactics on individual beat officers. The officers prepare detailed, written analyses of the police-related problems on their beats and develop techniques for coping with them. While the analyses and proposed activities are reviewed by their supervisors, the patrol officers bear principal responsibility for the identification and control of problems on their beats. In essence, Community Oriented Policing represents an attempt to make creative use of individual beat officers' discretion and initiative by increasing their sense of beat accountability, level of knowledge of beat conditions and involvement in beat activities. The program has been evaluated in an experiment funded by the Police Foundation. The results should be available shortly.

Team policing provides another recent method for developing and directing in-service task activities. It is treated in a National Evaluation Program report, prepared by the National Sheriffs' Association.

III. Effectiveness of Different In-Service Tasks

The programs discussed to this point constitute efforts to increase and restructure non-committed patrol time and make decisions concerning its most effective use. They are not based on a rejection of the utility of routine preventive patrol, but rather on the recognition that it represents only one of many possible uses of time spent on patrol. Unfortunately, however, there is currently very little definite knowledge about the effectiveness of alternatives to routine patrol or the various approaches which could be taken to the performance of patrol duties.[41]

Some departments have emphasized activities such as community meetings, crime prevention counseling and ride-a-longs which are believed to have a positive influence on police/community relations.[42] Others have attempted to involve patrol officers more fully in the investigative process,[43] or have organized non-committed patrol time so as to allow officers to participate in specialized units.[44] However, the effectiveness of these and other alternatives and approaches to patrol remains uncertain.

One exception to this situation concerns the utility of aggressive patrol tactics, which has been evaluated in a Police Foundation-funded experiment in San Diego.[45] Field interrogation practices are an extremely controversial aspect of police work. They have frequently been criticized for inflaming police/community relations, especially in inner-city minority areas, while contributing rather little to patrol effectiveness.[46] The San Diego study sought to test the efficacy of field interrogations by means of a nine-month experiment. Three matched beats were established. Field interrogations were completely suspended in one beat, conducted by specially trained officers in another and carried out according to normal procedures in the third. The experiment found that the suspension of field interrogations was associated with an increase in suppressible crimes (e.g., robbery, burglary, grand theft, petty theft, assault/battery, sex crimes and malicious mischief and disturbances),[47] and that the number of these crimes declined when interrogation was resumed. It was also found that the frequency of field interrogations had no evident effect on community attitudes.

There are some apparent problems in the study's design and execution which render interpretation of its findings somewhat problematical. Briefly, the study does not include an adequate operational definition of field interrogations. They appear to be defined as any police/citizen encounter which results in the completion of a field interrogation form, rather than the actual act of stopping and questioning, regardless of the ensuing documentation.[48] As a result, a substantial amount of citizen interrogation by officers in the no-field interrogation beat could have occurred without being reflected in the study's findings. Observers used during part of the experiment felt that these non-documented contacts occurred about as often as those which resulted in a report.[49] There was also no direct check on the integrity of the no-field interrogation beat. The study's reliance solely on indirect measures of the maintenance of experimental conditions means that there is no definite data about the behavior of the critical experimental variable.[50]

In spite of these problems which, admittedly, would have been terribly difficult and expensive to overcome, the study's results are extremely interesting and provocative. They run counter to much conventional thought about the effectiveness of aggressive patrol tactics and, as the study's authors emphasize, the experiment deserves replication in another setting, on a larger scale.

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In conclusion, the proper use and organization of non-committed patrol time and the effectiveness of various in-service patrol activities are issues of growing concern. To date there have been a number of interesting attempts to restructure patrol time and search for productive ways in which to use it, but knowledge about the relative merits of different in-service tasks remains slight. Many departments appear to have considerable amounts of non-committed patrol time and recent experience suggests that it is possible to experiment safely with the use of this time. However, little is known about how best to capture this time and employ it effectively. These are extremely important topics for further investigation. They hold at least the potential promise of leading to ways of improving the productivity of patrol without increasing its cost. Future research possibilities in this area are discussed in greater detail in the concluding chapter of this volume and in the design for Phase II research projects on preventive patrol.

Exhibit XII presents a summary of common assumptions which relate the organization and performance of in-service activities to the attainment of the strategic and tactical objectives of patrol. Most of these assumptions are untested and many are in conflict with one another. They are presented here as a heuristic device to stimulate and facilitate systematic thinking about different approaches to the use of in-service patrol time.

CHAPTER SIX

CHARACTERISTICS OF PATROL OFFICERS

Personal characteristics are among the most important determinants of individual patrol officer performance and, as such, they can have a significant impact on overall patrol effectiveness. The quality of a patrol force is largely determined by the caliber of its officers. Individual characteristics are also frequently factors in the selection of officers for particular beat and task assignments.

This chapter presents an assessment of current knowledge about the influence of officers' race, sex and educational background on the performance of patrol duties. There are, it is recognized, several other characteristics which might have appropriately been included in this discussion. Perhaps most prominent among these are language skills, skills developed through special training, and psychological characteristics. The influence of language skills on patrol effectiveness is not considered because there is very little information pertaining to it. While some departments, such as the Los Angeles Police Department, offer additional pay to bilingual officers, and others, such as the Albuquerque Police Department, provide language training, the actual effect of language skills on the performance of patrol has received very little attention -- perhaps because the ability of officers to communicate with the citizens they serve would seem to be a fairly obvious advantage. Skills developed through special training, such as surveillance techniques and procedures for handling domestic disturbances, are excluded because training falls outside the domain of this report. Finally, psychological characteristics are not discussed because from an operational point of view their importance is felt primarily in the recruitment and selection process. With the exception of severe personality disorders, their influence on day-to-day beat and task assignments appears to be mainly informal.

I. Racial Considerations in Patrol Assignments

Government commission reports and independent studies have stressed the importance of recruiting and deploying more non-white patrol officers as a means of improving police/community relations and patrol effectiveness.[1] Minorities are currently under-represented, in proportion to a jurisdiction's total population, in virtually every department in the country. Even the Metropolitan Police Department in Washington, D.C., with the nation's highest proportion of non-white officers, has a percentage far below the city's 70% black population. The relative absence of non-whites in police work has been viewed as a major factor contributing to the frequently repeated portrayal of the police as an alien, occupying force in inner-city neighborhoods. It has also been suggested that increased use of minority officers will lead to more sensitive, acceptable, and effective patrol of non-white areas, and that the presence of non-white officers in significant numbers in a department will help to alter the prejudicial attitudes of their white colleagues.

Evidence bearing on these issues is sketchy at best and often of dubious quality. Many discussions of the subject seem content with the simple and usually unsupported assertion that non-white officers are more effective than whites in patrolling non-white areas. This assertion generally serves as a prelude to more extensive and better documented considerations of the techniques and problems in minority recruiting.[2] Unfortunately, studies with a more direct focus on minorities on patrol are few in number and present confusing and often contradictory findings.

For example, it is commonly observed that non-white officers are more sympathetic to the needs and problems of non-white citizens and treat them with greater respect and dignity than their white counterparts.[3] Rossi and his associates found evidence in support of this contention in a study of black patrol officers, and they also noted that black officers perceive somewhat less citizen hostility in black communities and are better able than whites to interpret the meaning and significance of street activity in these areas.[4] On the other hand, other studies have discovered substantial levels of hostility directed toward black officers patrolling in black neighborhoods,[5] and it has been reported that all officers, regardless of their race, attribute this hostility to similar sources.[6] One major research project found that, while white officers commonly expressed prejudiced attitudes toward black citizens, they did not actually treat them much differently than their black colleagues.[7] Finally, it has even been suggested, albeit on the basis of very little data, that black officers are often more harsh than whites in policing black areas because of feelings of frustration and moral indignation at the damage done by black criminals to the image of their race.[8] One study has reported that for this reason lower income blacks sometimes prefer to be policed by white officers.[9]

While the available evidence on citizen reactions to black patrol officers is incomplete and contradictory, there is widespread agreement that black officers can frequently find themselves trapped in an uncomfortable position between the white community which doesn't completely accept their authority as public officials and their own community which often regards them as "Uncle Toms" who are traitors to their race. Rubin, in his study of the Miami police force, found black officers to be heavily burdened by this conflict in the public definition of their role.[10] And, if there is any truth to the common assertion that the police and ghetto residents are locked in a warlike situation, then black officers are confronted with a virtually insolvable conflict.[11]

Even less is known about other aspects of the effectiveness of black officers than about community reactions to their presence. A study of the Philadelphia Police Department found that approximately three-fourths of the patrol officers believed that black officers were more effective than whites in black neighborhoods; however, their supervisors were more skeptical.[12] In Fort Worth, the department recently experimented with assigning two-man racially mixed foot patrol units to ghetto beats. The reported improvement in levels of enforcement activity and community satisfaction was striking, but it is impossible to determine how this was influenced by the racial composition of the units.[13] Finally, an examination of background data on New York City police officers revealed very few significant differences between the performance of whites and non-whites.[14]

In short, there has never been a systematic examination of the relative performance of white and non-white patrol officers. However, the fragmentary evidence that does exist suggests that on the whole officers patrolling in minority areas perform similar tasks in a similar manner regardless of race.

At least part of the reason for the absence of detailed analyses of the effectiveness of non-white officers may well lie in the widely felt ambivalence about assigning them in disproportionate numbers to non-white districts. Most recommendations for the increased use of minority officers are based, at least in part, on their assumed ability to better police minority areas; however, there is also a great reluctance to staff minority districts primarily with minority officers. This would conflict with the goal of providing full occupational equality in a completely integrated department and it might contribute to racial barriers which are already dangerously high. While the goal of full occupational equality is important, it must be realized that in most major cities assignment procedures which do not account for race would greatly restrict the direct impact of minority officers on minority areas.

Non-white officers themselves appear to have mixed feelings about assignment practices. In several cities black officers have protested about being assigned primarily to black areas, while in New York City black and Puerto Rican officers have complained about frequent assignments outside their communities.[15] There appears to be no very satisfactory resolution to the dilemma between occupational equality and full efficiency in assignments. If minority officers are believed to be of primarily symbolic value, then the problem disappears; however, if they are seen as a means of coping with the problems of patrolling the inner-city, then administrators face a very delicate situation. One seemingly useful response to the problem has been the deployment of racially mixed two-officer units in high crime areas.

Finally, substantial attention has been paid to the effects of increased numbers of minority officers on the social climate of patrol divisions. Some observers suggest that they might exert a positive influence on the racial attitudes of white officers, while other have emphasized the social tensions which can exist on a racially mixed force. One study found that the use of pejorative language in referring to minorities was negatively related to white officers' exposure to blacks on the force and that the strength of this influence depended on the degree to which blacks were integrated into all facets of the department's operations.[16] This effect has been confirmed by informal observations of departments across the country.[17] On the other side, tension between white and non-white officers makes excellent news copy and has accordingly received considerable public exposure. There have been reports of: black officers accusing whites of misconduct and brutality toward blacks;[18] problems in the use of white and black officers as patrol partners;[19] and concern that the involvement of a large number of minorities in police work might be viewed as a threat to the status of the occupation.[20] But, since none of these alleged problems has received careful attention and study, it is difficult to offer more than conjecture about them. Perhaps the best that can be said is that they represent aspects of the on-going process of integration in American society and, as such, can be treated but not completely avoided by administrative and supervisory practices.

It is difficult to conclude, in a satisfactory way, a discussion of an issue on which so little is known. On the basis of current evidence, the degree to which departments with large numbers of minority officers on patrol in minority areas have experienced less community tension than departments with fewer minority officers is unclear. Nor is it clear whether increased deployment of minority officers has contributed to lower crime rates or to a decline in police harrassment and abuse of minority citizens. This lack of evidence does not constitute an argument against employing more minority officers and placing them on patrol in minority communities.[21] Instead it appears to be a consequence of the fact that, at bottom, increased use of minority officers has been stressed less for reasons of their supposed effectiveness than for reasons of equity and equality. While this sense of priorities cannot be argued with, it should not be allowed to impede examination of the effect of minority officers on patrol operations. The question is not whether minorities should be recruited and placed on patrol in greater numbers, but how they can best be utilized.

II. Women on Patrol

The use of women on patrol is one of the most controversial issues in American policing. Although women have been active in police work since before the turn of the century, until quite recently they were restricted to "policewomen's positions" such as matron duty and juvenile work.

Indianapolis, in late 1968, became the first American city to assign women to general patrol. Since then, under pressure from civil rights legislation, feminist groups, and federal regulations, an increasing number of police departments have followed suit. It has been estimated that in 1974 there were approximately 1,000 female patrol officers distributed among some 40 to 50 departments.[22]

It is now legally incumbent on departments to hire and use women and men on an equal basis unless the existence of bona fide reasons for sex discrimination can be demonstrated. Yet, in spite of the legal requirements, the issue of women on patrol continues to be hotly debated.

The debate revolves around a host of highly emotional issues ranging from the ability of women to handle violent situations to fears of sexual encounters between male and female officers on duty together. From an operational point of view the most important concerns appear to be:

1. The ability of women to perform adequately on patrol;

2. The potential advantages and disadvantages of using women on patrol; and

3. The possible effects of a large number of female officers on the nature of police operations.[23]

Evidence bearing on these issues has come from a wide variety of sources including: (1) the few departments which have used women on patrol; (2) experiences of foreign police departments with women on patrol; (3) experiences

of women in other potentially hazardous jobs (e.g., mental hospital attendants, housing project guards, etc.); (4) results of studies on the influence of sex on job performance; and (5) subjective opinions of various observers on the suitability of women for patrol. To date, program evaluations of women on patrol have been conducted in three departments: New York City, St. Louis County, Missouri, and Washington, D.C. The sample sizes in New York and St. Louis (14 and 16 respectively) are too small for their findings to be regarded as anything more than suggestive. However, the Washington, D.C. study represents an ambitious, elaborate and influential attempt to evaluate experimentally the use of women on patrol.[24]

This study addressed the three central questions mentioned above by means of a year and a half-long experiment. Eighty-six female patrol officers were matched with an equal number of males, and their performance was compared and evaluated in terms of a wide variety of criteria ranging from citizen reactions to supervisory ratings. The study concluded that:

1. It is appropriate to assign women to patrol on the same basis as men. Both sexes were found to perform similar kinds of work in similar settings with roughly equal measures of success. There were no incidents which could cast doubt on the ability of women to patrol effectively. Citizens had similar and generally favorable attitudes toward both male and female officers. In short, "sex is not a bona fide occupational qualification for doing police work."[25]

2. Employing women on patrol has numerous advantages. Women are less likely than men to exhibit conduct unbecoming to an officer, they may be more effective in defusing potentially violent situations, they can provide a patrol force with a more representative proportion of its jurisdiction's population and, finally, their presence protects a department from discrimination lawsuits. On the other side, male officers tend to react negatively to women on patrol and this can have a serious, although possibly temporary, effect on departmental morale.

