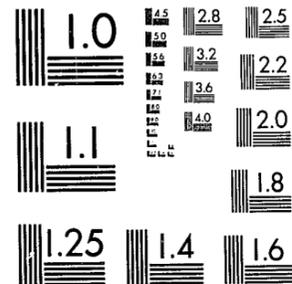


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**AN
ALTERNATIVE
APPROACH
IN
POLICE
PATROL:**



**THE
WILMINGTON
SPLIT-FORCE
EXPERIMENT**

National Institute of Law Enforcement and Criminal Justice
Law Enforcement Assistance Administration
United States Department of Justice

**AN ALTERNATIVE
APPROACH IN
POLICE
PATROL: THE
WILMINGTON THE
SPLIT-FORCE
EXPERIMENT**

**by James M. Tien, Ph.D.
James W. Simon
Richard C. Larson, Ph.D.**

April 1978



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FOREWORD

The lion's share of an urban police department's resources is devoted either directly to or in support of police patrol activities. Traditionally, it has been assumed that the routine patrol conducted by marked police vehicles in between responding to calls for service can have a significant impact on the prevention of crime and the citizens' perception of safety. In 1974, the results of a year-long preventive patrol experiment in Kansas City, Missouri cast doubt on this traditional assumption, and the effectiveness of routine preventive patrol has since been a matter of widespread debate and concern.

The continuing search for more effective approaches in police patrol led the Police Division of the National Institute of Law Enforcement and Criminal Justice to fund, in 1975, an experiment in Wilmington, Delaware to test the split-force patrol concept. The concept is based on the hypothesis that greater effectiveness could be achieved if the call-for-service response and crime prevention functions of a police patrol force could be split, each assigned to an organizationally separate but integral part of the patrol force. The Wilmington split-force patrol experiment was formally conducted for a period of one year (i.e., from December 1, 1975 through November 30, 1976) and was expertly monitored and evaluated by Public Systems Evaluation, Inc. The evaluation findings are contained in this report.

As the findings indicate, the split-force experiment has significantly increased the efficiency of Wilmington's patrol force, without any adverse impact on its effectiveness. The experiment has not only shown that the split-force approach can be a significantly productive alternative in police patrol, but also that the approach can forge an essential bridge between the response and investigative functions of a police department. In addition, the evaluation study has identified some potential problems and highlighted other policy-relevant findings, all of which have profound implications for police administrators.

We at the Wilmington Bureau of Police believe that the split-force approach constitutes a major breakthrough in the field of police patrol. Our satisfaction with the approach is reflected in the fact that we have continued with the split-force patrol program, past the experimental period. We urge other police departments to consider the split-force patrol concept. We also urge police administrators to become involved in the on-going debate and search for more effective and productive methods in policing.

Harry F. Manelski
Chief, Wilmington Bureau of Police
City of Wilmington, Delaware

PREFACE

On June 1, 1975, the Police Division of the National Institute of Law Enforcement and Criminal Justice (NILECJ) awarded the Wilmington Bureau of Police (WBP) an eighteen-month grant to design and implement an *experiment* to test the efficacy of the *split-force* patrol concept. Split-force patrol is an approach in patrol *specialization*, based on the separation of the call-for-service (CFS) response and crime prevention functions of a police patrol force. In order to effect the split-force concept, the WBP had to increase the productivity of its CFS response force (i.e., the "Basic" patrol force) so that a crime prevention force (i.e., the "Structured" patrol force) could be established. In addition to increasing Basic productivity, it is the hypothesis of the split-force concept that a *dedicated* and *directed* Structured force could also increase the patrol force's effectiveness in carrying out its crime prevention function.

The NILECJ grant also allowed the WBP to contract with Public Systems Evaluation, Inc. (PSE) to provide limited technical assistance in the design of the experiment; monitoring support during the course of the experiment; and, most importantly, evaluative analysis of the resultant findings. Although the technical assistance and monitoring efforts are briefly mentioned in this report, it is primarily an *evaluation* report. In the evaluation of the Wilmington split-force experiment, PSE has not only attempted to determine the efficacy of the split-force concept but also the relevance and impact of the individual elements which effected the concept. In addition, PSE has attempted to view the Wilmington experience from a *national* perspective. Thus, the findings documented herein should be relevant to policy considerations for not only the Wilmington Bureau of Police, but other police departments as well.

It should be noted that, in addition to PSE, the WBP also retained the services of three individual consultants who provided advice and input to the split-force experiment. They include Mr. Keith Bergstrom of the City of Miami, Mr. Scott Cown of the Delaware Council on Crime and Justice, and Dr. Howard Lamb of the National Training Laboratories.

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SUMMARY

This evaluation report is the product of an eighteen-month effort undertaken by Public Systems Evaluation, Inc. (PSE) in connection with the design and implementation of an *experiment* to test the efficacy of the *split-force* patrol concept. The split-force patrol concept is a significantly different approach in patrol *specialization*, based on the separation of the call-for-service response and crime prevention functions of a police patrol force and the subsequent assignment of each function to a separately organized group within the patrol force. The experiment was conducted by the Wilmington Bureau of Police and was funded by the National Institute of Law Enforcement and Criminal Justice of the Law Enforcement Assistance Administration, U.S. Department of Justice.

DESIGN OF EXPERIMENT

In order to implement the concept, the Wilmington Bureau of Police (WBP) had to increase the *efficiency* of its call-for-service response force (i.e., the *Basic* patrol force) so that a dedicated and directed preventive patrol force (i.e., the *Structured* patrol force) could be formed. Increasing response efficiency and insuring split-force integrity caused the WBP to better allocate its patrol resources and streamline its patrol procedures.

A number of decisions were made in regard to increasing the efficiency of the response-oriented, Basic force. Specifically, it was decided that Basic patrol units could be more strategically deployed around-the-clock, in better *proportion* to the temporal distribution of the call-for-service demand; that the unit response sectors could be correspondingly *adapted*; that every call-for-service could be given a *priority* designation and dispatched, within each priority, on a *first-come, first-served* basis; that, if necessary, a non-critical call-for-service could be *formally* delayed; that roll-call procedures could be *streamlined*; that the number of Basic units manned by two officers could be *reduced*; and that, in between handling calls for service, Basic units could be given *fixed-post* assignments within their respective response sectors.

Unlike the Basic patrol elements, the Structured patrol elements were purposefully left undefined during the planning phase: it was felt that flexibility was required to allow the Structured force to develop into an effective crime prevention unit. Instead, two guiding principles were to be adhered to by the Structured force. First, the Structured force was to be *dedicated* to the primary function of preventing crime. It was, however, required, as a secondary function, to provide backup to Basic patrol units in felony incidents, or, if necessary, to respond to critical calls for service. Second, the Structured force was to be *directed* in its activities, with support from a small Special Operations Unit which provided crime analysis input. Operating under these two

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principles, the activities of the Structured force have gradually evolved into two main areas: *directed, problem-oriented patrol* and *immediate, incident-oriented investigation*.

CONDUCT OF EXPERIMENT

The Wilmington split-force experiment was formally conducted for a period of one year (i.e., from December 1, 1975 through November 30, 1976). Except for some initial problems in data collection and training, the Wilmington Bureau of Police (WBP) has been able to carry out the split-force experiment with surprising ease and without any overwhelming problems. This accomplishment is all the more significant in light of the broad scope and complex nature of the experiment.

In terms of output measures on a *Before* (i.e., 9/1/74-8/31/75) and *During* (i.e., 12/1/75-11/30/76) comparison basis, the Part I crime level in Wilmington has decreased slightly (-6.1%), while Wilmington residents continue to be quite satisfied with the services provided by the WBP. Coincidentally, the efficiency of Basic officers in terms of call-for-service workload per Basic officer has increased significantly (+20.6%), contributed in part by a conversion of two-officer sector cars into one-officer cars. Although the conversion has caused an increase in the number of assists--slightly increasing the call-for-service workload (+2.9%)--it has not resulted in any officer-safety problems. The Structured officers, on the other hand, have contributed to a substantial increase in Part I crime clearances (+105.5%) by the Patrol Division, at the partial expense of the Detective Division whose own clearances have dropped dramatically (-61.4%), causing an overall decrease in the WBP's crime clearance rate (-28.0%). The increase in Patrol Division clearances can be primarily attributed to the *immediate* investigative follow-up performed by Structured officers in felony incidents; this outcome was predicted by a recent Rand detective study. The conflict and *communication gap* between Structured officers and detectives--which contributed to the overall decrease in the WBP's crime clearance rate--can be mitigated by a more function-oriented organization structure and better management of detective workload.

Although the majority of WBP officers regard the split-force concept as an effective approach, only one third of the officers would like the split-force to be continued in Wilmington after the experiment. Three factors have contributed to the officers' dislike of the split-force (as it has been implemented in the WBP): specifically, the divisiveness engendered by the conflict between the Structured Unit and the Detective Division; the concern over the lack of sector identity (due to changing sector configurations and first-come, first-served dispatching procedure); and the boredom with fixed-post assignments. Three other factors--unrelated to the experiment--have, however, been on the minds of the officers: specifically, the concern over a shortage of WBP manpower (the Bureau is approximately 20 men below the authorized strength of 271); the anticipated inertial resistance to change (especially because the split-force experiment has impacted *all* the units of the WBP); and an underlying

morale problem in the WBP (as a result of ill feelings between the WBP officers and the City administration, caused by disagreements in connection with the last labor negotiation between the police and the City in 1974).

Officials of the WBP, including the new Chief of Police, have been very pleased with the split-force patrol experiment, especially with the resultant increase in productivity. They have decided to continue with the split-force program, past its experimental period. The WBP officials' appreciation of the split-force approach is in part due to the increased command and control potential offered by the approach. The WBP officials feel that the approach makes the Basic and Structured forces each *accountable* for fulfilling a specific function. Split-force procedures have also increased officer accountability.

SPLIT-FORCE PATROL

Based on the Wilmington experience, the following conclusions can be stated. The split-force patrol approach:

1. Causes Significant Increase in Call-for-Service (CFS) Response Productivity
 - The *very act* of forming a dedicated, prevention-oriented Structured force from an *existent*, traditionally-oriented patrol force causes the remaining, response-oriented Basic force to be more *efficient*, without compromising its *effectiveness*.
 - The increase in Basic efficiency can be *practically* achieved by any one or combination of three methods. First, careful *planning* can minimize the workload imbalance among Basic patrol units, allowing for increased unit efficiency. Second, a *decision* to decrease the number of two-officer units would correspondingly increase the CFS workload per officer. Third, judicious *management* of CFS demand can reduce random demand peaks and/or decrease the level of demand that requires Basic patrol unit response, allowing for a more efficient allocation of Basic resources.
2. Results in Significant Increase in the Patrol Division's Arrest-Related Productivity
 - The formation of a dedicated, prevention-oriented Structured force provides the Patrol Division with Structured officers who could engage in arrest-related activities, resulting in an increase in the *quantity* of arrests and clearances--at the *partial* expense of the Detective Division--without seemingly compromising on the *quality* of the arrests.
 - The increase in arrest-related productivity can be primarily attributed to the *immediate* incident-oriented investigation

conducted by Structured officers at or near the scene of the incident. Secondly, it can be attributed to the *directed* problem-oriented patrol undertaken by Structured officers.

3. Allows for Increase in Police Professionalism and Accountability

- The rotation of patrol officers between the Basic and Structured forces enables the officers to focus on and *develop* their response-oriented and prevention-oriented skills, respectively.
- The Structured force does not only contribute to patrol specialization but can also, in effect, serve as a *bridge* between the response-oriented, Basic force and the specialized Detective force. It is both a functional and a professional bridge, serving to expand the functional skills and the professionalism of police officers.
- The implementation of the split-force approach makes the Basic and Structured forces each *accountable* for fulfilling a specific function. Officer accountability is also increased through greater *direction* of officer duties and activities.

The Wilmington split-force patrol experiment has also bridged a *knowledge gap* that was recently manifested by the findings of two precedent setting studies. The gap occurred when, on the one hand, the Kansas City Preventive Patrol Experiment questioned the effectiveness of the traditional method of conducting preventive patrol, and, on the other hand, the Rand Criminal Investigation Study questioned the effectiveness of the traditional method of conducting criminal investigation. The Wilmington experiment has identified partial answers to these questions; namely, that the assignment of the crime prevention function to a separate but integral part of the patrol force provides a more viable framework for undertaking preventive patrol and that the conduct of immediate investigative follow-up in felony incidents results in a greater likelihood for their eventual clearance or solution.

CONCLUDING REMARKS

The Wilmington experience has also resulted in other policy-relevant findings, including the fact that there is a *paucity* of patrol methods for explicitly effecting the crime prevention function (most related methods are directed at apprehension); the conclusion that a *reduction* in the proportion of two-officer patrol cars need not compromise officer safety, as assist or back-up cars can be sent (there seems to be a linear relationship between the level of assists and the proportion of two-officer cars); and the indication that *management of police demand* is a potentially effective and efficient approach in the delivery of police

services (inasmuch as 86% of all calls for service are *non-critical* in nature, and citizen satisfaction is a function of *expectation*).

Finally, the overall positive evaluation findings contained herein suggest that the split-force approach is worthy of emulation by other police departments. This suggestion does not imply that the Wilmington experience is conclusive, nor that the Wilmington split-force design is unique. On the contrary, the suggestion, if followed, would lead to different types of split-force programs in different jurisdictions. Monitoring and evaluation of these programs would provide a more solid data base on which the split-force patrol approach can be definitively judged. The Wilmington split-force patrol experiment has contributed to this data base.

ACKNOWLEDGMENTS

The authors would like to acknowledge the support of the Police Division of the National Institute of Law Enforcement and Criminal Justice (NILECJ), the City of Wilmington, Delaware, and the Wilmington Bureau of Police (WBP). More specifically, the following individuals deserve to be mentioned by name.

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- Kenneth L. Becker
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- John T. McCool
(Former Chief, WBP)
- Harry F. Manelski
(Chief, WBP)
- Nicholas M. Valiante
(Inspector, WBP and Project Director, Split-Force Experiment)
- James T. Nolan
(Captain, WBP and Project Administrator, Split-Force
Experiment)

The vision and dedication of the above individuals made possible the successful realization of the split-force patrol concept. Their understanding and support of a concurrent monitoring and evaluation effort reflect a genuine concern for the continued development and dissemination of effective police patrol methods. Their contribution to this report is acknowledged, but the authors are solely responsible for the points of view and opinions expressed herein.

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Finally, the authors would like to dedicate this report to the dozens of WBP officers and the countless number of police officers throughout the nation who have allowed themselves to be questioned, observed and evaluated.

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Section 2. Suffice it to say that the WBP, as a police department, is

quantitative performance statistics, while the elements of the
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PART I: BACKGROUND

- 1 INTRODUCTION
- 2 DESIGN OF EXPERIMENT
- 3 EVALUATION OF EXPERIMENT

[Experiment is]...an operation carried out under controlled conditions to...test or establish a hypothesis...

Webster's Dictionary, 1969

1 INTRODUCTION

This is an *evaluation* report of an *experiment* in police patrol: an experiment to *test* the *split-force* patrol concept. As such, the report determines the *utility* or *efficacy* of the concept. The determination is obviously influenced by the set of experimental conditions or elements that characterize the experiment, as it has been implemented in the City of Wilmington, Delaware. Thus, the evaluation findings are based upon the Wilmington experience: more specifically, upon a set of elements which the Wilmington Bureau of Police decided were necessary in order to effect the concept in *its* jurisdiction. However, as noted in the latter sections of the report, the Wilmington experience has been able to provide a *reliable* knowledge base on which broader and more policy-relevant determinations can be made. This evaluation report, then, views the Wilmington experience from a *national* perspective.

In this introductory section, we first discuss the split-force concept in Section 1.1 and then review the context of the Wilmington experiment in Section 1.2. The scope of the report is outlined in Section 1.3.

1.1 SPLIT-FORCE CONCEPT

The split-force concept is based on the recognition that the patrol division of an urban police department is primarily responsible

for two of the four major police functions; namely, the call-for-service (CFS) response and the crime prevention functions. As illustrated in Exhibit 1.1,* the CFS response function is directed at apprehending offenders, providing emergency service and maintaining community security; while the crime prevention function is directed at deterring crime, detecting crime and apprehending offenders.

Exhibit 1.1
Police Objectives and Functions

Police Objectives	Police Functions			
	Call-for-Service Response	Crime Prevention	Criminal Investigation	Community Relations
1. Deter Crime	--	x	x	--
2. Detect Crime	--	x	--	--
3. Apprehend Offenders	x	x	x	--
4. Provide Emergency Service	x	--	--	--
5. Maintain Community Security	x	x	x	x

It is, then, hypothesized that the two patrol functions could be carried out more effectively if they were each to be assigned to a separate patrol force. Thus, the splitting of the patrol force into

* It is to be noted that the framework depicted in Exhibit 1.1 is only one way of viewing the field of policing. Although other frameworks have been advanced by police scholars, there is, as yet, no widely accepted definition of police objectives and functions.

two groups allows each group to *concentrate* on a single patrol function. This is obviously different from the traditional patrol method, where a call-for-service response unit is presumably conducting preventive patrol in between handling calls for service. The split-force patrol concept is, in essence, an approach in patrol *specialization*.

Various forms of the split-force approach have been implemented in many cities. Worcester, Massachusetts, for example, has a force of police service aides (i.e., civilian aides in uniform but unarmed and without power of arrest) who concentrate on responding to non-critical calls for service [A.1-27].* New Haven, Connecticut has a directed patrol force concentrating on area-specific crime problems in a focussed manner [A.1-4 and A.1-20]; other cities (e.g., Kansas City) are also beginning to deploy directed patrols. Several cities have special strike forces which are formed to concentrate on specific crime problems [A.1-8, A.1-11, A.1-25 and A.1-29]. Other notable attempts at some form of split-force patrol occurred in Chicago [A.1-19] and St. Louis [A.1-26]. St. Louis presumably abandoned the approach because of perceived inequities between the two patrol forces, especially with respect to the perceived elitism of the crime prevention force.

However, what finally evolved in Wilmington is a split-force patrol program that is *unique* to date: its Structured, or crime prevention, force is *more* than just a directed force or a strike

* For convenience, all text references are listed in Exhibit A.1 in Appendix A.

force. The Structured force has become both a functional and a professional *bridge* between the response-oriented patrol force and the investigation-oriented detective force. The significance of the Wilmington split-force experiment in relation to other national studies and programs is discussed at appropriate points in the text of the report. The context of the experiment is discussed next.

1.2 CONTEXT OF EXPERIMENT

In viewing the Wilmington split-force patrol experiment, it is important to realize that the experiment has not only affected *all* the organizational units in the Wilmington Bureau of Police but also the *manner* in which police services are provided in the City of Wilmington. The scope of the experiment is indeed broad; it is considered in Section 2. Here, we consider the context of the experiment, in terms of the City of Wilmington and the Wilmington Bureau of Police.

CITY OF WILMINGTON

Wilmington is some 15.7 square miles in size and it is the largest city in the State of Delaware. The City of Wilmington is well located, being some twenty miles south of Philadelphia, Pennsylvania and having direct rapid rail connection to Washington, D.C. In the 1970 Census, its resident population was recorded at 80,386, down from 95,827 in 1960, due primarily to a migration to the suburbs--which City officials feel has abated since 1970. The City is corporate headquarters for some of the largest U.S.

corporations, including E.I. duPont deNemours, Hercules and Columbia Gas System.

The demographic characteristics of the City's resident population are summarized in Exhibit B.6. For the most part, the characteristics are similar to those of other major U.S. cities. Like other cities during the past decade, Wilmington has experienced civil disorders, migration to the suburbs, erosion of its middle class, and other problems that have plagued the urban centers of America. In effect, Wilmington can be regarded as a typical small to medium sized U.S. city or, alternatively, as a microcosm of a larger city. In this respect, Wilmington provides an ideal laboratory for social experimentation; it is neither too large to be unmanageable, nor too small to be atypical.

WILMINGTON BUREAU OF POLICE

The Wilmington Bureau of Police (WBP) is currently staffed by 257 sworn officers, 19 cadets, 28 civilian police aides (i.e., performing mostly traffic-oriented functions) and 20 civilian support personnel. The WBP has an annual budget approaching six million dollars. The Patrol Division is, of course, the largest unit in the WBP; 59.8 percent of all the sworn officers are in patrol, while 13.6 percent are in the Detective Division. A more detailed breakdown of the WBP manpower is contained in Exhibit 4.1.

The organizational structure and basic operating procedures of the WBP are traditional and similar to those of other police departments. The structure and procedures are highlighted and reviewed in

Section 2. Suffice it to say that the WBP, as a police department, is not dissimilar to the majority of police departments. In fact, the WBP can be thought of as a "precinct" command in a large city like New York, or, alternatively, as a "district" command in a smaller city like St. Louis. The size of the WBP command and its relevancy to the split-force experiment is considered in Section 11.1.

1.3 SCOPE OF REPORT

The report is divided into five parts, containing eleven sections and three appendices. The reader who is just interested in *what* happened should peruse Part I, which contains the background sections, and read Part IV, which contains the evaluation results and national implications. Parts II and III, which discuss the process and output measures, respectively, attempt to explain *how* it happened. Part V contains the appendices.

In brief, Part I consists of three background sections. Section 1 defines the split-force patrol concept, discusses the context of the Wilmington split-force experiment, and reviews the scope of the report. Section 2 details the design of the experiment, including an exposition of the design considerations, an explanation of how the various split-force elements were decided upon, and a summary highlighting certain aspects of the program that was finally implemented. The philosophy, design and conduct of this evaluation are then summarized in Section 3.

Part II, consisting of the next four sections, Sections 4 through 7, deals with the various process measures. Section 4 contains the more

quantitative performance statistics, while the elements of the response-oriented and prevention-oriented patrol forces are discussed in Sections 5 and 6, respectively. Section 7 deals with patrol specialization issues.

Part III, encompassing the output measures, consists of Sections 8 and 9, which focus on the crime statistics and overall reactions, respectively.

Part IV concludes the main portion of the report with a summary of the evaluation results in Section 10 and a discussion of national implications in Section 11.

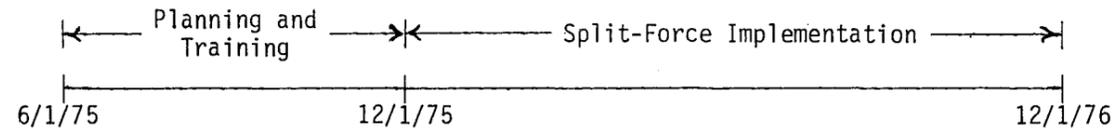
Finally, Part V, consisting of three appendices, includes a bibliography, a glossary and a complete summary of all the questionnaire survey results.

2 DESIGN OF EXPERIMENT

The initial proposal submitted by the Wilmington Bureau of Police (WBP) to the National Institute of Law Enforcement and Criminal Justice (NILECJ) was purposefully vague regarding the extent to and manner in which the WBP Patrol Division would split into the two function-oriented forces--the response-oriented, *Basic* patrol force and the prevention-oriented, *Structured* patrol force. It was obvious to the WBP that judicious and extensive planning was required before the split-force experiment could be detailed. As illustrated in Exhibit 2.1, the planning and training for the experiment occurred during the first six months, while the formal experiment lasted one year.

Exhibit 2.1

Overall Experiment Schedule



The culmination of the planning effort happened in mid-October, 1975, when top-level WBP personnel met for an intensive one-week working session; Public Systems Evaluation, Inc. (PSE) personnel provided technical assistance. At the suggestion of PSE, the working session took place at PSE headquarters, located in Cambridge, Massachusetts. The WBP attendees included the Commissioner of Public Safety, the Inspector of Administration, the Captain of Planning, and a Patrol Division sergeant.*

* Although the Chief of Police was scheduled to attend the session, he was unable to do so. Nevertheless, he was advised of and fully concurred with the decisions that were made.

Additionally, Wilmington's Director of Criminal Justice and Manpower Programs was also in attendance. Given the ranks and positions of the Wilmington officials and the need for an intensive and uninterrupted effort, it was imperative that the officials be free from the daily demands of their jobs. In hindsight, we feel that having the working session away from Wilmington contributed significantly to its success.

Two important points should be made regarding the Cambridge working session. First, PSE's role was limited to the provision of technical assistance: *all* resultant decisions were made by the WBP officials, who were coordinated and directed in their decisions by the Commissioner. In essence, PSE's participation included a) collecting baseline data and performing analysis; b) calibrating and running two computer-based patrol allocation models; c) reviewing relevant experiences of other police departments; and d) providing insight regarding the impact and interrelationships of various alternatives. Thus, PSE used its expertise to assist in the systematic formulation of alternatives, while the final split-force design was determined by the WBP officials.

The second point relates to the use of the two computer-based patrol allocation models. The manner in which the WBP officials interacted with the models can be regarded as an exemplary case study in the *direct* use of computer-based models by *decision makers*: as such, it merits a lengthy exposition and perhaps even a separate report. However, we shall be brief here.* The first of the two

* For a more detailed discussion, see [A.1-27].

models--the Patrol Car Allocation Model (PCAM)*--was used to assist in the determination of the number of Basic patrol units required, as well as the temporal allocation of those units. The second model--the Hypercube Queueing Model**--was used to assist in the spatial allocation of Basic units. During the five days of the working session, part of the first day was devoted to familiarizing the WBP officials with the models' data requirements, implicit assumptions, program capabilities and output measures. Subsequently, utilizing a computer time-sharing terminal, PSE demonstrated the use of the models on the second and third days: preliminary decisions were made based on the models' results. During the refinement and final decision phase on the fourth and fifth days, the decision-makers were *directly* interacting with the models: PSE played a very limited role--namely, keying into the terminal the instructions of the decision-makers. In their interactions with the models, the WBP officials were able not only to *understand* the model results, but also to *compensate* for some of the results which were somewhat unrealistic, due to limitations caused by the model assumptions. In other words, they were using the models as *aids* in their decision-making process. Their success with the models can be mostly attributed to their enthusiasm, intelligence and concentration--away from the hustle and bustle of their work environment. One of the attending Wilmington officials recently observed, "The week up in Cambridge has been one

* For a description of PCAM, see [A.1-5].

** For a description of Hypercube, see [A.1-13].

of the most productive weeks I have spent on the job--it was a real learning experience."*

Before summarizing in Section 2.2 the split-force elements that were developed,** we discuss in Section 2.1 some considerations that affected the final split-force design. The implementation of the design is reviewed in Section 2.3.

2.1 DESIGN CONSIDERATIONS

As stated in Section 1, the goal or purpose of the Wilmington experiment was to *test* the efficacy of the split-force concept. Unlike other more goal-oriented programs, the Wilmington split-force experiment was not required to achieve any pre-specified change in crime, fear, clearance or productivity level--it was solely to test a concept.

Although the split-force concept is simple to understand, the design and implementation of an experiment to test it was considerably more complex. It was apparent to the WBP that in order to split its traditional patrol force--which undertook crime prevention activities in between responding to calls for service--into the two function-oriented patrol forces, each officer in the response-oriented, Basic force had to handle more call-for-service (CFS) workload than before,

* An encore, post-experiment working session is being planned in March, 1977: the models will be run using up-to-date data collected for evaluation purposes, and a further refinement of the split-force design will be undertaken. Plans are also being made to give the City of Wilmington direct access to the two computer-based patrol allocation models: the models will be installed on a local computer system.

** A planning document was issued by the WBP in November, 1975 [A.1-30]: it contains a more detailed account of the development of the split-force experiment.

thus freeing up enough officers to be assigned to a prevention-oriented, Structured force. Additionally, given the desire to at least maintain the *quality* of the CFS responses, it was then obvious that the Basic force had to be more *productive*. Similarly, as stated in Section 1.1, the formation of a Structured force to handle crime prevention activities on a dedicated, uninterrupted basis--without interruptions to handle calls for service--was directed at improving the Patrol Division's *productivity* in the fulfillment of its crime prevention function. Thus, the WBP viewed the split-force experiment as a test of the impact of patrol *specialization* on patrol *productivity*.

In effecting the split-force concept, the WBP officials were especially mindful of four requirements: the need a) to face the political reality existent in the City of Wilmington; b) to meet the experiment schedule; c) to avoid having a Structured force that might be regarded as an elitist unit; and d) to maintain a certain degree of flexibility during the course of the experiment.

POLITICAL REALITY

In November, 1972, a Democrat was elected Mayor of the City of Wilmington: he had run on a platform of limiting the growth in municipal expenditure and increasing worker productivity. During his four-year term in office, the Mayor tried to fulfill his election promises. Negotiations with the City's unions were drawn out and sometimes bitter. In fact, the Fraternal Order of Police (FOP), representing the City's sworn police officers, resorted to picketing

before a three-year agreement--effective July 1, 1974--was finally negotiated with the City on September 19, 1974.

The tension between the FOP and the City administration, engendered initially by the labor negotiations, remained a constant problem. Decisions made by the administration would invariably be perceived as attempts to reduce the size of the police force; or to burden the force with more work; or to provide less substantial and practical replacement for worn-out equipment. In one instance, the administration attempted to substitute Chevettes in place of medium-sized police vehicles for use by the detectives and youth aid officers. Following a brief testing period with ten Chevettes, it was decided that the meter maids would use the Chevettes.

News of the split-force experiment was initially greeted as another attempt to "squeeze more blood out of an already overworked and undermanned patrol force." The WBP officials were sensitive to the officers' concerns: they tried to allay their disquietude by emphasizing the increased professionalism that would result as a consequence of patrol specialization. Additionally, emphasis was placed on the fact that it was an *experiment* and that it would be receiving national attention. Perhaps the single most important factor that contributed to the officers' acceptance of the experiment was the provision by NILECJ of some \$125,000 in overtime money: it was a *necessary* "sweetener" in light of the broad scope and demanding nature of the experiment. The significance and impact of the NILECJ overtime is further discussed in Section 5.8.

Finally, another factor that has adversely affected the morale of the WBP has been the steady growth of both the surrounding County's and the State's police forces. Since the early seventies, the County has increased its police force by half; the State has almost doubled its force; while the City of Wilmington has experienced a decrease of over ten percent in its police force. At present, there are about 500 State police officers, 300 County officers, and 250 City officers. There has been some speculation about consolidating the WBP with the County police. The recent court decision to bus school children between the City and the County, beginning with the 1977-1978 school year, may provide additional impetus for consolidation. Moreover, the appointment in January, 1977 of the then WBP Chief of Police to take over the top County police position has also added fuel to the speculation.