3. The use of a substantial number of women on patrol may reduce the likelihood of violent encounters between police and the public and foster a less aggressive style of patrol. It may also stimulate a constructive review of patrol techniques and the measures used to evaluate patrol effectiveness.

These, put briefly, are the major findings of the Washington study. This project represents one of the most extensive experiments ever conducted in the field of preventive patrol and its impact has been considerable. For example, a recent review of the literature on women in policing notes that, "While each city can be seen as a somewhat unique law enforcement situation, findings from the Washington, D.C., evaluation have been generally accepted as applicable to programs in other urban areas."[26] And, in a similar vein, a manual on women in policing observes that, "further programmatic evaluations of women

on patrol would be a case of experimental overkill. The program question has been answered definitively and affirmatively that women are able to perform as well as men on general patrol..."[27] Finally, the study's results have been used in legal proceedings concerning equal employment opportunity in police departments.

Despite the generally positive reaction to the Washington study,[28] there are some problems in its methodology and analysis which call into question the validity of its findings. These problems are discussed in some detail because the study represents the only serious attempt to date to evaluate the use of women on patrol. It is also one of the few major experiments ever conducted on preventive patrol and it is important to illustrate that even the findings of elaborate experimental research projects cannot be unquestionably accepted as valid. Hopefully, examination of these problems will serve as an instructive example of the care which must be taken in evaluating and employing research findings and of the many potential pitfalls which can complicate the conduct of experimental research.

Following consideration of the study's merits as a piece of research, attention is turned to its practical value to the courts in deciding questions of equal employment opportunity and to patrol administrators in attempting to use female officers in an effective way. While it is necessary to examine methodological and analytical procedures and problems closely in assessing the quality of a research project, criticism on these grounds should not be allowed to obscure the potential practical contributions of the project's findings.

A. Research Design

The study attempted to use an experimental design to examine the performance of women on patrol; however, it failed to conform to some of the requirements of experimental research. Experiments provide a means of investigating specific hypotheses about the relationships between operationally defined (e.g., measurable) variables by examining them under carefully controlled conditions in which the influence of outside, potentially confounding factors is reduced to a known minimum. They represent a very sophisticated and expensive form of research, the results of which are expected to have substantial validity. Accordingly, it is critical that experiments be carefully designed with clearly defined variables and closely monitored controls. Unfortunately, the Washington study fell somewhat short of meeting these standards.

For example, the study does not include a precise statement of hypotheses and the variables to be used in testing them. It does address several general questions,[29] but they are not broken down into explicit hypotheses to be examined by specific techniques and accepted or rejected on the basis of clearly defined analytical standards. In short, the researchers never seemed to confront questions concerning the kinds of statements they wanted to be able to make on the basis of the study and the degree of confidence they expected to have in them.

At first glance, this may seem to be an overly rigid, academic criticism of a policy-oriented study; however, failure to specify clearly

hypotheses and variables appears to have contributed to some of the study's major problems. For instance, the experiment purports to be about patrol, but the researchers do not provide a clear-cut specification of various activities which constitute this crucial variable. At times it seems to be defined as all the activities of officers formally assigned to the patrol division, at other times it appears to refer to the performance of routine, uniformed duties, and often it is impossible to intuit its operational meaning. The study employs a number of different assignment categories including: "regular, uniformed patrol," "other patrol," "other street" assignments, and "inside" work, but they are extremely difficult to interpret. At one point, for example, "other street" is said to include scooter, wagon and morals assignments,[30] while elsewhere wagon duty is dropped from the definition and assignment to tactical squads is added.[31] In a similar manner, assignment to the youth division is sometimes called an "inside" assignment[32] and sometimes "other patrol,"[33] and "other patrol" occasionally includes scooter and morals assignments[34] which elsewhere are combined with either wagon or tactical duty to make up the "other street" assignment category.[35] Finally, for some purposes assignment to patrol is defined to include all officers who spent 30% or less of their time on regular station duty without explicitly recognizing the possibility that non-station assignments are not necessarily patrol assignments.[36] As a consequence of this definitional problem, the specific focus of the experiment is unclear. The study attempted to examine the comparative performance of male and female officers on a set of activities called patrol, but the exact nature and number of these activities is never made explicit, and it is frequently difficult to determine exactly what activities the reported findings refer to.

The experiment also suffered from lack of adequate controls. The authors acknowledge that if male and female officers did not receive equal treatment, then all the study's findings would be biased,[37] but they do not extend this comment to indicate how various levels and types of unequal treatment affected the findings, nor do they establish a point at which unequal treatment would have forced them to abandon the study or, at least, alter its experimental status. In fact, the study included no direct measures of the amount of time which the subjects spent performing different tasks and, consequently, there is no accurate information on the extent to which the experimental conditions were maintained.

The final report strongly suggests that the researchers encountered considerable difficulty in keeping track of their subjects' activities. Throughout the report different tables reporting data for similar time frames show marked discrepancies in the number of subjects assigned to different tasks.[38] The authors admit to the problem when they note, for example, that no precise assignment figures were kept for male officers,[39] and that "daily assignment changes and short-term details were not recorded."[40] In fact, only details of 60 days' duration or more were considered to be assignment changes.[41] This would seem to be an inadequate standard for monitoring the maintenance of experimental conditions in a year and a half-long study, and it apparently does not take into account the distinct possibility that subjects might have been given a number of short-term, non-patrol assignments. Lack of a rigorous standard contributes to imprecise statements to the effect that even women who were formally assigned to patrol were frequently given other tasks.[42] Unfortunately, the researchers do not seem to know how often this happened to how many of the subjects.

It is, of course, virtually inevitable that experimental conditions in large-scale studies will have to be altered somewhat to meet unanticipated organizational needs. This complicates the research task but, at the same time, it makes it essential to monitor very carefully the subjects' activities. The study's research design evidently did not make adequate provision for recording the activities of the 172 subjects. Consequently, there is no definite way of determining the degree to which experimental controls were maintained.

As a result of these problems in the study's design, we do not know how many subjects were actually on patrol during the experimental period and how much time each was spending in what type of patrol activity. This calls into question the study's status as an experiment and raises serious doubts about the degree to which its findings actually pertain to patrol.

B. Data Collection and Analysis

The study made use of a number of different data collection techniques including surveys of patrol administrators, patrol officers and citizens; structured observation; and examination of departmental and prosecutorial records. The use of multiple measures is an excellent means of tapping complex phenomena such as patrol performance. Unfortunately, however, several of the techniques were improperly used and the data were frequently analyzed in an inadequate manner. For example:

(1) The study included telephone interviews with a random sample of 129 citizens in the four police districts in the experiment. The final report states that the survey "represented all age, sex and racial groups living in the two experimental and two comparison districts."[43] However, the extremely small sample size raises doubts about the reliability and validity of the survey. For instance, the sample cells for black and white females 55 years of age and above contain only 5 and 2 respondents respectively.[44] Despite this small sample drawn from only part of the city, the study concludes that "citizens of the District of Columbia, regardless of their race or sex, were more likely to support the concept of policewomen on patrol than to oppose it,"[45] and that, "citizens of the District of Columbia generally approved of having policewomen on patrol."[46] Exactly how statements of such a general nature can be justified on the basis of a sample of only 129 respondents drawn from areas of the District which cannot be assumed to be representative of the city as a whole is never explained.

(2) The same problem, that of making rather sweeping statements on the basis of very limited and often questionable data, is found in the analysis of information gathered from other sources. For instance, the study included a patrol survey in which male and female officers were asked to complete a questionnaire concerning their attitudes toward women on patrol and other aspects of police work. The questionnarie was sent to all female officers in the study and to a large sample of males; however, only 14 (22%) of the women completed and returned it[47] and only five of them were reported to be assigned to patrol at the time of the survey.[48] Nevertheless, on the basis of this very small, self-selected and non-representative sample the study draws "general conclusions" to the effect that "patrolwomen, on the other hand, [as compared with patrolmen] believed their patrol skills were, for the most part, as good as patrolmen's

and in a few cases, better,"[49] and that "patrolwomen felt they received a greater degree of cooperation from the public than patrolmen did."[50]

Another instance of overgeneralization from a very small number of non-representative cases is found in the analysis of data collected from a survey of patrol officials about their feelings concerning the comparative performance of female and male patrol officers assigned to their districts. The officials' survey consisted of self-administered questionnaires which were sent in 1972 and again in 1973 to officials (captains, lieutenants and sergeants) in the districts included in the experiment. The response rate in 1973 from officials in the districts to which women were assigned was only 32% (much lower than in 1972), compared with a rate of 73% from the comparison districts (about the same as in 1972).[51] Thus, the survey data are based on a self-selected, non-representative sample and they must be treated as tentative and inconclusive. While the authors recognize that there may be considerable bias in the data, this recognition is not adequately reflected in their analysis. The final report states as a major finding that captains and lieutenants gave women higher performance ratings in 1973 than they had the year before and that in 1973 men and women received similar scores on general competence.[52] The authors do not, however, sufficiently stress that the reported change in the women's ratings was based on radically different samples which render its interpretation extremely problematical, if not impossible, without a careful examination of the reasons of the low return rate in 1973, which they do not provide. It is also curious that the sergeants' ratings were not included in this part of the analysis. Since they comprised 70% of the already small sample and might be expected to have the most detailed knowledge of the officers being rated, it seems unusual that their ratings are omitted from much of the analysis.

In sum, these examples are illustrative of the study's tendency to use questionable data as the basis for conclusions without adequate consideration of the ways in which the data's quality might affect the validity of conclusions drawn from them.

(3) The experiment purports to be about patrol; however, the analysis frequently combines data on officers with patrol and non-patrol assignments. For instance, in discussing the results of the officials' survey, the report emphasizes that captains' and lieutenants' ratings of women improved from 1972 to 1973 and that male and female officers received fairly similar ratings in 1973. However, what stands out in the tabular presentation of the data is that on comparisons of officers assigned to patrol males received statistically significant higher ratings from both "sergeants" and "captains and lieutenants" for their performance of all the patrol skills included in the survey.[53]

In a similar vein, examination of departmental records led to the conclusion that there were no significant differences between men and women in the number of injuries sustained while on duty, number of days absent from work due to injury, number of driving accidents, and supervisory performance ratings related to patrol.[54] However, it is also reported that toward the end of the experiment only 45% of the women, compared with 71% of the men, remained on regular uniformed patrol.[55] In drawing these conclusions the study uses data on officers with a variety of assignments. This reinforces doubts about the extent to which the study's findings actually pertain to patrol. Certainly, it is not accurate to conclude that male and female patrol officers had similar

injury and driving records when more than 50% of the women included in the analysis were not assigned to patrol for the duration of the experiment and 30% of them had "inside" assignments.[56]

The authors state, at one point, that aside from the structured observations and the survey of citizens who had been involved in incidents handled by the experiment's subjects, the other data collection techniques "were affected only indirectly, if at all, by the reduced number of women on patrol duty."[57] This is because these techniques (e.g., supervisory ratings, monitoring departmental records and performance ratings, and officer and citizen surveys) were used to collect data on all the officers in the study regardless of their assignments. In fact, however, the problem of differential assignments did immeasurable damage to the utility of the data collected by all techniques. The experiment is presented as a comparative examination of the performance of women and men of the various activities which comprise patrol. In the end, however, it presents data and offers conclusions about their performance on a range of poorly defined, but apparently quite disparate activities. As a result, the focus of the experiment is blurred and its findings lose a great deal of their relevance to questions about women on patrol.

(4) The influence of changes in departmental policy raises additional questions about the study's experimental integrity. Eight months into the study, the chief declared the experiment to be a success and rescinded his prior order that male and female officers be treated equally in every respect.[58] This did considerable damage to the study's status as an experiment. It meant that even the rather weak controls which had previously guided the experiment no longer had the force of departmental policy. Circumstantial evidence of the impact of the order's rescission on the study is found in the poor response rates for self-administered surveys of officers and officials and the declining number of women assigned to patrol following the chief's action. The final report notes that after the chief rescinded the equal treatment order "policewomen *as a group* were no longer assured of receiving the same treatment as men."[59] However, the researchers again fail to confront the fact that their data could no longer be treated as though they were based on a properly controlled experiment. The handling of this problem is an example of the study's tendency to note difficulties which were encountered in the course of the research, and to then continue the analysis more or less as though these problems did not arise, with only minor efforts to explain and/or control for their effects on the findings.

C. Presentation of Findings

In addition to the difficulties mentioned above, the presentation of the data and findings is frequently confusing and open to possible misinterpretation. For example, the study employs two statistical standards to indicate the likelihood that the reported findings occurred for reasons other than chance. Findings are labeled "significant" if they could have appeared by chance only one in twenty times, and as a "tendency" if chance could have been a factor in one out of ten times.[60] Although it is fairly unusual, there is nothing inherently wrong with using two different levels of significance. However, in this study it leads the authors to make statements which might easily appear to be contradictory to all but the most careful reader. For instance, the summary

of major findings includes the statement that women with higher performance ratings tended to be reassigned from patrol to inside duty.[61] Then, several pages later in the same report we learn that on official departmental ratings there was no significant difference between the performance of women on inside and street assignments.[62] Given the study's use of statistical significance, these two statements are not inconsistent. But their interpretation hinges on a word, and they could easily be used in support of contending positions.

In reporting its findings the study also seems in places to go to great lengths to show female officers in a favorable light. For instance, in its summary of major findings the final report states that "comparison men handled somewhat more patrol incidents per tour..."[63] In actuality, the combined data on levels of patrol activity for one-and two-officer units show that male officers handled a statistically significant larger number of incidents per tour than their female counterparts.[64] The word "somewhat" would thus seem to be a rather misleading understatement.

In the same section of the final report, the authors note that females tended (e.g., .10 level of significance) to handle more dispatched service calls when patrolling alone than did males patrolling alone.[65] However, they chose to omit the firmer finding that one man units engaged in a significantly (e.g., .05 level of significance) greater amount of self-initiated activity.[66] In a similar vein, the report observes that "citizens rated new women about the same as comparison men in handling threatening behavior."[67] But the data on which this observation appears to be based show that the performance of male officers is rated significantly better on two of the three comparisons made. For the third comparison, the number of cases is too small to allow for a meaningful computation of significance.[68]

Lastly, the results of a survey of patrol supervisors initiated by the chief indicated that the men were rated significantly higher than the women on a number of dimensions including "their general performance of patrol," while the women were not rated significantly better than the men on any of the included items. The authors seek to place this finding in context by pointing out that the women were still generally rated "average" or above, but they fail to report the statistical standard upon which their definition of "average" is based. They then proceed to stress the three out of eight areas in which male and female subjects were rated equally (handling an automobile accident involving injury, filling out a crime report, and handling a disorderly female) by setting them out from the text with astericks for emphasis.[69]

The preceding examples are only intended to be illustrative of the study's tendency to devote less prominent attention to significant findings which indicate that males outperformed females than to less certain results which favor females. While this orientation may only be a question of emphasis, it does seem, at least to these reviewers, to skew the presentation of the findings in a direction which is often not consistent with the actual data on which they are based.

D. Conclusion

Based on the above comments, we are forced to conclude that the Washington study has not laid to rest questions about the use of women on patrol. However, it is not enough simply to criticize the study's methodology and dismiss its findings on that basis. Even if it has not provided the firm findings one commonly expects from experimental research, it still might offer less definite, but nonetheless useful, information about the performance of women on patrol. Of particular concern is the study's relevance to legal proceedings on equal employment opportunity and to assisting police administrators in using females in the most effective manner.[70]

The authors place considerable emphasis on the potential legal impact of the study's findings. They point out that a major impetus behind the experiment was to determine whether or not women could perform well enough on patrol so that sex could no longer be considered an occupational qualification for general police work. On the basis of their findings they conclude that "sex is not a bona fide occupational qualification for doing police work."[71]

The study has played a role in legal proceedings in several jurisdictions [72] and, despite the flaws in its methodology, it may prove to be quite helpful in this respect. Its findings indicate that there was a considerable degree of overlap in the performance of male and female officers; i.e., some female officers performed as well as or better than some of their male counterparts on a wide variety of performance measures. Since the study does not report the extent of overlap in the overall performance of individual officers, it is uncertain whether some officers ranked consistently higher than others or whether rankings on different measures varied more or less independently of one another. However, performance assessment at this level of specificity may not be necessary for legal purposes.

The law, as it now stands, clearly places the burden of proof on those departments which wish to maintain sex as a bona fide occupational qualification for general police work. The findings of this study would appear to make their task more difficult. It is, however, beyond the scope of this report and the competence of its authors to enter into a detailed consideration of the legal ramifications of the study. Questions concerning the importance of sex as a qualification for police work and the types and quality of knowledge necessary to make this determination are still before the courts. Suffice it to note that to the extent that the study facilitates the resolution of this issue, it has made an important and worthwhile contribution.

The study concludes with a number of observations intended to assist police administrators in using women effectively on patrol and to improve patrol performance in general. On the whole, they are sensible suggestions which are difficult to quarrel with and, in combination with the experiment's conclusions, they may help to persuade departments to use or increase their use of women on patrol and assist them in doing so in an efficient way. However, as a general point, applicable to all policy-oriented research, the better the quality of the research, the better will be the policy advice and decisions based on its results. It is a mistake, and an all too common one, to assume that policy-oriented studies can use the tools and techniques of scientific research, while shirking some of the rigorous procedures which give the results meaning and validity. In light of the methodological and analytical problems discussed above, patrol

administrators should be aware that the conclusions and policy recommendations offered in this study, while reasonable and potentially helpful, are not as empirically well-grounded as they frequently appear to be in presentation.

Finally, it is important to note that the comments in this section refer to questions of social science research, not social policy. Criticism of this study is in no way meant to be an argument against using women on patrol. It merely indicates that we may know less about the issue than we perhaps thought we did. Hopefully, this situation will be remedied by an on-going NILECJ/LEAA-funded study of women on patrol in New York City.

III. Higher Education and Patrol Officer Performance

In recent years there has been a growing interest in improving the quality and status of patrol by upgrading the educational qualifications of patrol officers. Rather impressive claims have been made for the beneficial effects of increased officer education. The President's Commission on Law Enforcement and the Administration of Justice stated that, "The quality of police service will not significantly improve until higher educational requirements are established for its personnel,"[73] and warned that all its recommendations for improving police performance were "predicated on the sharp improvement in personnel..."[74] The Commission went on to propose that ultimately all sworn law enforcement officers should have baccalaureate degrees and that, as an interim measure, degrees should be required for all officers in supervisory positions.[75]

Higher education is also an important aspect of the concept of police professionalism. Its presumed role in this respect is, however, somewhat complicated by the ambiguous nature of this concept. Professionalism has been a mainstay in research and commentary on patrol since the pioneering work of Raymond Fosdick and August Vollmer in the early 1900's,[76] but its definition has never been made entirely clear. To some, it is synonymous with the advanced education of officers, to others it means improvements in management, organization, and officer accountability, while a third group would label any positive change in police operations as a contribution to professionalism.

In application, professionalism appears to have two distinct operational connotations. On the one hand, it is viewed as an attempt to rationalize police operations through the use of more effective internal controls; sophisticated equipment; and advanced management, deployment, and crime analysis techniques. On the other hand, it is seen as an effort to upgrade the quality of personnel by instituting higher education as a prerequisite for recruitment and/or promotion. These two orientations, while not mutually exclusive, represent in practice two quite different responses to the managerial problems of officer accountability and discretion. The first would attempt to increase accountability through the use of sophisticated methods of external control, while the second emphasizes internal standards of behavior developed through education and training as the principal means of controlling discretion.

It is difficult to reconcile the first approach with the traditional dictates of professionalism. Professions, by definition, allow their members considerable leeway in making judgements and exercising discretion on the basis

of individual competence and expertise. Efforts to increase managerial control and standardization of officer behavior might well improve the quality of patrol, but they will not promote professionalism unless it is equated with modernization in general. In operation, such efforts would tend to bureaucratize rather than professionalize a department.

The second approach, with its emphasis on higher education, corresponds more closely to the usual notion of professionalism. Higher education has always been one of the defining characteristics of the professions which typically stress the individual competence of their practitioners to apply a specialized body of theory and knowledge to particular problems. Accordingly, it would seem that movement toward police professionalism can be equated with the development of a systematic, well-grounded body of knowledge about policing and advancement in the levels and quality of officer education. This entire report is devoted to an assessment of the state of current knowledge about patrol. Here attention is focused on the influence of higher education on patrol performance.

The desire to improve patrol through the educational process, coupled with the availability of federal funds, has stimulated considerable interest and activity in the field of law enforcement education. There are presently over 800 law enforcement programs in institutions of higher education throughout the country and the number continues to grow.[77] However, only a small percentage of all active officers have obtained college degrees.

While the widespread assumption that higher education will improve the quality of patrol has a certain, almost compelling, logic to it, there is rather little hard evidence bearing on the issue. It is probably true that higher education can benefit patrol officers, but the nature of that benefit is unclear. There have been very few explicit analyses of its anticipated impact.

Smith and Ostrom, in one of the most careful and useful examinations of the subject, discovered only a very weak relationship between college education and the positive attitudes and behavior it is commonly expected to foster. They found that while college-educated patrol officers did manifest slightly more humanitarian and pro-civil liberties attitudes than their less-educated peers, they tended to feel less confident in their ability to handle police work and were not given higher ratings by the citizens they serve. In concluding, the authors observe that, "While considerably more analysis is obviously required, the results from our study thus far provide slight confirmation for hypotheses derived from police reform literature calling for higher levels of training and education."[78]

Cohen and Chaiken, in a study of the background characteristics of officers in New York City, found that officers with at least one year of college were more likely to be promoted and less likely to receive civilian complaints than those with lower levels of education.[79] However, another researcher who worked in and studied the same department noted that differences in education can often lead to cleavages between college-educated officers and their colleagues with only high school diplomas or equivalency certificates. He also found that officers with college backgrounds were more cynical about police work and disaffected with their jobs.[80] Finally, it has been observed that education

in police science frequently fails to lead to a career in law enforcement and that educated officers commonly leave the field in favor of other pursuits.[81]

The paucity of research findings on the effects of higher education on officer performance is accompanied by uncertainty in the field concerning its utility. Even departments which have long required that all recruits have at least some college background seem to have little precise evidence about the influence of the requirement on the actual effectiveness of officers.[82] For example, the Multnomah County, Oregon, Department of Public Safety, which was the first non-federal law enforcement agency in the country to require that all recruits hold four-year college degrees, has yet to evaluate carefully the impact of this requirement.

The department appears to be completely satisfied with its educational entrance requirement. The academic qualifications of its officers are increasing steadily and this has apparently contributed to its national reputation as a progressive, forward-looking police agency. While the effects of college education on officer performance has not been analyzed, the requirement has not led to any identifiable problems and there are no plans to change it in the future.

The only major criticism of the requirement has come from the Multnomah County Police Consolidation Project,[83] and it is directed more toward the general nature of police work than the effect of higher education on police performance. The project's staff pointed out that while officers in the department are probably more highly educated than those in any other similar county in the country, its present organizational structure is not designed to use their talents effectively. A career system which confines them to routine duties for years restricts them from making their maximum contribution to the achievement of organizational goals. The implication of their comment is that while it is worthwhile to employ highly educated officers, a department should be willing to make some fairly substantial changes in order to make full use of their skills.

Two additional criticisms which are commonly made of a college degree requirement for police recruits are that it can lead to increased turnover and greatly complicate minority recruitment. Neither of these problems has been encountered in Multnomah County. Personnel turnover has remained at an acceptable level and minority recruitment is not much of a problem in a county with a very small minority population. Both these potential problems could, however, loom substantially larger in departments operating in a different environment. In particular, it seems clear that a college degree entrance requirement would restrict the number of potential minority recruits.

In sum, on the basis of ten years' experience in Multnomah County, it can be said that at least one department has instituted a college degree requirement of all new recruits and is satisfied with the results. However, little can be said about the ways in which the requirement has affected officer performance or departmental operations. It has not led to any obvious problems, but it remains uncertain whether any particular good has come from it.[84]

* * * * *

In conclusion, the available information on the effects of education on the conduct of patrol is very incomplete. It is difficult to generalize about the influence of education because educated officers may differ from their peers in many other ways which are potentially related to performance, and different types of education may have different effects on patrol abilities. For the moment, there is very little evidence to support assumptions which relate levels of officer education to improved individual performance and patrol effectiveness. Emphasis on education may improve a department's "professional" image in both its own and the public's eyes, but there is little to suggest that it will improve patrol. As James Q. Wilson recently put it, "The value of college training is still largely a matter of conjecture."[85]

CHAPTER SEVEN

MODES OF PATROL

Since August Vollmer first introduced motor vehicles for patrol in 1912, police administrators throughout the country have been concerned with determining those forms of transportation which will effectively fulfill departmental responsibilities. Aside from foot patrol which has been traditional, modern technology has presented departments with an extensive array of transportation modes (including bicycle, motor bike, motor scooter, motorcycle, automobile, and helicopter), but with little well-documented guidance to assist in the selection of the most appropriate configuration of vehicles — given the perceived needs of both the department and the community.

Police administrators often adopt a particular mode on an *ad hoc* basis, utilizing that which is recommended by manufacturers or other departments. In other words, widely publicized endorsements often serve as justification for the utilization of particular vehicles so that administrators adopt that which is presented as new and different in the absence of substantial evaluation. There is rarely any questioning of findings or any attempts to ascertain suitability in terms of departmental differences. The internal assessments which may be made rarely display any scientifically valid approach and are, instead, based on personal experience and description — on subjective evaluations which reflect personal preferences rather than hardcore data.[1]

There has been considerable debate among police officials about the most appropriate patrol mode and, in the case of automobiles, the number of men to be assigned to each. The basic concerns include: (1) selection of patrol mode; and (2) choice between one- or two-officer patrol cars. These concerns are analyzed in terms of the five patrol goals of deterrence of crime, apprehension of offenders, provision of non-crime services, provision of a sense of community satisfaction, and recovery of stolen goods, and within that context, in terms of the appropriate intermediate, strategic, and tactical objectives. They are further analyzed in terms of the four operational characteristics of officer safety, economy of operation, officer morale, and vehicle availability.

Some scant research during the past few years has concerned the effectiveness of alternative patrol modes. This array of alternative modes of transportation can be viewed along continuums of various dimensions. An example is a continuum which suggests that foot patrol, at the one end of the scale, provides intensive localized police protection that facilitates officer interaction with the citizenry while the helicopter, at the other end, provides wide-ranging but totally impersonal coverage. Another example suggests that foot patrol restricts the range of officer activity due to limitations of movement and of available equipment while the patrol car enhances flexibility with respect to speed and maneuverability as well as carriage of wide varieties of equipment and large numbers of passengers.

Administrators have attempted to achieve the optimum by providing comprehensive coverage which fosters interaction with the public, provides rapid, effective responses to calls for service, and maintains high visibility within the community. In the pursuit of these goals, they have mixed various transportation modes and attempted to coordinate the activities for maximum effectiveness. Administrators generally emphasize the use of the marked patrol car which is supplemented when resources permit or according to public demand by other modes of transportation, such as the following. Foot patrol is used in dense urban and commercial areas on the assumption that it affords visibility, generates a

sense of community security and satisfaction, facilitates the maintenance of order, and aids in the detection of targets of potential criminal opportunity. Bicycles, motor scooters, and motor bikes are used in similar types of high crime or congested areas in the belief that they not only afford many of the advantages of foot patrol, but also increase mobility. Helicopters are seen as particularly effective back-up units to automobiles with respect to pursuit and to wide-ranging ground and rooftop surveillance.

Each form of transport is assumed to possess inherent advantages and, conversely, each is assumed to have certain disadvantages. Automobiles offer little interaction with the community; problems of officer fatigue and morale are linked to foot patrol; problems of officer safety, morale, and vehicle maintenance are related to the bicycle, motor scooter, and motor bike; and community dissatisfaction has been associated with the high noise levels and bright surveillance lights used in helicopter operations.

The marked patrol car, both by default and due to its versatility and speed, remains the vehicle of choice for routine patrol; for special purposes, other vehicles serve as effective supplements, although the characteristics of their most effective utilization pattern has not been sufficiently well clarified. The use of the patrol car is, however, marked by one major point of controversy: should one or two officers be assigned to each unit? This has become a volatile issue in some departments with arguments concerning officer safety, observation capability, attentiveness to duty, and economy being central to discussion.

While little empirically valid and reliable research addresses the issue of one- or two-officer motorized patrol, there is a body of experiential evidence which, when synthesized, provides some conclusions. Given the wide use of one-officer cars in different parts of the country, it seems clear that, except in particularly hazardous neighborhoods where officers patrolling alone are hesitant to take individual initiatives and except in isolated beats where back-up capabilities are limited, one-officer deployment does not apparently detract from patrol effectiveness or jeopardize officer safety. Dispatchers are able to discriminate among calls for service, assigning back-up units as necessary, and officers are sufficiently perceptive to know when to request assistance. Finally, there is compelling economic reason for the adoption of one-officer cars for general use given continuing financial pressure on departments throughout the country. In lieu of hiring additional officers for patrol duty, two-car units can be split into two one-car units and, while maintaining constant personnel costs, the only additional expense is the extra vehicles.