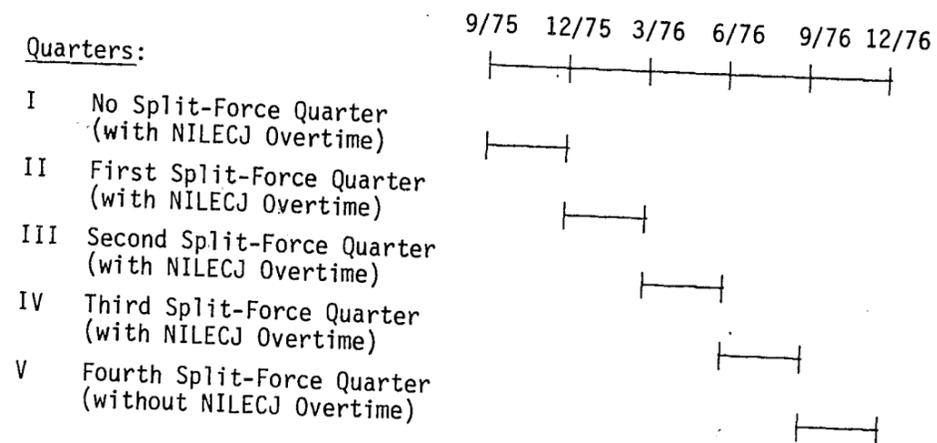
EXPERIMENT SCHEDULE

The experiment schedule shown in Exhibit 2.1 was presented in more detail in the initial proposal submitted to NILECJ by the WBP. As illustrated in Exhibit 2.2, the period of experimentation covered five calendar quarters, with the split-force occurring during the latter four quarters. The first quarter included traditional patrol with NILECJ-funded overtime*, while no NILECJ-funded overtime was available during the last quarter. It was hoped that the experiment schedule would not only allow for a testing of the split-force concept but also an *indication* of the impact of NILECJ overtime on the

* During the period 9/1/75-8/31/76, NILECJ funds provided for an average of 52 officer-hours of overtime per day.

Exhibit 2.2

Detailed Experiment Schedule



resultant findings. Such an elaborate schedule was, in hindsight, not necessary, inasmuch as the impact was determined to be negligible--even though the NILECJ overtime was a critical factor in the WBP's willingness to undertake the experiment. Again, Section 5.8 discusses the overtime impact in greater detail.

It is to be noted that the WBP officials were always very conscientious about adhering to the experiment schedule. Although such conscientiousness is commendable, it did cause an initial problem. As discussed in Section 2.3, the training was relatively brief and somewhat inadequate--it was hurried so that the split-force experiment could begin on schedule.

UNIT ELITISM

The St. Louis split-force experience and previous attempts at setting up special units caused the WBP officials to be especially sensitive to the issue of unit elitism. They felt that perceived

elitism in a unit would in the long run be detrimental to the morale and well-being of the WBP: jealousy and lack of communication, coordination and cooperation among units would result. Consequently, the WBP officials took special care to avoid having a Structured force that might be regarded as an elitist unit. In fact, as discussed in Section 2.3, their over-sensitivity to this issue resulted initially in the formation of a Structured force that was quite ineffective.

COMMAND FLEXIBILITY

In the spirit of experimentation, the WBP officials insisted on a certain degree of flexibility in making changes during the course of the experiment. However, they recognized that the changes could neither impair the *integrity* of the experiment nor confound the *validity* of the evaluation findings. In this regard, they agreed to consult PSE before any changes were made.

In actuality, only one major change was made: it is discussed in detail in Section 2.3. In fact, the change *strengthened* both the integrity of the experiment and the validity of the evaluation findings.

2.2 SPLIT-FORCE ELEMENTS

As mentioned in Section 1, the specific split-force elements that were implemented in the City of Wilmington do not constitute a unique set of elements: they simply reflect the design which the WBP officials decided was necessary in order to effect the split-force concept *in* Wilmington. The decision-making process resulting in the

final split-force design is summarized in this section, while the more quantitative results and impacts of the design decisions are detailed in Sections 5 and 6, which consider the Basic and Structured patrol elements, respectively.

BASIC PATROL ELEMENTS

A number of decisions were made to increase the efficiency of the response-oriented, Basic force, so that a prevention-oriented, Structured force could be formed. Specifically, it was decided that Basic patrol units could be more strategically deployed around-the-clock, in better *proportion* to the temporal distribution of the call-for-service (CFS) demand; that the unit response sectors could be correspondingly *adapted*; that every CFS could be given a *priority* designation and dispatched, within each priority, on a *first-come, first-served* (FCFS) basis; that, if necessary, a non-critical CFS could be *formally* delayed; that roll-call procedures could be *streamlined*; that the number of Basic units manned by two officers could be *reduced*; that, in between handling calls for service, Basic units could be given *fixed-post* assignments within their respective response sectors; and that the available NILECJ overtime could be used to help maintain *all* of the elements of the experiment.

Proportional Temporal Deployment

The first step taken by the WBP decision makers was an assessment of the available resources in patrol. It was determined that, except for special assignments (i.e., assignments related to headquarters, mounted, evidence detection, radar, wagon, and accident investigation duties),

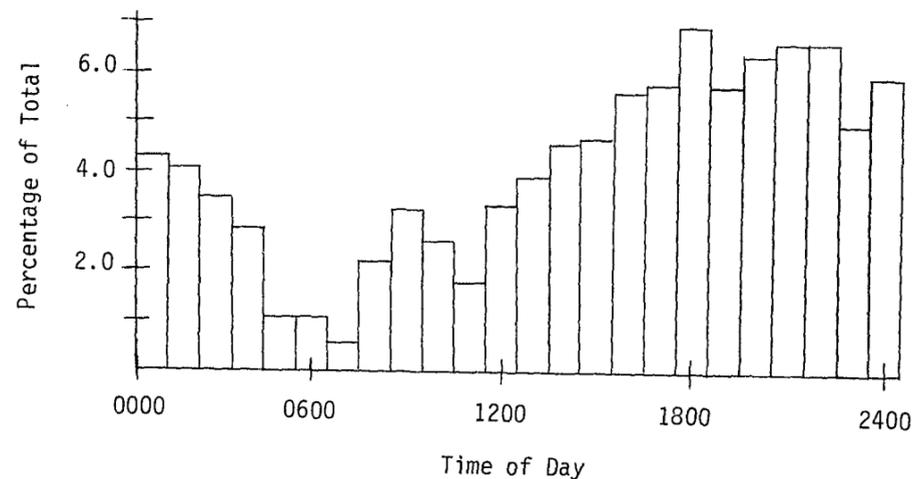
the available patrol manpower could sustain 43 eight-hour patrol cars or units over a 24-hour period. As is the case in many other police departments, the WBP had an almost constant patrol manning level throughout the day: the Patrol Division maintained four equally-staffed platoons which rotated through the three daily eight-hour tours on a 28-day cycle--on any day, three platoons would be on-duty, while one would be off-duty. It became obvious to the decision makers that greater efficiency could be achieved by changing the temporal deployment of patrol resources so that it could more proportionately reflect the time distribution of the demand for police services.

The second step, then, was to determine the time distribution of police demand. However, given the central premise of the split-force concept, it became apparent that *two* types of police demand had to be considered: the overall CFS demand--which had to be considered for Basic deployment--and the *crime-related* portion of the CFS demand--which had to be considered for Structured deployment. As illustrated in Exhibit 2.3, the level of CFS demand is very much dependent on the time of day, while the level of Part I crimes is relatively uniform during the 1000-0200 (i.e., 10 a.m. - 2 a.m.) period.

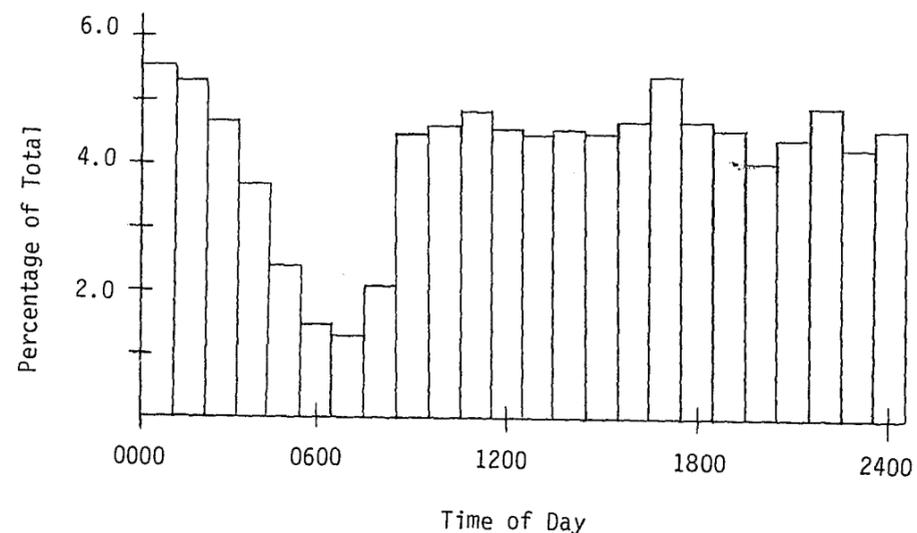
Given the time distribution of the two types of police demand, the next step was to determine the number of Basic patrol units that would be required to meet the CFS demand. As indicated earlier, the PCAM model assisted the WBP officials in making such a determination--it was decided that 27, eight-hour Basic patrol units would be required. This, then, left 16 units for the Structured force. The temporal allocation of the 27 Basic units was also determined by the PCAM

Exhibit 2.3

Time Distribution of Police Demand



(a) Time Distribution of Calls for Service



(b) Time Distribution of Part I Crime Incidence

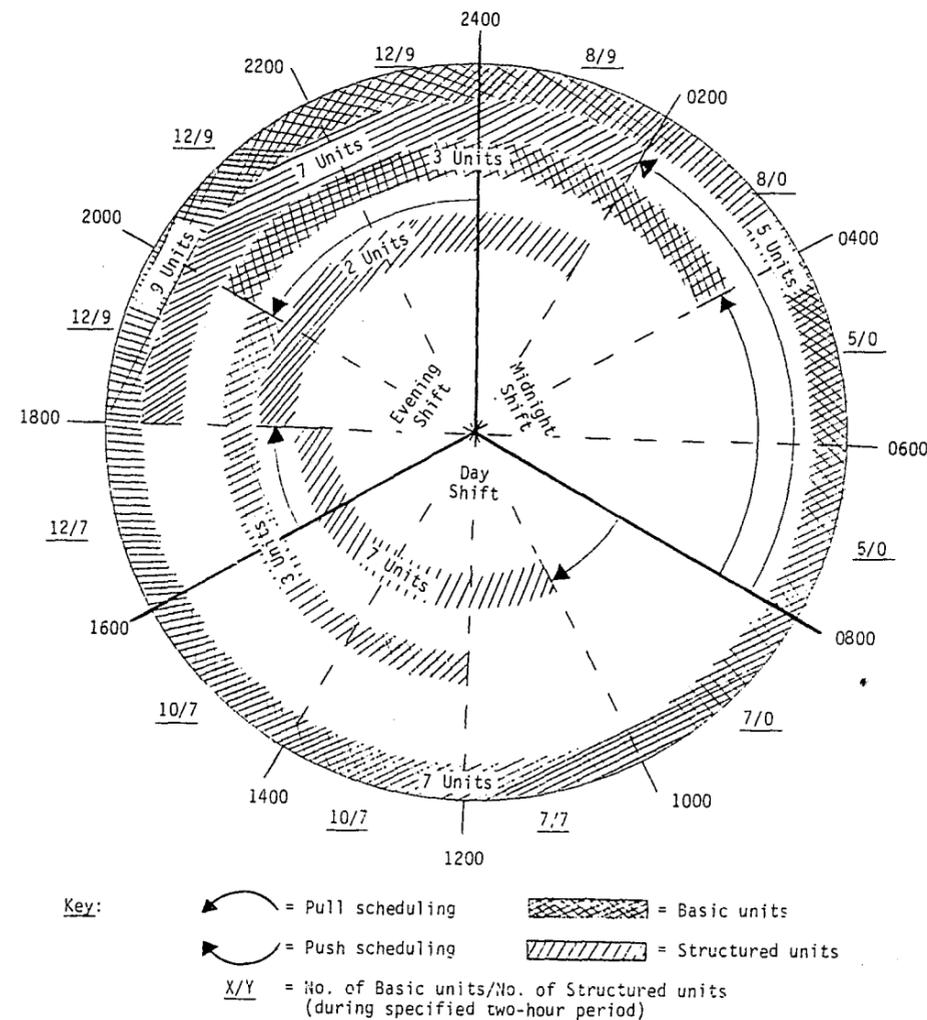
model: beginning with midnight, 8, 5, 7, 10, 12, and 12 units were allocated to the six contiguous four-hour periods, respectively.* In considering the 16 Structured units, it was decided that seven units would be assigned to the 1000-1800 period, while nine units would be assigned to the 1800-0200 period.

The fourth and final step was the development of a schedule which could meet the temporal allocation of both the Basic and Structured patrol units. In an attempt to minimize the number of changes required, it was decided that the four platoon system would remain in effect. Consequently, an ingenious "push-pull" scheduling mechanism was developed. As shown in Exhibit 2.4, two sets of "pushes" and three sets of "pulls" were required in order to effect the temporal deployment of patrol units. For example, in viewing the 2400-0800 period in Exhibit 2.4, we see that the normal platoon system would have allowed for 15 patrol units in this period. However, because the CFS demand is quite low in the period, seven out of the 15 units

* It should be clearly noted that the PCAM model, which is based on the theory of queues, does not simply allocate patrol resources in direct proportion to the time distribution of CFS demand; it also takes into consideration the probabilistic nature of such variables as the inter-arrival time between calls for service and the service time for a call. It is a property of queuing systems with several servers (e.g., patrol cars) that average delays can be kept below some threshold as the call-for-service rate increases by adding additional servers at a rate less than proportional to the call-for-service rate. Thus, for example, a patrol command twice as busy as another should be allocated less than twice as many units as the other, resulting in greater workloads for each patrol unit in the busier command. In this report, however, the phrase "proportional temporal deployment" is used to describe this Basic element because it is similarly identified in the original WBP planning report [A.1-30]. In grasping the nature of the PCAM model, the WBP decision makers have tended to view the PCAM results as "an allocation plan that is more proportionally related to demand than the constant level allocation plan."

Exhibit 2.4

Push-Pull Schedule of Basic and Structured Patrol Units



were scheduled or pulled to come in six hours earlier and an additional three units were pulled to come in four hours earlier. The overlapping tours resulting from the push-pull schedule were also regarded as a means of maintaining street coverage during the platoon shift changes.

Adaptive Response Sectors

Again, like many other police departments, the WBP had traditionally maintained a constant number of patrol sectors (i.e., ten sectors) with fixed boundaries.** It was apparent to the WBP officials that the fixed sector design would be inadequate for the proportional temporal deployment plan which called for a different number of Basic units to be deployed every four hours. Therefore, as illustrated in Exhibit 2.5, six alternate sector designs were developed for the six four-hour periods, respectively. The designs were developed primarily to minimize the workload imbalance among sector units; they were constructed with the aid of the Hypercube model.

Finally, the sectors were identified as *response* rather than patrol sectors, inasmuch as the Basic units' primary function was to respond to calls, while patrolling for the purpose of crime prevention was primarily to be a function of the Structured units.

* The push-pull schedule was in terms of patrol units; the platoon lieutenants were given the responsibility of allocating appropriate manpower from their respective platoons to man the units. They were also instructed to rotate officers assigned to the various scheduled units and between Basic and Structured duties.

** Depending on the time of day and the number of patrol units deployed, each patrol unit was assigned patrol responsibility for one or more sectors, or it may have shared the patrol responsibility of a sector with one or more units.

Exhibit 2.5

Alternate Sector Designs



Note: Location of City Hall and Police Headquarters is indicated by a dot (•).

Prioritized FCFS Dispatch

The WBP officials were also aware that some efficiency could be gained by instituting certain communications-related procedures. Specifically, three procedures were identified and implemented.

First, as detailed in Exhibit 2.6, it was decided that every call-for-service could be given one of the following three priority designations:

- An "In Progress" designation--requiring an immediate response by either a Basic or Structured unit;
- A "Basic Patrol Critical" designation--requiring a response by the first available Basic unit; and
- A "Basic Patrol" designation--requiring an eventual response by a Basic unit.

These priority designations were formally included in the revised call-for-service card--see Exhibit B.1--which was introduced as part of the data gathering requirements of the split-force experiment.

Secondly, it was decided that, within a priority, each call-for-service would be dispatched on a first-come, first-served (FCFS) basis and to the first available and appropriate patrol unit, irrespective of whether the call originates from the unit's designated response sector. Traditionally, the WBP dispatcher would usually hold the non-emergency or non-critical calls for dispatch only to the particular patrol unit in whose sector the calls originate. In queuing terms, the traditional procedure results in a multi-queue, multi-server system, while the revised procedure results in a single-queue, multi-server system. It was felt that the anticipated benefits of the revised procedure (i.e., decreased delay time in dispatching a

Exhibit 2.6

Call-for-Service Priority Designations

Radio Code	Type of Complaint	In Progress	Basic Patrol Critical	Basic Patrol
10-10	accident (property damage)			
	accident (personal injury)		X	X
	accident (hit and run)		X	
10-11	second fire alarm			
10-12	request assistance at headquarters	X	X	X
10-23	direct traffic			
10-24	send assistance to scene	X	X	X
10-33	parking violations			X
10-33A	disabled vehicle			X
10-40	officer in trouble	X		
10-48	alarm at location (robbery)	X		
	alarm at location (burglary)		X	
10-49	civil disturbance		X	
10-57	bomb threat		X	
10-58	traffic light not functioning			X
10-79	non-emergency transport			X
10-80	spinal injury			X
10-81	mental patient		X	
10-82	communicable disease			X
10-83	head, face and neck injury		X	X
10-84	seizure			X
10-85	convulsions			X
10-86	drowning		X	
10-88	overdose			X
10-89	burns		X	X
10-90	possible cardiac arrest		X	X
10-92	possible internal injuries		X	X

Exhibit 2.6
(page 2 of 3)

Radio Code	Type of Complaint	In Progress	Basic Patrol Critical	Basic Patrol
10-93	fractured limb			X
10-94	miscarriage		X	X
10-95	emergency maternity		X	X
10-97	severe bleeding		X	X
10-98	stroke victim		X	X
10-99	heart attack		X	X
AA	disorderly conduct			X
AB	disorderly crowd			X
AC	drunk			X
AD	barking dog		X	X
AE	fireworks			X
AF	suspicious person	X		
AG	suspicious car	X		
AH	abandoned car			X
AI	traffic violation			X
AJ	loud party			X
AK	loud radio			X
AL	person lying on sidewalk		X	
LA	lost animal			X
LB	lost boy			X
LC	lost man			X
LD	lost girl			X
LE	lost woman			X
FA	auto fire			X
FB	building fire			X
FC	grass fire			X
FD	explosion		X	
IA	open door/window	X		

Exhibit 2.6
(page 3 of 3)

<u>Radio Code</u>	<u>Type of Complaint</u>	<u>In Progress</u>	<u>Basic Patrol Critical</u>	<u>Basic Patrol</u>
IB	trespasser outside	X		
IC	trespasser inside	X		
IF	robbery (immediately after or in progress)	X		
IG	larceny (in progress) larceny (after the fact)	X		X
IH	suicide			X
II	rape (in progress) rape (after the fact)	X	X	
IJ	woman screaming	X		
IK	shooting		X	
IL	cutting		X	
IM	an assault (in progress) an assault (after the fact)	X		X
IO	smoke		X	
IQ	person bitten		X	
IR	person fell		X	
IS	burglary (in progress) burglary (immediately after) burglary (after the fact)	X	X	X
IT	malicious mischief (in progress) malicious mischief (after the fact)	X		X
IU	fight inside (in progress) fight inside (after the fact)		X	X
IV	fight outside (in progress) fight outside (after the fact)		X	X
IW	riot	X		
IX	murder		X	
IZ	domestic		X	

call-for-service and decreased workload imbalance among units) outweighed the anticipated problems (i.e., increased travel time to the scene of an incident and increased intersector dispatches).

The third procedure--formally delaying the response to a non-critical call-for-service--is discussed next.

Formalized Response Delays

As indicated earlier, and once again like other police departments, the WBP would usually delay a response to a non-critical call-for-service if the patrol unit in whose sector the call originates is busy or if at least a certain number of all patrol units are busy. However, the citizen calling for police services would most likely not be informed of the potential delay: on the contrary, the caller would usually be told, "A patrol car will be right out." Therefore, in order to minimize citizen frustration and expectation, it was decided that if the response to a call-for-service was to be delayed, then the caller would be *formally* advised of it. A second, and perhaps more important reason for formally delaying responses is that it tends to decrease and shift the demand peaks, allowing for a more efficient allocation of police resources. The benefits of and methods for *managing* police demand are further discussed in Section 11.2.

At first, the WBP officials felt that if a response delay was to occur, then the caller was to be told, "You should expect a 40-minute delay." The WBP officials were quite aware of the fact that most of the delayed calls for service could be responded to with a response time of less than 25 minutes: their purpose for identifying a 40-minute delay was to allow for more flexibility, and perhaps even to increase

citizen satisfaction when the police arrive well within the 40-minute limit. However, after careful analysis of the results of the first client survey conducted by PSE, it was hypothesized that a 30-minute delay would be very much more acceptable than a 40-minute delay. The WBP officials accepted this hypothesis and changed the limit to 30 minutes. In hindsight, the hypothesis was correct: as indicated in Exhibit B.7 (Question 10), 64.5 percent of all responding clients indicated that a 40-minute delay was unacceptable, while only 34.4 percent indicated that a 30-minute delay was unacceptable.

Streamlined Roll-Call Procedures

Another area which lent itself to more efficient procedures was in connection with both the on-going and off-going roll-calls, including the time consumed in attending roll calls and in acquiring or returning portable radios, patrol cars and other equipment. It was decided that the patrol supervisors be given the responsibility of having the pertinent equipment available before the on-going roll-call and, likewise, inspecting the returned equipment before the off-going roll-call. Further, the supervisors were instructed to shorten the roll-calls by limiting the briefings and debriefings to relevant matters and eliminating long-winded oratories.

Reduced Manning Level Per Unit

Partially in response to the civil disturbances in the late sixties, police departments have tended to increase the proportion of patrol units that are manned by two officers, as opposed to one-officer units. In fact, several large urban police departments are now fielding only

two-officer patrol units. The City of Wilmington, the scene of one of the first major civil riots in 1967, had also increased its proportion of two-officer units--by 1975, about half of its call-for-service response units were each manned by two officers.

The WBP officials felt that, *given* a more efficient allocation of patrol resources resulting from the other Basic elements, it was possible to decrease the proportion of two-officer units. In particular, they felt that about half of the two-officer units could be converted back to one-officer units, *without* impairing officer safety.

Fixed-Post Assignments

Another issue confronting the WBP officials was: What should the Basic patrol units do when they are not responding to calls for service or carrying out maintenance-related activities? The traditional answer is that they should patrol in their respective response sectors and be available to respond to future calls for service. However, it was decided that the Basic units should not just undertake random preventive patrol--which was the traditional approach--but be assigned to specific locations or posts where major events were occurring or where, based upon past history, a large number of calls for service originate. After all, the WBP officials reasoned, if the primary function is to respond to calls for service, then the Basic units should undertake activities that would anticipate, if not mitigate, potential calls for service.

It was also felt that the fixed-post assignments would give the Basic officers the opportunity and the time to complete their incident reports--thus freeing them from completing the reports at the

scene of the incidents, and thereby allowing them to clear faster. In this manner, the Basic units would have a shorter on-scene time and, conversely, would be more *available* to respond to calls for service.

NILECJ Overtime

Although the overtime provided by NILECJ was regarded as a critical factor in the WBP's willingness to undertake the split-force experiment, the WBP officials were especially mindful about not having it be a critical factor in the *structure* of the experiment. For example, they made sure that the overtime was not used solely to sustain the Structured force. Instead, the NILECJ overtime was used to help maintain all the elements of the experiment; or, equivalently, it helped maintain the operation of the Patrol Division.

STRUCTURED PATROL ELEMENTS

As discussed earlier, it was decided that 16 patrol units would be assigned to Structured patrol: that is, seven and nine units would be assigned to the 1000-1800 and 1800-0200 periods, respectively. The platoon lieutenants were given the responsibility of assigning officers to man the Structured units, and these officers were to be rotated with Basic officers.

In forming a patrol force *dedicated* to the primary function of preventing crime, the WBP officials were well aware of the much heralded results of the Kansas City Preventive Patrol Experiment [A.1-12]. In fact, the WBP officials agreed with the Kansas City findings: they, however, felt that the findings showed that *random*

preventive patrol is ineffective.* On the other hand, the WBP officials felt that *structured*, or directed, preventive patrol can be effective. For this reason, the prevention-oriented patrol force was labelled the *Structured* force.

A Special Operations Unit, composed of two officers and a supervisor, was given the responsibility of preparing "packages" for the Structured units. The packages, based primarily on the analysis of crime data, were to contain specific instructions regarding the area to be patrolled or the crime problem to be attacked; the type(s) of crime to be concerned with; the tactics to be used; and the manner in which to undertake the assignment--that is, either in an overt (i.e., uniformed and in marked police car) or in a covert (i.e., plainclothes and in an unmarked car) manner. The Structured force was to carry out its crime-prevention function primarily by patrol-oriented activities: it was assumed that the Detective Division would continue to be solely responsible for carrying out investigative activities. The WBP officials also required that at least some of the Structured units be overt so that they could provide assistance to the Basic units whenever necessary and in accordance with the priority designations listed in Exhibit 2.6.

Finally, it was decided that the Captains of Patrol, Detectives, and Special Operations should meet daily to develop and approve of the Structured assignments.

* Other researchers, like Larson [A.1-15], have questioned the *integrity* of the Kansas City Experiment, and, therefore, the *validity* of the resultant findings.

2.3 DESIGN IMPLEMENTATION

Following the Cambridge working session in mid-October, 1975,* a frantic effort was mounted to complete the plans and to provide training to the affected officers, all to be accomplished by December 1, 1975, the scheduled date for the split-force aspect of the experiment to begin.

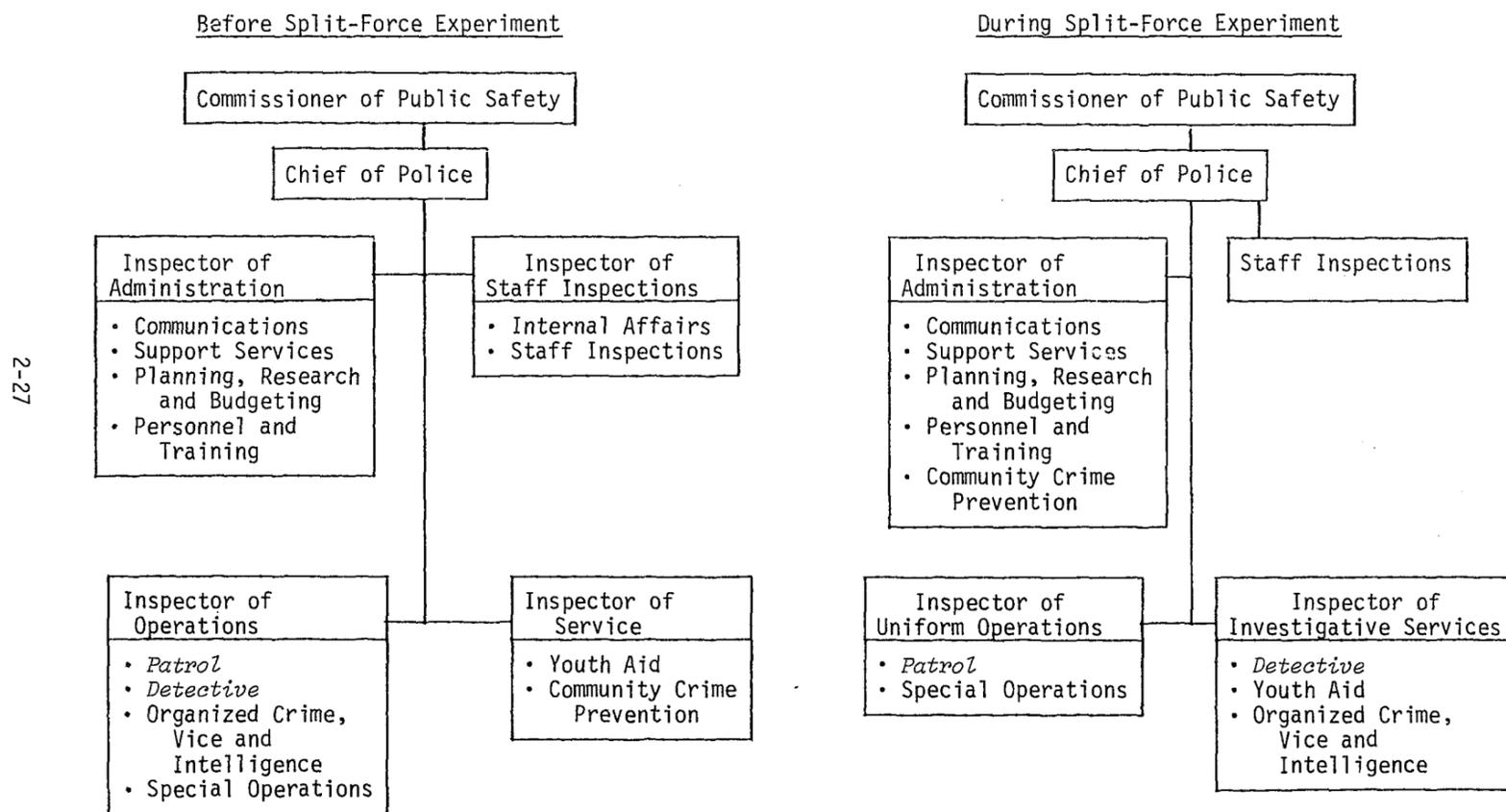
In the following subsections we discuss the reorganization that occurred; the training that was conducted; the only major design change that was made; and a comment on the experiment's design.

REORGANIZATION

During the summer and early fall of 1975, the WBP Inspector of Operations was on an extended sick leave--he would eventually take an early retirement. His leave from the WBP coincided with the start-up of the split-force experiment, and presented an opportunity to reorganize the WBP command structure. In late October, 1975, an order was issued which, in essence, eliminated the powerful position of the Inspector of Operations. As illustrated in Exhibit 2.7, the responsibilities of the Inspector of Operations were given to two Inspectors: the Inspector of Uniform Operations and the Inspector of Investigative Services. The Inspector of Administration, who had attended the Cambridge working session, became the Inspector of Uniform Operations: he then selected the Captain of Planning, who had also attended the session, to be his Captain of Patrol. Actually,

* The working session was actually held about a month later than planned: the delay was caused by problems encountered in the collection, coding and keypunching of pertinent call-for-service data.