ALTERNATIVE FORMS OF TRANSPORTATION

I. Realization of Patrol Goals

A. Effects Upon Apprehension

Administrators are constantly seeking any modes which will aid in effecting high arrest rates. Such rates serve as one of the primary measurements of police productivity.

Foot patrol, generally speaking, produces arrests for minor crimes, but other than supplying certain leads, rarely results in arrests for serious

crimes. A foot patrolman seldom receives calls for service. In those few departments in which he does, via a hand held radio, he usually cannot respond quickly. Moreover, as a tactical surprise, he is relatively ineffective for the following reasons: (1) the low probability of an individual's commission of a crime until after ascertaining the officer's location; and (2) the ability of an individual to outrun the often fatigued, heavily equipped officer.[2]

Foot patrol, often providing the officer with a more intimate and thorough knowledge of the beat area than other modes, leads to arrests for minor misdemeanors. These arrests maximize the order maintenance function of the police by facilitating reductions in simple assault, carrying a deadly weapon, disturbing the peace, and the like. Furthermore, an officer's knowledge of his beat often permits him to ascertain information leading to arrests.[3]

Although the motor scooter, utilized in the District of Columbia, New York, and Detroit, is believed by many to contribute to a high apprehension rate, there is little evidence to support this. Although faster and less fatiguing than foot patrol, it is typically noisy. Thus apprehensions by scooter patrol officers resemble those of foot patrolmen - arrests for minor offenses; and they resemble those of motorcycle officers - arrests and citations for motor vehicle violations.[4]

The motor bike, a vehicle resembling a smaller and less powerful motorcycle, has been found by the Denver Police Department to contribute to sizeable numbers of arrests. Although the preponderance of such arrests are for misdemeanors, a noticeable number are for felonies.[5]

Bicycle patrol, utilized in some departments, has been found to contribute to the apprehension of burglars. Baltimore claims that the bicycle can be used successfully due to its maneuverability through alleys and its virtually silent operation.[6] In addition, the Long Beach, California, Police Department finds bicycle patrol to be effective in small geographic areas with high crime rates.[7]

The automobile seems to have all the capabilities of quick dispatch, speed, and maneuverability.[8] Despite these characteristics, there exists some debate concerning the effectiveness of making arrests while on patrol. The vehicle is not only highly visible to citizens, but also limits the observations for the officer and shortens the length of time he has for perceiving and reacting to problems.[9] The most valuable characteristic of the automobile appears to be its ability to respond quickly to dispatched calls. Even here, though, there is some disagreement as to the impact of vehicle patrol upon apprehension. The earlier studies revealing that from 44% to 62% of the number of dispatched calls lead to arrests have been challenged by more recent studies which find only 20%.[10]

Data from the Los Angeles Police Department's project ASTRO show that the apprehension rates of radio-dispatched cars double when their movements are coordinated with helicopters. This is attributed to the low average response time of 1.5 minutes. A similar effort by the Los Angeles County Sheriff's Department's Project Sky Knight has resulted in an average response time of 2 minutes.[11] A conclusion made by the Project Sky Knight study is that helicopter patrol is justified only if a large geographical area is patrolled and the number of called-for police services is high.[12] Improved apprehension rates are also reported by the Memphis Police Department[13] through the coordinated use of vehicles and helicopters.

Helicopters have been found to be useful in detecting some misdemeanors.[14] However, in many states, the ground unit cannot make arrests on information received from the helicopter unit; the offense must be committed in the presence of the arresting officer. This means that the ground unit, to make an arrest, must arrive at the scene while the misdemeanor is in progress.[15]

In conclusion, certain modes of patrol have been shown to contribute significantly to apprehension for specified crimes: bicycles to burglary, helicopters to break-ins and vandalism, motorcycles to traffic enforcement, and foot patrol as well as motor scooters and bikes to minor misdemeanors. However, such evidence indicates that these modes are used more as selective enforcement tools in specialized patrol than as general apprehension devices in preventive patrol. As far as automobiles are concerned, they do not appear to contribute significantly to apprehensions except in those cases where dispatched to crime scenes.

B. Effects Upon Deterrence

The deterrence of crime is the *raison d'etrê* for traditional preventive patrol. Accordingly, police administrators attempt to locate modes that may produce reductions in crime rates.

Foot patrol, as a general rule, is not considered practical for city-wide operations because it would be too expensive; a patrol officer would be required in nearly every block.[16] However, it has been found effective in certain areas, such as neighborhoods with a high rate of "sidewalk" crimes, high density residential areas where vehicle access is difficult, and congested business districts.[17] Although foot patrol provides maximum officer visibility, the area of coverage is small.

Automobiles,[18] motor scooters and bikes,[19] motorcycles,[20] and bicycles[21] are capable of covering a larger area with faster speed than foot patrol; therefore, they offer greater visibility. Also the bicycle, the motor scooter, and the motor bike have a certain degree of versatility in that the rider can easily dismount and walk. Some recent experimentation has resulted in squad car officers parking and walking at designated times throughout their tour of duty. In Washington, D. C., the officer rides part of the time and, when possible, walks. The deterrent effect of this versatility of movement has not been tested although that for individual vehicle coverage has.[22]

Despite the increased visibility and versatility offered, some observers suggest that certain vehicles are more effective in selective enforcement than in preventive patrol[23] while others find them relatively ineffective. The motorcycle, restricted primarily to traffic, is said to have a tremendous psychological effect in suppressing speed on the road.[24] Washington, D.C., finds the motor scooter especially effective in preventing theft from automobiles.[25] On the other hand, data for the first three months of Denver's motor bike program showed an increase in the target crimes[26] of rape, robbery, aggravated assault, and commercial burglaries rather than the 25%-30% reduction anticipated.[27] Lakeland, Florida, and Baltimore, Maryland, attribute the reduction of nighttime burglaries and thefts to the use of the bicycle.[28] Long Beach, California, on the other hand, has tried the bicycle as a preventive measure against daytime strongarm robberies and purse-snatchings, but has found it to be more effective in apprehension.[29]

Although Project Sky Knight and ARGUS have reported a reduction in crime in their project areas, observers of the Sky Knight Project suggest that helicopter patrol be directed towards specific crimes, and that it not just orbit around patrol areas.[30] Other findings assert that helicopter patrol has reduced vandalism to city and school property to the extent that it has almost paid for itself. The helicopter is equally adept in detecting certain criminal activities as daylight burglaries, rooftop burglaries, robberies, riots, and speeding motorists.[31] Much of this activity is attributed to its observational range; the helicopter has an 8 to 1 ratio of observable area as compared with the automobile.[32] Additionally, the helicopter can view some otherwise inaccessible areas.[33]

C. Effects Upon Provision of Non-Crime Services

Because nearly a third of all police work involves service functions,[34] administrators seek modes of patrol which offer reasonable response times for dispatched requests and officer accessibility for requests initiated on the street.

Foot patrol offers the greatest degree of accessibility because the officer remains approachable at all times.[35] The bicycle,[36] motor scooter, and motor bike[37] offer as much accessibility when the officer dismounts and walks and offers only slightly less when riding, for the view is unbroken. The automobile, although offering little accessibility to citizens on the street, has the advantage of quick response to calls for service.[38]

While most police departments keep statistics for calls for service, these are usually only dispatched calls. Much of the action actually initiated on the street is not included.

D. Effects Upon Community Satisfaction

The mode of patrol has been found to affect the degree of community satisfaction. Police officials tend to consider foot patrol as offering the most personal contact, therefore improving community relations.[39] This conclusion may not be warranted, as foot patrol in some neighborhoods may actually antagonize the residents, particularly when aggressive patrol tactics are utilized.[40]

Patrol by motor scooter, motor bike,[41] and bicycle[42] are thought to have the same effect as foot patrol, but virtually no evidence exists on the subject. Motorcycle officers, on the other hand, may actually detract from a sense of community satisfaction, particularly if they are in traffic enforcement and spend the majority of their time issuing traffic tickets. These officers often foster a certain elitism which may antagonize the community.[43]

Citizens' reactions to helicopters are mixed. Community residents have expressed dissatisfaction with helicopters on account of their high noise levels and bright surveillance lights.[44] Project Sky Knight, having received citizen complaints, corrected the offensive features. Afterward citizens' reactions to Project Sky Knight helicopters were assessed through a mailed questionnaire to all Lakewood, California, residents. The County Sheriff received a 32% return, as compared with what they considered to be a normal mail survey of 2%, with the following results: 92% approved continuation of helicopter patrol, 6% disapproved, and 2% had no opinion.[45]

Comparatively few citizen attitude surveys have been conducted and, of those which have, rarely has the distinction been made between citizens who have had contact with the police and those who have not. Another distinction which has been neglected is a breakdown according to audience, that is, by various types of citizens.

E. Effects Upon Recovery of Stolen Goods

Nothing on this subject appears to be available, either in written or discussion form. Statistics identifying the number of stolen goods which have been recovered are kept by virtually all police departments, but no attempt is made to credit them to particular modes of patrol. It is assumed, however, that the degree to which a particular mode affects the ability of the officer to capture fleeing suspects or to gain relevant information may also affect the level of goods recovery. This is merely a logical extension of the discussion of the impact of the mode upon apprehension.

II. Implications of Operational Characteristics

A. Officer Safety

Injuries to officers and damage to equipment result in increased costs, reduced officer morale and performance, and loss of patrol units. Regardless of the pattern of patrol selected, police officials are extremely concerned with minimizing injuries and damages.

The two-wheeled motorcycle is perhaps the most dangerous vehicle: injuries associated with its use are often serious and permanent. The motor scooter is also dangerous. In Washington, D.C., the maximum speed permitted on a motor scooter for regular patrol purposes is 15 mph. Other dangers include the lack of visibility when the motor scooter is along-side a lane of parked vehicles.[46] Denver reports that the motor bike is far safer than any motor scooter. The accidents, only of a minor nature, have not resulted in an excessive loss of time by the officers involved.[47]

The automobile offers a much greater degree of safety than the motorcycle, motor bike, or motor scooter.[48] Although its use is very limited and general conclusions cannot be made, the helicopter's accident rate is reported to be lower than the automobile's.[49]

B. Officer Morale

Officer morale has been traditionally a source of concern to police administrators. Morale, it has been found, is closely linked to job satisfaction.

For many forms of patrol, morale seems to be related to the individual officer's interest and/or the status afforded the assignment by the department. Foot patrol, in some instances, results in high levels of morale due to the officer's contact with the citizenry and the independent nature of the work.[50] In other instances, foot patrol detracts from an officer's morale because he feels it is ineffective and outside the mainstream of police work.[51] Equally conflicting effects on morale are seen with respect to the bicycle, the motor scooter, and the motor bike. On the one hand, these modes are considered invaluable for selective enforcement practices[52] and, on the other hand, are not considered sufficiently "respectable" vehicles by the majority of officers (although volunteer officers favor them).[53]

Both helicopter pilots and motorcycle officers have a heightened sense of morale as they often consider themselves as elitist groups.[54] The attitudes of squad car officers, although not usually elitist, still reflect high morale.[55]

C. Vehicle Availability

Police patrol is dependent upon the availability of units and equipment. Thus whenever certain types of vehicles are out of commission (for whatever reasons), the allocation of units must be changed, as well as the assignments of officers (unless sufficient numbers of extra vehicles are maintained by the department). Those variables that may affect availability include weather conditions, storage of necessary equipment, and fatigue.

Such weather as heavy fog, severe rain, and blizzards curtail a helicopter's activities.[56] Inclement weather also affects three-wheeled motorcycles,[57] and to a lesser extent, motor scooters.[58]

As far as equipment is concerned, very little can be stored on a bicycle, motor scooter, motor bike, or solo motorcycle;[59] the three-wheeled motorcycle is capable of carrying more equipment than the others. The patrol car, on the other hand, actually serves as a mobile police station, capable of carrying virtually anything.[60]

Fatigue, a factor in officer availability, seems to be greatest for a helicopter pilot — with one department reporting that he is permitted to fly only five hours per eight-hour shift.[61] A bicycle incurs less fatigue than foot patrol, and an automobile incurs the least of all.[62]

D. Economy of Operation

Transportation costs are second only to manpower costs in police department budgets. Police officials attempt to use the cheapest forms of transportation which will allow certain levels of service to be provided; that is, the most cost effective patrol mode is desired.

The commonly held belief is that the automobile is more cost effective than foot patrol. On account of its limited coverage and effectiveness, foot patrol is the least cost effective and is recommended only in areas where it is absolutely necessary and only during hours of actual need.[63] Also expensive is the motorcycle, since it costs about as much to buy and maintain as an automobile, yet has much more limited use.[64]

In cities where the motor scooter has been tested (New York, Washington, D.C., and Detroit), the claim is made that this type of patrol has the advantages of both foot and automobile patrol, yet costs considerably less than either.[65] The same holds true for the motor bike.[66] Denver's fully equipped CB-200 T Honda has been purchased for only $848.00 and has cost only 6.8¢ per mile.[67]

The helicopter is expensive: the calculations for the provision of aerial patrol and surveillance reveals the per flight hour equipment cost as approximately $50 (compared to the hourly expenditure of approximately $10 to $12 for the service of a conventional ground unit). However, certain activities are performed by helicopter units more effectively than by any other mode. An

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3 OF 4

attempt at measurement has been made in the Lakewood, California, area by the removal of two cars from each shift (out of a total of eighteen available). The remaining units adjusted well to the additional workload while the crime picture did not show any unusual changes. Based on this experience, proponents claim that the utilization of helicopters for patrol permits replacement of two to six ground units and their personnel — although this conclusion does not necessarily follow from the experiment.[68]

III. Conclusions

Although considerable resources are being invested in the acquisition and maintenance of vehicles and the training of officers for them, few studies have been undertaken to determine the effectiveness of different modes. In other words, few valid data are offered which measure effective attainment of the five patrol goals or any of the four operational characteristics.

The many studies of foot patrol find it relatively effective — but do not, in fact, evaluate it as a separate entity. Instead, this particular mode has been part of other strategies or combined with other modes so that the results may not necessarily be attributed to foot patrol. It has been used for location-specific and crime-specific activities; in other words, it has been used for selective enforcement.[69] It has been utilized for saturation in which a small number of foot patrol officers handle a designated area for a short period of time.[70] It has been utilized in conjunction with motorized units.[71] And it has been implemented with two-officer teams, one of whom is a member of a minority race[72] — or with two-person teams, one of whom is a civilian.[73] Furthermore, there have been combinations of the above.[74]

Studies have been conducted to ascertain the effectiveness of other modes in reducing crime, and many of the results have been based on statistical data. Such data should be questioned, as they may not have resulted from that particular mode. The extent to which the vehicle itself reduced total crime, the extent to which the patrol forced a shift in the location of criminal activities, and the extent to which other factors played a part in crime reduction are unknown.[75]

One study which deserves particular attention is Project Sky Knight. The project's real merit lies in its careful evaluation of the helicopter as a patrol vehicle and its candid presentation of the findings and conclusions. The findings and conclusions, in addition to enumerating the operational feasibility of helicopters on patrol, listed the implementational problems that became evident throughout the evaluation process; they were as follows: (1) lack of coordination and understanding at the command level; (2) technical difficulties with the equipment; (3) failure to develop training and procedural manuals prior to the actual operations; and (4) threat of community rejection of the project before its onset. A study recommendation is that any police agency contemplating the use of helicopter patrol should design patrol strategies to meet its own particular environment and needs. Another point made is that evaluation cannot be based on statistical data alone.[76]

Although a few substantial conclusions can be made which will aid police officials in selecting patrol modes, most of these conclusions are based upon criteria other than patrol effectiveness, such as safety and economy.

When apprehension and prevention are the criteria to be used in the selection of patrol modes, very little can be said other than to refer to the observations and opinions of others. The limited research conducted to date investigates the efficacy of foot patrol,[77] bicycles,[78] motor scooters,[79] and helicopters.[80] With respect to foot patrol, certain elements of the community seem to respond quite favorably, although the operational impact on the realization of deterrence and apprehensions remains in doubt. Bicycles have been found to be of some utility in patrol directed against burglaries. Helicopter patrol has been judged effective in ground and rooftop surveillance although its high operating costs may prove to be unjustifiable for all but the larger departments. Motor scooters have been found to facilitate patrol in urban areas, but the associated problems of officer safety and vehicle reliability are of considerable concern. Although scooters may have a deterrent effect, bicycles an apprehension effect, and helicopters a deterrent effect, the available information *per se* does not warrant any massive patrol mode shift.

ONE- VS. TWO-OFFICER UNITS

I. Realization of Patrol Goals

A. Effects Upon Apprehension

There are two schools of thought on this issue. The first argues that no determination has been made as to the superiority of either unit.[81]

The second argues that the one-officer unit has a higher apprehension rate.[82] The assumption is made that the one-officer unit results in reduced response time, for the additional units mean smaller beat areas to be covered. Another assumption made is that the single officer is far more alert than he would be with a partner.[83]

B. Effects Upon Deterrence

Supporters of the one-officer car claim that it is the more effective in the reduction of crime. The two reasons given include: (1) increased visibility for one-officer cars when the two-officer beat has been split in half, allowing for twice as much coverage;[84] and (2) greater interceptor capability or observational power for two one-officer units than for one two-officer unit.[85]

Opponents, however, question the entire nature of the impact of visibility on deterrence.[86] They also question whether the one-officer unit (especially while driving) is as attentive to the surrounding environment as the two-officer unit.[87]

C. Effects Upon Provision of Non-Crime Services

Supporters of the one-officer car argue that most service calls do not require two officers. Furthermore, they claim that with increased coverage by the one-officer unit, response time is reduced.[88] Opponents claim that because situations are overlooked, two men often are needed.[89]

D. Effects Upon Community Satisfaction

The issue of community satisfaction is more a matter of concern with the automobile *per se* than with a one- or two-officer car. In fact, nothing has been said with respect to this subject.

E. Effects Upon Recovery of Stolen Goods

There is no available evidence showing the relationship between recovery of stolen goods and one- or two-officer cars.

II. Implications of Operational Characteristics

A. Officer Safety

The available data suggest that there are no appreciable differences between the two systems.[90] The indications are that organizational precautions compensate for the reduced manpower in the one-officer cars. Dispatchers, screening the calls, assign the more dangerous ones to two-officer units or provide back-up units for one-officer cars.[91] Certain regulations have been formulated in most departments for the protection of the one-officer unit. Examples are notification of the dispatcher of the location before leaving a one-officer vehicle and prohibition against transporting a prisoner alone.[92] Furthermore, an officer in a patrol car may be safer alone, relying on his own abilities, than with another officer who may give him a sense of security out of proportion to the added protection he provides.

B. Officer Morale

The levels of morale for officers assigned to one- or two-officer cars is largely a matter of personal preference and, in certain cases, of perceived danger.[93] Some departments, in response to their officer's reactions to danger, have maintained a patrol force of two-officer units.[94] Other departments have converted the majority of the patrol force to one-officer units (leaving two-officer units in only the highest crime areas) and have found in the long run no appreciable decline in morale or in productivity.[95]

C. Vehicle Availability

One-officer units result in the availability of a greater number of vehicles for dispatch;[96] however, areas are left unprotected when these units are dispatched, and no communication is possible during personal out-of-service stops. Other problems may be of a disciplinary nature. It is argued, on the one hand, that a single officer is prone to loaf[97] and, on the other hand, that the bad habits of one officer are often assumed by the other.[98]

D. Economy of Operation

Concerning the issue of the relative economy of the alternative transportation modes, there are two opposing views. Supporters of the one-officer car argue that the extra cost of automobiles required to obtain a one-officer patrol force is far below the benefits of the increased patrol.[99] Yet opponents say the extra costs in equipment, maintenance, and dispatcher services are greater than the benefits.[100] In general, the one-officer car is considered more cost effective than the two-officer unit.

III. Conclusions

Much of the literature is descriptive, and many of the attempts to make statistically valid statements are weak. FBI statistics, for example, on police officers killed by criminals were used as the basis for the argument that no appreciable differences exist between the two systems.[101] Yet the statistics were in the form of absolute numbers, giving no indication of the percentages of the patrol force that was one- and two-officer. In another case, data from Wichita, Kansas City, and San Diego were used to demonstrate the increased productivity (arrests, citations, field interrogations) and visibility for one-officer cars.[102] Special training and the screening of calls, which were additional aspects of the program, were not, however, accounted for in the analysis of these experiments.

In a third instance, the relative observation capability was tested for three two-officer and six one-officer units in the same district by simulating four types of "targets" (open doors, break-ins, stolen cars, and wanted men) of which the observations or "hits" were recorded during a one-hour test. By using the Mann-Whitney U Test to compare the significance of the difference between the number of hits made by the two-officer cars to that made by all possible combinations of one-officer cars, it was determined that there is a probability of .58 that two one-officer units will always out perform one two-officer unit.[103] This conclusion, however, is questionable due to the small size of the sample and the failure to take into account the effect of velocity (the slower the driving speed, the more noticeable the surroundings).

The debate among police administrators concerning the superiority of one- or two-officer cars has been in progress for the past three decades. Although conclusive evidence of the effectiveness of one or the other has not become available as yet, the actual preferences of departments have been gradually moving toward the one-officer unit.[104] In fact, numerous police departments throughout the country have made, without serious consequences, the shift from two- to one-officer units.

CHAPTER EIGHT

CONCLUSION: NEW DIRECTIONS FOR RESEARCH

The preceding sections of this report have reviewed and assessed the quality and extent of available knowledge about traditional preventive patrol. From a rigorous methodological point of view, this assessment depicts a very disappointing state of affairs. If one were to reflect upon the research hierarchy presented in the second chapter, . . . one would find virtually no examples of research conducted at the higher levels, only a few examples of problematic research in the middle range, and the majority of studies at the lower levels, with necessarily inconclusive results. Most of what has been called "knowledge" about traditional preventive patrol is, in fact, opinion based primarily upon experiential evidence. The gaps in knowledge are pervasive, and there is very little which can be said definitively about the impact of alternative approaches to patrol upon the ability of a department to realize the goals of patrol. To a large degree, this is due to the lack of valid measures of goal attainment discussed earlier and to the fact that systematic research into patrol practices is a new endeavor which only began in earnest with the creation of the Law Enforcement Assistance Administration in 1968.

Such an indiscriminate indictment of the research and findings in the field is, however, extremely unproductive: it neither focuses the attention of practitioners upon the most salient aspects of patrol, nor does it provide sufficient guidance to government agencies, private institutions and individual researchers seeking to make useful contributions to police science. As a consequence, the identification of gaps in knowledge itself requires a judgmental assessment. It necessitates evaluation of both the relative importance of various patrol-related issues and the degree of certainty required by administrators before implementing any prescribed operational changes.

The importance of a given issue is a matter of judgment which can vary from department to department. To a large degree it depends upon the proportion of departmental resources and activities potentially affected and the contribution which resolution of the issue might make to the ability of departments to realize the goals of patrol and/or increase the productivity of patrol operations. For example, consider the relative importance of determining the merits of take-home car programs which may result in a small, additional increment of patrol coverage vs. the importance of examining split patrol, which could have major implications for the level of patrol and service delivery and the types of activities undertaken by the patrol force and might, thereby, affect a department's entire orientation toward patrol. While the former question is not unimportant, the potentially wide-ranging ramifications of the latter would appear to give it higher priority on the agenda for future research.

The degree of certainty required about a proposed policy is again a judgmental issue. The greater the degree of surety required, the more extensive and rigorous must be the research upon which prescriptions are based. The need for certainty depends to a large degree upon the risks which the policymaker himself perceives to be entailed in the implementation of a particular program or policy. For example, the decision to try a new type of

vehicle carries only marginal risk and, as a result, can perhaps be made safely on the basis of endorsements by other departments and the considered judgment of departmental administrators: individual vehicles are inexpensive; the impact of a vehicle change is unlikely to have a profound, adverse effect upon goal attainment; and the decision is easily reversible with minimal financial implications. More problematic would be the decision to install an automatic vehicle monitoring system, which involves extremely high expenditures and has an impact upon the deployment and supervisory processes of the department. Similarly, extremely high risks may be associated with the implementation of a new, basic deployment pattern which could have a profound impact upon the entire pattern of service delivery, the realization of all strategic and tactical objectives of patrol, and the attainment of all patrol goals. In a comparative sense, the patrol administrator can afford to take risks with regard to vehicle choice on the basis of limited knowledge, but he must be far more cautious in approaching the decisions to purchase costly, high technology support systems or to implement extensive deployment changes. The need for highly reliable and valid research in support of prescriptions increases with the cost of the proposed changes and the scope and seriousness of their potential impact.

Any attempt to point out appropriate directions for future research must therefore be governed by two considerations: the relative importance of the issues and the degree of certainty required in order to implement a policy change. The recommended directions are discussed with relation to relevant, on-going research programs and innovative patrol projects in an effort to build upon an accumulating body of knowledge. Each suggested project is discussed in greater detail in the accompanying volume entitled A Design for Phase II Research in the Area of Traditional Preventive Patrol. This review and evaluation of research has also provided insights into the conduct of research on patrol, and this chapter concludes with some brief reflections upon that process.

I. Subjects for Future Research

As the preceding sections of this report indicate, recent years have been marked by a growing number of significant research projects on patrol conducted with the cooperation of departments throughout the country. Many of these projects have generated nationwide interest, but any mention of research on patrol almost inevitably seems to elicit comments on Kansas City. On-going and completed NILECJ/LEAA and Police Foundation-supported projects in Kansas City, Missouri, reflect the types of research on traditional preventive patrol which promise to provide important insights into its conduct and effectiveness.

The most controversial of these projects is, without doubt, the Kansas City Preventive Patrol Experiment. The limitations of the experiment's validity and reliability have been discussed earlier. We return here to a consideration of the experiment's significant and positive message.

Beyond the insights which the experiment provides into the process of applied research in police operations, it also clearly demonstrates that it is possible to vary the conduct of patrol without any apparent risk to community security. In Kansas City, the systematic and long-term interference with normal, routine patrol did not result in an identifiable increase in crime

or a discernible deterioration of community attitudes towards the police. The study did not attempt to define the acceptable limits of change; it appears, however, that when coupled with the recent experiences with innovative approaches to patrol in other cities, the results indicate that departments can be extremely flexible in varying patrol operations in an effort to discover new means of improving efficiency, economy, and effectiveness of patrol operations.

The Preventive Patrol Experiment suggests the possibility of change and manipulation of resources in patrol practices and by inference directs attention to the question of how patrol time can be most effectively spent. In the light of steadily increasing demands being placed on the police, overtaxed municipal budgets, and rising operating costs, tremendous pressure has been mounting for the improvement of the effectiveness and productivity of existing departmental resources in lieu of expansion. Given the pressing nature of these concerns, it is clearly important to determine whether patrol officers' time is being fully and efficiently utilized. Information currently available, although incomplete, suggests that this is not the case, that general patrol acitivities may not necessarily be the most productive use of an officer's time. Consequently, even at present levels of staffing, there may be a very substantial number of patrol hours available for experimenting with a wide range of potentially useful strategies and tactics such as directed patrol and increased involvement in the community. It mayalso be possible to staff special units from within department personnel without new staff. Two other research projects in Kansas City have direct bearing on this issue.

Research on directed patrol has confirmed the limited findings presented in the Preventive Patrol Experiment which indicate that in Kansas City approximately 60% of an officer's time is spent on undirected, routine patrol. This in no way suggests that the size of a patrol force can be reduced; rather, it raises the positive question of how this time, which is typically fragmented by calls for service, could be restructured into periods of sufficient length to allow patrol officers to engage in activities which might be more goal-oriented and productive than conducting routine patrol on a residual basis during the time which falls between the performance of ostensibly more important tasks. Time devoted to patrol may be time poorly spent, and the non-committed time of patrol officers may constitute an important and largely untapped resource. Research efforts can be profitably directed toward examining ways of reordering this time so that it can be turned into potentially more involving and constructive uses.

It is in this context that the Kansas City Response Time Study sponsored by NILECJ/LEAA becomes especially interesting. This study promises to be perhaps the most important single piece of research on patrol yet conducted. The study is gathering and analyzing comprehensive data on the elements which contribute to measures of response time. This will form the basis for assessment of both the determinants of response time and the impact of response time on the effective delivery of police services. It can be anticipated that this study will provide some very definite answers (albeit specific only to Kansas City) regarding the significance of response time differentials to the outcome of calls for service. The issue of response time is an emotionally charged one -- assumptions regarding its importance provide the very basis for many aspects of traditional preventive patrol. It is, therefore, of great importance that plans be formulated and implemented immediately to duplicate and verify this

study. Failure to do so may lead to its significant findings going unheard and unheeded.

It is possible that the Response Time Study will confirm traditional assumptions, but it appears equally possible that it may lead to a serious re-thinking of patrol operations. To indulge in conjecture: if the study indicates that except for responses to crimes in progress and personal injuries, response time is irrelevant to the outcome of calls for service, then there would be a serious need to re-think one of the major assumptions underlying the deployment and activities of patrol personnel. A potential re-orientation on the question of the importance of response time would facilitate the aggregation of patrol time, thus enabling officers assigned to traditional patrol to engage in directed activities designed to meet the specific and defined needs of the communities they serve. Such a decision, however, would depend heavily on the public's willingness to accept deferred responses to those types of service calls for which response time is determined to be a less than critical factor. This could be examined by way of expanded studies on the nature of and reasons for citizens' attitudes toward response time, and experiments on the effectiveness and acceptability of response by appointment to certain types of calls.