Exhibit 2.7
WBP Organization Chart



all the WBP attendees at the Cambridge working session became intimately involved with the conduct of the split-force experiment. The Commissioner of Public Safety continued to provide leadership and strong support for the experiment; the Director of Criminal Justice and Manpower Programs took on the role of a project monitor and provided liaison support to PSE, the project evaluator; the newly appointed Inspector of Uniform Operations became the Project Director; the newly appointed Captain of Patrol became the Project Administrator; and the Patrol Sergeant became an invaluable assistant to the Captain of Patrol.

Thus, the architects of the split-force experiment became its executors. Given the broad scope and complexity of the experiment, it was necessary that this be the case. As anticipated, it did, however, create some resentment among other officers in the WBP. Notwithstanding the fact that they designed the experiment, the executors acted in a very professional and objective manner: they accepted criticisms and took steps to remedy problems without exhibiting proprietary feelings. In fact, a task force of about a dozen officers, representing the various units of the WBP, was formed to provide feedback to the Inspector of Uniform Operations. The Split-Force Task Force convened every three weeks during the course of the experiment. Although the Task Force highlighted specific split-force-related problems, it also provided a forum for airing other perceived problems in the WBP.

TRAINING

As suggested earlier, the delay encountered in the planning phase and the desire to keep to the experiment schedule caused the training process to be relatively brief and somewhat inadequate. An organization development consultant from the National Training Laboratories' Institute for Applied Behavioral Science was hired to assist in the development and execution of a split-force training program; the actual training consisted of a two-hour presentation by the Inspector of Uniform Operations and the Captain of Patrol, followed by a one-hour question-and-answer period.* The presentation outlined, in mostly general terms, the purpose and elements of the experiment. In brief, the presentation was inspiring but lacking in substance: it provided excellent orientation but minimal training.

The inadequacy of the training was further aggravated by the absence of any written procedures. Although the planning report [A.1-30] was available, it did not provide the necessary guidelines. As a result, and during the first few months of the experiment, the architects of the experiment had to constantly interpret, if not define, the required procedures. In hindsight, we feel that written procedures should have been issued, even though the nature of the experiment might have required changing them as it progressed. In fact, we feel that a set of procedures should have been made available before the

* The training was conducted over four consecutive Sundays in November, 1975 for the four patrol platoons, respectively. For convenience and to minimize any resultant work disruption, two training sessions were held each Sunday. The training sessions were only attended by Patrol Division officers and Communications Unit personnel.

experiment began; thus, it would have required a delay in the starting date. Further, all officers in the WBP, especially the detectives, should have attended the training sessions.

The training-related problems have been mostly resolved with time, although no adequate set of written procedures is yet available.* Another series of training sessions was conducted in the spring of 1976: this helped to further clarify some confounding split-force issues and problems.

DESIGN CHANGE

The one and only major change in the split-force design that was developed in October, 1975, and as outlined in Section 2.2, was the creation of a separate unit within the Patrol Division for the Structured force. The Structured Unit was established on April 4, 1976, in response to three major problems that were observed during the first four months of experimentation. First, the platoon lieutenants and sergeants, who had responsibility for both the Basic and Structured assignments, were primarily concerned with fulfilling the more traditional Basic needs: they were, in fact, unsympathetic to the purpose of Structured patrol and regarded it as just "another instance of taking away much-needed manpower for questionable assignments." Consequently, the officers assigned to the Structured units felt rootless and unappreciated. Second, the 16 Structured units were mostly assigned to overt operations--i.e., high-visibility

* On April 8, 1976, a "Procedural Guide for the Split-Force Concept" was issued by the WBP--it is, in essence, a general guide and is, in fact, outdated.

patrol in predefined problem areas. Except for providing some limited assistance to Basic units, the Structured officers would mostly just patrol and "check doors" for their eight-hour tour. Boredom and frustration with Structured assignments were rampant by April, 1976. As one patrol officer stated, "I would rather take on two Basic tours of duty than one Structured tour--I'm so busy in Basic that I don't even notice the time going by, whereas just patrolling eight hours in Structured drives me bananas and makes me dizzy." The third major problem confronting both the Structured and Basic officers was related to the push-pull schedule. Although they were usually pleased about being pulled away from the "graveyard shift" (i.e., 2400-0800 period), the patrol officers complained that they were not advised of their shifted schedules enough in advance--they wanted to be advised at least ten days in advance.

It, therefore, became clear that the problems inherent in trying to integrate the Structured and Basic forces under a single command structure outweighed the potential danger of having a separate Structured Unit that might be perceived as an elitist force. Structured Unit elitism was also to have been minimized by a mandate that assignment to the Unit should be for no more than six to eight weeks.

As of April 4, 1976, the Structured Unit has been staffed by 24 patrol officers and three patrol sergeants. The Unit is divided into two groups, each with a sergeant and 12 officers, and is available for two eight-hour shifts (i.e., during the 1000-1800 and 1800-0200 periods). The third sergeant acts as a coordinator of the two groups and reports directly to the Captain of Patrol. As a separately organized

force, the Structured officers no longer have identity problems; are much less bored with their work; and, finally, are not part of the normal platoon system which operates under a push-pull schedule.

The formation of a separate Structured Unit also caused a significant change in the character of its activities. In addition to undertaking *directed*, problem-oriented patrol, the Structured Unit began to perform *immediate* investigative follow-up on an incident-oriented basis. The latter activity has greatly contributed to the success of the Unit; Section 6 elaborates on this claim.

Finally, it should be noted that, except if otherwise stated, whenever the Structured force is mentioned in the text of the report, it refers to the force in terms of the post-April, 1976 context.

COMMENT

It has been the purpose of this section, Section 2, to identify the design elements of the Wilmington split-force experiment, as *developed* by the WBP [A.1-30]. It is obvious that the resultant design was *not* a true experimental design (i.e., in the classical sense). That is, the design did not endeavor to meet *explicit* and *measurable* objectives, but rather attempted to effect a concept which was to be tested. Additionally, the need of the WBP to maintain a certain degree of flexibility during the conduct of the experiment is, of course, contrary to the principles of experimental design. Finally, the absence of written procedures, which would have detailed the design, is also a significant failure of the split-force design.

Although the design of the Wilmington split-force experiment could have been improved (e.g., explicit and measurable objectives could have been identified; and detailed procedures could have been documented in written form), it could never have met the requirements of a classical experimental design, since the conduct of an experiment in a real social setting must, of necessity, be constrained by the needs and uncertainties of that setting. Instead, the design of the evaluation plan, which is considered next in Section 3, attempted to take into consideration and compensate for the weaknesses in the split-force design.

3 EVALUATION OF EXPERIMENT

Ideally, the design of an evaluation plan should be an integral part of program development. Program goals and corresponding evaluation measures should be specified along with the program design, *prior* to its implementation. The evaluation measures are then collected and analyzed during the course of the program, and are used not only to *document* the program's impact but also to *monitor* its progress. In the case of this evaluation effort, the ideal was closely realized.

The presence of Public Systems Evaluation, Inc. (PSE) personnel at the major planning sessions provided PSE with a unique view of the decision-making process that culminated in the design of the split-force experiment. Accordingly, we were able to develop a *sound* evaluation design with *appropriate* evaluation measures. And during the course of the experiment, the evaluation measures were used to monitor its progress.

In addition, on a bimonthly basis, we would formally inform the WBP officials of our overall monitoring findings. After careful consideration of our feedback as well as their own monitoring results,* the WBP officials made one major change, as discussed in Section 2.3, and several minor refinements to the split-force experiment. The

* The WBP had also set up monitoring procedures, including feedback from the Split-Force Task Force, maintenance of a "deviation" log at the communications center, and periodic review of patrol car sheets. For the most part, the WBP's monitoring results supported PSE's findings.

refinements included the installation of a light at the dispatcher station to advise complaint takers of potential delays in call-for-service responses; the assignment of Basic officers to sector cars in a more judicious manner so as to minimize sector identity problems; and the updating of fixed-post assignments to insure the relevancy of such assignments.*

The considerations that impacted our final evaluation design are discussed in Section 3.1, while the design itself is detailed in Section 3.2. The conduct of the evaluation is summarized in Section 3.3.

3.1 EVALUATION CONSIDERATIONS

In developing the evaluation design, we were especially sensitive to the *nature* and *complexity* of the experiment; the need to have a design that would not only insure the *validity* of the findings but also the *integrity* of the experiment; and the reality of our own *limited* resources.

NATURE AND COMPLEXITY OF EXPERIMENT

In general, a program evaluation is a process of assessment designed to answer two questions:

* It should be noted, however, that all the refinements to the experiment were carefully analyzed to make certain that they would not adversely impact the *integrity* of the experiment (i.e., through maintenance of the experimental conditions) or the *validity* of the findings. Additionally, it should be stated that, in the course of our monitoring and feedback endeavors, we were mindful of the need to maintain our own *integrity* and *objectivity*, as the experiment evaluator.

- To what extent did the program achieve its goals? and
- How did it achieve or not achieve its goals?

An evaluation answering the first question is an *impact* evaluation; one answering the second question is a *process* evaluation. Answering the first question without addressing the second furnishes no information about whether and under what conditions a similar program can be implemented elsewhere. Answering the second question without addressing the first results in a peculiar situation in which the process of the program is described, but its degree of success is not.

In the case of the split-force experiment, the goal was simply to test the efficacy of the split-force concept. However, in addition to the above-stated questions, a third question needed to be answered:

- What can be said about the *concept* itself?

The third question reflects, of course, the nature of all experiments--the purpose of which is to test or establish a hypothesis or concept. It is perhaps the hardest question to answer, especially if the answers to the first two questions are unreliable or invalid. Nevertheless, it was imperative that our evaluation design be sound and robust enough to answer all three questions.

The recognition that the split-force experiment was primarily an approach in patrol manpower organization and utilization also influenced the emphasis of our evaluation design: qualitative measures were collected regarding the feelings, interactions, perceptions, and aspirations of the individuals involved. Additionally, we were sensitive to the central *productivity* theme of the experiment, and recognized related measuring difficulties [A.1-3, A.1-16, A.1-17, and A.1-31].

Finally, the complexity and scope of the split-force experiment required that we not only focus on the Patrol Division but also on the entire Wilmington Bureau of Police. Our broad focus was, in hindsight, an important and necessary aspect of our approach. Furthermore, because this was a federally funded experiment, we had the added responsibility of viewing the findings from a *national* perspective.

VALIDITY AND INTEGRITY CONSIDERATIONS

The validity of the evaluation findings is dependent upon both the validity of the data and the validity of the method of analysis. The first component of validity is discussed here, while the latter component is discussed in Section 3.2. Additionally, our approach in insuring the integrity of the experiment is also discussed herein.

Data Validity

The WBP, like other police departments, has, of course, a problem with data validity: the data are generated and recorded by non-mechanical means, and are therefore subject to human error. We tried to address this problem by comparing alternative sources of data. For example, our analysis of call-for-service data was complemented and compared with an analysis of patrol car sheets, an analysis of client surveys, and an extended period of observation at the communications center. The use of different and independent data sources to view a particular element of the experiment has proven to be a very *effective* and *enlightening* approach.

Experiment Integrity

In order to insure the integrity of the experiment, we took three important steps. First, we defined and monitored *appropriate*

evaluation measures. For example, in anticipating the impact of fewer two-officer units, we decided to categorize all calls for service into a *primary* and an *assist* category. As expected, the number of assist calls increased as the number of two-officer units decreased.

Second, we devoted a significant portion of our limited resources to the monitoring function. The experimental conditions were carefully monitored to insure their constant maintenance.

Third, we analyzed the experimental conditions to make sure that they did indeed *reflect* the integrity of the experiment. We used existing quantitative models--such as PCAM and Hypercube--and other simpler statistical models in our analyses. The use of mathematical models in the field of evaluation is a relatively new approach: it has, nevertheless, been shown to be effective. Larson [A.1-15], for example, used several simple probabilistic models to argue that the integrity of the Kansas City Preventive Patrol Experiment was not completely upheld.

LIMITED EVALUATION RESOURCES

Our total evaluation effort has consisted of only 2.5 professional person-years; and it has included providing technical assistance in the design of the experiment, undertaking monitoring activities during the course of the experiment, and performing evaluative analysis of the resultant findings. We were, therefore, somewhat handicapped in the development of our evaluation design. For example, we would have liked to have conducted a general victimization survey: instead, we undertook a very limited client telephone survey. We would have

liked to have had a 100 percent sample of such data sources as the call-for-service cards and the patrol car sheets: instead, we settled for a 20 percent sample. Furthermore, the evaluation could have benefitted from a more extensive participant observation program; from analyses of additional data sources, including arrest and conviction reports; and from a more sophisticated evaluation design with control group(s). In sum, the final evaluation design was a compromise between what would have been ideal and what was realistic, given our limited resources.*

To what extent did the final compromise affect the evaluation findings? Given our knowledge of the findings, we feel that the compromise probably affected the *degree* of the findings, but the *nature* and *implications* of the findings were not affected and remain valid.

3.2 EVALUATION DESIGN

In response to the considerations discussed in Section 3.1, an evaluation design was developed and implemented, along with the experiment design, on December 1, 1975. During the course of the experiment, some minor changes in the design were made in correspondence with the experimental changes.

The evaluation design is outlined in this section in terms of its activities and method of analysis.

* The WBP eased the severity of the compromise by providing assistance in the collection of certain data elements and by subsidizing the cost of keypunching.

EVALUATION ACTIVITIES

Seven evaluation activities were identified: these are summarized in Exhibit 3.1. The activities were to:

- Review pertinent background information for relevance to the evaluation effort and to place the Wilmington split-force experiment in proper perspective;
- Provide technical assistance in both the design of the experiment and the monitoring of its progress;
- Undertake analyses of relevant data;
- Develop and administer questionnaires;
- Conduct a limited number of telephone interviews with non-critical call-for-service clients (i.e., those residents of Wilmington who were assisted in connection with a non-critical call-for-service);
- Undertake on-site tasks, including participant observations, formal interviews, and briefings; and
- Produce the evaluation products.

METHOD OF ANALYSIS

In evaluation terminology, our method of analysis is based on a "one-group pretest-posttest" design: that is, a "before" and "during" comparison analysis,* using the WBP as its own control group. Campbell and Stanley [A.1-3] have noted the internal and external sources of invalidity in such an analysis. We took special pains to minimize, and in some instances eliminate, the various sources of invalidity. For

* Usually, the method is labelled as a "before" and "after" analysis: however, we have substituted the term "*during*" in place of the term "after." The substitution is made to emphasize the nature of experimentation: whereas the classical approach is to assume a single change occurring at a moment in time (in which case, the term "after" has meaning), the more realistic approach is to recognize the fact that minor refinements and changes do occur after the major change occurs (in which case, the term "after" is less meaningful than the term "during").

Exhibit 3.1
Evaluation Activities

<u>Activities</u>	<u>Split-Force Patrol Experiment</u>		
	<u>Basic Patrol Elements</u>	<u>Structured Patrol Elements</u>	<u>Split-Force Concept</u>
1. Background Review			
a. Related Programs	x	x	x
b. WBP Data Sources	x	x	--
2. Technical Assistance			
a. Design of Experiment	x	x	--
b. Monitoring Feedback	x	x	--
3. Data Analyses			
a. UCR Data	x	x	--
b. Arrest Data	x	x	--
c. Dispatch Data	x	--	--
d. Patrol Car Sheets	x	x	--
e. Personnel Records	x	x	--
f. Overtime Data	x	x	--
g. Other WBP Data	x	x	--
4. Questionnaire Surveys			
a. Basic Patrol Officers	x	--	x
b. Basic Patrol Supervisors	x	--	x
c. Structured Patrol Officers	--	x	x
d. Detectives	--	x	x
e. Communications Personnel	x	--	x
5. Client Telephone Survey			
a. Part 1	x	--	--
b. Part 2	x	--	--
6. On-Site Interaction			
a. Participant Observations	x	x	x
b. Formal Interviews	x	x	x
c. Briefings	x	x	x
7. Evaluation Products			
a. Interim Presentation	x	x	x
b. Final Report	x	x	x

example, we reconstructed and monitored the events and procedures of the before and during periods, respectively. We also made certain that the relevant data were recorded and coded in a consistent manner during the periods of comparison. The precise dates of the before and during periods are detailed in the next section.

3.3 EVALUATION CONDUCT

The details of the evaluation conduct are summarized in Exhibit 3.2. Although additional comments on the evaluation activities are given at appropriate points in the text of the report, we would like to address at this time three important evaluation-related issues which should be kept in mind as the remainder of the report is read.

First, we would like to define the before and during evaluation periods: as indicated in Exhibit 3.3, they correspond to the 9/1/74-8/31/75 and 12/1/75-11/30/76 periods, respectively. Although most results in the report are in terms of the two periods, our analyses were actually performed on a quarterly basis, corresponding to the experimental quarters detailed in Exhibit 2.2 and reproduced in Exhibit 3.3. In fact, the two 12-month evaluation periods were defined after we looked at our quarterly analyses and considered the potential impact of major events, which are also indicated in Exhibit 3.3. For convenience, it can be assumed that text references to a *Before* and *During* period correspond to the above-defined evaluation periods. All deviations from this assumption or convention are noted in the text.

Exhibit 3.2
Evaluation Conduct

<u>Activities</u>	<u>Conduct Period</u>	<u>Sample Period</u>	<u>Sample Element</u>	<u>Sample Size</u>	
				<u>Number</u>	<u>% of Total</u>
1. Background Review					
a. Related Programs	6/1/75-12/31/76	--	--	--	--
b. WBP Data Sources	6/1/75-8/31/75	--	--	--	--
2. Technical Assistance					
a. Design of Experiment					
• Data Collection	6/1/75-10/31/75	--	--	--	--
• Mathematical Modeling	10/1/75-11/30/75	--	--	--	--
b. Monitoring Feedback	9/1/75-11/30/76	--	--	--	--
3. Data Analyses					
a. <u>UCR Data</u>					
• FBI <u>UCR</u>	--	1/1/68-12/31/75	Yearly Report	8	100
• WBP <u>UCR</u>	--	1/1/68-12/31/76	Monthly Report	104	100
b. Arrest Data					
• Arrest Book	--	1/1/75-11/30/76	Daily Entries	700	100
• Detective <u>UCR</u> Supplement	--	1/1/68-12/31/76	Monthly Report	104	100
c. Dispatch Data					
• Call-for-Service (CFS)	--	9/1/74-11/30/76	CFS Card	48,860	20
• Car Availability Log	--	12/1/75-11/30/76	Hourly Entry	1,752	20
• Deviation Log	--	12/1/75-11/30/76	Daily Entries	366	100
d. Patrol Car Sheets	--	9/1/74-11/30/76	Car Sheet	8,021	20
e. Personnel Records					
• Sick Day Summaries	--	1/1/72-12/31/76	Half Year	12	100
• Complaints and Commendations	--	9/1/74-11/30/76	--	--	--
f. Overtime Data					
• Accounting Statistics	--	9/1/74-11/30/76	Biweekly Entries	65	100
• Patrol Summaries	--	12/1/75-11/30/76	Daily Entries	366	100

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Exhibit 3.2
(page 2 of 3)

<u>Activities</u>	<u>Conduct Period</u>	<u>Sample Period</u>	<u>Sample Element</u>	<u>Sample Size</u>	
				<u>Number</u>	<u>% of Total</u>
3. continued					
g. Other WBP Data					
• Structured Patrol Reports	--	12/1/75-11/30/76	Monthly Report	11	100
• Split-Force Task Force Minutes	--	6/1/75-11/30/76	--	--	--
• WBP Orders and Memos	--	6/1/75-11/30/76	--	--	--
4. Questionnaire Surveys ¹					
a. Basic Patrol Officers	9/27/76-9/29/76	--	Officer	82	85
b. Basic Patrol Supervisors	9/27/76-9/29/76	--	Supervisor	17	85
c. Structured Patrol Officers	9/27/76-9/29/76	--	Officer	24	89
d. Detectives	9/27/76-9/29/76	--	Detective	30	88
e. Communications Personnel	9/27/76-9/29/76	--	Person	25	86
5. Client Telephone Survey ²					
a. Part 1	12/1/75-12/5/75	11/6/75-11/26/75	Interview	192	--
b. Part 2	9/20/76-9/24/76	8/27/76-9/24/76	Interview	190	--

3-11

¹ It should be noted that all questionnaire surveys were administered by an evaluator in an *anonymous* manner: a more detailed discussion is contained in Appendix C, which also includes a summary of the survey results.

² A discussion of the client telephone survey and a summary of the corresponding results are contained in Appendix B.

Exhibit 3.2
(page 3 of 3)

<u>Activities</u>	<u>Conduct Period</u>	<u>Sample Period</u>	<u>Sample Element</u>	<u>Sample Size</u>	
				<u>Number</u>	<u>% of Total</u>
6. On-Site Interaction ³					
a. Participant Observations ⁴	6/1/75-12/31/76	--	--	--	--
b. Formal Interviews	6/1/75-12/31/76	--	--	--	--
c. Briefings	6/1/75-12/31/76	--	--	--	--
7. Evaluation Products					
a. Interim Presentation	6/25/76	--	--	--	--
b. Final Report	2/15/77	--	--	--	--

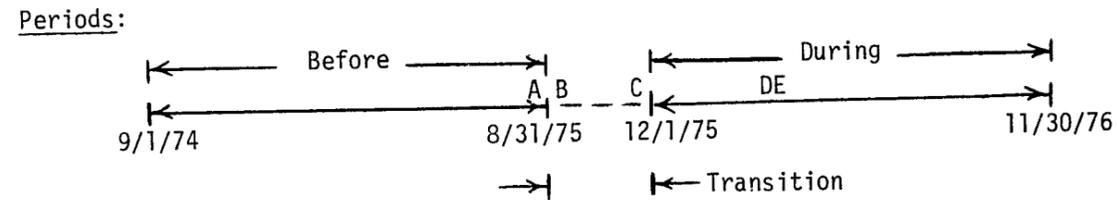
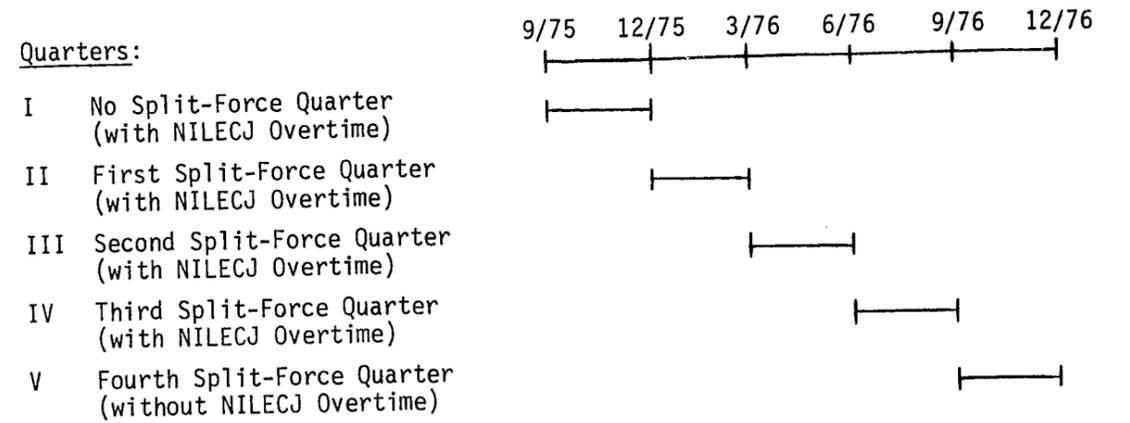
3-12

³ On-site interaction consumed 1.2 person-years out of a total of 2.5 professional person-years devoted to the evaluation effort.

⁴ Participant observations were conducted in an unstructured but consistent manner; each observation usually took from two to three hours.

Exhibit 3.3

Evaluation Quarters and Periods



Major Events:

- A. During the last two weeks of August, 1975, large disturbances occurred as a result of an interracial murder.
- B. During the last two weeks of September, 1975, large disturbances occurred as a result of a teachers' strike.
- C. In November, 1975, preparation for the split-force experiment was underway: a new call-for-service dispatch card was introduced and training sessions were conducted.
- D. On April 4, 1976, the Structured patrol force was established as a *separate* organizational unit within the Patrol Division.
- E. On April 8, 1976, an officer was critically wounded during the course of a robbery while on an *off-duty* job, increasing consciousness of officer safety.

Second, we would like to point out that some of the evaluation measures cited in the report have been specifically developed for this evaluation: a glossary of abbreviations and terms is included in Appendix A. Furthermore, it should be noted that we have been very careful about the usage of such terms as productivity and workload. Thus, we use the term productivity only when we are combining the concepts of *effectiveness* and *efficiency*,* and, similarly, workload refers to the amount of patrol unit *time* consumed in responding to calls for service.

Finally, we would like to state that, for the sake of brevity and clarity, we have purposefully omitted from the text most of the standard statistical analysis results (e.g., results from Chi-square tests, t-tests, F-tests, correlations, and linear regressions). Instead, and wherever appropriate, we indicate only *statistically significant* differences or changes--at a 0.05 level of significance.**

* Various publications [A.1-1, A.1-16, A.1-17, A.1-18, and A.1-31] have attempted to identify the multitude of productivity-related measures. To date, there is no single composite productivity measure. In this evaluation, we address productivity only in terms of those measures which combine the concepts of effectiveness (i.e., the extent to which a program is accomplishing its stated purposes) and efficiency (i.e., the extent to which a program is undertaking its activities at minimum cost in resources).

** In non-technical terms, a 0.05 level of significance implies that there is only a five percent likelihood that the resultant differences or changes could have occurred by chance, assuming the null or "straw man" hypothesis to be true. Thus, if a test is significant at the 0.05 level, a reasonable person could discard the null hypothesis as being an implausible characterization of reality.

PART II: PROCESS MEASURES

- 4 PERFORMANCE STATISTICS
- 5 BASIC PATROL ELEMENTS
- 6 STRUCTURED PATROL ELEMENTS
- 7 PATROL SPECIALIZATION

The testing of a new hypothesis is, perhaps, the most important process for which it can be used, since testing and verification lead to the discovery of new truths. The importance of a hypothesis is not that it is true, but that it can be subjected to a process of testing or verification. It matters little whether it turns out to be true or not.

Carl Alsborg, 1931

4 PERFORMANCE STATISTICS

The purpose of this section is to summarize some quantitative performance results which are referred to at various points in this part of the report, which deal with the process measures of the Wilmington split-force patrol experiment. Specifically, the incident time statistics, the Basic workload-related statistics, and the arrest-related statistics are presented in this section: the *significance* of these statistics in relation to the Basic and Structured patrol elements is discussed in Sections 5 and 6, respectively.

Before presenting the performance statistics, it is important to discuss two issues which provide the basis for understanding the statistics. First, we review the extent of the split in the patrol force in terms of the assigned manpower. Exhibit 4.1 summarizes the Before and During distributions of WBP manpower. Discounting those assigned to special, mounted and headquarters duties, we see that during the experiment 70 sworn officers were assigned to Basic, while 27 were assigned to Structured, yielding a Basic to Structured ratio of 2.59:1. The degree to which each Basic patrol element contributed to the formation of the Structured Unit is discussed in Section 6. Suffice it to say here that the split actually did *occur* and that the size of the Structured force is *substantial*, as was the corresponding decrease in the Basic force.

The second issue concerns the focus of our evaluation effort. In terms of call-for-service (CFS) responses, we limited our analysis

Exhibit 4.1

WBP Manpower Distribution

	<u>Average Number of Before/During Sworn Personnel</u>			
	<u>Supervisors</u>	<u>Officers</u>	<u>Total</u>	<u>Change</u>
Patrol Division				
Basic ¹	10/8	74/62	84/70	-16.7%
Special ²	--	25/17	25/17	-32.0%
Mounted	1/2	11/16	12/18	+50.0%
Tactical/Structured ³	1/3	10/24	11/27	--
Headquarters ⁴	11/13	2/5	13/18	+38.5%
Total	23/26	122/124	145/150	+ 3.4%
Detective Division	14/14	18/20	32/34	+ 6.3%
Other Divisions	39/34	38/33	77/67	-13.0%
Total	76/74 ⁵	178/177	254/251 ⁶	- 1.2%
Overtime Equivalent ⁷	--	--	34/42	+23.5%
Total with Overtime	--	--	288/293	+ 1.8%

¹Includes officers assigned to foot patrol.

²Includes officers assigned to evidence detection, radar, wagon, and accident investigation units.

³Tactical officers were mostly assigned to burglary and robbery details in the Before period, while Structured officers are organized in a separate unit (as of 4/4/76) in the During period.

⁴Includes supervisors and officers who carry out patrol command, turnkey, court liaison, and traffic administration duties.

⁵Includes (1/1) Chief, (4/3) Inspectors, (8/11) Captains, (13/11) Lieutenants, and (50/48) Sergeants.

⁶The Wilmington Bureau of Police has an authorized strength of 271 sworn officers.

⁷Based on 202 working days per person-year.

to only those provided by the Basic patrol units.* However, as indicated in Exhibit 4.2, the Basic units handled 71.6 percent and 73.7 percent of all calls for service in the Before and During periods, respectively. Inclusion of the CFS responses made by other units would only confound the incident time statistics, which are considered next.

4.1 INCIDENT TIME STATISTICS

As illustrated in Exhibit 4.3, four times are recorded--to the nearest minute--on each CFS card: the time the CFS is received at the WBP; the time a patrol unit is dispatched to handle the incident or provide the assist; the time the unit reports his arrival at the scene of the incident; and the time the unit reports his clearance from the scene. The three corresponding elapsed times are the delay, travel and on-scene times, respectively. A more meaningful way of viewing these times is from the demand and supply perspectives. From the demand perspective, the citizen who makes a CFS perceives a "response" time: the time spent waiting for the police to arrive. It is, of course, the sum of the delay and travel times. From the supply perspective, the patrol unit perceives a "service" time: the time spent in connection with the CFS incident. It is, of course, the sum of the travel and on-scene times.

* It should be noted that, although we monitored the activities of all the units in the WBP, we focused our attention on the Basic and Structured forces. We did not, for example, try to measure the effectiveness and efficiency of the special (i.e., evidence detection, radar, wagon and accident investigation) and mounted patrol units. As a point of interest, the WBP officials feel that special patrol units are necessary, and that mounted patrol units are good for public relations and are very effective in certain situations.