It is important to repeat that these comments on response time are based on conjecture about the results of an on-going study. Any attempts to alter patrol operations based on a reconsideration of response time should await the study's actual conclusions. In addition, plans to purchase expensive equipment systems designed to reduce response time, such as automatic vehicle monitors, might also be held in temporary abeyance.

There are a number of other interesting possibilities for increasing the effective utilization of patrol officers' time. For example, synthesis of evidence drawn from a variety of studies leads to the tentative conclusion that, except in extremely hazardous areas, the assignment of two officers to a patrol car is an inefficient use of personnel. As a result, departments which make extensive use of two-officer units could effectively increase the amount and variety of their patrol activities by shifting to the deployment of one-officer units. The relative merits of one- versus two-officer units is a topic much in need of definitive study.

In Cleveland Heights, Ohio, another approach to tapping underutilized manpower is being tried. The Patrol Emphasis Program (funded by LEAA) has achieved what appear to be positive and significant results by instituting variations in the number of units assigned to patrol (from as many as 21 on the evening shift to as few as four in the early morning hours) on the basis of projections of service workloads by time of day and day of the week. The adjustment of levels of patrol on the basis of expected needs has apparently led to a substantial decline in the rate of reported crime and a considerable increase in the number and quality of arrests made by patrol officers. A careful evaluation of the PEP program seems very much in order.

Split patrol offers a third approach to consolidating and restructuring patrol officers' time. It divides a patrol force into response and patrol units.

The response units handle all calls for service, leaving the patrol units free to engage in routine patrol, directed and specialized activities, or some combination of the two. The concept of split patrol is being explored to a limited degree in a recently initiated experiment in Wilmington, Delaware, funded by NILECJ/LEAA. Additional research aimed at determining the appropriate combination of response, directed, and routine patrol activities would seem to be warranted.

While the concepts discussed above have been directed at the better utilization of patrol officers' time in lieu of increasing the number of officers on patrol, two other approaches have been suggested. In the very early stages of exploration is the possibility that by assigning investigative responsibilities to patrol officers, the size of the detective bureau can be drastically reduced, releasing officers assigned to that division for patrol activities. Recent experiences in Rochester, New York (in a Police Foundation-funded effort), seem to indicate that the traditional organizational split between the detective and patrol divisions may result in the under-utilization of personnel. The work in Rochester seems to suggest that the patrol officer may quite effectively become more involved in investigative activities, while at the same time it suggests that the detective may be quite appropriately assigned to street duty. In Cleveland Heights, the actions of the department were far less tentative. The size of the detective bureau was drastically reduced, and the size of the patrol force increased along with reassignment of many traditional detective functions to the patrol officers who had received the requisite training. Both programs seem to present promising ways of increasing the effective utilization of manpower, and, as such, they are appropriate topics for detailed evaluation.

Should the opportunity arise to increase departmental staffing, there seems to be considerable merit in the use of non-sworn personnel to respond to non-crime related calls for service. Such calls may account for as many as 40% of all calls received. In Worcester, Massachusetts, non-sworn personnel have been assigned to respond to these types of calls, thus releasing the time of sworn officers for work on robbery and burglary squads and increasing the morale of officers who continue in patrol operations. While the evaluation of this program has not yet been completed, the department believes that it has been well received by the public and that the operational framework itself is functioning effectively. In addition, it appears that, in the aggregate, this approach may lead to substantial cost savings. The experience of the Fremont, California, Police Department seems to reflect the positive reaction expressed by the Worcester police. As it appears that the present evaluation of the Worcester program is concentrating primarily on the effectiveness of special units, it may be appropriate to look more closely at the effectiveness of the use of civilian personnel. In addition, we note the potential for using citizen auxiliary personnel to augment patrol. The subject of citizen auxillaires is being explored in greater detail in another NEP study.

Having identified some of the opportunities which present themselves for freeing available officer time for directed patrol activity, the next requirement is to determine the most appropriate scope, range, and mix of officer activities. First, it is necessary to understand the complexities of the concept of police presence. The projects mentioned throughout this report have, for the most part, forcused on the manipulation of activity and deployment variables. Some attempt has been made to determine the impact on strategic and tactical

objectives and on the attainment of the general goals of patrol, but little attention has been devoted to determining how these manipulations have affected the perceived level of police presence within the community. The Preventive Patrol Experiment touched on the issue by manipulating the levels of routine preventive patrol, but this is only one of the variables thought to influence the level of perceived presence. Presence is a complex phenomenon which entails much more than the mere physical visibility of the police. It is determined by the amount and types of police activity in a community, by the activities of people within the community, and by the reactions of citizens to this activity. At present, we know that patrol is conducted differently in different types of communities, but we have only a very rudimentary understanding of the ways in which police activities and community characteristics interact and how they can be appropriately matched. A thorough investigation of the nature of police presence would help to establish the direction and scope of future innovations in patrol and would assist departments in rationally determining patrol strategies and tactics.

Secondly, it is important to examine the various directed activities that might be engaged in by a department in order to determine the degree to which these activities should be undertaken by individuals permanently assigned to special squads or by officers assigned on an *ad hoc* or intermittent basis. In general, there is little knowledge about the possible flexibility of officer assignment to a range of activities or about the compatibility of the various specialized activities and operations carried out by the department. In addition, it is important to determine the degree to which special services can be provided to particular segments of the population without jeopardizing the equity of service provided to the community as a whole.

As a third consideration, it is necessary to assess the alternative approaches to patrol planning. In general, what is the most effective way to determine the needs of a given community, to assess its problems, and to structure the approach to policing? Clearly, the planning of patrol should go well beyond the considerations of crime analysis to encompass an understanding of the full array of activities engaged in by the patrol officer, who often spends less than 30% of his time on crime-related concerns. The Community Profiling Approach undertaken in San Diego and the Interactive and Directed Models used in Kansas City are but a few examples of the alternative approaches to planning directed activities which should be evaluated.

A fourth area of concern is that of patrol officer supervision. As has been indicated earlier, little is known about the impact of various aspects of supervision (e.g., centralized versus decentralized authority, street deployment of supervisory personnel, scheduled officer call-in, and supervisor-officer ratios) upon the degree of officer attentiveness to duty, levels of misconduct and corruption, and general patrol effectiveness. Additionally, investigation of the following hypothesis is warranted: directed patrol activities, the diversion of non-crime related calls for service to non-sworn personnel, and the deployment of officers in direct proportion to the level of demand for service will have a positive impact on the level of officer morale and job satisfaction by stimulating an increased attention to duty and diminishing the need for close supervisory attention. For departments with Automatic Vehicle Monitoring Systems, it would seem appropriate to consider the possibility that many aspects of supervision could be transferred to the dispatch

center where the movement, location, and status of vehicles and officers is closely monitored on a real-time basis.

Fifth, there continues to be a considerable degree of uncertainty concerning the importance of officer characteristics, particularly race, sex and education, on individual officer performance and the overall effectiveness of the patrol operations in different types of communities. In the context of present public debate in which questions of equal opportunity and equal work for equal pay are significant issues, it is particularly essential that well-designed research programs be developed to address these matters. There is no doubt that unless an efficacious approach to officer selection and assignment can be developed, the best formulated approaches to patrol activity will still meet with only limited success.

Finally, the information generated by research programs must be made readily available to departments in a way which will facilitate beneficial program changes. In order to facilitate the transfer of information and programs out of the experimental context and into the mainstream of policing, it is necessary to analyze the process of innovation within departments to determine the most effective way to communicate findings to departments and to provide for the on-going review and analysis of research and program findings in order to promote a continuing, cumulative approach to research on patrol.

In conclusion, it should be noted with regard to all of the research areas discussed above that careful consideration must be given to developing and improving the available measures of effectiveness for evaluating alternative approaches to patrol. Without proper means of measurement, the entire process of research and analysis will continue to be compromised. As noted, LEAA, through the National Institute of Law Enforcement and Criminal Justice, is currently sponsoring an in-depth program to develop and evaluate alternative measures of effectiveness. This project, being conducted by the American Justice Institute, is of critical importance to the future of research in policing.

II. The Conduct of Future Research

As noted throughout this report, there have been many problems in the design, execution and reporting of research on traditional preventive patrol. It thus seems useful to conclude with an examination of some important lessons about the process of research which can be drawn from experience to date. Such a review may hopefully lead to an improvement in research work in the field and in the receptivity of departments to both research activity and the reported results.

(1) Research on patrol, to be of value, must be relevant to the needs of the policy maker in a way which will provide him with knowledge regarding levels of patrol effectiveness and the efficiency and economy of operations. This does not mean that applied research must be conducted to the exclusion of basic research questions, but rather that all research should be justified in terms of its relevance to the concerns of the department. There seems to be

little doubt that the police community recognizes that applied research, to produce meaningful programmatic results, must be based upon a sound foundation. Immediate problems cannot always be solved by the researcher, and the researcher has an obligation not to promise reliable program results when they are not likely to be readily forthcoming.

(2) The design of research studies must reflect the operating constraints of the police departments and not unduly interfere with departmental operations. The police community is much more receptive to the adaptation of procedures for the purposes of research than has been commonly believed. The researcher must continually assess the impacts of operating constraints upon the reliability and validity of his findings in order to determine whether or not the project is worth initiating or continuing.

(3) It is of critical importance that evaluation and research designs be built around on-going programs and that sufficient lead time be provided for the accumulation of baseline data necessary for the conduct of a valid and reliable study. Too often, designs have been *ad hoc* and after the fact; this deficiency has been responsible for many of the major problems found in much of the research undertaken thus far. Departments are beginning to recongnize the necessity of such requirements, and many appear to be willing to live with the stipulations which are the basis for contingent funding of proposed programs. It should also be noted that careful study designs may necessitate the availability of funds for planning grants.

(4) In the development of appropriate research designs more attention needs to be paid to a thorough consideration of the scope, level and quality of related research findings, and more use should be made of simpler correlation and case studies as opposed to experimentation techniques. Research experimentation is extremely expensive. It is therefore crucial that a firm grounding be established for each design and that previous work indicates, with a high degree of certainty, that the truly relevant hypotheses are being appropriately addressed. By paying closer attention to already accumulated knowledge, future research will be more economical and yield more valuable findings. This stipulation, however, necessitates that the general availability of reports be substantially improved.

(5) It seems essential to the success of any applied research endeavor that the research program be carefully and systematically presented to all levels of departmental personnel whose cooperation is being sought. Experience indicates

that departmental personnel much more readily give their full cooperation when they have been fully briefed about a project and provided with an opportunity to express their concerns and offer their advice.

(6) Both researchers and departments benefit from directing continuous attention to the accurate chronicling of their program and research activities. This not only facilitates reconstruction of the project for analysis purposes, but also greatly enhances the transferability of successful programs and findings to other jurisdictions.

(7) Care should be taken to report results promptly and accurately, and not to endow projects with an unmerited level of significance through the haphazard use of labels. Results should not be prematurely reported, as this often tends to set off a chain of discussion which cannot immediately be resolved through a review of the analysis. Finally, modest and accurate presentation with minimal public relations considerations enhances the acceptance of research conclusions.

Research into the operating realities of police departments is a relatively new endeavor which has necessitated the adaptation of social science techniques developed in other contexts to the environment and operating realities of police departments. As research and experimentation become increasingly valued elements of police administration, the above seven provisos will become routinely familiar procedures, recognized as integral aspects of the on-going process of police-related research. It can be expected that continuing studies in policing will steadily shape uniquely appropriate approaches to research in the field while at the same time contributing to the steady growth of empirically-based knowledge about police work.

The science of research into police patrol is now straining to reach maturity; unprecedented opportunities to further knowledge and improve procedures lie immediately ahead. However, a major burden remains on the researcher to prove himself to the police practitioner. Departments of all sizes throughout the country are keenly interested and willing to participate in research projects which are realistically designed and address salient concerns regarding patrol. In addition, police departments are quite willing to adapt their operating procedures, within limits, to accomodate legitimate research needs. As a result, it seems possible to conduct rigorous research activities with the informed cooperation of departments.

In sum, this review of the state of the art in Traditional Preventive Patrol indicates that significant strides are being made toward answering many of the questions most salient to patrol administrators and that the opportunity now exists for research to make meaningful new contributions to the effectiveness of preventive patrol.

FOOTNOTES

CHAPTER ONE: THE PATROL SYSTEM: AN ANALYTICAL FRAMEWORK

1. A National Institute of Law Enforcement and Criminal Justice, LEAA National Evaluation Program Phase I Evaluation Study of Neighborhood Team Policing has been conducted by the National Sheriffs' Association, Washington, D.C., 1975.

2. A National Institute of Law Enforcement and Criminal Justice, LEAA, National Evaluation Program Phase I Evaluation Study of Specialized Patrol has been conducted by the Institute for Human Resources Research, Bethesda, Maryland, 1975.

3. A National Institute of Law Enforcement and Criminal Justice, LEAA, National Evaluation Program Phase I Evaluation Study of Crime Analysis has been conducted by the Foundation for Research and Development in Law Enforcement and Criminal Justice, Bloomington, Indiana, 1975.

4. This distinction between two types of independent variables -- those potentially within the control of the administrator and those beyond his control -- is drawn from: James S. Coleman, Policy Research in the Social Sciences (Morristown, New Jersey: General Learning Press, 1972).

5. Many lists of departmental and patrol objectives have been found in the literature. There is, however, very little difference between them. Because of the extensive documentation provided, we have adopted those set forth in: The National Commission on Productivity, Opportunities for Improving Productivity in Police Services (Washington, D.C.: Government Printing Office, 1973); see particularly pp. 13-26. The more traditional definitions are found in: Clarence H. Patrick, "The Police in Modern Society," The Police, Crime and Society, ed. Clarence H. Patrick (Springfield, Illinois: Charles C. Thomas, 1972), and G. Douglas Gourley, Patrol Administration (Springfield, Illinois: Charles C. Thomas, 1974), p. 157.

6. For a more extensive discussion of the distinction between deterrence and prevention see: Isaac Ehrlich, "The Deterrent Effect of Criminal Law Enforcement," The Journal of Legal Studies, June 1972, p. 259-276.

7. See, for example: Samuel G. Chapman, "Security Checks," Police Patrol Readings, ed. Samuel G. Chapman (Springfield, Illinois: Charles C. Thomas, 1970), p. 655-656.

8. Most discussions of patrol treat the concept of visibility in a deceptively simple manner. In fact, the concept has many complex and, to date, unexplored ramifications. For a discussion of the complexities of visibility, see Chapter Eight of this report.

9. George L. Kelling, *et. al.*, The Kansas City Preventive Patrol Experiment: A Summary Report, and A Technical Report (Washington, D.C.: Police Foundation, 1974). A detailed discussion of the experiment is included in Chapter Four of this report.

10. Clarence H. Patrick, "The Police in Modern Society," *op. cit.*

11. J. F. Elliott and Thomas J. Sardino, Crime Control Team: An Experiment in Municipal Police Department Management and Operations (Springfield, Illinois: Charles C. Thomas, 1971), p. 11.

12. See, for example: Albert J. Reiss, Jr., The Police and the Public (New Haven, Connecticut: Yale University Press, 1971), p. 164-168.

13. Franklin E. Zimring, Perspectives on Deterrence (Washington, D.C.: Government Printing Office, 1971).

14. We note here that the available documentation suggests that only from 13-20% of the actions taken by uniformed patrol officers are officer-initiated. See: Reiss, *op. cit.*, p. 11, and John A. Webster, The Realities of Police Work (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1973), p. 57.

15. J. F. Elliott, *et al.*, "The Detection and Interception Capability of One- and Two-Man Patrol Units," Police, November-December, 1969, pp. 24-26.

16. The crimes usually considered to have the highest associated probabilities of apprehension are robbery and burglary. See, for example: The President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology (Washington, D.C.: U.S. Government Printing Office, 1967), p. 10.

17. A typical example of the utilization of response time as a measure of effectiveness is found in: Spencer B. Smith, "Operations Research for More Effective Police Patrol," Technology and Human Affairs, Summer, 1972, Vol. 4, No. 2.

18. The President's Commission on Law Enforcement and the Administration of Justice, Task Force Report: Science and Technology, *op. cit.*, pp. 9-10. A critical discussion of research on response time is presented in Chapter Three of this report.

19. Kansas City Police Department Response Time Analysis Study, (Kansas City, Missouri: forthcoming).

20. Paul M. Whisenand and James L. Cline, Patrol Operations (Englewood Cliffs, New Jersey: Prentice-Hall, 1971), p. 4.

21. Marvin Cummins, "Police and Service Work," Police in Urban Society, ed. Harlan Hahn (Beverly Hills, California: Sage Publications, 1971), p. 287.

22. Herman Goldstein, "Police Functions Peripheral to the Task of Preventing and Controlling Crime," Police Patrol Readings, ed. Samuel G. Chapman, *op. cit.*, p. 41-42.

23. James Q. Wilson, Varieties of Police Behavior: The Management of Law and Order in Eight Communities (New York, New York: Atheneum, 1972), p. 19; and Whisenand and Cline, *op. cit.*, p. 5.

24. See, for example: Webster, *op. cit.*, pp. 98-100; and Reiss, *op. cit.*, pp. 94-96. Comments received in response to our National Patrol Survey also indicate that this is a widespread belief among patrol administrators.

25. Richard A. Myren, "The Role of the Police," in Police Patrol Readings, ed. Samuel G. Chapman, *op. cit.*, pp. 25-33.

26. Goldstein, *op. cit.*, pp. 43-47. Most departments responding to our National Patrol Survey indicate that some calls for service are routinely referred to other agencies for response.

27. Myren, *op. cit.*, pp. 33-41.

28. It is frequently argued that the patrol department should be divided into two divisions: one which is assigned to handle law enforcement, and the other non-crime related services. For example, see: The President's Commission on Law Enforcement and Administration of Justice, Task Force Report: The Police (Washington, D.C.: U.S. Government Printing Office, 1967), pp. 122-124; and Jesse Rubin, "Police Identity and the Police Role," The Police and the Community, ed. Robert F. Steadman (Baltimore, Maryland: The Johns Hopkins University Press, 1972), pp. 41-44.

29. Citizen auxiliaries are proposed as being capable of performing such services as neighborhood security checks and house watches, roving observations for wanted persons and vehicles, social service counseling, etc. See: The President's Commission on Law Enforcement and Administration of Justice, Task Force Report: The Police, *op. cit.*, pp. 223-224; James S. Campbell, *et al.*, Law and Order Reconsidered (New York: Bantam Books, 1970), pp. 441-445; George E. Berkley, The Democratic Policeman (Boston, Massachusetts: Beacon Press, 1969), pp. 177-178; National Advisory Commission on Criminal Justice Standards and Goals, Police (Washington, D.C.: U.S. Government Printing Office, 1973), pp. 264-269; Gourley, *op. cit.*, pp. 86-93.

30. Citizens may be hired as non-sworn personnel to handle specialized functions which would otherwise be assigned to uniformed patrol officers. These might include traffic duties, community services, and the like. See: The President's Commission on Law Enforcement and Administration of Justice, Task Force Report: The Police, *op. cit.*, p. 125; National Advisory Commission on Criminal Justice Standards and Goals, *op. cit.*, pp. 258-261.

31. In some cases, certain equipment is utilized on routine patrol or assigned to patrol officers so that non-crime related services can be provided when necessary; e.g., the use of station wagons on patrol so that patrol cars can serve as ambulances.

32. Peter Bloch and Deborah Anderson, Policewomen on Patrol: Final Report (Washington, D.C.: Police Foundation, 1974); John E. Boydston, San Diego Field Interrogation: Final Report (Washington, D.C.: Police Foundation, 1975); and Kelling, *et al.*, *op. cit.*

33. *Ibid.* The Urban Institute's evaluation of Cincinnati's Team Policing Program also included before and after surveys. See: Alfred I. Schwartz, *et al.*, Evaluation of Cincinnati's Community Sector Team Policing Program, A Progress Report: After One Year, Summary of Major Findings (Washington, D.C.: The Urban Institute, 1975). For a review and assessment of this evaluation, see: The National Sheriffs' Association's National Evaluation Program report on Neighborhood Team Policing, *op. cit.*

34. The National Commission on Productivity, *op. cit.*, p. 19.

35. During the Spring of 1975, the Boston Police Department dramatically increased the use of foot patrol, assigning foot patrol officers to local shopping areas in response to community demands and on the belief that the increased level of visible patrol would have a salutory effect upon the level of crime and disorderly conduct experienced in such areas. Interviews with representatives of the Boston Police Department, May 1975.

36. In 1975, the Washington, D.C., Metropolitan Police Department increased the use of foot patrols in densely populated commercial and residential areas experiencing high crime rates.

37. The Fort Worth, Texas, Police Department, in 1974, increased the level of foot patrol in a small, predominantly minority area in order to increase the level of officer visibility. Interviews with representatives of the Fort Worth Police Department, May 1975.

38. The Portland, Oregon, Police Bureau in Project CRIMP (Crime Reduction Involving Many People) uses intensive foot patrol of a small geographic area to combat a certain type of crime -- "jackrolling," i.e., the robbery of transients. Interviews with representatives of the Portland Police Bureau, May 1975.

39. The Rochester, New York, Police Department in Project PAC-TAC (Police and Citizens Together Against Crime) uses foot patrol teams made up of one sworn officer and one civilian. Interviews with representatives of the Rochester Police Department, May 1975.

40. Interviews with representatives of the Los Angeles County, California, Sheriff's Department concerning Project Sky Knight, May 1975. Also: Peter J. Pitchess and C. Robert Guthrie, Project Sky Knight: A Demonstration in Aerial Surveillance and Crime Control (Washington, D.C.: U.S. Government Printing Office , 1968).

41. These programs were initiated under the Patrol Emphasis Program sposored by LEAA Region V under the direction of Mr. Terrence Dougherty, Region V Police Specialist.

42. Interviews with representatives of the Cleveland Heights, Ohio, Police Department, August 1975.

43. See, for example: Richard C. Larson, Urban Police Patrol (Cambridge, Massachusetts: MIT Press, 1972); J.F. Elliott,"Random Patrol," Proceedings of the Second National Symposium on Law Enforcement Science and Technology, S.I. Cohen, ed. (Chicago, Illinois: ITT Research Institute, 1968).

44. In response to the National Patrol Survey question: "Do you direct uniformed officers to vary their routes of travel on a random basis?," over 90% of the responding departments indicated that this was the policy of the department.

45. Wayne Bennett and John R. DuBois, The Use of Probability Theory in the Assignment of Police Patrol (Washington, D.C.: Law Enforcement Assistance Administration, July 1970).

46. See, for example: J. Thomas McEwen, "A Mathematical Model for the Prediction of Police Patrol Workload," a paper presented at the TIMS/ORSA Joint National Meeting, San Francisco, California, May 1968; St. Louis Police Department, Allocation of Patrol Manpower Resources in the St. Louis Police Department: Supplementary Report (St. Louis, Missouri: St. Louis Police Department, 1969).

47. St. Louis Police Department, Automatic Resource Allocation Control (St. Louis, Missouri: St. Louis Police Department, March 1975).

48. Cleveland Heights interviews, *op. cit.*

49. Interviews with representatives of the Pueblo, Colorado, Police Department, May 1975.

50. Interviews with representatives of the Quincy, Massachusetts, Police Department, May 1975.

51. Los Angeles County interviews, and Pitchess, *op. cit.*

52. Kansas City Police Department, *op. cit.*

53. Interviews with representatives of the Worcester, Massachusetts, Police Department, May 1975.

54. Interviews with representatives of the Fremont, California, Police Department, May 1975.

55. Rochester interviews, *op. cit.*

56. Cleveland Heights interviews, *op. cit.* See also: Patrol Emphasis Programs in cities such as Beloit, Wisconsin; Duluth, Minnesota; and Evansville, Indiana.

57. Pueblo interviews, *op. cit.*

58. Interviews with representatives of the Denver Police Department, May 1975.

59. Quincy interviews, *op. cit.*

60. Los Angeles County interviews and Pitchess, *op. cit.*

61. Kelling, *et al.*, A Technical Report, *op. cit.*, pp. 498-510.

62. The Cleveland Heights Police Department records the number of miles driven by each patrol vehicle on each shift in order to determine levels of patrol activity.

63. St. Louis Police Department, Automatic Resource Allocation Control, *op. cit.*, and interviews with representatives of the St. Louis Police Department, May 1975.

64. The Boston Police Department, for example, has adopted as its goal response to 90% of all calls for service within a specified amount of time.

65. Quincy interviews, *op. cit.*

66. Boston interviews, *op. cit.*

67. Cleveland Heights interviews, *op. cit.*

68. Pueblo interviews, *op. cit.*

69. Interviews with representatives of the Miami Beach Police Department concerning the department's "10-4" program, May 1975.

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71. Interviews with representatives of the San Diego Police Department, May 1975. Also: San Diego Police Department, Community Profiling and Police Patrol: Final Staff Report of the Community Profile Development Project (San Diego, California: San Diego Police Department, 1974).

72. Interviews with representatives of the Kansas City, Missouri, Police Department concerning directed and interactive patrol, May 1975.

73. Interviews with representatives of the University City, Missouri, Police Department, May 1975.

74. Worcester interviews, *op. cit.*

75. Fremont interviews, *op. cit.*

76. See: Victor A. Kowalewski, "Police and Social Service Agencies: Breaking the Barriers," The Police Chief, October 1975, pp. 259-260.

77. Data from the Science Center's National Patrol Survey indicate that 90% of all responding departments refer calls for service to other agencies, but the data do not indicate the extent to which this is done either in lieu of or in conjunction with police response.

78. For a typical example, see: The President's Commission on Law Enforcement and the Administration of Justice, Task Force Report: The Police, *op. cit.*, pp. 167-168.

79. Interviews with representatives of the Menlo Park, California, Police Department, May 1975.

80. Interviews with representatives of the Lakewood, Colorado, Department of Public Safety, May 1975.

81. Bloch and Anderson, *op. cit.*

82. Radio interview with Chief R. Fred Ferguson, Riverside, California, broadcast over station WCAU, Philadelphia, Pennsylvania, October 14, 1975.

83. San Diego Police Department, *op. cit.*, and interviews with representatives of the San Diego Police Department, *op. cit.*

84. Kansas City interviews, *op. cit.*

85. St. Louis Police Department, Automatic Resource Allocation Control, *op. cit.*

86. Cleveland Heights interviews, *op. cit.*

87. San Diego interviews, *op. cit.*

88. Menlo Park interviews, *op. cit.*

89. Lakewood interviews, *op. cit.*

90. Lakewood Department of Public Safety, Lakewood Community Attitude Survey, III (Lakewood, Colorado: Lakewood Department of Public Safety, 1973).

CHAPTER TWO: AN ORIENTATION TOWARDS KNOWLEDGE

1. This research hierarchy has been adapted from: William McGreevey, *et al.*, The Policy Relevance of Recent Social Research on Fertility (Washington, D.C.: Smithsonian Institute, 1974), pp. 61-64.

CHAPTER THREE: DEPLOYMENT OF PATROL UNITS

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3. John E. Boydstun, San Diego Field Interrogation Final Report (Washington, D.C.: The Police Foundation, 1975), p. 15.

4. Samuel G. Chapman, ed., Police Patrol Readings (Springfield, Illinois: Charles C. Thomas, 1970), p. 292.

5. O.W. Wilson and Roy C. McLaren, Police Administration (New York: McGraw-Hill Book Company, 1972), p. 357.

6. *Ibid.*, pp. 689-704. This appendix, entitled "Allocation and Distribution of Police Patrol Manpower," describes one approach for incorporating "patrol hazards" into deployment decisions.

7. R. C. Larson, Urban Police Patrol (Cambridge, Massachusetts: MIT Press, 1972), p. 37.

8. J. S. Kakalik and S. Wildhorn, Aids to Decision Making in Police Patrol (Washington, D.C.: National Technical Information Service, 1971).

9. Chapman, *op. cit.*, p. 294; and Wilson and McLaren, *op. cit.*, pp. 666-688.

10. Kakalik and Wildhorn, *op. cit.*

11. Larson, *op. cit.*, p. 38.

12. Interviews with representatives of numerous departments throughout the country.

13. Cleveland Heights, Ohio, Division of Police, Grant Project Summary, Police Patrol Emphasis, submitted to the Law Enforcement Assistance Administration, U.S. Department of Justice, December 1975; and interviews with representatives of the Cleveland Heights Police Department, August 1975.

14. Minneapolis Police Department, Regular Quarterly Report on Police Patrol Emphasis Program, submitted to the U.S. Department of Justice, LEAA, October 10, 1975.

15. Larson, *op. cit.*, p. 133.

16. James D. Caldwell and James N. Nehe, "Patrol Distribution in Arlington County," Police, September 1974, pp. 47-50; and interviews with representatives of the Arlington County Police Department, May 1975.

17. *Ibid.*, p. 47.

18. J. Thomas McEwen, "A Mathematical Model for Prediction of Police Patrol Workload," a paper presented at the TIMS/ORSA Joint National Meeting, San Francisco, California, May 1968.