Exhibit 4.2
Call-for-Service Distribution

Calls for Service / Type of Unit		Before/During Comparison of Number of Calls for Service Per Day						
		Basic Unit ¹	Special Unit ²	Tactical/Structured Unit ³	Foot & Mounted	Other ⁴	Total	Change
Primary								
	Part I	24.4/25.8	0.9/0.7	0.3/0.7	0.2/0.5	2.9/2.0	28.7/29.7	+3.5%
	Part II	70.0/62.2	3.9/1.6	1.4/3.1	1.3/1.2	12.0/4.8	88.6/72.9	-17.7%
	Traffic	28.7/21.0	4.8/2.1	2.8/4.2	1.0/0.9	10.8/4.7	48.1/32.9	-31.6%
	Medical	3.1/5.2	0.2/0.3	0.0/0.1	0.0/0.1	0.3/0.2	3.6/5.9	+63.9%
	Alarm	12.9/12.2	0.9/0.5	0.2/0.4	0.2/0.5	1.4/0.6	15.6/14.2	-9.0%
	Miscellaneous	10.4/28.1	0.4/0.8	0.2/1.6	0.1/0.7	1.5/7.4	12.6/38.6	+206.3%
	Total	149.4/154.6	11.1/6.0	4.8/10.0	2.9/3.9	29.0/19.7	197.2/194.2	-1.5%
Assist		39.1/51.4	10.5/7.0	2.6/14.1	0.6/1.9	13.2/10.8	66.0/85.2	+29.1%
Total		188.5/206.0	21.6/13.0	7.4/24.1	3.5/5.8	42.2/30.5	263.2/279.4	+6.2%
Change		+9.3%	-39.8%	--	+65.7%	-27.7%	+6.2%	
Average Number of 8-Hour Units Per Day		24.9/24.8	4.2/3.2	1.7/--	--	--	--	

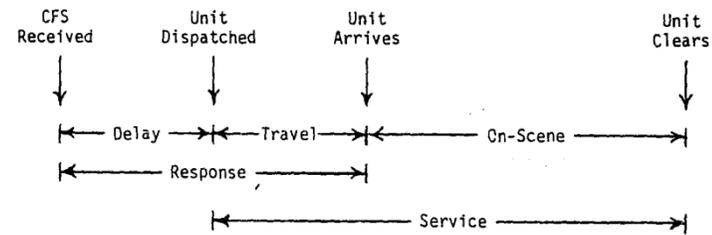
¹ Denotes a marked patrol car whose primary responsibility is to respond to calls for service.

² Includes evidence detection, radar, wagon and accident investigation units.

³ Includes only those tactical (i.e., Before) and Structured (i.e., During) units which are marked patrol cars.

⁴ Includes street sergeant, duty officer, cycle, detective and mobile communications units.

Exhibit 4.3
Incident Time Measures



(a) Definitions

	Average Time in Minutes ¹					
	Before		During		Change	
	Average	SD/Ave. ²	Average	SD/Ave. ²	Average	SD/Ave. ²
<u>Delay Time</u>						
Primary	4.53	2.34	3.41	2.30	-24.7%	--
Assist	0.13	17.46	0.25	17.20	--	--
<u>Travel Time</u>						
Primary	4.98	1.45	5.92	1.43	+18.9%	--
Assist	4.27	1.78	3.94	1.49	-7.7%	-16.3%
<u>On-Scene Time</u>						
Primary	18.55	1.07	17.40	1.03	-6.2%	--
Assist	11.97	1.23	10.80	1.23	-9.8%	--
<u>Response Time</u>						
Primary	9.47	1.43	9.33	1.27	--	-10.9%
Assist	4.37	1.78	4.16	1.78	--	--
<u>Service Time</u>						
Primary	23.53	0.98	23.32	0.95	--	--
Assist	16.24	1.13	14.74	1.10	-9.2%	--

(b) Statistics

¹ All delay, travel, on-scene, response and service times greater than 90 minutes are truncated to 90 minutes.

² Ratio of standard deviation to average: it reflects the spread of the distribution about its average and normalized to the average. In general, it can be stated that the system efficiency increases as the indicated ratio decreases.

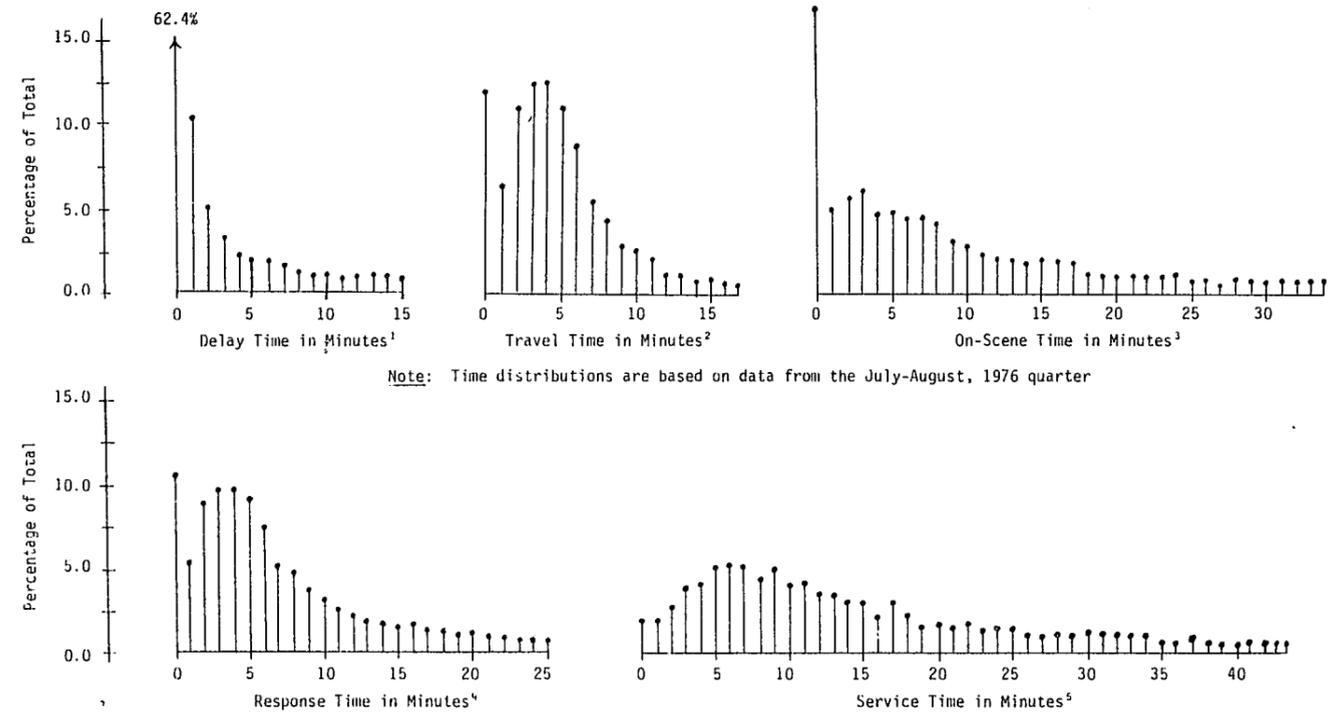
The various incident time statistics are also contained in Exhibit 4.3: it is seen that the statistics for primary and assist calls for service are *significantly* different. For purposes of illustration, the actual incident time distributions, based on all calls for service in the 7/76-8/76 quarter, are shown in Exhibit 4.4. In comparing the findings in Exhibits 4.3 and 4.4, it is interesting to note that although the average delay time is 2.62 minutes (which is the weighted sum of the During primary and assist delay times), 62.4 percent of all calls for service have a zero delay time! The fact that only a little more than a third of all calls for service are delayed is an important and revealing finding. Similarly, it should be noted that a significant number of all calls for service have zero travel times and/or zero on-scene times. Zero travel times could imply self-initiated calls (i.e., instances where citizens make direct contact with the patrol officers in the field); while zero on-scene times could reflect instances where, for example, patrol officers report self-initiated calls and their completions at the same time, or when assist units are no longer required to go to the scene and are informed of this while on route. Dispatcher errors could also cause zero elapsed times to be recorded.

The remainder of this section contains a brief discussion of the nature of the incident time statistics in terms of the response and service times--again, it should be indicated that the significance of these statistics is mainly discussed in Sections 5 and 6.

RESPONSE TIME

Inasmuch as primary responses reflect *initial* responses to citizen requests for service, the primary response times are of greater

Exhibit 4.4
Incident Time Distributions



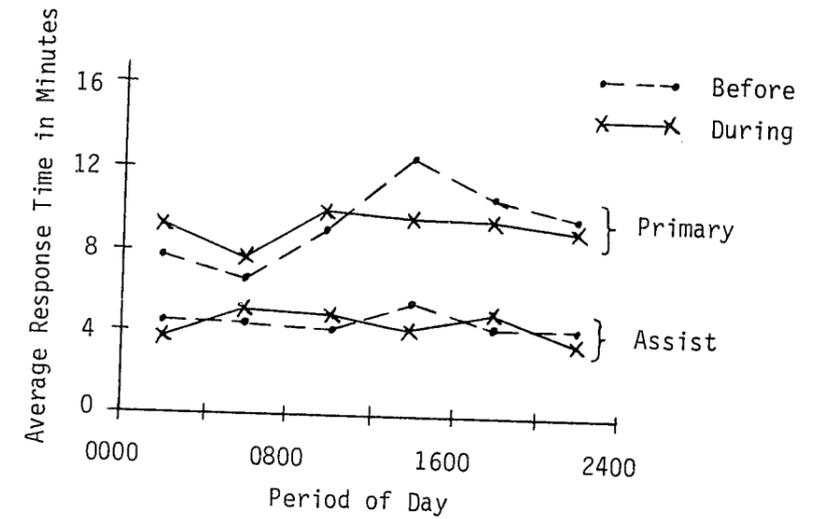
¹ 0.3% of total During sample have 90 minutes delay time--computer analysis truncates at 90 minutes.
² 0.4% of total During sample have 90 minutes travel time--computer analysis truncates at 90 minutes.
³ 3.3% of total During sample have 90 minutes on-scene time--computer analysis truncates at 90 minutes.
⁴ 0.6% of total During sample have 90 minutes response time--computer analysis truncates at 90 minutes.
⁵ 3.9% of total During sample have 90 minutes service time--computer analysis truncates at 90 minutes.

significance to citizens. Referring to Exhibit 4.3 and on a Before and During basis, we see that although primary delay time has decreased by a substantial 24.7 percent, the primary response time has remained statistically unchanged, at a little over nine minutes: obviously, the primary travel time has increased--it has increased by about a minute. Thus, the citizens of Wilmington should not have perceived any change in response time--this is supported by the client survey results (see Exhibit B.7, Question 5). The client survey results also indicate that most citizens--about 80 percent--are either satisfied or very satisfied with the response time (see Exhibit B.7, Question 6).

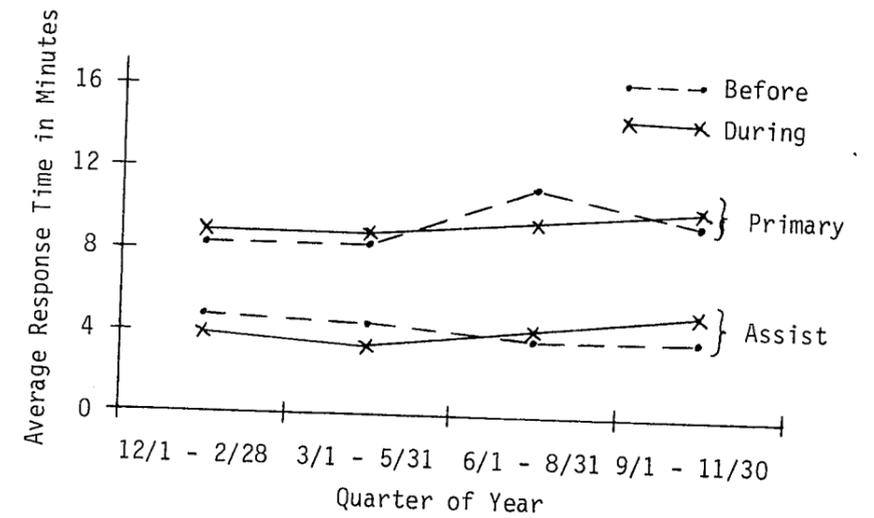
On the other hand, assist response times are important to patrol officers since they are the ones being assisted. The assist response time of a little over four minutes should *not* be interpreted as an indication that the primary response unit must wait that length of time for the assisting unit to arrive. In most cases, an assist unit is dispatched almost immediately after the primary unit is dispatched--as evidenced by the fact that the assist delay time is negligible (see Exhibit 4.3). Thus, both primary and assist units travel simultaneously to the scene of an incident: in most cases, they arrive at about the same time.

In looking at the sensitivity of response time to time of day and season of year, Exhibit 4.5 shows that the only sensitivity is that to time of day: primary response time is predictably shorter in the early morning hours when traffic is light. Assist response time does not exhibit a similar sensitivity.

Exhibit 4.5
Response Time Sensitivities



(a) Sensitivity to Time of Day



(b) Sensitivity to Season

SERVICE TIME

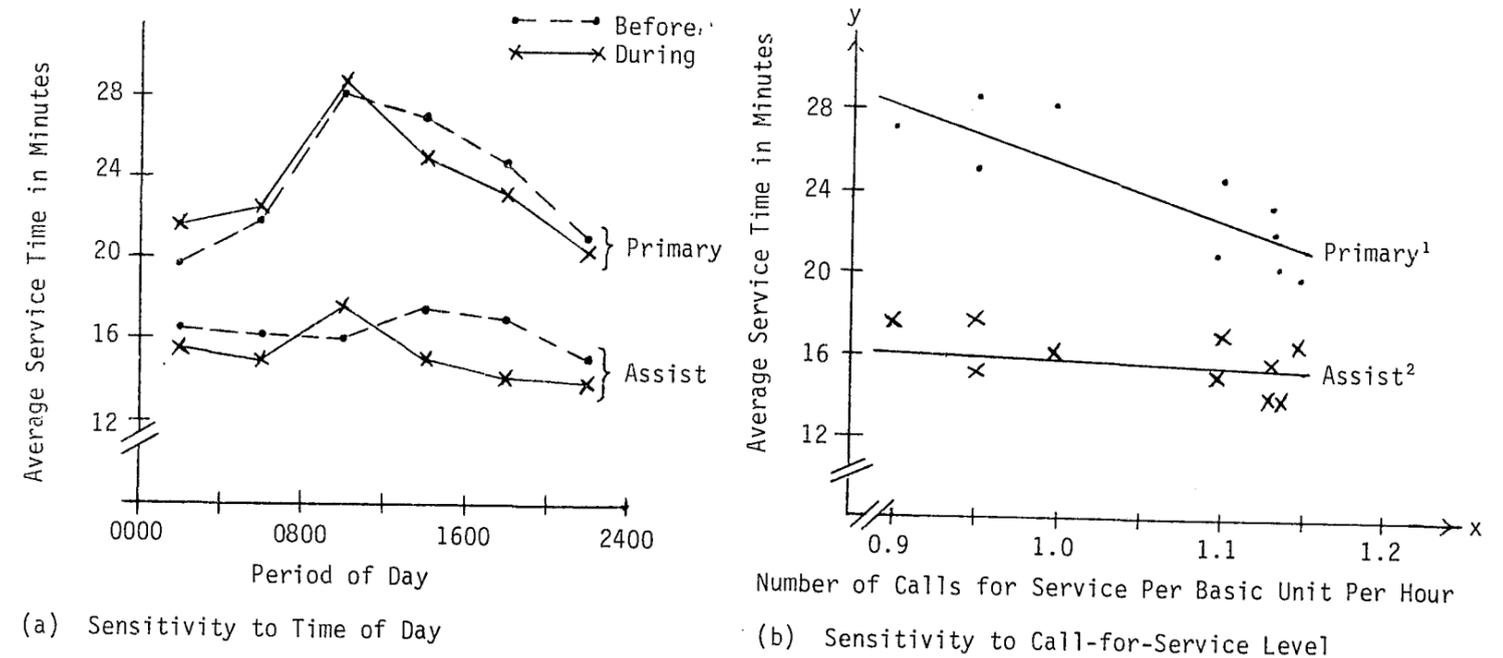
Exhibit 4.3 shows that the primary service time has remained statistically unchanged, at about 23 minutes; while the assist service time has decreased by a minute and a half to about 15 minutes. Basically, the one minute increase in primary travel time was offset by an equivalent decrease in primary on-scene time; while decreases in both assist travel and on-scene times contributed to a lower assist service time.

Like the primary response time, the primary service time is also sensitive to time of day: this is shown in Exhibit 4.6. Another interesting service time sensitivity is shown in Exhibit 4.6: namely, the service time, especially the primary service time, is inversely proportional to the call-for-service level. This reflects a well-known phenomenon in queuing or waiting line theory--that is, a server tends to work fast when there are a large number of customers waiting to be served, and conversely, more slowly when there are a few customers.

The import of this phenomenon can best be illustrated by a numerical example using the primary linear regression equation contained in Exhibit 4.6. Let us take two call-for-service levels and compute their related statistics. First, at 0.90 calls for service per Basic unit per hour, the equation states that the primary service time is 28.30 minutes, or 0.472 hours, resulting in an equivalent workload of 0.425 hours per Basic unit per hour (i.e., (0.90) (0.472)). Secondly, at 1.15 calls for service per Basic unit per hour, the equation states that the primary service time is 21.13 minutes, or 0.352 hours, resulting in an equivalent workload of 0.405 hours per

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Exhibit 4.6
Service Time Sensitivities



¹ Primary Linear Regression Equation: $y_p = 54.10 - 28.67x_p$ ($r^2=0.708$)

² Assist Linear Regression Equation: $y_A = 18.16 - 2.44x_A$ ($r^2=0.346$)

CONTINUED

1 OF 4

Basic unit per hour (i.e., $(1.15)(0.352)$). Thus, even though the calls for service per Basic unit per hour increased by 27.8 percent, the workload per Basic unit per hour actually decreased by five percent! Obviously the decrease in primary service time--by 25.3 percent--was the critical factor behind this counter-intuitive result. Interestingly enough, a careful examination of the primary linear regression equation in Exhibit 4.6 reveals that increasing the call-for-service level per unit would *never* cause a corresponding increase in workload per unit: in fact, as shown by the above example, the workload per unit decreases slightly in the call-for-service range for which the equation is defined. In sum, the equation models a human tendency to keep the overall workload *constant*.

An eager efficiency expert might want to exploit this constant-workload phenomenon by decreasing the number of patrol units, which would increase the number of calls for service per unit. In attempting to maintain a constant workload, the patrol units might then decrease the service time per call so drastically that the service provided would be inadequate, resulting in citizen dissatisfaction. Moreover, the physical demands of rushing from one incident to another may cause severe physical and morale problems. The question arises, What is the optimum workload level for a patrol unit? We attempt to address this question in the next section.

4.2 BASIC WORKLOAD-RELATED STATISTICS

Before reviewing the workload-related findings, it is important to understand the meaning and purpose of three related measures: *workload*, *unit utilization factor*, and *officer workload index*. A patrol

unit workload is defined as the amount of patrol unit time consumed in responding to calls for service: it is, as indicated in Section 4.1, the number of calls for service weighted by the corresponding *service* times. As an example, if patrol unit A handles six calls for service during an eight-hour tour with an average service time of 20 minutes, then the patrol unit's workload is 120 minutes (i.e., $(6)(20)$) or two hours.

The problem with just quoting the patrol unit workload is that it is somewhat limited. For example, two patrol units having the same workload, say two hours, does not mean that they were equally as busy, since one unit, say B, may have had a four-hour tour, while the other, say C, an eight-hour tour. Obviously, the former unit was twice as busy as the latter. Therefore, it is advantageous to normalize the workload. The patrol unit utilization factor is then defined as the ratio of call-for-service workload to number of available *unit* hours or, equivalently, the fraction of time the patrol unit is committed to responding to calls for service during its tour of duty (usually an eight-hour tour of duty). In the same example, then, patrol unit B has a utilization factor of 0.50, while patrol unit C has a factor of 0.25.

The patrol unit utilization factor is also somewhat limited. Suppose, for example, two patrol units, say D and E, have the same utilization factor, say 0.25. However, unit D is manned by one officer, while unit E is manned by two officers. Although the officers in both units are just as busy, from the viewpoint of efficiency, it is obvious that unit D is twice as efficient as unit E, assuming

all other conditions remain constant. The problem, then, is to define a measure that takes into consideration the number of officers per unit. We have defined the officer workload index as the ratio of call-for-service workload to number of available officer hours: this index can be shown to be equal to the unit utilization factor divided by the number of officers per unit. Thus, continuing with the recent example, patrol unit D has an officer workload index of 0.25, while patrol unit E has an index of 0.125.

Exhibit 4.7 contains several important Basic patrol unit statistics, most of which are discussed at appropriate points in the text of the report. At this point, three results in Exhibit 4.7 should be discussed. First, it should be noted that, on a Before and During basis, the unit utilization factor has increased by 4.6 percent, while the officer workload index has increased by a substantial 20.6 percent, owing mostly to a 13.0 percent decrease in officers per Basic unit. Although Basic efficiency (as reflected in the officer workload index) increased significantly, what can be said about Basic effectiveness? Insofar as the citizens of Wilmington are concerned, they remain overwhelmingly positive about the quality of their police services (see Exhibit B.7, Questions 11 and 15). Our evaluation findings in Section 5 also indicate that Basic effectiveness has not decreased, and may, in fact, have increased somewhat. Therefore, it can be stated that the productivity of the WBP's call-for-service response officers has increased by at least 20 percent!

Second, if one were just to consider call-for-service levels--without weighting them by the appropriate service times--then the number of calls for service per Basic unit per day would have increased by 9.8 percent (i.e., from 7.57 in the Before period to 8.31 in the During period), and a similarly defined officer call-for-service index would have increased by 26.1 percent (i.e., from 5.19 to 6.54). Obviously, the difference between these statistics and the corresponding workload-related statistics is due to the service time which did not remain constant but decreased some, especially the assist service time. The decrease in service time could have been partially caused by the constant-workload phenomenon, but, based on participant observations, the decrease in assist service time was primarily due to more effective supervision.

The third result to be discussed concerns the inordinately high workload levels in the 6/75-8/75 and 9/75-11/75 evaluation quarters. As indicated in Exhibit 3.3, an interracial murder resulted in instances of civil unrest in the 6/75-8/75 quarter, while a teachers' strike resulted in large-scale demonstrations in the 9/75-11/75 quarter. Although the teachers' strike occurred in our defined transition period, the interracial murder occurred in our Before period. Indeed if we were to normalize the artificially high unit utilization factor in the 6/75-8/75 quarter, then the revised factor for the Before period would be 0.331, which, on a Before and During basis, would yield increased changes of 10.0 percent in the utilization factor and 26.6 percent in the officer workload index. Therefore, the statement that Basic productivity has increased by 20.6 percent is indeed a conservative assertion.

Second, if one were just to consider call-for-service levels--without weighting them by the appropriate service times--then the number of calls for service per Basic unit per day would have increased by 9.8 percent (i.e., from 7.57 in the Before period to 8.31 in the During period), and a similarly defined officer call-for-service index would have increased by 26.1 percent (i.e., from 5.19 to 6.54). Obviously, the difference between these statistics and the corresponding workload-related statistics is due to the service time which did not remain constant but decreased some, especially the assist service time. The decrease in service time could have been partially caused by the constant-workload phenomenon, but, based on participant observations, the decrease in assist service time was primarily due to more effective supervision.

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As a matter of fact, in comparing the unit utilization results in Exhibit 4.7--which is based on the CFS cards--with those estimated from the patrol car sheets, we see from Exhibit 4.8 that the Before and During change indicated by the patrol car sheets is greater than that indicated by the CFS cards, but very close to the revised change. Nevertheless, it is surprising, but reassuring, that the results from the two data sources correlate so well.

Another statistic that is shown in Exhibit 4.8 is the maintenance utilization or the fraction of time that the Basic unit spends on maintenance activities. The WBP patrol car sheets estimate the maintenance utilization to be 0.189: we believe this to be a very low estimate of the true value, since the patrol car sheets are completed by the patrol officers themselves, and they would, of course, be reluctant to indicate a number of personally-related maintenance activities. The Kansas City estimate of 0.311 is more realistic: it was arrived at by participant observation measures. In fact, if we were to add 0.311 to the During unit utilization factor of 0.364, we get 0.675 which is amazingly close to the total utilization indicated by the WBP car availability log. Again, the correlation and complementary nature of the various data sources is reassuring: it underscores the need to analyze a range of different and independent data sources.

Before concluding this section on workload-related statistics, it is important to view Wilmington's performance from a national perspective. Unfortunately, we know of no other study that has computed an officer workload index. The few studies that have unit utilization factors available are referenced in Exhibit 4.9: it is

Exhibit 4.8

Total Basic Patrol Unit Utilization

Data Source	Average Before/During Patrol Unit Utilization ¹					
	Call-for-Service Utilization	Change	Maintenance ² Utilization	Change	Total Utilization	Change
WBP Call-for-Service Card ³	0.348/0.364	+ 4.6%	--/--	--	--	--
WBP Patrol Car Sheet ⁴	0.317/0.345	+ 8.8%	--/0.189	--	--/0.534	--
WBP Car Availability Log ⁵	--/--	--	--/--	--	--/0.677	--
Kansas City Evaluation ⁶	See Exhibit 4.9	--	0.311 (1973)	--	--	--

¹ Utilization is defined as the fraction of time a patrol unit is *unavailable* for dispatch. It is the sum of the call-for-service utilization (i.e., unit utilization factor) and the maintenance utilization.

² Maintenance activities include meal breaks, coffee breaks, car check-ups, arrest processing, phone calls, personal errands, etc.

³ Call-for-service cards--a sample of which is shown in Exhibit B.1--are completed by both the complaint-taker and the dispatcher: a card is completed for every primary and assist call-for-service. Inasmuch as the incident-related time statistics are punched on the cards by a time clock, the call-for-service cards do constitute a reliable data source.

⁴ Patrol car sheets are completed by patrol officers during the course of their tours: a patrol car sheet is completed for each eight-hour patrol unit tour. Inasmuch as the incident-related time statistics are usually estimated by the patrol officers, the patrol car sheets do not constitute a very reliable data source.

⁵ The car availability log was kept by the dispatcher specifically for the purpose of the split-force experiment: the dispatcher would record the number of available Basic patrol units every hour on the half hour. The log entries do constitute a very reliable data source.

⁶ Kansas City Preventive Patrol Experiment: see [A.1-12].

Exhibit 4.9

Inter-City Comparison of Patrol Unit Utilization

City	Population (1970 Census)	Officers Per 1,000 Population ¹	"Basic" ² Unit Utilization Factor ³
Wilmington, Delaware	80,386	3.12	0.364 (1976) [See Exhibit 4.7]
Worcester, Massachusetts	176,572	2.36	0.280 (1975) [A.1-27]
St. Louis, Missouri	622,236	3.56	0.200 (1974) [Internal Report]
Kansas City, Missouri	507,330	2.52	0.185 (1973) [A.1-12]
Arlington, Massachusetts	53,534	1.64	0.150 (1974) [Internal Report]

¹ Based on the 1974 FBI Uniform Crime Reports and the 1970 census data.

² The term "Basic" is used here in a generic sense to designate those patrol units whose primary function is to respond to calls for service. Some police departments refer to these units as "sector" or "district" units.

³ Based on *available* information--the specific references are indicated. A comparison of utilization factors between cities should be undertaken with extreme caution; it is obviously highly dependent on each city's communications-related procedures, especially with regard to the recording of self-initiated and assist calls for service.

seen that Wilmington has the *highest* known unit utilization factor. The paucity of available workload or productivity-related data suggests that an intensive national effort should be undertaken to fill this important gap.

Rephrasing the unanswered question in Section 4.1, a final issue to be addressed is, What is the optimum patrol unit utilization factor? The answer is not known at this time; it is obviously dependent on a number of factors, including the number of patrol units available, the time of day, the types of call-for-service, the level of citizen expectation, etc. However, given current patrol conditions, we feel that it would be *unrealistic* for an urban police department to achieve an *average* unit utilization factor of, say, more than 0.40 or 0.45. Together with a maintenance utilization of about 0.30, we see that the total unavailable time of an average patrol unit would be between 70 and 75 percent of its eight-hour tour. A higher average unit utilization factor would cause very long call-for-service delays and may endanger both the safety of officers and the security of citizens, as units may not be available for critical or assist dispatches. As it is, extensive *management* of the call-for-service demand would be required to smooth the demand enough so that an average unit utilization factor of over 0.40 could be attained.

Finally, given the above discussion on unit utilization factor, it is seen that Wilmington's Before and During factors of 0.348 and 0.364, respectively, are indeed significant. Of more significance, however, is its 20.6 percent increase in the officer workload index; this has been achieved in conjunction with an already high level of unit utilization.

4.3 ARREST-RELATED STATISTICS

The arrest, charge and clearance statistics are summarized in Exhibits 4.10, 4.11 and 4.12, respectively. They all suggest one conclusion: that, on a Before and During basis, the Patrol Division-- in particular, the Structured force--has performed much better in arrest-related activities, perhaps at the partial expense of the Detective Division, which has experienced a significant drop in arrest-related activities. Section 6 discusses the meaning and significance of these statistics.

Unfortunately, several additional indicators useful in evaluating investigative productivity were inaccessible, due to the time and resource constraints of the evaluation effort. Specifically, we were unable to access indicators relating to the *quality* of arrests, including the proportion of arrests surviving the first judicial screening, the conviction rate for the apprehended offenders, and the correlation between the crime for which the offender is charged and that for which he/she is convicted. However, it can be stated that most WBP officers and supervisors believe that the quality of arrests in the During period has been no different than that in the Before period.

Exhibit 4.10
Arrest Statistics

	Average Monthly Before/During Statistics ¹			
	Number of Individuals Arrested	Number of Assigned Officers	Arrests Per Assigned Officer	Change
<u>Violent Crimes</u>				
Patrol Division				
Structured ²	--/6.04	--/27	--/0.224	--
Non-Structured ²	--/8.21	--/123	--/0.049	--
Total	11.82/14.25	145/150	0.082/0.095	+15.6%
Detective Division	17.45/9.25	32/34	0.545/0.272	-50.1%
<u>Property Crimes</u>				
Patrol Division				
Structured	--/33.77	--/27	--/1.251	--
Non-Structured	--/36.65	--/123	--/0.298	--
Total	66.91/70.42	145/150	0.462/0.469	+ 1.5%
Detective Division	38.00/20.92	32/34	1.188/0.615	-48.2%

¹The Before and During statistics are based on 1/75-11/75 and 12/75-11/76 periods, respectively.

²The Structured and Non-Structured breakdown is estimated based on data from 4/76 - 11/76.