19. See: Los Angeles Police Department, Advance Planning Division, Automated Deployment of Available Manpower Project: Final Report Phase I; Final Report Phase II-A, and Final Report Phase II-B (Los Angeles, California: Los Angeles Police Department, n.d.); Systems Development Corporation, PATRIC Design Requirements: Volumes I and II (Santa Monica, California: Systems Development Corporation, 1972); and Hughes Aircraft Company, Design Study and Master Plan for an Improved Command Control Communications System Serving the City of Los Angeles: Final Report (Los Angeles, California: Hughes Aircraft Company, 1971).

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25. Interviews with representatives of the Worcester Police Department, May 1975.

26. Fremont Police Department, Operations Directive (Fremont, California: Fremont Police Department, 1974); and interviews with representatives of the Fremont Police Department, May 1975.

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31. Raymond L. Hoobler and Ken Fortier, "A Computer-Aided Dispatch System," Police Chief, October 1975, pp. 22-26.

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61. Interviews with representatives of numerous departments throughout the country.

62. *Ibid.*

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10. Albert J. Reiss, Jr., The Police and the Public (New Haven: Yale University Press, 1971), p. 167.

11. John E. Angell *et al.*, Police Consolidation Project: Staff Report (Portland: Portland-Multnomah County, Bureau of Central Services, 1975), p. 81.

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13. Thomas F. Adams, Police Patrol: Tactics and Techniques (Englewood Cliffs: Prentice-Hall, Inc., 1971), pp. 126-129.

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17. George E. Berkley, The Democratic Policeman (Boston: Beacon Press, 1969), p. 3.

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63. Reiss, *op. cit.*, p. 162.

64. Knapp Commission, *op. cit.*

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67. It has been reported, for example, that in Chicago and New York City, frequent transfers of officers have been used to reduce the solidarity of work groups which was thought to foster corruption. See: Lawrence W. Sherman, "Introduction: Toward a Sociological Theory of Police Corruption" in Lawrence W. Sherman, ed., Police Corruption: A Sociological Perspective (Garden City, New York: Anchor Books, 1974), pp. 35-36.

68. Interviews with former administrators of the New York Police Department, December 1975.

69. Edward Doyle and George D. Oliver, "An Invitation to Understanding: Workshop in Law Enforcement Integrity," The Police Chief, May, 1972, pp. 34 & 44.

70. Goldstein, *op. cit.*, presents an excellent, recent discussion of these and other approaches in greater detail than can be provided here.

CHAPTER FIVE: IN-SERVICE TASK ASSIGNMENTS

1. The theme and content of this chapter was heavily influenced by the recent work of members of the Kansas City, Missouri Police Department and the Police Foundation's Kansas City Evaluation Staff.

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3. The President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology (Washington, D.C.: Government Printing Office, 1967), p. 12.

4. O. W. Wilson, and Roy C. McLaren, Police Administration, 3rd ed. (New York: McGraw-Hill, Inc., 1972), pp. 319-362.

5. See, for example, National Advisory Commission on Criminal Justice Standards and Goals, Police (Washington, D.C.: Government Printing Office, 1973), p. 192, and Richard A. Myren, "The Role of the Police" in Police Patrol Readings, ed. Samuel G. Chapman (Springfield, Illinois: Charles C. Thomas, 1970), pp. 17-41.

6. National Commission on Productivity, Opportunities for Improving Productivity in Police Services (Washington, D.C.: Government Printing Office, 1973), pp. 29-36.

7. George L. Kelling *et al.*, The Kansas City Preventive Patrol Experiment: A Summary Report and A Technical Report (Washington, D.C.: Police Foundation, 1974).

8. Kelling *et al.*, Summary Report, *op. cit.*, p. 3.

9. *Ibid.*, p. 3.

10. *Ibid.*, p. vi.

11. *Ibid.*, p. 5.

12. For example, see: Edward M. Davis and Lyle Knolwes, "A Critique of the Report: An Evaluation of the Kansas City Preventive Patrol Experiment," The Police Chief, June, 1975, pp. 22, 24-27; Joseph D. McNamara, "The Kansas City Preventive Patrol Experiment," The Police Chief, June, 1975, p. 30; Patrick V. Murphy, "The Davis-Knowles Observations on the Kansas City Preventive Patrol Experiment: A Summary Report," The Police Chief, June, 1975, p. 30; George L. Kelling and Tony Pate, "The Davis-Knowles Critique of the Kansas Preventive Patrol Experiement," The Police Chief, June, 1975, pp. 32-34, 36 & 38; Charles E. Brown, "Evaluation Research in Policing: The Kansas City Experience," The Police Chief, June, 1975, pp. 40 & 42-45; and Harold Tytell, "Citizens, Patrol Commanders and the Kansas City Preventive Patrol Experiment," The Police Chief, November, 1975, pp. 42-43. The controversy surrounding the experiment also came up constantly in interviews with representatives of numerous departments throughout the country.

13. Kelling *et al.*, Technical Report, *op. cit.*, p. 36.

14. *Ibid.*, p. 29.

15. *Ibid.*, pp. 36-53.

16. *Ibid.*, p. xviii.

17. Interviews with representatives of the Kansas City, Missouri Police Department and the Police Foundation's Kansas City Evaluation Staff, May 1975. Interviews with representatives of numerous departments throughout the country. And, Davis and Knowles, *op. cit.*, and Kelling and Pate, *op. cit.*

18. Kelling *et al.*, Technical Report, *op. cit.*, pp. B-1 throught B-5.

19. *Ibid.*, p. E-1.

20. *Ibid.*, p. 490.

21. *Ibid.*, p. 496

22. *Ibid.*, p. 56-57.

23. *Ibid.*, p. 71.

24. Interviews with representatives of the Cleveland Heights Police Department, August 1975.

25. New York Police Department, "Operation 25," in Chapman, *op. cit.*, p. 342-353.

26. S. James Press, Some Effects of an Increase in Police Manpower in the 20th Precinct of New York City, Report No. R-704-NYC (New York: Rand Institute, 1971).

27. James Q. Wilson, Thinking About Crime (New York: Basic Books, 1975), p. 86.

28. Kelling *et al.*, Technical Report, *op. cit.*, pp. 498-511, and Kansas City Police Department, Directed Patrol, (unpublished manuscript) p. 352.

29. Albert J. Reiss, Jr., The Police and the Public (New Haven: Yale University Press, 1971), pp. 94-95.

30. Michael E. O'Neill and Carlton J. Bloom, "The Field Officer: Is He Really Fighting Crime?," The Police Chief, February 1972, pp. 30-32, and Kelling, Technical Report, *op. cit.*, p. 498.

31. These figures are departmental responses to the Science Center's National Patrol Survey.

32. Interviews with representatives of the Worcester Police Department, May 1975.

33. Interviews with representatives of the Cleveland Police Department, May 1975.

34. Interviews with representatives of the Fremont Police Department, May 1975.

35. Interviews with representatives of the Wilmington Police Department, July 1975.

36. The National Advisory Commission on Criminal Justice Standards and Goals, *op. cit.*, p. 192 states that "some cities have assigned many non-enforcement tasks to other agencies." However, it cites only two examples, licensing dogs and towing vehicles, neither of which seem very significant. In general, it appears that in most jurisdictions police departments are considered to be the primary source of 24 hour emergency aid for a wide variety of problems and they usually attempt to meet this expectation.

37. Kansas City interviews, *op. cit.*

38. James Q. Wilson, Varieties of Police Behavior: The Management of Law and Order in Eight Communities (New York: Atheneum, 1972), pp. 57-70.

39. Kansas City interviews,

40. Interviews with representatives of the San Diego Police Department, May 1975, and San Diego Police Department, Community Profiling and Police Patrol: Final Staff Report of the Community Profile Development Project (San Diego: San Diego Police Department, 1974).

41. For example, Kakalik and Wildhorn conclude their review of patrol practices by noting that, "In short, between one third and one half of all patrol time is devoted to preventive patrol and the police cannot specify with confidence what effect it has on crime and criminal apprehension." James S. Kakalik and Sorrel Wildhorn, Aids to Decision-making in Police Patrol (Santa Monica, California: Rand Corporation, 1971), p. 72. Other reviewers have reached similar conclusions. See, for example: Richard C. Larson, Urban Police Patrol Analysis (Cambridge,Mass: MIT Press, 1972), p. 33; American Bar Association, Standards Relating to the Urban Police Function, Project on Standards for Criminal Justice, Institute of Judicial Administration (New York, 1972), p. 56; and, James Q. Wilson, Thinking About Crime, *op. cit.*, p. 96.

42. Interviews with representatives of the Portland Police Bureau, the Multnomah County Police Consolidation Project, the San Diego Police Department, and the University City, Missouri Police Department , May 1975. Departments with team policing also commonly emphasize these types of activities. See: the National Evaluation Program study of Team Policing prepared by the National Sheriff's Association.

43. Interviews with representatives of the Rochester, New York Police Department, May 1975. There is some evidence that this practice improves clearance rates, but the reasons for the improvement are not entirely clear. See: Peter B. Bloch and Cyrus Ulberg, Auditing Clearance Rates (Washington, D.C.: Police Foundation, 1974).

44. Worcester, Massachusetts interviews, *op. cit.*

45. John E. Boydstun, San Diego Field Interrogation: Final Report (Washington, D.C.: Police Foundation, 1975).

46. See: David J. Bordau and Larry L. Tifft, "Citizen Interviews, Organizational Feedback and Police-Community Relations," Law and Society Review, November, 1971, pp. 155-182; Wayland D. Pilcher, "The Law and Practice of Field Interrogation," Journal of Criminal Law, Criminology, and Police Science, December 1967, pp. 465-492; Charles A. Reich, "Police Questioning of Law-Abiding Citizens," in The Ambiguous Force: Perspectives on the Police, Arthur Niederhoffer and Abraham S. Blumberg, eds., (Waltham, Massachusetts: Ginn and Company, 1970), pp. 244-251; and Reiss, *op. cit.*, pp. 92-94.

47. Boydstun, *op. cit.*, p. 4.

48. *Ibid.*, p. 25 and 63.

49. *Ibid.*, p. 63.

50. *Ibid.*, p. 66.

1. For instance, see: John Angell, *et al.*, Police Consolidation Project: Staff Report (Portland, Oregon: Portland-Multnomah County Bureau of Central Services, 1974), p. 109; George E. Berkley, The Democratic Policeman (Boston, Massachusetts: Beacon Press, 1969), p. 63; and The President's Commission on Law Enforcement and Administration of Justice, Task Force Report: The Police (Washington, D.C.: U.S. Government Printing Office, 1967), pp. 167-168.

2. Robert Wasserman, *et al.*, Improving Police Community Relations (Washington, D.C.: LEAA, 1973), pp. 40-48.

3. David J. Bordua and Larry L. Tifft, "Citizen Interviews, Organizational Feedback and Police-Community Relations," in Law and Society Review, November 1971, pp. 155-182; and Peter H. Rossi, *et al.*, "Between White and Black: The Faces of American Institutions in the Ghetto," Supplemental Studies for the National Advisory Commission on Civil Disorders (Washington, D.C.: U.S. Government Printing Office, 1968), p. 104.

4. *Ibid.*, and W. Eugene Groves and Peter H. Rossi, "Police Perceptions of a Hostile Ghetto: Realism or Projection," Police in Urban Society, Harlan Hahn, ed. (Beverly Hills, California: Sage Publications, 1970), p. 181.

5. The President's Commission on Law Enforcement and Administration of Justice, *op. cit.*, p. 167.

6. Rossi, *et al.*, *op. cit.*, p. 109 and 111. Rossi and his colleagues found that while black officers preceived somewhat less hostility in black areas than their white counterparts, both groups of officers had similar impressions about the primary sources of citizen hostility in these areas.

7. Albert J. Reiss, Jr., The Police and the Public (New Haven, Connecticut: Yale University Press, 1971), p. 147.

8. Arthur Niederhoffer, Behand the Shield: The Police in Urban Society (Garden City, New York: Anchor Books, 1969), pp. 193-194.

9. Elliot M. Rudwick, "The Unequal Badge," Police Patrol Readings, Samuel G. Chapman, ed. (Springfield, Illinois: Charles C. Thomas, 1970), pp. 89-98.

10. Jesse Rubin, "Police Identity and the Police Role," The Police and the Community, Robert F. Steadman, ed. (Baltimore, Maryland: The Johns Hopkins University Press, 1972), pp. 37-39.

11. Nicholas Alex, Black in Blue (New York: Appleton-Century-Crofts, 1969).

12. The President's Commission on Law Enforcement and Administration of Justice, *op. cit.*, p. 167.

13. Melvin B. Pendland and Wayne G. Gay, "Foot Patrols: The Fort Worth Experience," The Police Chief, April 1972, pp. 46-48.

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28. The only published criticism of the study that we have found is Jade T. Walsh, "Some Questions in Re: 'Policewomen on Patrol'," Police Chief, July 1975, pp. 20-22.

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34. *Ibid.*

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38. For example, compare the n's for the two tables on p. 117 of Bloch and Anderson, Volume II, *op. cit.* Both tables display data drawn from the same source, but the first shows 49 women assigned to patrol, while the second shows only 40. The tables on p. 118 of the same volume have similar discrepancies. Similarly, table I-1 on p. 7 of this volume indicates that as of July 1973, 21 women had been reassigned to non-patrol duties within District 7, while the table on the next page appears to show that 17 were reassigned within the district at exactly the same time. The report is replete with inconsistent data of this nature.

39. *Ibid.*, p. 27.

40. *Ibid.*, p. 9.

41. *Ibid.*

42. *Ibid.*

43. Bloch and Anderson, Volume I, *op. cit.*, p. 36.

44. Bloch and Anderson, Volume II, *op. cit.*, p. 18.

45. Bloch and Anderson, Volume I, *op. cit.*, p. 6.

46. *Ibid.*, p. 36.

47. Bloch and Anderson, Volume II, *op. cit.*, p. 12.

48. *Ibid.*, p. 61.

49. Bloch and Anderson, Volume I, *op. cit.*, p. 38. A similar statement appears on p. 7 of the same volume.

50. *Ibid.*, p. 7.

51. Bloch and Anderson, Volume II, *op. cit.*, pp. 15-16. We were unable to find figures for return rates by distrcit for the 1972 survey.

52. Bloch and Anderson, Volume I, *op. cit.*, p. 5.

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54. *Ibid.*, pp. 34-35.

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57. Bloch and Anderson, Volume II, *op. cit.*, p. 9.

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70. The legal issue has been raised in Peter B. Bloch, "Reply to Questions Raised in Re: 'Policewomen on Patrol'," Police Chief, July 1975, pp. 22-23; and in discussions with Peter Bloch and Deborah Anderson. It is also briefly discussed at several points in Bloch and Anderson, Volume I, *op. cit.* For a discussion of the administrative relevance of the study see: Volume I, *op. cit.*, pp. 61-63.

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