Exhibit 4.11
Charges Per Arrest Statistics

	Average Monthly Before/During Statistics ¹			
	Number of Individuals Arrested	Number of Charges	Charges per Arrest	Change
<u>Violent Crimes</u>				
Patrol Division				
Structured ²	--/6.04	--/7.81	--/1.29	--
Non-Structured ²	--/8.21	--/7.69	--/0.94	--
Total	11.82/14.25	14.09/15.50	1.19/1.09	- 8.4%
Detective Division	17.45/9.25	33.91/14.17	1.94/1.53	-21.1%
<u>Property Crimes</u>				
Patrol Division				
Structured	--/33.77	--/99.07	--/2.93	--
Non-Structured	--/36.65	--/29.01	--/0.79	--
Total	66.91/70.42	99.91/128.08	1.49/1.82	+22.1%
Detective Division	38.00/20.92	108.91/74.50	2.87/3.56	+24.0%

¹The Before and During statistics are based on 1/75-11/75 and 12/75-11/76 periods, respectively.

²The Structured and Non-Structured breakdown is estimated based on data from 4/76 - 11/76.

5 BASIC PATROL ELEMENTS

Exhibit 4.12
Case Clearance Statistics

	Average Monthly Before/During Statistics ¹					
	Cases Assigned	Change	Cases Cleared	Change	Clearance Rate	Change
<u>Violent Crimes</u>						
Detective Division	40.6/34.7	-14.5%	23.0/10.5	-54.3%	56.7%/30.3%	-46.6%
Non-Detective Divisions	--/--	--	3.6/9.7	+169.4%	--/--	--
Total WBP	44.6/43.0	- 3.6%	26.6/20.2	-24.1%	59.6%/47.0%	-21.1%
<u>Property Crimes</u>						
Detective Division	350.1/256.5	-26.7%	117.9/47.3	-59.9%	33.7%/18.4%	-45.4%
Non-Detective Divisions	--/--	--	29.1/57.5	+97.6%	--/--	--
Total WBP	644.0/554.1	-14.0%	147.0/104.8	-28.7%	22.8%/18.9%	-17.1%

¹The Before and During statistics are based on 1/75-11/75 and 12/75-11/76 periods, respectively.

The increase in Basic patrol officer efficiency indicated in Section 4.2 has, in essence, been achieved by a combination of three methods. First, careful *planning* has minimized the workload imbalance among Basic patrol units, allowing for increased unit efficiency. Second, a *decision* to decrease the number of two-officer units has resulted in a corresponding increase in workload per officer. Third, *management* of the call-for-service demand has helped to reduce random demand peaks, allowing for a more efficient use of Basic resources. These methods are reflected in the various Basic patrol elements that were developed and implemented in the City of Wilmington.

Before elaborating on the significance and impact of the eight Basic elements presented in Section 2.2, it is expedient to briefly indicate the patrol officers' overall perception of the elements, based on the questionnaire survey responses and our own participant observation findings. As summarized in Exhibit 5.1, the patrol officers feel that, in general, the Basic elements have decreased their job satisfaction, even though they recognize the elements' contribution to WBP effectiveness. They obviously like some elements (i.e., NILECJ overtime and streamlined roll-call procedures), are indifferent to some (i.e., formalized response delays and proportional temporal deployment), and dislike others (i.e., adaptive response sectors, prioritized FCFS dispatch, reduced manning level per unit, and fixed-post assignments). These sentiments are further elaborated

Exhibit 5.1
Patrol Officer Perceptions

Basic Patrol Elements	Perceptions of Patrol Division Officers Regarding Basic Patrol Elements ¹					
	Net Impact on WBP Effectiveness			Net Impact on Job Satisfaction		
	Increased	No Effect	Decreased	Increased	No Effect	Decreased
1. Proportional Temporal Deployment	X				X	
2. Adaptive Response Sectors			X			X
3. Prioritized FCFS Dispatch		X				X
4. Formalized Response Delays		X			X	
5. Streamlined Roll-Call Procedures	X				X	
6. Reduced Manning Level Per Unit		X				X
7. Fixed-Post Assignments			X			X
8. NILECJ Overtime	X			X		

¹ The perceptions are primarily based on the questionnaire survey responses (see Exhibit C.1), tempered by our own participant observation findings. There was, for the most part, correlation between the two sources of data.

upon when we next consider each individual Basic element.* In each of the following eight sections which address the eight elements, respectively, we first identify the element, as planned, in terms of its salient features, then discuss each feature from both a quantitative and qualitative perspective, and finally close with a brief concluding statement.

5.1 PROPORTIONAL TEMPORAL DEPLOYMENT

The proportional temporal deployment element had two salient features. First, as illustrated in Exhibit 2.4, beginning with midnight, 8, 5, 7, 10, 12 and 12 Basic patrol units were allocated to the six contiguous four-hour periods, respectively. The 27 eight-hour units were allocated primarily to meet the *temporal* distribution of demand for police services. Second, in order to effect the temporal allocation plan, a "push-pull" schedule was implemented to temporally deploy the units. For the Basic portion of the push-pull schedule, two sets of pulls were required: three units from each of the 2400-0800 and 1600-2400 platoons were pulled to come in four hours earlier. The overlapping tours resulting from the push-pull schedule were also regarded as a means of maintaining street coverage during the platoon shift changes.

* It is recommended that the reader review Section 2.2 before proceeding with this section. Section 2.2, which contains a discussion of the decision process that resulted in the eight Basic patrol elements, provides the necessary background.

TEMPORAL ALLOCATION PLAN

The integrity of the temporal allocation plan has essentially been upheld, as stated in Exhibit 5.2; the difference in the planned and measured levels can mostly be accounted for by the analytical procedure that was used in the measurement process. Exhibit 5.2 also shows that the total number of response-oriented Basic units was the same in both the Before and During periods; however, the temporal distribution of the units was *different* in the two periods--more units have been allocated to the latter half of the day (i.e., noon till midnight) in the During period, whereas there was a more constant allocation of units throughout the day in the Before period. As planned, the During allocation has more closely reflected the temporal distribution of calls for service. This temporal allocation feature has been the primary reason for the 41.6 percent decrease in the mismatch between the temporal distributions of the call-for-service demand and the supply of Basic units, as summarized in Exhibit 5.3. The adaptive response sectors and formalized response delays have also contributed to the significant decrease in the mismatch index. The better match between demand and supply has in turn contributed to the 24.7 percent decrease in primary delay time (see Exhibit 4.3).

Another way of viewing the impact of the temporal allocation feature is to consider the time distribution of Basic workload-related statistics. Exhibit 5.4 shows that, as expected, the average unit utilization factor has primarily increased in the early morning hours when

Exhibit 5.2

Time Distribution of Available Basic Units

Period of Day	Average Number of Basic Units		Change
	Planned	Measured ¹	
0000 - 0400	8	7.55	- 5.6%
0400 - 0800	5	3.97	-20.6%
0800 - 1200	7	6.39	- 8.7%
1200 - 1600	10	9.20	- 8.0%
1600 - 2000	12	11.36	- 5.3%
2000 - 2400	12	11.22	- 6.5%
0000 - 2400	27	24.78	- 8.2%

(a) Planned Versus Measured

Period of Day	Average Number of Basic Units		Change
	Before ¹	During ¹	
0000 - 0400	8.42	7.55	-10.3%
0400 - 0800	6.04	3.97	-34.3%
0800 - 1200	7.36	6.39	-13.2%
1200 - 1600	8.44	9.20	+ 9.0%
1600 - 2000	9.60	11.36	+18.3%
2000 - 2400	9.93	11.22	+13.0%
0000 - 2400	24.90	24.78	- 0.5%

(b) Before Versus During

¹ The measured Before and During levels may be somewhat low, especially during low activity periods (e.g., the 0400-0800 period), because Basic units were only counted when they handled calls for service during the middle 3.5 hours of each four-hour block. This analytical procedure was instituted to avoid double counting of patrol units which were either slightly early or late for their respective shift changes.

Exhibit 5.3

Basic Demand and Supply Temporal Mismatch

Evaluation Quarter	Percent of Basic (CFS Demand/Unit Supply) in Time Period						Mismatch Index ¹
	0000 - 0400 D(1) / S(1)	0400 - 0800 D(2) / S(2)	0800 - 1200 D(3) / S(3)	1200 - 1600 D(4) / S(4)	1600 - 2000 D(5) / S(5)	2000 - 2400 D(6) / S(6)	
<u>Before</u>							
9/74 - 11/74	17.9%/16.9%	6.0/11.2	14.7/15.4	18.1/17.0	23.7/19.2	19.5/20.1	0.071
12/74 - 2/75	16.9%/17.2%	6.4/12.0	14.1/14.7	19.0/17.3	22.9/19.6	20.7/19.2	0.069
3/75 - 5/75	15.6%/16.2%	5.3/11.5	13.1/14.2	19.6/17.3	24.3/19.6	22.1/21.2	0.083
6/75 - 8/75	18.8%/17.4%	7.1/13.9	14.6/14.8	16.6/16.2	23.0/18.7	19.9/19.2	0.082
9/74 - 8/75	--	--	--	--	--	--	0.077
<u>Transition</u>							
9/75 - 11/75	19.4%/18.2%	8.0/13.4	15.0/15.1	17.2/16.1	22.2/18.0	18.2/19.3	0.071
<u>During</u>							
12/75 - 2/76	15.6%/15.8%	5.5/7.8	15.3/13.2	20.1/18.8	24.6/22.8	18.8/21.6	0.047
3/76 - 5/76	14.1%/14.4%	4.8/7.7	13.8/12.7	19.4/19.2	23.6/23.2	24.3/22.8	0.035
6/76 - 8/76	16.5%/15.2%	4.9/8.1	12.8/12.9	18.4/18.0	24.5/22.8	22.8/23.0	0.039
9/76 - 11/76	15.8%/15.4%	5.3/8.4	13.4/12.7	15.2/17.9	26.4/22.7	24.0/22.9	0.057
12/75 - 11/76	--	--	--	--	--	--	0.045
Before/ During Change	--	--	--	--	--	--	- 41.6%

¹ Mismatch Index = $[\sum_{\ell=1}^6 (D(\ell) - S(\ell))^2]^{1/2}$ for each quarter.

Exhibit 5.4

Time Distribution of Basic Workload-Related Statistics

	Basic Unit Utilization Factor		Officers Per Unit	Basic Officer Workload Index	
	Before/During	Change	Before/During	Before/During	Change
0000 - 0400	0.362 / 0.380	+ 5.0%	1.47 / 1.26	0.246 / 0.302	+22.8%
0400 - 0800	0.181 / 0.237	+30.9%	1.47 / 1.30	0.123 / 0.182	+48.0%
0800 - 1200	0.329 / 0.406	+23.4%	1.46 / 1.34	0.225 / 0.303	+34.7%
1200 - 1600	0.373 / 0.357	- 4.3%	1.46 / 1.26	0.255 / 0.283	+11.0%
1600 - 2000	0.418 / 0.390	- 6.7%	1.46 / 1.27	0.286 / 0.307	+ 7.3%
2000 - 2400	0.355 / 0.352	- 0.8%	1.46 / 1.21	0.243 / 0.291	+19.8%
0000 - 2400	0.348 / 0.364	+ 4.6%	1.46 / 1.27	0.238 / 0.287	+20.6%

fewer units have been assigned. On the other hand, the officer workload index has increased during every period of the day, due mainly to a decrease in the number of officers per unit. Of greater significance is the fact that the efficient allocation of Basic units has contributed to a substantial 28.0 percent decrease in the workload imbalance among all Basic units (see Exhibit 5.5): the adaptive response sectors and prioritized FCFS dispatch also contributed to this decrease. The unit utilization factor ranged from 0.087 to 0.665 in the Before period, while it has only ranged from 0.188 to 0.532 in the During period: thus, the call-for-service workload has been more equally distributed among all Basic units.

How have the Patrol Division officers perceived the temporal allocation feature? The officers are very pleased with the increase in the number of patrol units in the evening hours (i.e., 1600-2400) when 47.4 percent of the total daily call-for-service workload occurs. But they are unhappy about the decrease in patrol manpower during the early morning hours (i.e., 0400-0800 period) when five Basic units are assigned: they feel that their safety could be endangered.* During the course of the experiment, however, there has been no instance in which an officer's safety has been compromised due to the unavailability of backup units or for any other reason.

* Actually, in the design of the split-force experiment, the PCAM analysis had recommended an allocation of four Basic units in the 0400-0800 period. The WBP decision-makers decided, however, to allocate an additional unit, primarily to allay the safety-related fears of the officers.

Exhibit 5.5

Basic Unit Utilization Imbalance

	Average Before/During Basic Unit Utilization Factor ¹				
	Minimum	Average	Maximum	SD/Average ²	Change
0000 - 0400	0.172/0.302	0.362/0.380	0.665/0.482	0.307/0.155	-49.5%
0400 - 0800	0.087/0.188	0.181/0.237	0.282/0.380	0.259/0.199	-23.2%
0800 - 1200	0.188/0.318	0.329/0.406	0.522/0.532	0.213/0.117	-45.1%
1200 - 1600	0.223/0.226	0.373/0.357	0.516/0.507	0.230/0.160	-30.4%
1600 - 2000	0.212/0.210	0.418/0.390	0.558/0.520	0.208/0.196	- 5.8%
2000 - 2400	0.222/0.214	0.355/0.352	0.550/0.495	0.233/0.192	-17.6%
0000 - 2400	0.087/0.188	0.348/0.364	0.665/0.532	0.243/0.175	-28.0%

5-9

¹ Based on quarterly summaries of Basic unit utilization factors which are first averaged on a sector-assigned basis. For example, in the 0000-0400 period, there are eight designated sectors in the During period with a Basic unit assigned to each sector. First, we average, on a quarterly basis, the utilization factors of all the units assigned to the same sector: this is done for each one of the eight sectors. Therefore, there are 8 unit utilization factor values for each quarter, and 32 values for the During period which covers four quarters. Thus, the 0000-0400 During statistics are based upon these 32 values.

² Ratio of standard deviation to average.

PUSH-PULL SCHEDULE

As indicated in Section 2.3, the patrol officers were initially (i.e., before the formation of the Structured patrol force as a separate unit) very dissatisfied with the manner in which they were being pushed and pulled to man the 16 Structured units and the 6 overlapping Basic units. The level of dissatisfaction was considerably reduced when the Structured Unit was formed in April, 1976, since only the manpower for the 6 Basic units remained to be pulled.

Furthermore, the number of Basic officers who were being pulled decreased with time and by the end of the experiment only two out of six units were being manned by pulled officers--the remaining four units were being manned only by officers on overtime or assigned to the regular platoons. Inasmuch as an officer on overtime duty is usually given a four-hour assignment, those overlapping units manned by overtime officers would also be off the streets during platoon shift changes. Thus, the street coverage provided by the six overlapping Basic units has only been partially implemented during the platoon shift changes at midnight and 4 p.m.--and there are no overlapping units at the 8 a.m. shift change. As a result, the average incident delay times at shift changes have been relatively large; Section 5.4 further discusses the delays at shift changes.

CONCLUSION

The proportional temporal deployment element has resulted in a more *efficient* allocation of Basic resources, as evidenced by the

decrease in the mismatch between demand and supply; the decrease in primary delay time; and the decrease in the workload imbalance among all Basic units. Because the Patrol Division's call-for-service response function is being carried out with greater sensitivity to the temporal distribution of the call-for-service demand, it is also an *effective* element.

Unfortunately, the push-pull feature of this element has not been conclusively tested. Insofar as it has been tested, however, it does indicate that the pushing and pulling of approximately half the platoon manpower--to man 22 out of the 43 Basic and Structured units--is not feasible; it causes severe scheduling problems and disrupts the integrity of the platoon system. On the other hand, we believe that the pushing and pulling of no more than 20 percent of the platoon manpower is feasible, *provided* an explicit schedule is posted several months in advance. If more pushing and pulling is required, then we recommend the formation of new platoon(s) to overlap the three consecutive eight-hour shifts of the three basic platoons.

5.2 ADAPTIVE RESPONSE SECTORS

The adaptive response sectors element had three salient features. First, the sectors were designed to *minimize* both the travel time to calls for service and the workload imbalance among sector units.*

* It should be noted that the workload of a sector unit is generally *not equal* to the workload of the sector; the two quantities are only equal when no intersector dispatches are allowed. The relationship between sector unit workload and sector workload is, of course, dependent upon the dispatch procedures; Larson [A.1-14] has modeled this relationship.

Second, in order to accommodate the temporal deployment of Basic units, it was required that the sector designs *change* every four hours during the course of a day: six alternate sector designs--see Exhibit 2.5--were developed. Actually, the sector designs for the 1600-2000 and 2000-2400 periods were the same. Third, the sectors were identified as *response* sectors to highlight the Basic response function.

SECTOR DESIGN OBJECTIVES

Although the sector designs have tended to decrease the initial travel time to calls for service,* the FCFS dispatch procedure has tended to increase it, resulting in an overall increase in primary travel time of 18.9 percent (see Exhibit 4.3): the significance of this result is further discussed in Section 5.3. The second objective of minimizing workload imbalance among sector units has, of course, been achieved, as detailed in Section 5.1.

CHANGING SECTOR DESIGNS

Although the communications personnel have not had any problems with changing sector designs every four hours, the Basic officers have been very concerned about the *lack of sector identity* caused by the changing designs. One Basic officer wrote, "These days the officers can't feel responsible for their sectors and don't have a chance to properly learn their sectors--they have almost no contact with the

* Whereas a decrease in incident delay time could result from a better temporal match between demand and supply, a decrease in incident travel time could result from a better spatial match. In fact, the sector designs were developed by a computer based, queuing model which, in essence, attempted to match the supply of patrol resources to the probabilistic nature and spatial distribution of demand for police services, subject to certain conditions and assumptions.

civilians who inhabit these sectors."

The perception that sector identity was upheld in the Before period is questionable, since, depending on the number of patrol units deployed, each unit was assigned patrol responsibility for one or more sectors, or it may have shared the responsibility with one or more units. It is true, however, that the assignment of officers to sector cars has been more haphazard in the During period than in the Before period, when it was easier for patrol supervisors to assign the same men to a sector since the sector designs remained constant.

RESPONSE FUNCTION

The Basic officers have continued to regard the sectors as "patrol" sectors in the traditional sense: that is, they continue to view the sectors as designated areas where they should conduct, usually random, patrol for the purpose of crime prevention. They have not yet accepted the fact that their primary function is to respond to calls for service, while it is the Structured officers' primary function to undertake crime prevention activities. The problems with Basic role identity are further highlighted in Sections 5.7 and 7.1.

CONCLUSION

The adaptive response sectors element has been *effective* in accomplishing its stated objectives, but it has caused some perceived sector identity problems. The perception could be mitigated if Basic officers could understand that the current procedure of changing sector designs every four hours (with each Basic unit being assigned to one sector)

is more in their *interest* than the previous procedure of having a fixed sector design (with each Basic unit being assigned usually to one or more sectors)--*both* procedures result in sector identity problems, but the current procedure causes less workload imbalance among Basic units. Nevertheless, the sector identity problems caused by this element could be minimized if officers are assigned to sector cars in a less haphazard and more judicious manner.

5.3 PRIORITIZED FCFS DISPATCH

The prioritized FCFS dispatch element had two salient features. First, as detailed in Exhibit 2.6, it was decided that every call-for-service could be formally given a *priority* designation. Second, it was decided that, within a priority, each call-for-service would be dispatched on a first-come, first-served (FCFS) basis and to the first available and appropriate patrol unit, irrespective of whether the call originates from the unit's designated response sector.

PRIORITY DESIGNATION

Exhibit 5.6 contains the distribution of calls for service by priority designation in the During period: unfortunately, a similar distribution is not available in the Before period, since priority designations were not a part of the data required on the call-for-service card. During our monitoring of the communication function, it became apparent that the complaint takers, who make the priority determinations, are confused about the "Basic Patrol Critical" and "In Progress" designations. In fact, they have tended to categorize each call-for-service as either a *critical*

Exhibit 5.6

Call-for-Service Priority Distribution

Priority Designation (During Period)	Percent of Basic Calls for Service		
	Primary	Assist	Total
Basic Patrol	61.2%	15.5%	76.7%
Basic Patrol Critical	1.6%	0.5%	2.1%
In Progress	8.9%	3.0%	11.9%
Other	3.7%	5.7%	9.4%
TOTAL	75.4%	24.7%	100.1%
Critical ¹	10.5%	3.5%	14.0%
Non-Critical ²	64.9%	21.2%	86.1%

¹Includes "Basic Patrol Critical" and "In Progress" calls for service.

²Includes "Basic Patrol" and "Other" calls for service.

call (i.e., requiring an immediate or emergency response) or a *non-critical* call (i.e., not requiring an immediate or emergency response). In performing a similar categorization, Exhibit 5.6 indicates that 86.1 percent of all calls for service are non-critical in nature: this is an important statistic from a policy perspective, since it suggests that an overwhelming majority of calls can be handled on a non-emergency basis. Another interesting point to note in Exhibit 5.6 is the fact that the proportion of assist to primary calls is the *same* for both critical and non-critical calls.

As summarized in Exhibit 5.7, the WBP has been able to respond appropriately to requests for police services: the delay and travel times are markedly shorter for critical calls than for non-critical calls.

Finally, although the WBP complaint takers and dispatchers do not feel that there is very much difference in the way critical and non-critical calls are dispatched in the Before and During periods, they do feel that *formalizing* the priority designation procedure has allowed for a more *uniform* treatment of calls of equal urgency. The patrol officers have obviously been less aware of the priority designation procedure, and they are therefore less vocal about its effectiveness or impact. They are, however, much more vocal about the FCFS dispatch procedure which is considered next.

FCFS DISPATCH

As anticipated by the architects of the split-force experiment and as stated in Section 2.2, the FCFS dispatch procedure has resulted in

Exhibit 5.7
Incident Time Statistics by Priority

	Average Time in Minutes (During Period)		
	Critical Calls for Service	Non-Critical Calls for Service	Total
<u>Delay Time</u>			
Primary	1.75	3.66	3.41
Assist	0.02	0.27	0.25
<u>Travel Time</u>			
Primary	4.77	6.10	5.92
Assist	3.48	4.01	3.94
<u>On-Scene Time</u>			
Primary	18.95	17.13	17.40
Assist	11.24	10.74	10.80
<u>Response Time</u>			
Primary	6.52	9.76	9.33
Assist	3.50	4.28	4.19
<u>Service Time</u>			
Primary	23.72	23.23	23.32
Assist	14.72	14.75	14.74

both positive (i.e., decreased delay time and decreased workload imbalance among units) and problematic (i.e., increased travel time and increased intersector dispatches) impacts.

What the architects did not anticipate is the overbearing nature of the procedure: it overshadows some of the other Basic elements. For example, the FCFS dispatch procedure has been the key factor behind the decrease in delay time (since the first available unit is dispatched) and increase in travel time (since intersector dispatches occur more frequently); interestingly enough, these two impacts negate each other so that the response time has *not changed*. Moreover, as indicated in Exhibit 5.8, the fraction of dispatches which are intersector dispatches has been at a 0.648 level* in the During period; unfortunately, it is not possible to obtain a comparable statistic for the Before period, because some units were each assigned to more than one sector.

The fact that nearly two-thirds of all dispatches are intersector dispatches has been unquestionably felt by all Basic officers (see Exhibit C.1, Question 17). One officer said, "Sector boundaries may as well not exist--I am running all over the City. In some busy shifts, nearly all of my calls are out of my own sector." The officer's perception is correct: the number of intersector dispatches tends to increase as the system gets busier.

* The 0.648 statistic supports the *integrity* of the FCFS procedure: it closely approximates the expected level of intersector dispatching, as predicted by queuing analysis of a FCFS system. The analysis suggests that it is reasonable "to estimate the fraction of dispatches which are intersector dispatches to be equal to or greater than the average fraction of time that the units are unavailable" [A.1-14, pp. 250]. The fraction of time that units are unavailable is approximated in Section 4.2 to be 0.675.

Exhibit 5.8
Intersector Dispatches

Evaluation Quarter (During Period)	Dispatches Per Day ¹	Fraction of Dispatches Which Are Intersector Dispatches
12/75 - 2/76	193.4	0.630
3/76 - 5/76	205.1	0.680
6/76 - 8/76	225.1	0.620
9/76 - 11/76	188.5	0.666
12/75 - 11/76	206.0	0.648

¹ It is assumed that the number of dispatches per day is equal to the number of calls for service per day.

Again, the officers have been concerned about the *lack of sector identity* caused by the FCFS procedure which results in a high level of intersector dispatches. In comparison with the Before dispatch procedure, where the dispatcher would usually hold the non-critical calls for dispatch only to the particular patrol unit in whose sector the calls originate, the FCFS procedure has certainly had an adverse effect on sector identity, perhaps too strong an effect.

CONCLUSION

The prioritized FCFS dispatch element has resulted in a more *efficient* utilization of Basic units: the dispatch of calls of a certain priority has received a more uniform treatment and the workload imbalance among all Basic units has been minimized. The decrease in delay time

has been offset by the increase in travel time, so that response time has not changed.

The lack of sector identity caused by the fact that nearly two-thirds of all dispatches are intersector dispatches could decrease the *effectiveness* of Basic officers.* The intersector dispatches could be minimized by making greater and more judicious use of the formalized delay procedure (which is discussed in Section 5.8): that is, a call-for-service should first be considered for a formal delay--if it is feasible to do so (i.e., in the case of a non-critical call) *and* if it is necessary (i.e., when all Basic units are busy or when the particular unit in whose sector the call originates is busy)--and then be dispatched on a first-come, first-served basis.

5.4 FORMALIZED RESPONSE DELAYS

The formalized response delays element had one salient feature: it was decided that if the response to a non-critical call-for-service was to be delayed, then the caller would be *formally* advised of it. We discuss this element by first reviewing the formalized response delay procedure and its use, and then assessing the citizen attitude toward the element.

PROCEDURE

It is instructive first to briefly describe the procedure that has been used to formally delay responses to non-critical calls for service.

* The relationship between sector identity and officer effectiveness is hard to establish. Nevertheless, it is generally perceived that sector identity is a desirable and important element of police patrol.

When all Basic patrol units are busy, or such a situation appears imminent, the dispatcher activates a red light which warns complaint takers of the likelihood of a delay. At such times, callers requesting service for a non-critical matter are informed of a 30-minute delay. The corresponding call-for-service cards are then marked with a conspicuous red "DELAY" stamp, before they are handed to the dispatcher.

Use of this formalized response delay procedure has required periodic reminders to prevent lapses in performance. The dispatcher's red delay light was not installed until April, 1976, when ongoing monitoring activities revealed that the procedure was being both underutilized and sometimes misused. During the second split-force quarter, the installation of the light and the issuance of a memorandum by the communications lieutenant increased the level of formal delays, as shown in Exhibit 5.9. Exhibit 5.9 also shows that 9.7 percent of all primary calls have been delayed, with a delay time of over three times the average.

In analyzing the temporal distribution of delays, we have found that most of the delays occur at platoon shift changes. Exhibit 5.10 gives the delay time statistics at platoon shift changes: the slightly lower delay times at the midnight and 4 p.m. shift changes, as compared to that at 8 a.m., can be accounted for by those overlapping Basic units that are out on the street during the midnight and 4 p.m. shift changes. In fact, during the first split-force quarter when the push-pull schedule was strictly adhered to (i.e., three overlapping Basic units were out on the street during both the midnight and 4 p.m. shift changes)

Exhibit 5.9
Marked Delay Statistics

Evaluation Quarter	Average Number of Calls for Service per Day		
	Number of Primary Calls with Marked Delay	Total Number of Primary Calls	Percent of Primary Calls with Marked Delay
12/75 - 2/76	3.4	140.3	2.4%
3/76 - 5/76	11.0	151.1	7.3%
6/76 - 8/76	30.2	180.2	16.8%
9/76 - 11/76	15.3	140.7	10.9%
12/75 - 11/76	15.0	154.6	9.7%

(a) Marked Delay Level

Evaluation Quarter	Average Delay in Minutes		
	Primary Calls with Marked Delay	All Primary Calls	Ratio of Marked to Primary Delay Times
12/75 - 2/76	10.62	3.06	3.47
3/76 - 5/76	12.40	3.27	3.79
6/76 - 8/76	11.22	3.77	2.98
9/76 - 11/76	11.70	3.54	3.31
12/75 - 11/76	11.49	3.41	3.37

(b) Marked Delay Time

Exhibit 5.10
Incident Delays at Platoon Shift Changes

Platoon Shift Change	Average Delay Time in Minutes ¹			
	Before ²		During	
	Quarterly	Total	Quarterly	Total
<u>Midnight</u>				
12/1 - 2/28	7.85	6.30	4.17	8.54
3/1 - 5/31	7.90		5.71	
6/1 - 8/31	5.77		10.59	
9/1 - 11/30	3.67		13.68	
<u>8 a.m.</u>				
12/1 - 2/28	4.26	3.00	9.10	9.91
3/1 - 5/31	2.39		10.43	
6/1 - 8/31	3.06		8.03	
9/1 - 11/30	2.27		12.05	
<u>4 p.m.</u>				
12/1 - 2/28	9.95	8.89	5.58	8.94
3/1 - 5/31	8.80		9.27	
6/1 - 8/31	8.95		10.61	
9/1 - 11/30	7.84		10.29	
24-hour period	--	4.53	--	3.41

¹ Average delay times are based on all calls for service (i.e., primary and assist) which are received during the half-hour period that overlaps each platoon shift change.

² In the Before period, each platoon change occurred in two phases: about half of the ongoing platoon would be out on the street a half hour earlier than the rest of the platoon. This procedure accounts for the somewhat lower delay times in the Before period, as compared to those in the During period.

and the formal response delays were minimal, Exhibit 5.10 shows that the delay time at the 8 a.m. shift change was almost *twice* as great as those at the midnight and 4 p.m. shift changes, respectively.

An important point to note is that despite the implementation of the formalized response delay procedure, the overall primary delay time has decreased from 4.53 minutes in the Before period to 3.41 minutes in the During period. Obviously, the prioritized FCFS dispatch and proportional temporal deployment elements had a greater impact on delay time than the formalized response delays element has had.

Finally, the decreasing fraction of primary calls receiving formal delays (see Exhibit 5.9) in the last quarter of the experiment and the fact that a large portion of the callers--who were supposedly advised of a delay--could not remember being so advised (see Exhibit B.7, Question 8) suggest that the formalized response delay procedure is again not being properly followed.

CITIZEN ATTITUDE

Based on a two-part telephone survey of 382 Wilmington residents (i.e., 192 and 190 residents in the Before and During samples, respectively) who had called for police service on a *non-critical* matter, we find that the residents or citizens of Wilmington are quite satisfied with the police response time (see Exhibit B.7, Question 6). In fact, as indicated in Exhibit 5.11, the citizens are just as satisfied with a response time of a little less than ten minutes as they are with a response time of twice that length, provided they are advised of the delay.

Exhibit 5.11

Citizen Satisfaction With Response Time

How satisfied were you with the response time?

Percent Answering ¹	Clients Receiving Formal Delays (N = 95)	Clients Not Receiving Formal Delays (N = 87)
Very Satisfied	34.7%	34.5%
Satisfied	41.1	49.4
Dissatisfied	10.5	12.6
Very Dissatisfied	13.7	3.4
<u>Average Incident Time Statistics in Minutes ²</u>		
Delay	13.99	3.67
Travel	<u>7.98</u>	<u>6.22</u>
Response	21.97	9.89

¹ Based on results from Part 2 (i.e., During Period) of the client survey.

² Based on actual times as indicated on the call-for-service cards which were selected for the client survey. A comparison of the *perceived* with the actual response time reveals that, in general and as expected, people tend to perceive a time period to be longer than it actually is, especially if they are waiting.

The citizen attitude toward response time can best be summarized by one of the telephone survey respondents who said, "I'm a taxpayer: if it helps to keep my taxes down, then I'm all for the police to take their time in showing up to non-emergency situations--but I would like to be told [of such a delay] so that I'm not just waiting around for them." It is obvious from the quote and from our client survey results that citizen *satisfaction is a function of expectation**--this is an important observation from a policy perspective, since it suggests that the *management* of call-for-service demand is possible, *provided* the public is educated and advised of it.

CONCLUSION

The formalized response delays element has been implemented with some success in Wilmington, but it has not been used to its full potential--Section 5.3 suggests how this element could be used to improve sector identity. Potentially, the element could be very *effective* (i.e., increasing citizen satisfaction by minimizing expectation, and mitigating sector identity problems) and *efficient* (i.e., allowing for a more efficient allocation of police resources by decreasing and shifting the demand peaks).

* A recent Police Foundation study [A.1-22] has also found that the difference between citizen expectation and the actual response time observed is the more important factor in citizen satisfaction. Additionally, an on-going Kansas City study is finding that much time is wasted before the citizen calls for police help: our client survey results (see Exhibit B.7, Question 12) also support this finding.

5.5 STREAMLINED ROLL-CALL PROCEDURES

The streamlined roll-call procedures element had one salient feature: it was decided that both on-going and off-going roll-calls could be shortened by the institution of more efficient procedures.

As planned, the patrol supervisors have had the pertinent equipment (e.g., portable radios, patrol cars, shot-guns, etc.) available before the on-going roll-call and, likewise, have inspected the returned equipment before the off-going roll-call. Further, the supervisors have abbreviated their presentations at roll-calls: more written material--prepared by Special Operations--have been handed out.

Exhibit 5.12 shows that the overall impact of this element has been to shorten roll-call related time by almost half: given the number of eight-hour Basic units that have been deployed each day, it is equivalent to over nine extra unit hours on the street. These extra hours assume greater significance in light of the fact that they occur at platoon shift changes when police presence on the streets of Wilmington is minimum.

Exhibit 5.12
Roll-Call Related Time Statistics

Roll-Call	Average Roll-Call Related Time in Minutes ¹		
	Before	During	Change
On-Going	23	12	- 47.8%
Off-Going	22	11	- 50.0%
Total Time	45	23	- 48.9%

¹ Based on participation observations and formal interviews.

Although most patrol officers feel that streamlined roll-calls have definitely increased WBP effectiveness and slightly increased their job satisfaction (see Exhibit C.1, Question 9), some patrol officers have complained that shorter roll-calls have reduced the time for information exchange among themselves and with officers from other Divisions. Other officers have stated that whatever non-personal information was exchanged was of little value.

Finally, patrol supervisors have indicated that their added responsibility has greatly increased their workload (see Exhibit C.1, Question 19). Our observations indicate that, although patrol supervisors are doing more roll-call related work, the police cadets are actually carrying out the equipment related tasks (e.g., getting portable radios, fueling patrol cars, etc.).

CONCLUSION

The streamlined roll-call procedures element has increased patrol efficiency in the use of available manpower: it has added over nine unit hours per day of police presence on the streets of Wilmington.

5.6 REDUCED MANNING LEVEL PER UNIT

The reduced manning level per unit element had one salient feature: it was decided that, given a more efficient allocation of patrol resources resulting from the other Basic elements, about half of the two-officer units could be converted back to one-officer units, without impairing officer safety. We discuss this element by first reviewing its impact on the level of assist calls for service, and then assessing the officer and citizen attitudes toward the element.

ASSIST LEVEL

Exhibit 4.7 contains the pertinent assist-related statistics. First, it should be noted that the number of officers per unit has decreased from 1.46 in the Before period to 1.27 in the During period; given the number of Basic units deployed in the two periods, respectively, it is equivalent to stating that the number of two-officer units has decreased from 14.3 in the Before period to 6.7 in the During period-- a 53.2 percent decrease, as planned. The 13.0 percent decrease in officers per unit can also be translated into an equivalent saving of 39.1 officer hours per day or approximately 9 officers per year.

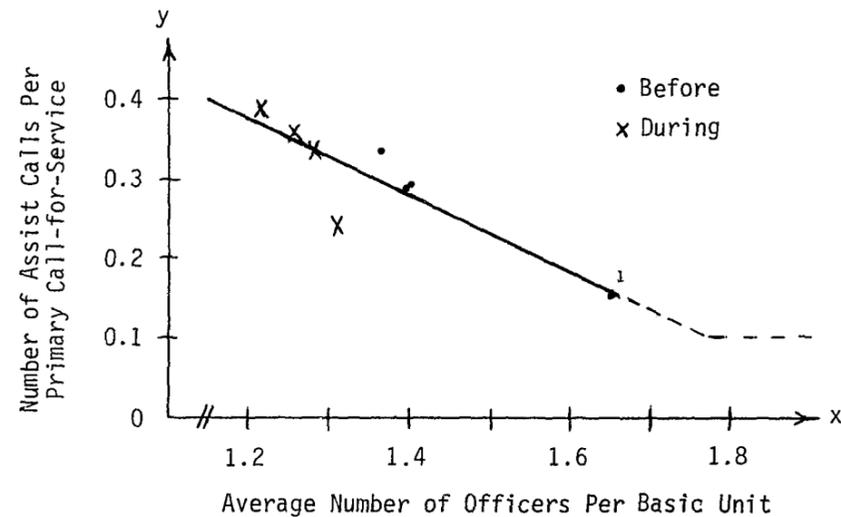
The cost of the saving has, of course, been the increased level of assist calls for service. Referring to Exhibit 4.7, it is seen that the number of assist calls has increased by 31.5 percent, which, because of the decrease in assist service time, is equivalent to a 18.9 percent increase in assist workload. The additional assist workload is only 2.1 unit hours or 2.7 officer hours per day--this adds only 2.9 percent to the total call-for-service workload. Thus, the net savings to cost ratio is 14.5 (i.e., 39.1/2.7) to one!

A key question is: What is the relationship between assist level and number of officers per unit? Exhibit 5.13 shows this relationship in terms of a linear regression equation. Let us translate this equation to a similar workload equation, weighted by the During service times of 23.22 and 14.74 minutes for primary and assist calls, respectively. Defining X as the average number of officers per unit, we have:

$$\begin{aligned} \text{Ratio of Assist to Primary Workload} &= \frac{(0.95 - 0.48X)(14.74)}{23.32} \\ &= 0.60 - 0.30X \end{aligned}$$

The above equation could be an *important tool* for police administrators, if it can be validated for other police departments as well. We believe that it is quite valid. For example, at $X = 1$ or one officer per unit, the equation states that the ratio of assist to primary workload is 0.30-- this figure could be regarded as a *maximum* ratio of assist to primary workload. What is the minimum ratio? The equation states that at $X = 2$ or two officers per unit, the ratio is zero: this is obviously

Exhibit 5.13
Assist Call Sensitivity



¹ Linear Regression Equation: $y = 0.95 - 0.48x$ ($r^2=0.797$)

erroneous, since we have evaluated the equation outside its range of definition. According to Exhibit 5.13, the equation is defined for $X \leq 1.65$. Actually, as illustrated by the dashed line in Exhibit 5.13, we hypothesize that the equation is valid up to $X = 1.77$, where the ratio of assist to primary calls is equal to 0.10, since we believe that in practice ten percent of all primary calls will probably always require at least two response units, irrespective of whether the units are each manned by one or two officers. Thus the minimum ratio of assist to primary workload is equal to 0.07.

If the equation is valid and our hypothesis is true, then a department going from an all two-officer per unit patrol force to an all one-officer per unit force would only experience a 21.5 percent (i.e., $(1.30-1.07)/1.07$) increase in the *total* workload--at any rate, no more than a 30.0 percent increase.* This is an important statistic for police administrators.

ATTITUDES

Safety has, of course, been the major concern of patrol officers as the proportion of two-officer units has decreased.** It is usually for reasons of safety that the number of assists has increased: the dispatcher has tended to send the same number of officers to a particular

* The workload increase would actually be less since the assist service time tends to decrease as the level of assists increases. This tendency is primarily due to the fact that some assists are actually not necessary in the first instance so that they are returned to service almost immediately. Our participant observations have indicated that a greater proportion of the assists are unnecessary when there are proportionately fewer two-officer units (i.e., when the level of assists increases).

** As stated in Section 5.1, it should again be reiterated that, during the course of the experiment, there has been *no* instance in which an officer's safety has been compromised due to the unavailability of backup units or for any other reason.

type of call in both the Before and During periods. The patrol officers are almost unanimously in favor of having every patrol unit be manned by two officers (see Exhibit C.1, Question 16). One officer wrote, "One man cars aren't needed or wanted. I will not enter a crowd of people by myself and neither will any other man in the Patrol Division." The decrease in two-officer units has been a source of considerable dissatisfaction among the officers, although no formal moves have yet been taken by their union to force the issue.

Exhibit 5.14 shows that, although the citizens in Wilmington have perceived the increase in the number of response units per incident, they still perceive the same number of officers responding. The constancy in the latter perception is probably the reason the citizens have remained quite satisfied with the quality of police services (see Exhibit B.7, Question 15). The citizens do, however, tend to be *slightly* more satisfied if more officers respond, as also indicated in Exhibit 5.14.

CONCLUSION

The reduced manning level per unit element has been very efficient: approximately nine patrol officers have been freed from serving in the Basic units. This efficiency, however, has been partially made possible by the more efficient allocation of patrol resources resulting from the other Basic elements. Additionally, there has been an increase in assist workload, resulting in only a 2.9 percent increase in total call-for-service workload. The safety-related concern of patrol officers is of greater consequence, although it is unfounded--there has been no incident to date in which an officer's safety has been endangered due to the decrease in the number of two-officer units.

Exhibit 5.14
Citizen Perception and Response Level

Data Source	Before	During	Change
<u>Units per Incident</u>			
Call-for-Service (CFS) Card	1.26	1.33	+ 5.6%
Client Survey (Perceived)	1.20	1.34	+11.7%
<u>Officers per Unit</u>			
Patrol Car Sheet	1.46	1.27	-13.0%
Client Survey (Derived)	1.46	1.31	-10.3%
<u>Officers per Incident</u>			
CFS Card/Car Sheet	1.84	1.69	- 8.2%
Client Survey (Perceived)	1.75	1.75	--

(a) Response Level Statistics

In general, what is your feeling about the quality of police services in Wilmington? The quality of the services is:

Percent Answering:	Perceived Number of Officers Responding		
	One Officer (N = 144)	Two Officers (N = 164)	Three or more Officers (N = 55)
Excellent	22.2%	30.5%	47.2%
Good	41.0	39.6	23.6
Acceptable	25.0	17.1	16.4
Not Good	4.2	5.5	9.1
Poor	7.6	7.3	3.6

(b) Citizen Perception

5.7 FIXED-POST ASSIGNMENTS

The fixed-post assignments element had two salient features. First, it was decided that since the primary Basic function is to respond to calls for service, then the Basic units should *perform* fixed-post assignments which would anticipate, if not mitigate, potential calls for service. Second, it was also felt that the fixed-post assignments would give the Basic officers the opportunity and the time to complete their incident *reports*--thus alleviating them from completing the reports at the scene of the incidents, and thereby allowing them to clear faster.

FIXED-POST PERFORMANCE

Performance of *fixed-post* assignments during the experiment has been limited. They were largely ignored by Basic officers until June 23, 1976, when the Captain of Patrol issued a memorandum emphasizing their importance. Although the number of fixed-post assignments has increased sharply since June 23,* we have observed that the majority of these assignments have been performed in a mobile manner--that is, the officers would patrol within a few blocks of the fixed-post location. Thus, the fixed-post assignments have in practice become fixed-locale patrols.

As indicated in Exhibit 5.5, the fixed-post assignments element has been the key factor in the 9.2 percent reduction in the number of Basic unit miles per tour. Although the number of miles travelled in connection with responding to calls for service have increased by over 14 percent, the estimated number of patrol miles have decreased by about 20 percent.

* During the course of an eight-hour tour, a Basic unit would typically be given five or six different fixed-post assignments.

Exhibit 5.15

Basic Unit Mileage Statistics

<u>Measured</u>	<u>Average Number of Miles per Basic Unit per .8-Hour Tour</u>		
	<u>Before</u>	<u>During</u>	<u>Change</u>
Total	38.0	34.5	-9.2%
<u>Derived</u> ¹			
Response			
RV=15	9.0	10.3	+14.4%
RV=20	12.0	13.7	+14.2%
RV=25	15.0	17.2	+14.7%
Patrol			
RV=15	29.0	24.2	-16.6%
RV=20	26.0	20.8	-20.0%
RV=25	23.0	17.3	-24.8%

¹ Response and patrol mileages are derived for three different assumptions of response velocity (i.e., RV equal to 15, 20 and 25 miles per hour, respectively). Limited measurements made during participant observations indicate a response velocity between 15 m.p.h. and 25 m.p.h., while regular patrol velocity ranged from 5 m.p.h. to 15 m.p.h.

While the fixed-posts were initially intended to be at locations with a high likelihood of call-for-service demand, the demand often shifted faster than the new assignment posts were identified--sometimes officers would be sent to a location that required no special attention, only because it had been an assignment identified by the previous platoon lieutenant and not yet updated. Our participant observations indicate, however, that fixed posts at locations of large gatherings have resulted in some decrease in calls for service from those locations. It was, of course, not possible to measure the number of calls for service that did not occur because of the fixed-post assignments.

Although most patrol officers indicate that the locations chosen for fixed-post assignments are useful (see Exhibit C.1, Question 19), they feel that the assignments have decreased both WBP effectiveness--"fixed posts let the criminal know where you are and what you're doing"*--and their job satisfaction--"fixed posts are intolerably boring." Boredom on the part of patrol officers can lead to more severe problems. A 1972 study on police behavior found that:

Fatigue increased more markedly on those shifts where there was relatively little citizen contact. Their finding corroborated many statements made by policemen who said that a lack of action during the shift often left them feeling nervous, tired, and often led to insomnia. [A.1-6, p. 129]

* This is another indication that Basic officers have not fully accepted their role as a response force.

REPORT WRITING

The patrol officers have welcomed the chance to write their reports during fixed-post assignments (see Exhibit C.1, Question 18). In fact, our participant observations indicate that these have been the only times they have remained fixed at the fixed posts: after completing their reports, they would begin to perform fixed-locale patrols.

Although the writing of reports at fixed-post assignments was to have decreased on-scene time, there has been no such decrease. Actually, in the Before period, the patrol officers would also write their reports at some location after clearing and leaving the scene. The difference has been that the location is now known to the dispatcher, allowing for greater officer accountability.

CONCLUSION

The fixed-post assignments element has been somewhat *effective* in mitigating calls for service, although the degree of effectiveness has not been measured. It has, however, not been accepted or strictly adhered to by the patrol officers: they are bored and dissatisfied with it. In order to alleviate the boredom and dissatisfaction three steps could be taken. First, change fixed-post assignments to fixed-*locale* assignments--the latter would allow the Basic units to patrol around a one to four block area within their respective sectors. Second, insure the *relevancy* of the fixed-locale assignments--an up-to-date list of relevant assignments should be made available to the Communications Unit every four hours. And third, inform Basic

officers of the reason for fixed-locale assignments: that is, locales are selected based on their likelihood for generating calls for service, which should be of *primary* concern to Basic officers. Moreover, Basic officers should be encouraged to identify and inform the Communications Unit of such locales.

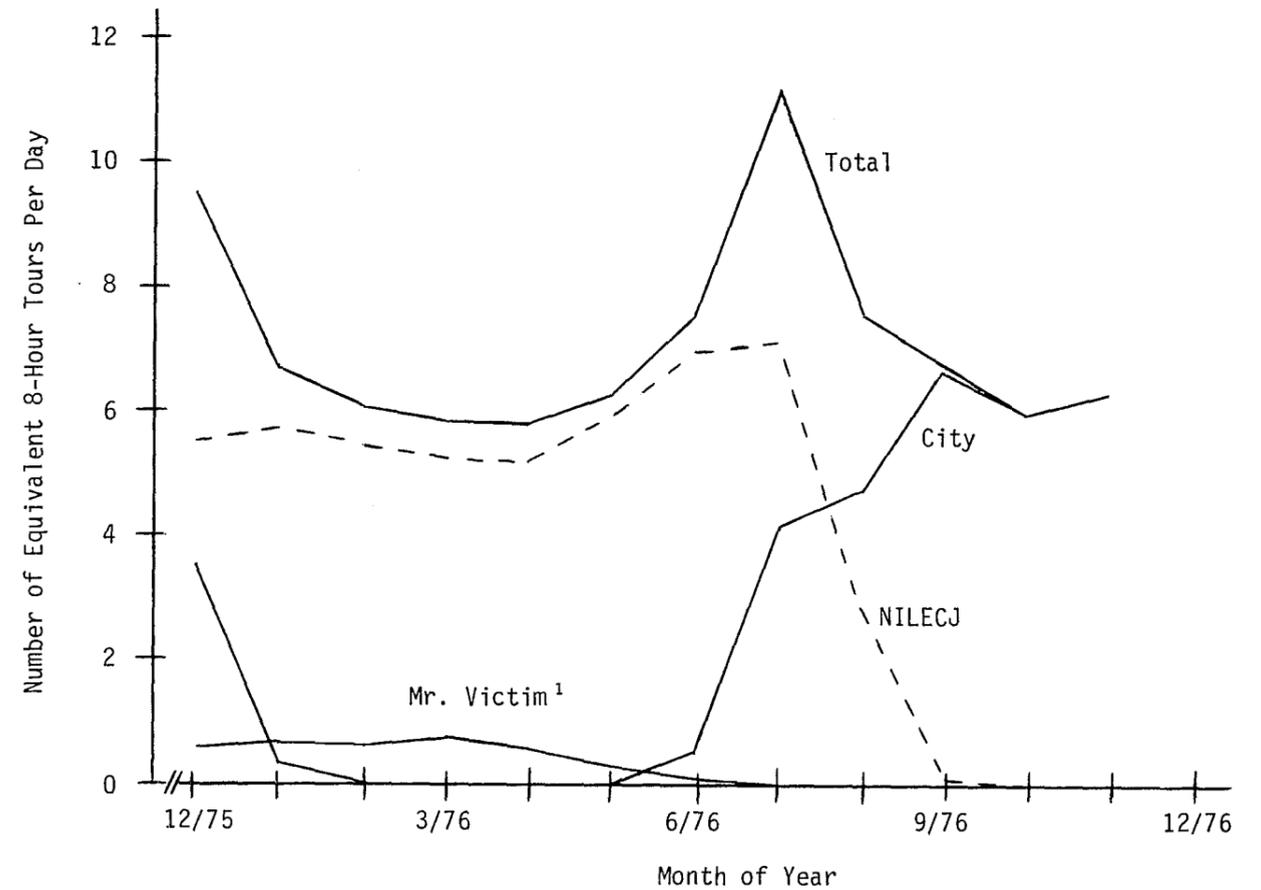
5.8 NILECJ OVERTIME

The NILECJ overtime element had one salient feature: it was decided that the overtime should not be a critical factor in the structure of the experiment, but that it should be used to help maintain all elements of the experiment.

As indicated in Exhibit 4.1, overtime manpower has been 23.5 percent higher in the During period than in the Before period: or an equivalent of eight additional officers. NILECJ funds provided for an average of 52 hours of overtime per day: or an equivalent of 8.8 additional officers in the During period. Thus, most of the NILECJ overtime has directly contributed to additional WBP manpower; given the attrition in WBP manpower, the net impact of the NILECJ overtime has been to increase WBP manpower by five officers (see Exhibit 4.1).

As seen in Exhibit 5.16, much of the NILECJ overtime manpower has been deployed in the Patrol Division, and almost entirely in Basic rather than Structured patrol (i.e., since the April 4, 1976 organization change). Overtime manpower has been used to minimize the impact of push-pull scheduling in achieving proportional temporal deployment, as discussed in Section 5.1, and to make two-officer

Exhibit 5.16
Street-Oriented Patrol Overtime



¹ Mr. Victim has been a community-oriented crime prevention program. Officers assigned to the program would usually visit the homes or business establishments of mostly burglary victims and advise them of such measures as operation identification, proper locks and other security devices.

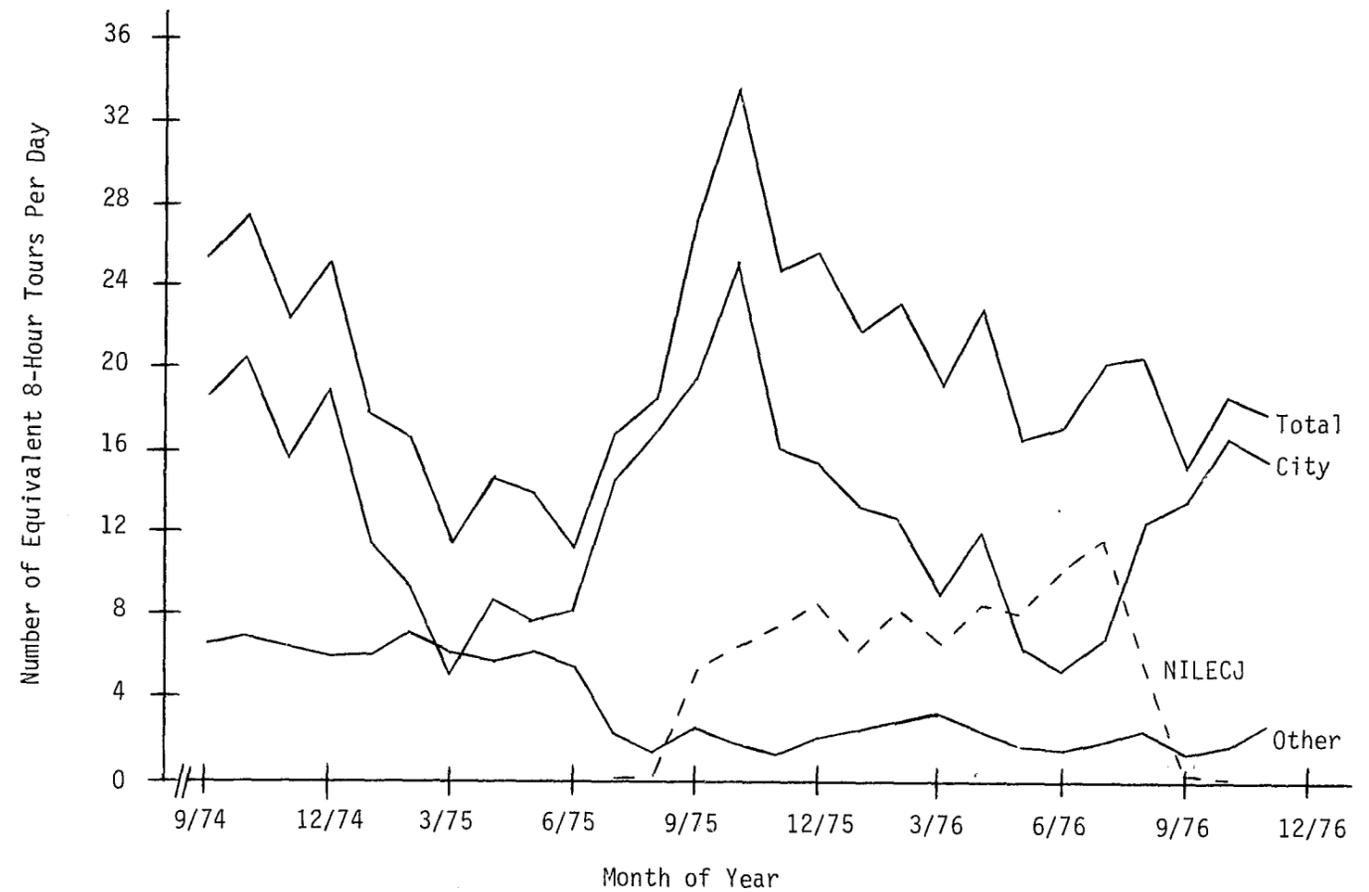
units for Basic patrol whenever possible--thus causing a reduction in the officer workload index.* When the amount of volunteered manpower proved insufficient during the summer of 1976, a "draft" was instituted; about 90 four-hour slots were filled in this way until NILECJ overtime was cut back on August 15, 1976. As the amount of NILECJ overtime dropped off, City overtime grew to maintain a reasonably *stable* level of overtime, as shown in Exhibit 5.16.

Unfortunately, no similar record of patrol overtime was kept in the Before period. However, looking at the department-wide overtime in Exhibit 5.17, it is seen that the City overtime has remained relatively stable in the Before and During periods, and that the "Other" overtime category was more substantial in the Before period. Inasmuch as the Other category included mostly street-oriented patrol programs (i.e., Crime Specific Program and Mr. Victim Program), we estimate that the net impact of the NILECJ overtime has been to add two to three equivalent officers in patrol. Thus NILECJ overtime has not been a significant factor in the operation of the Patrol Division.

Overtime availability has contributed greatly to job satisfaction (see Exhibit C.1, Question 9). It was a major factor in the officers' initial acceptance of the experiment. Considerable dissatisfaction arose, however, when the drafting procedure was used, including the filing of a grievance by the union. But when the draft ended, the grievance was quickly forgotten. Finally, it should be noted

* It is to be noted that all workload-related statistics presented in Section 4 take into account the effect of the NILECJ overtime; they are based on the *actual* number of officer-hours devoted to patrol.

Exhibit 5.17
Department-Wide Overtime



that the WBP as a whole has grown accustomed to a high level of overtime availability, as shown in Exhibit 5.17. Since the average age of the officers is quite low--29.9 years as reported in Exhibit C.1, Question 4, the officers have both the stamina to work and the need for extra income. For example, several officers have indicated that they are working towards the down payment on a house.

CONCLUSION

The NILECJ overtime element has contributed to increased *effectiveness* through increased officer morale. It was undoubtedly a major factor in inducing the officers, and in fact the WBP, to accept major changes in the way policing was performed in the City of Wilmington; it was necessary--as a goodwill gesture.

6 STRUCTURED ELEMENTS

Section 5 considers the eight Basic patrol elements that were implemented in order to increase Basic efficiency so that a Structured patrol force could be formed. In reviewing the WBP manpower distribution in Exhibit 4.1, it is seen that increased Basic efficiency freed 12 officers--nine of which were explicitly freed by the reduced manning level per unit element--and two supervisors. Together with the ten officers and one supervisor from the previous tactical unit and two officers from the special duties group, the Structured Unit of 24 officers and three supervisors (i.e., sergeants) was formed on April 4, 1976. As noted in Section 2.3, the Structured Unit is divided into two groups, each with a sergeant and 12 officers, and is available for two eight-hour shifts (i.e., during the 1000-1800 and 1800-0200 periods). The third sergeant acts as a coordinator of the two groups and reports directly to the Captain of Patrol.

Unlike the Basic patrol elements, the Structured patrol elements were purposefully left undefined during the planning phase: it was felt that flexibility was required to allow the Structured force to develop into "more than just another strike force."* Instead, two guiding principles were to be adhered to by the Structured force. First, the Structured force was to be *dedicated* to the primary function of

* Indeed, the Structured force has developed into *more than* just a strike force: Section 7.1 compares the Structured and strike force concepts.

preventing crime. It was, however, required, as a secondary function, to provide backup to Basic patrol units in felony incidents, or, if necessary, to respond to critical calls for service. Second, the Structured force was to be *directed* in its activities, with support from the Special Operations Unit.

Operating under these two principles, the activities of the Structured force have gradually evolved into two main areas: *directed problem-oriented tactics* and *immediate incident-oriented investigation*. Before discussing the significance and impact of each one of these Structured areas or elements, it is instructive to review the arrest-related statistics contained in Exhibits 4.10, 4.11 and 4.12; they are summarized in Exhibit 6.1. Specifically, the Patrol Division's arrest-related statistics have risen significantly, due solely to the performance of the Structured force. A summary of the major Structured impacts is contained in Section 6.3, following discussions of the two Structured elements in Sections 6.1 and 6.2, respectively.

6.1 DIRECTED PROBLEM-ORIENTED PATROL

As indicated in Exhibit 1.1, the purpose of the crime prevention function is to achieve three crime-related objectives: to deter crime before it occurs; to detect crime in progress; and to apprehend the offenders when a crime does occur. The traditional tactic to prevent crime has been to deploy a uniformed officer in a marked car (i.e., in a high-visibility manner) and instruct him to "know his district and keep a sharp eye out for possible criminal activity."

Exhibit 6.1

Patrol Division: Summary of Arrest-Related Statistics

Measure	Average Monthly Statistics for Patrol Division	
	Before/During ¹	Change
Part I Crime Arrests per Assigned Officer	0.5430/0.5645	+ 4.0%
Part I Crime Charges per Arrest per Assigned Officer	0.0100/0.0113	+ 13.2%
Part I Crime Clearances per Assigned Officer	-- / --	+105.5% ²

¹The Before and During statistics are based on 1/75-11/75 and 12/75-11/76 periods, respectively. There were 145 and 150 sworn officers assigned to the Patrol Division in the Before and During periods, respectively.

²Estimated based on clearances for all non-Detective Divisions in the WBP.

Under Structured patrol, the area-oriented patrol has also involved uniformed officers in marked vehicles--the high-visibility approach. The difference has been in the *direction* provided by Special Operations in identifying crime problems to be addressed; designing areas for patrol; informing officers of the crime patterns observed in the areas; and suggesting the type of tactics to be used. Directed problem-oriented tactics have been undertaken in both a high-visibility (i.e.,

uniformed) or overt manner, and in a low-visibility (i.e., plain-clothes) or covert manner. Before discussing the various crime prevention tactics, we first review the activities of the Special Operations Unit, which provides support to the Structured force.

SPECIAL OPERATIONS UNIT

Available Structured manpower is matched to patrol needs by means of crime analysis performed by a two-officer Special Operations Unit, under the command of a captain. Each morning one of the two officers reads all of the crime reports generated by the Patrol Division during the previous day, and then updates a pin map by removing pins over 14 days old and placing color-coded pins for incoming reports in each of the following categories:

- commercial burglary
- daytime residential burglary
- nighttime residential burglary
- daytime robberies
- nighttime robberies
- purse snatch thefts
- citizen band (CB) radio thefts

Two sets of preventive patrol areas are made up: one for the 1000-1800 shift based on daytime crimes, and one for the 1800-0200 shift based on nighttime crimes. The patrol areas are ranked in order of priority by the Special Operations officers, and the Structured patrol supervisors attempt to fill as many of the areas as they can, given the available manpower. The patrol areas are

chosen on a subjective basis with consideration given primarily to the concentration of one or more types of crime in a limited area. Additional allowance is made for one-way streets to ensure the "driveability" of the patrol area. When officers are assigned to crime trend areas at Structured roll-calls, they are each given a complete description of the recent crime pattern in the area to aid them, together with their knowledge and experience, in the conduct of their assignments.

Inasmuch as improvements to crime analysis were not planned as part of the split-force experiment, the only improvements came about through increased experience with methods previously in use. Crime analysis provided Structured officers with problem-oriented patrol areas and a list of crimes that occurred in the area, and provided their supervisors with some subjective assistance in choosing patrol tactics. Few in-depth analyses were undertaken to provide more specific information on potential crime patterns, due largely to the limited manpower of the Special Operations Unit.

As the Structured supervisors gained experience in choosing tactics, the Special Operations officers' lack of day-to-day street knowledge made them less valuable in helping to determine tactics. Additionally, lack of coordinated information flow from plainclothes units, especially from the Detective Division, has hampered their planning functions and lack of information processing capability has limited their output. Nevertheless, the patrol officers, especially the Structured officers, feel that the crime analysis packages prepared by the Special Operations Unit have slightly

increased WBP effectiveness (see Exhibit C.1, Question 9). We believe that the unit's effectiveness could have been much greater if it had adequate data processing facilities and support.

TACTICS

The choice of tactics for use in carrying out the crime prevention function was determined by Special Operations and the Structured patrol supervisors. Some crime concentrations, for example, suggested the use of tactical operations such as having a man atop a building with binoculars--to observe potential criminal activity in the street below. For the most part, however, either plainclothes patrol in unmarked cars or high-visibility patrol in marked cars was the chosen tactic when other alternatives were not obvious. The process of choosing tactics has been limited by a lack of knowledge of which tactics are appropriate for each type of crime. This knowledge gap exists not only in the WBP but in all police departments [A.1-29].

The tactics used by the Structured force were not new, even for Wilmington. The significant development in Wilmington has been the *flexible* use of the tactics in a manner *directed* at observed crime problems rather than the development of unique tactics per se. Exhibit 6.2 shows the frequency with which some of the tactics have been used. It is interesting to note the heavy reliance on high-visibility patrol in the early months of the experiment; the increased variety when the Structured Unit was first formed, in April, 1976; and the eventual dependence on three tactics: high-visibility patrol,

Exhibit 6.2
Relative Use of Structured Tactics

Structured Tactic During Period	Percent of Days per Month Each Tactic Is Used			
	High Visibility Patrol	Plainclothes Patrol	Stakeouts and Surveillances	Decoy Operations
December, 1975	100%	50%	--	30%
January, 1976	100%	45%	--	--
February, 1976	100%	100%	--	--
March, 1976	100%	100%	19%	13%
April, 1976	100%	100%	100%	33%
May, 1976	65%	100%	97%	19%
June, 1976	37%	77%	93%	--
July, 1976	97%	87%	6%	--
August, 1976	100%	94%	45%	--
September, 1976	100%	94%	83%	--
October, 1976	100%	100%	35%	--
November, 1976	100%	100%	--	--
TOTAL	91%	87%	43%	9%

plainclothes patrol, and stakeouts and surveillances. Decoy operations have been minimal. Unfortunately, no records were kept to indicate the relative arrest productivity of each individual tactic.

Before discussing each individual tactic, it should be noted that although Structured officers feel strongly that their use of flexible patrol tactics has contributed to an increase in both WBP effectiveness and job satisfaction, other groups of officers disagree (see Exhibit 6.3). The disagreement is primarily based on the ground of inefficiencies which have developed as a result of overlapping efforts by the Structured force and the Detective Division--this conflict is further discussed in Section 6.4. There is, however, general officer agreement that the tactics themselves are effective (see Exhibit C.1, Question 17), largely because the officers feel more and better arrests could be made, mostly through covert tactical operations.

High-Visibility Patrol

High-visibility patrol has been undertaken in a dedicated and essentially uninterrupted manner. As intended, the interruptions have been either for the purpose of assisting Basic units in emergency situations or to respond to in-progress felony incidents. As indicated in Exhibit 4.2, Structured patrol units as a group respond to 10.0 primary calls for service per day, and provide 14.1 assists per day. Assuming service times about the same as those observed for Basic units in Section 4.1, this implies that Structured patrol units spend 9.6 unit-hours per day in response-related activities: this

Exhibit 6.3

Officer Perceptions of Tactical Flexibility

What impact has the ability of Structured patrol units to undertake a wider range of patrol tactics had on WBP effectiveness?

Percent Answering:	Basic Patrol Officers (N=81)	Structured Patrol Officers (N=23)	Detectives (N=30)
Greatly Increased	7.4%	43.4%	0.0%
Increased	25.9	47.8	6.7
No Effect	29.6	0.0	33.3
Decreased	18.5	8.7	23.3
Greatly Decreased	14.8	0.0	23.3
Don't Know	3.7	0.0	13.3

(a) Impact on WBP Effectiveness

What impact has the ability of Structured patrol units to undertake a wider range of patrol tactics had on your job satisfaction?

Percent Answering:	Basic Patrol Officers (N=81)	Structured Patrol Officers (N=23)	Detectives (N=30)
Greatly Increased	4.9%	52.2%	0.0%
Increased	19.8	26.1	3.3
No Effect	33.3	17.4	36.7
Decreased	21.0	4.3	23.3
Greatly Decreased	17.3	0.0	30.0
Don't Know	3.7	0.0	6.7

(b) Impact on Job Satisfaction

corresponds to only 7.4 percent of the 129.8 available Structured unit-hours per day.* Thus, the interruptions have been minimal.

On the anonymous questionnaire survey, 74 percent of Structured officers noted that the uninterrupted patrol time has increased WBP effectiveness. Additionally, a large majority of WBP officers, including 79.2 percent of Structured officers, described high-visibility patrol as an "effective" or "very effective" patrol tactic.

However, during participant observation, the Structured officers noted that high-visibility, area-oriented patrol is not very different from patrol in the Before period, except that the lack of interruption from calls for service made it seem very *boring*. Interestingly enough, during participant observation, for example, Structured officers would not get out of their vehicles to check on doors: more than one officer mentioned that the reason he got out of his car to check on doors was to keep himself awake while assigned to a one-officer unit. Nearly all of the high-visibility Structured units have been one-officer units.

In essence, *prevention-oriented* patrol methods within an assigned area have been mostly left up to the officer's discretion. Methods observed during rides in high-visibility Structured units have not been noticeably different from the traditional methods of patrol conducted by, for example, the Basic units when they undertake fixed-locale patrol in between calls for service. Lack

* Based on patrol car sheet analysis--it is estimated that about a third of the 129.8 Structured unit-hours per day is devoted to high-visibility, area-oriented patrol.

of specialized training is cited as one of the principal problems in high-visibility patrol in a recent National Evaluation Program study [A.1-29].

Some attempts have been made in other cities to structure high-visibility patrol in greater detail as a means to achieve fully directed patrol. An example of this is the Directed Deterrent Patrol project, implemented in New Haven and surrounding cities in southwestern Connecticut [A.1-4]. Scheduled deterrent patrol activities are assigned by dispatchers; as in the case of Wilmington, they are determined through crime analysis. Such deterrent activities have been a supplement to rather than a replacement for traditional random patrol. Although the project has not yet undergone a rigorous formal evaluation, the project personnel claim that their project has caused a reduction in crime. Unfortunately, no such claim can be made for the directed high-visibility patrol portion of the Structured patrol force.

Plainclothes Patrol

Officers assigned to plainclothes patrol perform a similar function to high-visibility patrol officers in similarly selected problem-oriented crime areas. However, the plainclothes officers spend more time out of their cars than do the high-visibility patrol officers, usually because the high-visibility officers feel that they may be called at any time to respond to a call-for-service or to assist a Basic unit.

During participant observations, Structured officers on dedicated plainclothes patrol seemed better attuned to street events than did

the detectives, who also performed some plainclothes patrol. The detectives patrolled in pairs and usually focused their attention on discussing and developing their cases rather than actually patrolling the streets. The potential of plainclothes patrol as a tactic seems greatest when it is performed in a fashion free of the interruptions of either call-for-service responses or investigative analysis.

Furthermore, training, improved crime analysis, and increased structuring of officer activities offer possibilities for enhancing the effectiveness of plainclothes patrol, as well as high-visibility patrol. Such alternatives should be investigated by police departments which are intent on developing a comprehensive, directed patrol program.

Stakeouts and Surveillances

Stakeouts have been conducted based on two sources of information: either tips from informants or information from eyewitnesses. Stakeouts have yielded encouraging successes at times, and embarrassing duplication of effort at other times--when both structured officers and detectives would be staked out at the same location, unaware of the others' intentions. Most police departments conduct stakeouts and are aware of their value as a tactic for apprehending criminal offenders.

The usual form of surveillance operation in Wilmington has involved a man with binoculars on the rooftop of a relatively tall building selected with the aid of crime analysis. Limited field of vision has been a problem with this tactic. For example, in one

instance the area under observation was obstructed by trees and nearby houses, so that only the streets adjacent to the stakeout officer's building could be watched completely. However, because the area which can be watched is larger than the area seen from a patrol car and because some success has been noted, particularly in the apprehension of a CB radio thief and in monitoring the activities of a heavily-used downtown pedestrian mall, this tactic is felt to be quite useful in Wilmington. Surveillance operations were recently tested in Kansas City [A.1-21] and it was concluded that the arrest productivity of such methods was considerably greater than that of traditional preventive patrol.

Decoy Operations

Several decoy patrol tactics have been used in Wilmington with varying degrees of success, including deployment of patrol officers dressed as old ladies, as letter carriers, as drivers in cabs of a local taxi firm, and a female officer in the role of a prostitute. However, the structured officers have noted that in a small city like Wilmington, it is difficult to keep a decoy officer's real identity and purpose secret, so that the same decoy tactic becomes less valuable with time. Sometimes the officers were overenthusiastic about certain decoy operations. For example, the use of a letter carrier's uniform in checking doors for possible break-ins was suspended after an officer was assigned to this duty on a Sunday.

The use of decoy patrol tactics by the New York City Street Crime Unit and the precautions taken to avoid accusations of entrapment are detailed in a recent study [A.1-11]. Unfortunately, as is the case in

Wilmington, the study could not distinguish the effectiveness of decoy operations, as compared to other patrol tactics. Nevertheless, decoy operations seem to be gaining in popularity, especially in the recovery of stolen property; "sting" operations are being set up by several police departments, modelled after the successful and much publicized operation in Washington, D.C.

6.2 IMMEDIATE INCIDENT-ORIENTED INVESTIGATION

In planning for Structured patrol, one of the most important tasks assigned to Structured officers was the immediate response to in-progress felony incidents. Immediate response was intended to increase the probability of apprehension and thereby provide deterrence. Immediate response combined with the responsibility for the initial investigative report has led to *immediate investigation*, since uninterrupted patrol time has allowed Structured officers to pursue leads.

Like other police departments, investigation of felonies in Wilmington has usually been the sole responsibility of the Detective Division, which would normally undertake such an investigation about a day or more after the occurrence of the felony, depending upon the Detective Division's caseload level and mix. Detectives have traditionally been unavailable to respond to in-progress felonies. Structured officers, on the other hand, have gradually begun to meet this critical need and thereby have forged a *bridge* over the gap in between the traditional functions of the Patrol and Detective Divisions.

It is estimated that over half of the 24.1 Structured responses per day are to in-progress felonies. If the offenders escape from the scene before the Structured officers arrive, the officers seek to obtain sufficient information from the victims and witnesses in order to identify the offenders and begin their investigation. The combination of immediate response and follow-up investigation after each felony incident has been the key reason for the increase in the Patrol Division's arrest-related statistics (see Exhibit 6.1), especially the clearance statistics. Structured officers have noted that a suspect who is caught red-handed or arrested near the scene of the incident, is more likely to confess to other crimes than a suspect who is picked up at a later point in time. Similarly, Structured officers have noted that victims of crime who are questioned right after the crime, are more likely to cooperate than are victims who are questioned a day or two later. A recent Rand study on criminal investigation has also found that:

The single most important determinant of whether or not a case will be solved is the information the victim supplies to the immediately responding patrol officer. If information that uniquely identifies the perpetrator is not presented at the time the crime is reported, the perpetrator, by and large, will not be subsequently identified. [A.1-10, pp. vii]

Similar findings have been made in a recently released study of the investigative process in Oakland, California [A.1-9].

Some detectives have felt that the Structured Unit represents "a Patrol Division detective force without the benefit of training, proper supervision, or efficient records and files." Training, according to the Rand study, does not have a major effect on

investigator performance [A.1-10, pp. vi]. Immediate investigation is more important. As a Structured officer noted,

In my opinion, a large number of crimes are being closed out with arrests due to actions of the Patrol Division. When a case is reported to the Patrol Division it can be followed up right away if there are suspects. It should also be noted that the chances of recovering stolen property are greater without the time lost waiting for the Detective Division.

Structured supervisors realized that the investigation of specific incidents might conflict with the interests of the Detective Division, and said that if an incident required more than a couple of days of investigation they would refer it to the detectives. Very few cases were "felt" to warrant such referral. Immediate investigative follow-up was not viewed by Structured officers as a detective function, but as a major ingredient in the Structured force's patrol strategy of prevention through apprehension.

The conflict between the Structured force and the Detective Division did occur; it started almost as soon as the Structured Unit was formed in April, 1976. It got worse with time. The next section contains a more detailed discussion of the conflict.

6.3 STRUCTURED IMPACTS

Two major Structured impacts are addressed in this section: the impact Structured has had on *crime prevention* and the impact Structured has had on the *Detective Division*.

CRIME PREVENTION

Nearly all the officers of the WBP believe that the way to *prevent* crime is to *apprehend* the offenders. In fact, the Structured elements

Exhibit 6.4

Wilmington Crime Levels and Patrol Division Arrests

		Monthly Before/During Statistics ¹							
		Violent Crime				Property Crime			
		Wilmington Crime Level	Change	Number of Individuals Arrested by Patrol Division	Change	Wilmington Crime Level	Change	Number of Individuals Arrested by Patrol Division	Change
	During Period								
Structured Patrol Force Integrated with Basic Force	December	55/61	+10.9%	--/22	--	494/628	+27.1%	--/85	--
	January	46/50	+ 8.7%	9/13	+44.4%	571/533	- 6.7%	101/62	-38.6%
	February	31/30	- 3.2%	10/10	--	497/594	+19.5%	48/57	+18.8%
	March	45/50	+11.1%	8/8	--	556/584	+ 5.0%	63/53	-15.9%
	TOTAL	177/191	+ 7.9%	27/31 ²	+14.8%	2118/2339	+10.4%	212/172 ²	-18.9%
Structured Patrol Force Separately Organized	April	34/43	+26.5%	18/17	- 5.6%	511/524	+ 2.5%	36/61	+80.6%
	May	39/31	-20.5%	9/11	+22.2%	564/525	- 6.9%	60/52	-13.3%
	June	43/43	--	9/19	+111.1%	702/550	-21.7%	59/58	- 1.7%
	July	41/30	-26.8%	7/10	+42.9%	783/568	-27.5%	65/69	+ 6.2%
	August	42/50	+19.0%	15/16	+6.7%	747/597	-20.1%	104/81	-22.1%
	September	73/50	-31.5%	16/18	+12.5%	766/589	-23.1%	95/112	+17.9%
	October	52/36	-30.8%	19/11	-42.1%	762/538	-29.4%	64/87	+35.9%
	November	45/42	-6.7%	10/16	+60.0%	625/419	-33.0%	41/68	+65.9%
	TOTAL	369/325	-11.9%	103/118	+14.6%	5460/4010	-26.6%	524/588	+12.2%

¹ The Before and During statistics are based on 12/74-11/75 and 12/75-11/76 periods, respectively.

² The total does not include the entry for December.

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of problem-oriented patrol and incident-oriented investigation are almost exclusively directed at apprehension. Moreover, even the high-visibility patrol tactic was perceived by Structured officers as a preventive measure only because it increases the probability of apprehension. The *prevention through apprehension* emphasis has highlighted the fact that there is a *paucity* of explicit prevention-oriented methods. If such methods do exist, we believe they should be developed and tested.

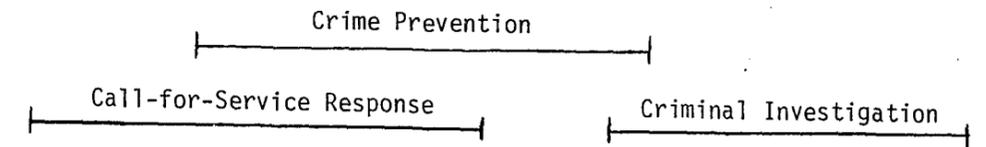
Nevertheless, the Structured force has been able to increase the Patrol Division's crime arrests by 4 percent, charges per arrest by 13.2 percent, and clearances by an estimated 105.5 percent (see Exhibit 6.1). Unfortunately, we were unable to secure data related to the quality of arrests. However, based on interviews with knowledgeable WBP supervisors and officers, we believe that the quality of arrests has not decreased. Consequently, the Structured force has increased the Patrol Division's arrest-related *productivity*.

The performance of the Structured force is even more striking when one looks at the month-by-month comparison in Exhibit 6.4; whereas the Part I crime levels increased by over ten percent in the four months before the Structured Unit was established, it decreased by over 25 percent in the eight months after the Unit was established. An almost similar finding is shown for the arrest level. Although the above findings may not be statistically significant, they are somewhat overwhelming. Whether the changes are long-term or not remains to be seen. And whether they were caused only by the Structured Unit is also open to discussion. However, it is remarkable that the changes occur in coincidence with the formation of the Structured Unit.

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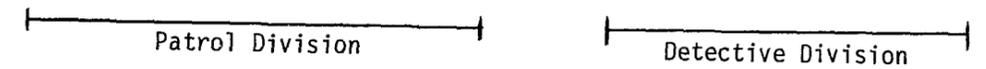
Exhibit 6.5
Patrol and Detective Responsibilities

Crime-Related Functions:

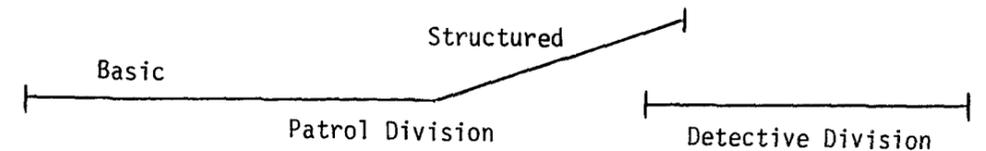


Functional Responsibilities:

Before:



During:



As to which Structured element(s) contributed to its significant success, it is generally agreed that the immediate incident-oriented investigation element has been the most *efficient*, followed by the directed problem-oriented patrol element.

DETECTIVE DIVISION

The incident-oriented investigation element has also been the main point of conflict between the Structured Unit and the Detective Division. The conflict can best be illustrated by looking at Exhibit 6.5, which reviews the functional responsibilities of the two groups in the Before and During periods. As one WBP official put it, "Before the experiment, 75 percent of all the responsibilities which both detectives and patrol claimed were not performed by either group--now Structured has laid claim to the middle ground." Thus, the Structured force has tried to *bridge* the gap, but the bridge remains unconnected: there is now a *communication* gap, whereas it was a *functional* gap before.

The communication gap has inhibited the performance of both groups, especially the Detective Division. Even though six former detectives were assigned to the Structured Unit when it was first set up, there have since been no transfers between the two groups. Men from the two groups rarely work together on cases.* Formal information flow between the two units is limited by a cumbersome organization structure in which their only common commander is the Chief. Lack of clear guidelines (see Exhibit 6.6) and lack of

* The initial plan for having the Captains of Patrol, Detectives, and Special Operations meet on a daily basis was abandoned very early in the experiment; the individual Captains were not supportive of the plan.

Exhibit 6.6

Clarity of Guidelines between Structured Patrol and Detectives

How clear are the WBP guidelines distinguishing between Structured Patrol and Detectives?

Percent Answering:	Basic Patrol Officers (N=80)	Structured Patrol Officers (N=23)	Detectives (N=30)
Very Clear	6.3%	17.4%	6.7%
Clear	32.5	26.1	3.3
Not Very Clear	27.5	34.8	20.0
Not at All Clear	27.5	17.4	63.3
Don't Know	6.3	4.3	6.7

Exhibit 6.7

Cooperation between Structured Patrol and Detectives

How would you rate the cooperation between Structured officers and detectives now (since April, 1976)?

Percent Answering:	Structured Officers (N=22)	Detectives (N=23)
Very Close	0.0%	0.0%
Close	4.5	4.3
Not Close Enough	54.5	21.7
Not at All Close	40.9	73.9

formal inter-unit reporting procedures aggravate the communications problem. Exhibit 6.7 shows that very significant majorities of both groups feel that the cooperation has not been close enough.*

The communication gap is responsible for the significant decrease in Detective efficiency (see Exhibits 4.10, 4.11 and 4.12). Although it is true that the Structured officers have been able to solve the easier crimes--made partially easier because of their immediate attention to the crimes--it is still obvious that the Detective performance has been quite poor. In fact, potential clearances and arrests slipped through the communications gap; sometimes the Detectives would not interrogate an arrested suspect only because "he has been contaminated by Structured interrogation." Informants were treated in the same manner.

In order to mitigate, if not eliminate, the conflict between the Structured Unit and the Detective Division, three steps could be taken. First, change the current WBP organization structure so that both the Patrol and Detective Divisions report to the same Inspector, who could mitigate and mediate any problem before it develops into a severe conflict requiring the attention of the Chief. Second, split the Detective force into a "generalist" force--which could be integrated with the Structured force--and a "specialist" force--which could concentrate on those crimes (e.g., homicide, rape, etc.) that require special investigative skills. And third, assign a lieutenant to command the Structured Unit since all equivalent units in the WBP are commanded by either lieutenants or captains.

* Other plainclothes investigation units within the WBP such as the Organized Crime and Vice Division and the Youth Aid Division experienced conflicts with the Structured Unit for much the same reason as did the Detective Division.

7 PATROL SPECIALIZATION

Split-force patrol is a significantly different approach in patrol *specialization*, based on the separation of the call-for-service response and preventive patrol functions of a police patrol force. Sections 5 and 6 discuss the elements that have been implemented to effect patrol specialization. In this section, we discuss patrol specialization issues regarding the role, integrity and supervision of the Basic and Structured patrol forces.*

7.1 PATROL ROLES

We examine Basic and Structured patrol roles to show how the officer's understanding of the nature and limits of their new roles has affected Patrol Division performance. The officers found the *distinction* between their central roles of call-for-service response and crime prevention to be fairly straightforward. As we would expect in any situation involving a substantial change in role definition, though, some problems were encountered in defining and refining the *boundaries* between these central roles. Basic units, for example, can and do perform crime prevention as a secondary function in terms of patrolling in the limited area near their fixed posts. Structured units, especially the high-visibility units, can and do provide responses when an emergency exists or when requested to back up Basic units.

* It should be noted that although the Basic and Structured forces are organizationally separate, they remain under a single commander, the Captain of Patrol, and patrol officers do rotate between the two groups. Section 7.2 elaborates on the integrity of the two forces.

BASIC PATROL

The majority of Basic officers feel that the guidelines distinguishing between their duties and those of Structured officers are quite clear, as shown in Exhibit 7.1. Most officers had no trouble understanding the specialization in their central roles. One officer stated, "In an overall sense, it is like delegating responsibility within a business." Those officers who felt uncertain about the distinction between the two groups were most concerned about the secondary patrol responsibilities Basic units had in addition to their primary duty in responding to calls for service. They sought clarification of what to do in between calls for service, of what consideration was to be given to knowing their sectors, and of what additional activities were required of them to prevent gaps from developing between their primary function and the duties of Structured officers.

As noted in Section 5.7, the activities performed by Basic units in between calls for service generally consist of mobile patrol within a few blocks of their reported fixed-post assignments. Such activities have not detracted from the primary purpose of fixed-post assignments; that is, proximity to high call-for-service locations. During participant observation we noted that Basic officers would sometimes take advantage of their mobility to enforce traffic regulations, check for stolen cars, and stop suspicious persons. Such activities do not significantly overlap the crime prevention activities planned for Structured officers through crime analysis.

Exhibit 7.1
Clarity of Basic and Structured Guidelines

How clear are the WBP guidelines distinguishing between the functions of Basic and Structured patrol?

Percent Answering:	Basic Patrol Officers (N=82)	Basic Supervisors (N=17)	Structured Patrol Officers (N=24)	Communication Personnel (N=25)
Very Clear	19.5%	29.4%	45.8%	28.0%
Clear	50.0	35.3	37.5	48.0
Not Very Clear	25.6	17.6	12.5	20.0
Not at All Clear	3.7	17.6	4.2	0.0
Don't Know	1.2	0.0	0.0	4.0

In addition to the above indicated secondary patrol activities, Basic officers assume preventive patrol responsibilities between 2 a.m. and 10 a.m., when no Structured manpower is on duty. Typically, three Basic officers would be taken out of two-man cars at 2 a.m. and assigned to one-man cars to do preventive patrol. It should be stressed that although the manpower used for this duty comes from the Basic force rather than the separate Structured force, the cars are labelled as Structured cars. This practice, which enhances the size of Structured relative to Basic patrol over that shown in Exhibit 4.1, has caused some resentment among Basic officers who dislike checking doors, but was *not* identified by the officers as a major contributor to role confusion.

STRUCTURED PATROL

The great majority of Structured officers feel that the guidelines distinguishing between their duties and those of Basic patrol are quite clear, as indicated in Exhibit 7.1. The 10.0 primary and 14.1 assist calls for service per day which Structured units respond to (i.e., about 1.5 calls for service per unit per eight-hour tour) are regarded as lending a hand to Basic patrol and have not caused confusion regarding Structured's primary patrol role.

In Exhibit 6.5, we conceptualized the bridging function of Structured patrol in closing the gap between activities normally performed by the Patrol Division and those normally performed by the Detective Division. The slight areas of overlap in duties were intended to serve

as bases for communications between the groups. While they clearly understand the boundary between their duties and those of Basic officers, Structured officers have encountered considerable conflict with detectives concerning the division of duties between their units, as brought out in Section 6.4.

Although the problems resulting from the overlap between the role of Structured patrol and that of the Detective Division are problems which are commonly associated with strike force-type units, it must be emphasized that Structured is *not* simply a strike force. Its role in *bridging* the Basic response function and the in-depth investigative function of the Detective Division is a much broader role than that of any strike force. The bridge is primarily built on the immediate incident-oriented investigation element of the Structured patrol; this immediate follow-up was not performed previously by either the Patrol or Detective Division, and is also not a characteristic function of a strike force.

Furthermore, unlike a strike force, the Structured force is intended to provide a *long-term* basis for focusing patrol efforts rather than a short-term effort to deal with crimes of a certain type or within a limited target area. Structured is also not an elitist group receiving specialized formal training or manned by the same officers: in fact, not all officers wish to be a part of the unit, as shown in Exhibit 7.2. Several officers said they found the Structured duties to be a *broadening* experience, one which "allows police officers to use imagination in developing patrol techniques and increases their

ability to conduct interviews and interrogations." In sum, the Structured patrol role is much broader in scope than the role of a typical strike force.

7.2 PATROL INTEGRITY

An examination of unit integrity is important to the discussion of patrol specialization because it assures a coherent effort toward the accomplishments of a unit's role, and forms a framework from which cooperation with other units can later be developed. The growth of a specific sense of unit identity and of close cooperation between the unit's officers are the building blocks of unit integrity. The development of such integrity under split-force was accomplished even though individual officers were rotated between the two Patrol Division assignments and transferred among the various WBP divisions.

UNIT IDENTITY

Basic patrol officers feel that their group has retained the sense of individuality and focus of the preexperimental Patrol Division. Some felt that they were carrying on the tasks of the traditional Patrol Division while Structured patrol was something entirely new. Such a conception is partially a result of the confusion of some Basic officers about their secondary patrol responsibilities, as noted in Section 7.1, and partially a result of Basic patrol's inheritance of the platoon structure and physical space of the old Patrol Division. Basic patrol is not, however, as tight-knit a group as Structured patrol.

Exhibit 7.2
Assignment Preference

If you had to be in the Patrol Division, which assignment would you prefer?

Percent Answering:	Basic Patrol Officers (N=80)	Basic Supervisors (N=17)	Structured Patrol Officers (N=24)	Detectives (N=29)	Communication Personnel (N=25)
Basic	55.0%	23.5%	4.2%	31.0%	48.0%
Structured	13.8	29.4	91.7	31.0	24.0
Makes No Difference	31.3	47.1	4.2	37.9	28.0

When it was set up in April, 1976, the Structured Unit quickly developed a group identity distinct from that of Basic patrol. One of the Structured supervisors observed that "these guys have an esprit de corps that you rarely see in Patrol Division officers." That the overwhelming majority of Structured officers prefer Structured patrol to Basic in Exhibit 7.2 is a strong indication of their unit's cohesiveness. The Structured unit received considerable personal attention from both the Captain of Patrol and the Inspector of Uniform Operations; this contributed to their development of a strong sense of unit identity and helped to boost their morale.

UNIT COOPERATION

Most Basic officers describe cooperation within their group on the anonymous questionnaire as close or very close, as shown in Exhibit 7.3. During participant observation, we noted that interaction between Basic officers was for the most part limited to dispatcher-assigned assists, but that cooperation during these interactions seemed close.

The majority of Structured officers describe cooperation within their group as very close, as shown in Exhibit 7.4. Police-related interactions between Structured officers during participant observation were noticeably more frequent than the limited interactions between Basic officers. Structured officers were often assigned to tactical patrol activities in which coordinated actions between the officers were an essential part of their task. Even the one-man

Exhibit 7.3
Cooperation among Basic Officers

How would you rate the cooperation among all Basic officers now (since 4/76)?

Percent Answering:	Basic Officers (N=82)	Basic Supervisors (N=17)
Very Close	20.7%	11.8%
Close	41.5	41.2%
Not Close Enough	29.3	29.4
Not at All Close	8.5	17.6

Exhibit 7.4
Cooperation among Structured Officers

How would you rate the cooperation among all Structured officers now (since 4/76)?

Percent Answering:	Structured Officers (N=24)
Very Close	54.2%
Close	29.2
Not Close Enough	16.7
Not at All Close	0.0

high-visibility patrol units demonstrated cooperation by reviewing the activities observed on their assigned areas with neighboring Structured units. Coordination of effort is a central aspect of the Structured patrol task.

ROTATION AND TRANSFERS

The integrity of the Basic and Structured patrol forces has not been decreased by officer rotation between the two groups. Rotation was planned such that each officer would spend up to two months in Structured and then return to Basic patrol in order to facilitate information flow and prevent the development of Structured elitism. The rotation was intended to contribute to the career development of the officers by making sure they were exposed to all phases of police work, much like transfers between the various divisions. For example, one officer who had been transferred back to Basic patrol from Structured noted that "learning to develop and execute search warrants and other court papers has been a valuable experience for me and I feel it gives me a better perspective on police work as a Basic officer." However, as shown in Exhibit 7.5, rotation through Structured patrol proceeded much slower than planned, at an average of four months per man. This has obviously contributed to a stronger unit integrity, at a possible cost to information flow. One Basic supervisor noted that officers working Basic patrol are sometimes reluctant to share informants or information; they tend to want to hold on to their information until they become Structured officers.

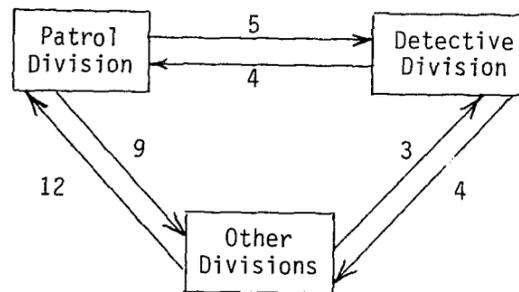
Exhibit 7.5

Duration of Duty in Structured Patrol

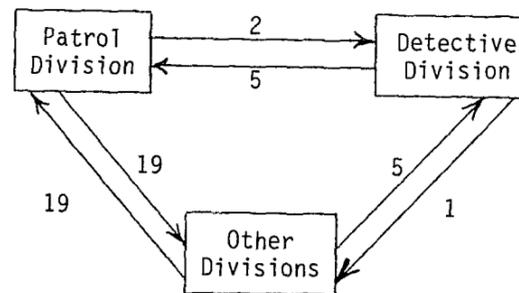
Duration of Duty:	Percent of Assigned Structured Patrol Officers as of November 30, 1976 (N=23)
1 month or less	0.0%
1 to 2 months	26.1
2 to 3 months	0.0
3 to 4 months	17.4
4 to 6 months	13.0
6 to 8 months	43.5

The extent of transfer between divisions is shown in Exhibit 7.6: note that roughly the same proportion of officers were transferred between the various divisions in the Before and During periods. In addition to transfers, manpower provided by officers working in other divisions and performing overtime assignments for the Patrol Division could have been a source of information transfer. In reality, most of the Patrol Division overtime manpower came from Patrol Division officers. Only a handful of overtime slots were filled by detectives during the experiment. Transfers and overtime assignments were few enough that they did not threaten unit integrity.

Exhibit 7.6
Transfers Between WBP Divisions



(a) Before (9/1/74 - 8/31/75)



(b) During (12/1/75 - 11/30/76)

7.3 PATROL SUPERVISION

Patrol specialization has necessarily affected the supervisory structure and the way in which Patrol Division supervision is provided for both Basic and Structured officers. Further changes in Basic supervision duties have resulted from the streamlined roll-call procedures discussed in Section 5.5. Functional accountability has of course been highlighted by the experiment; this in turn has contributed to the productivity gains detailed in Section 4.

BASIC PATROL

The supervisory structure of Basic patrol was only slightly altered from the preexperimental Patrol Division, by a reduction in the number of relief sergeants from four to two. The number of officers decreased even more, however, as shown in Exhibit 4.1.

Supervisors noted that it has been more difficult to supervise during the experiment than before, and that supervisory workloads are greater (see Exhibit C.1, Question 18 and 19). In formal interviews, the supervisors cited three aspects of the split-force experiment that have impacted their workload. First, they have had to define the guidelines of the experiment to the men in cases where proper procedures were not clear. Second, checking to see if a man was off his sector became more difficult due to flexible response sectors and increased intersector dispatching. And third, they regard the streamlined roll-call procedures, which required them to prepare written handouts, ready vehicles, and distribute radios, as annoying extra work.

Overall, Basic officers perceive a decrease in supervisory quality, as indicated in Exhibit 7.7. One extremely frustrated officer wrote "Supervisors were unable to answer questions when asked, and when they answered questions they had no idea what they were saying." Issuance of detailed guidelines can contribute to improved understanding of the split-force program.

STRUCTURED PATROL

The supervisory structure and duties in the Structured patrol force are necessarily different from previously established patterns in the Patrol Division. The Structured Unit was split into two twelve-man groups for assignment purposes, each responsible to a sergeant. A third sergeant is in overall command of the Unit; he is effectively a lieutenant. While this is an unstable situation in the long run, the personal attention of the Captain of Patrol and the Inspector of Uniform Operations has helped to ensure cooperation and effectiveness in the Structured patrol supervision.

The task of supervising the Structured Unit required more adaptability than that required for supervising Basic officers. The sergeants have to gather considerable input on the status of each activity their men are pursuing before making up their daily assignments in order to develop continuity in the overall patrol effort. An extra dimension is added to the process of developing assignments as a result of the flexible tactics used by the Unit. Supervisors stated that the need to integrate such information with crime patterns

Exhibit 7.7
Perceived Change in Quality of Supervision

How would you compare the quality of supervision you receive now (since 4/76) with the supervision you received before the experiment?

Percent Answering:	Basic Officers (N=82)	Basic Supervisors (N=17)	Structured Officers (N=24)	Detectives (N=30)
Much Better	4.9%	0.0%	25.0%	3.3%
Better	13.4	12.5	20.8	0.0
No Difference	45.1	50.0	45.8	40.0
Worse	25.6	25.0	4.2	33.3
Much Worse	11.0	12.5	4.2	23.3

has enhanced their ability to interact meaningfully with crime analysis officers. The consensus of the Structured supervisors in interviews was that the Structured supervisor's job was somewhat harder but a lot more rewarding than that of a Basic supervisor.

The opinion of the Structured officers, as shown previously in Exhibit 7.7, is that Structured patrol supervision is better than the supervision they received before the experiment. The main reason for this opinion was the supervisor's interest in the day-to-day activities of each officer.

PART III: OUTPUT MEASURES

8 CRIME STATISTICS

9 OVERALL REACTIONS

Trapped administrators have so committed themselves in advance to the efficacy of the reform that they cannot afford honest evaluation. For them, favorably biased analyses are recommended, including capitalizing on regression, grateful testimonials, and confounding selection and treatment. Experimental administrators have justified the reform on the basis of the importance of the problem, not the certainty of their answer, and are committed to going on to other potential solutions if the one first tried fails. They are therefore not threatened by a hard-headed analysis of the reform.

Donald Campbell, 1969

CONTINUED

2 OF 4

8 CRIME STATISTICS

As noted in Section 2.1, the goal of the Wilmington split-force experiment was not to achieve any pre-specified change in crime, fear, clearance or productivity level, but solely to test a concept. Nevertheless, we have monitored these outcome measures. Although we have not conducted a victimization or fear survey, we have undertaken a limited citizen survey, as summarized in Appendix B. In this section we consider crime and clearance statistics.

It is well known that crime and clearance statistics fluctuate from year to year and from city to city for many reasons, including social, economic, demographic, and law enforcement factors. The interactive nature of these factors makes it extremely difficult to isolate a single cause, if indeed it does exist. Nonetheless, the scope and the nature of the changes in WBP operations resulting from the implementation of the split-force experiment constitute a strong argument that changes in the reported crime and clearance levels in Wilmington are at least *partially* attributable to the split-force experiment.

8.1 PART I CRIME TREND

During the experiment, Wilmington's crime rate per 100,000 population showed considerable improvement as compared to other U. S. cities of 50,000 to 100,000 persons, while the City's clearance rates experienced a significant drop as indicated in Exhibits 8.1 and 8.2, respectively.

Exhibit 8.1
Part I Crime Rates

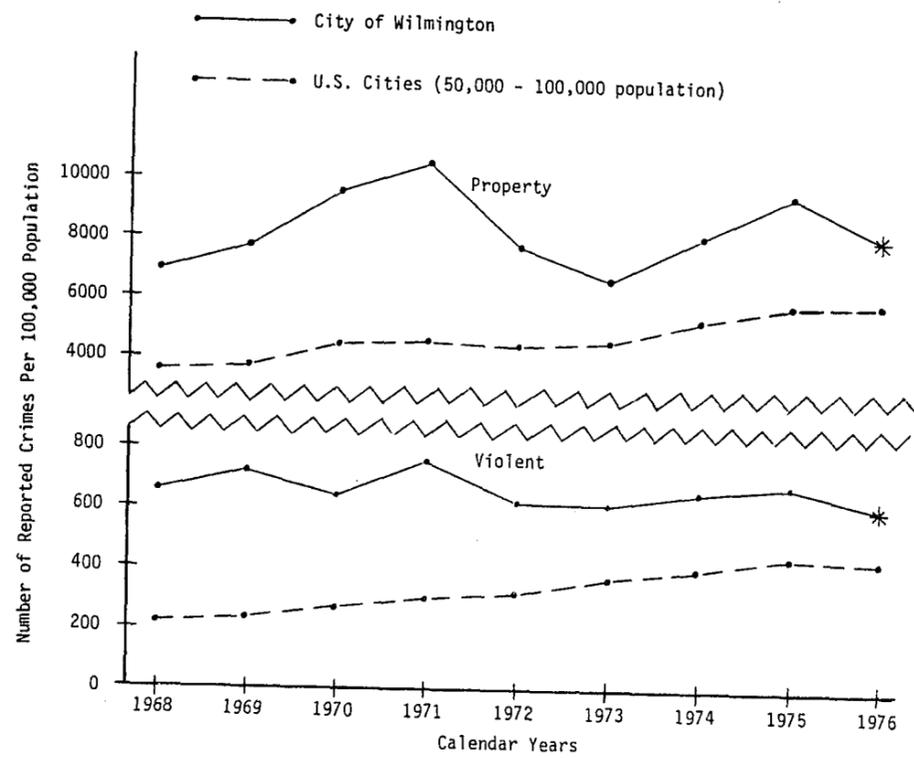
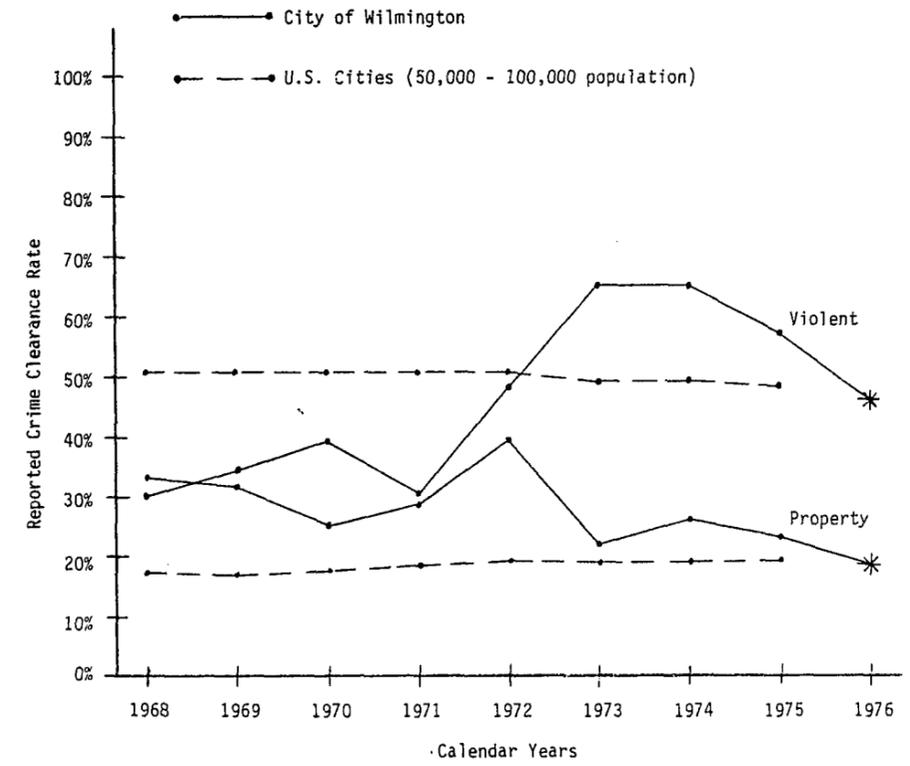


Exhibit 8.2
Part I Crime Clearance Rates



CRIME RATES

Both the violent crime rate and the property crime rate in Wilmington showed decreases in 1976 as compared to 1975. The violent crime rate dropped considerably--more than the 1976 drop in the national average--during the first full year of split-force operations by the WBP. As can be seen in Exhibit 8.1, the decrease in violent crime rates came after several years of a rising trend both in Wilmington and nationwide. Over the very long term, violent crime in Wilmington seems to be fluctuating about a relatively stable trend, in contrast to the steady growth before 1976 of violent crimes in U. S. cities of comparable size.* The cause of the fluctuation in Wilmington rates cannot be specifically identified: it could have been due to turnover in the WBP's statistics unit. There has, however, been no turnover in the unit since 1973, assuring a constant level of quality in the recent data. We also checked to make sure that the observed crime rate fluctuations did *not* occur as a result of changes in police reporting, collecting, and coding procedures.

The largest component of violent crime in Wilmington is robbery, accounting for 78.3 percent of violent crime in 1975. Nationally, assault accounted for just over half of the violent crime that year and robbery for most of the remainder. Violent crime decreases in 1976 both in Wilmington and in other U. S. cities of comparable size were due almost entirely to decreases in robberies. The net effect was greater in Wilmington, which showed a 10.8 percent overall reduction in violent crime compared to the decrease in the national average of only six percent.

* The U. S. cities crime trend is bound to be less fluctuating than the Wilmington trend, since the former is an *average* of many cities.

The property crime rate in Wilmington showed an even more dramatic improvement relative to the national average for cities of comparable size than did violent crime rates. Exhibit 8.1 shows the strong drop in the property crime rate observed in Wilmington after a recent trend toward considerable increases, in contrast to other U. S. cities which showed no real decrease over 1975. The long-term property crime trend in Wilmington shows the same pattern of fluctuation about a very steady level that was observed with violent crimes. As we noted earlier, such fluctuation did not occur as a result of changes in police procedures.

All three categories of property crime--burglary, larceny, and auto theft--showed similar proportional decreases in Wilmington. Nationwide increases in larcenies cancelled out decreases in burglaries and auto thefts. The significant decrease in the property crime rate in 1976 in Wilmington is especially impressive in contrast to the absence of change in the national rate.

CLEARANCE RATES

Clearance rates in Wilmington for both violent crime and property crime, as indicated in Exhibit 8.2, decreased considerably in 1976 as compared to 1975. Data for other U. S. cities in the 50,000 to 100,000 population category had not yet been released as of this writing, but the very stable nature of the long-term national trend leads us to expect no major change. Both violent and property crime clearance rates showed considerable fluctuation prior to 1973. As with the crime rate data, we feel that the stability of data quality justifies giving more weight

to the years since 1973 in judging relative performance in 1976. For example, prior to 1973 some auto thefts were counted as cleared when the car was returned to the rightful owner; in recent years the FBI's requirement for an "arrestable" suspect has been adhered to in scoring clearances.

Both violent crime and property crime clearances were substantially above the national average prior to the recent decline. The downturn began in 1975, the year *before* the split-force experiment began, suggesting that other forces were contributing to a decline in clearance rates. Nonetheless, the detailed analysis of arrest and clearance patterns in Section 4.3 indicates that decreased Detective Division efficiency resulting from problems in communicating and coordinating with the Structured patrol force is the key factor in the decreased clearance rates. Clearance rates decreased *faster* in 1976 than in 1975. This is all the more disturbing in view of the decreasing crime rate--which, of course, serves as the denominator in calculating the clearance rate.

8.2 PART I CRIME LEVEL

Since Part I crime and clearance rates show a pronounced decrease in Wilmington as compared to other U. S. cities of comparable size, it is important to address the *significance* of their decreases. We return to our defined Before and During periods to examine crime levels, unadjusted for population since the Wilmington population has stabilized at a little over 80,000 persons. In addition to comparing actual During period crime levels to those in the Before period, we compare them to the crime levels that

would have occurred in the During period if the rate of increase in the three years prior to the experiment had continued, as predicted by a least squares regression--we did not take more than three years since we were uncertain about the data quality prior to 1973.

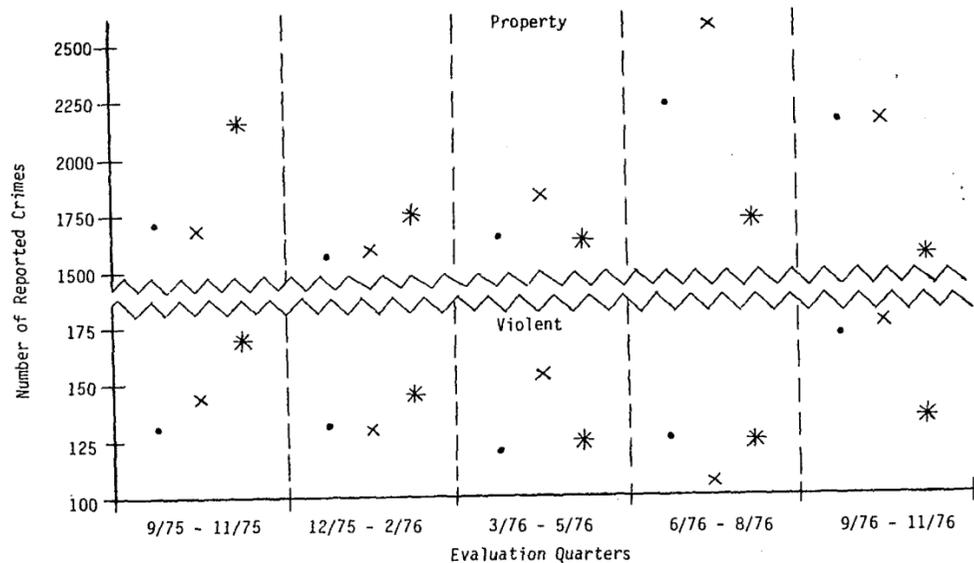
CRIME LEVELS

In a detailed quarter-by-quarter comparison, as shown in Exhibit 8.3, the source of the 1976 crime level decrease can be seen in the *latter* quarters of the experiment. During the transition quarter and the first experimental quarter, in fact, crime *increased* noticeably, before the split-force elements took effect, including the formation of a separate Structured Unit in April, 1976. In the second experimental quarter (i.e., 3/76 - 5/76), the crime level is close to the level of the same quarter one year earlier and noticeably below the rising crime trend. In the third quarter, property crime drops drastically as compared to a year earlier, and in the final quarter both crime levels show large decreases. Again, it should be noted that the decreases coincide roughly with the deployment of the Structured Unit as shown in greater detail in Exhibit 6.4. Property crime decreases for the full one year period are more pronounced than violent crime decreases, as seen in Exhibit 8.4.

The net effect, as shown in Exhibit 8.5, is that the drop in property crime is statistically significant. Since property crime constitutes more than 90 percent of all Part I crimes, the total drop is also significant. On the other hand, the slight decrease in the violent crime level is found not to be statistically significant.

Exhibit 8.3

Part I Crime Levels: Quarterly Analyses



Note: • Before Observed Value (i.e., value of corresponding quarter in the preceding year)
 × Predicted Linear Regression Value (i.e., based on corresponding quarters from 1973 - 1975)
 * During Observed Value (i.e., value of stated evaluation quarter)

Exhibit 8.4
 Part I Crime Statistics

	Number of Part I Crimes in 12-Month Period					
	Before	During	Change	Predicted ¹ (95% Confidence Interval)	During	Change
Violent	505	516	+2.2%	559.3 (+61.6)	516	-8.4%
Property	7122	6649	-6.6%	8568.7 (+790.8)	6649	-28.9%
Total	7627	7165	-6.1%	--	--	--

(a) Part I Crime Level

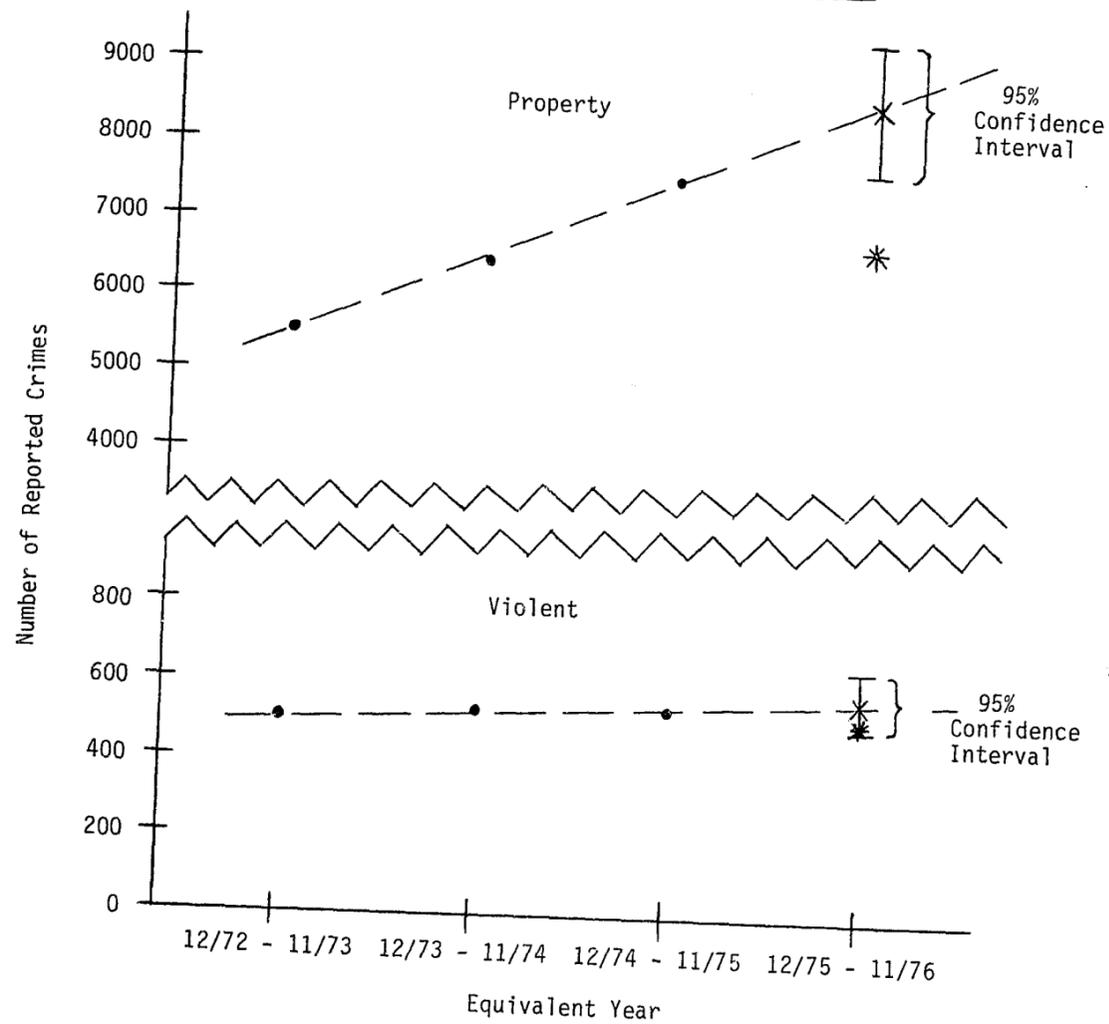
	Part I Crime Clearance Rate in 12-Month Period					
	Before	During	Change	Predicted ¹ (95% Confidence Interval)	During	Change
Violent	63%	47%	-25.4%	62% (+47%)	47%	-24.2%
Property	24%	19%	-20.8%	25% (+16%)	19%	-24.0%
Total	27%	21%	-28.0%	--	--	--

(b) Part I Crime Clearance Rate

¹ Predicted value is based on linear regression of three preceding 12-month periods running from 12/1 to 11/30.

Exhibit 8.5

Part I Crime Levels: Predicted Versus Observed



Note: • Before Observed Values

× Predicted Linear Regression Value (i.e., based on the before observed values)

* During Observed Value

CLEARANCE RATES

Clearance rates in the During period are less than those in the Before period and those predicted for the During period, as summarized in Exhibit 8.4 and illustrated in Exhibit 8.6. Clearance rates vary from period to period much more than crime rates do, with the result that the 95 percent confidence interval is very large, too large to illustrate meaningfully in Exhibit 8.6. This means that although the rates did decrease noticeably, such decreases may be due to random fluctuation. But, as discussed in Section 6.4, the decrease in clearances has been at least partially due to the conflict between Structured officers and detectives.

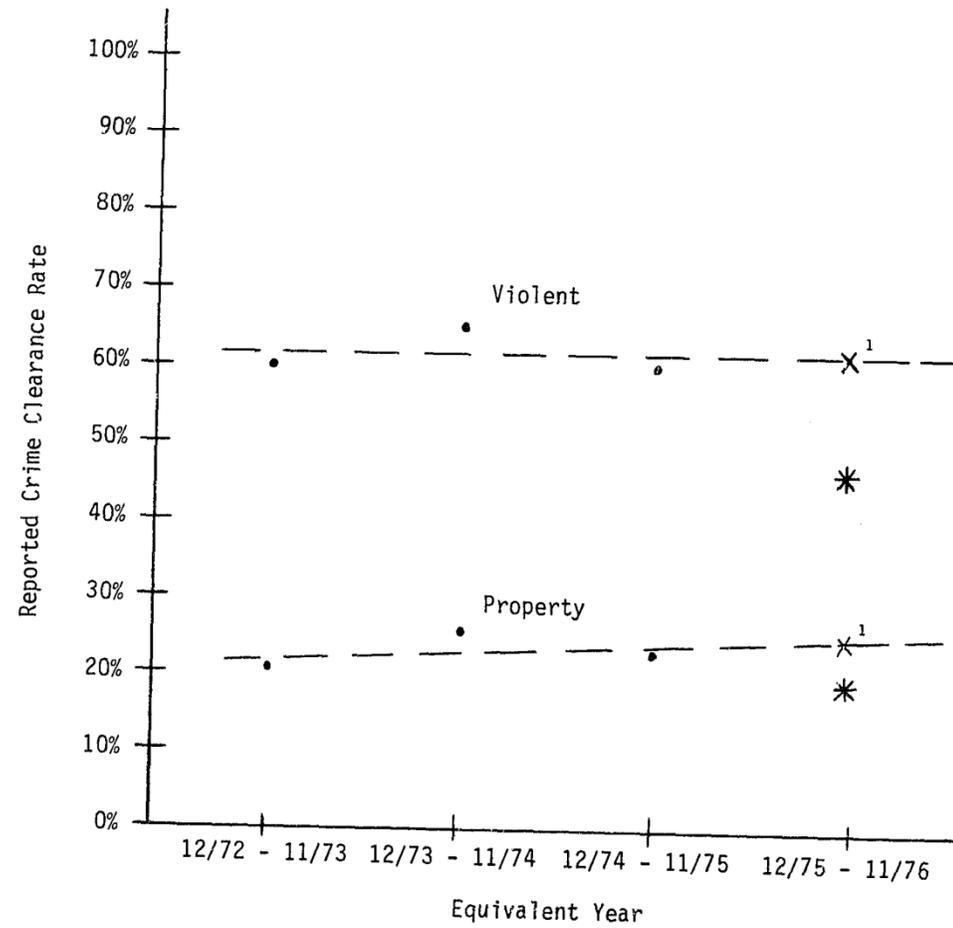
8.3 PART II CRIME LEVEL

An examination of Part II crime levels and of the number of other non-crime-related calls for service handled by the WBP provides a way to confirm that crime reclassification is not the source of the observed Part I crime drop.* In this respect, the sharp drop in Part II crimes, as shown in Exhibit 8.7, is reassuring. Furthermore, Exhibit 8.8 shows that every major call-for-service category has registered a decline in 1976.

* We had also wanted to access crime statistics for towns bordering the City of Wilmington to see whether crime has been displaced geographically: the consensus of the WBP officials and the police chiefs of two neighboring towns is that there has been no geographical displacement. It should also be noted that there could be temporal, tactical, target and functional displacements of crime [A.1-24].

Exhibit 8.6

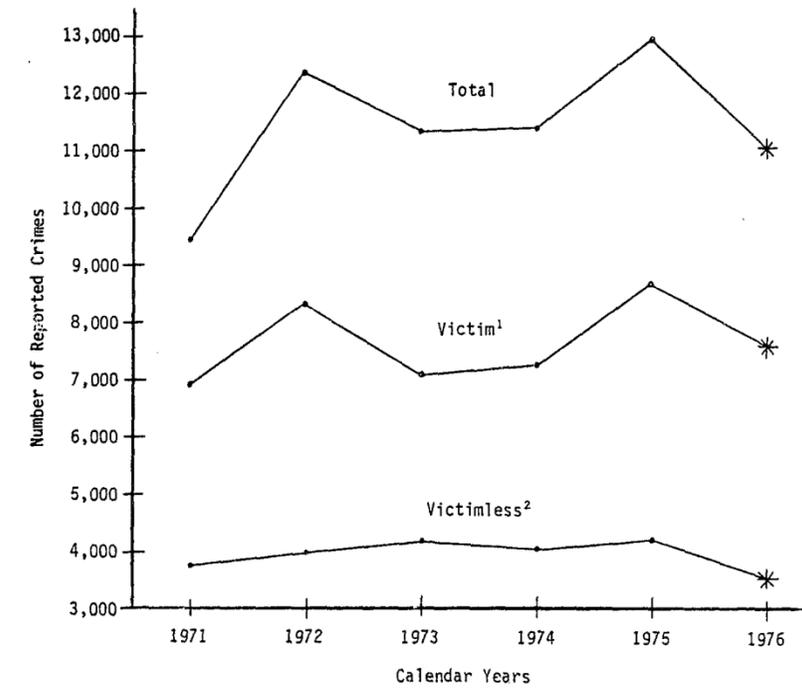
Part I Crime Clearance Rate: Predicted Versus Observed



Note: • Before Observed Values
 X Predicted Linear Regression Value (i.e., based on the before observed values)
 * During Observed Value

¹ 95% confidence interval is too large to be illustrated.

Exhibit 8.7
 Components of Part II Crimes

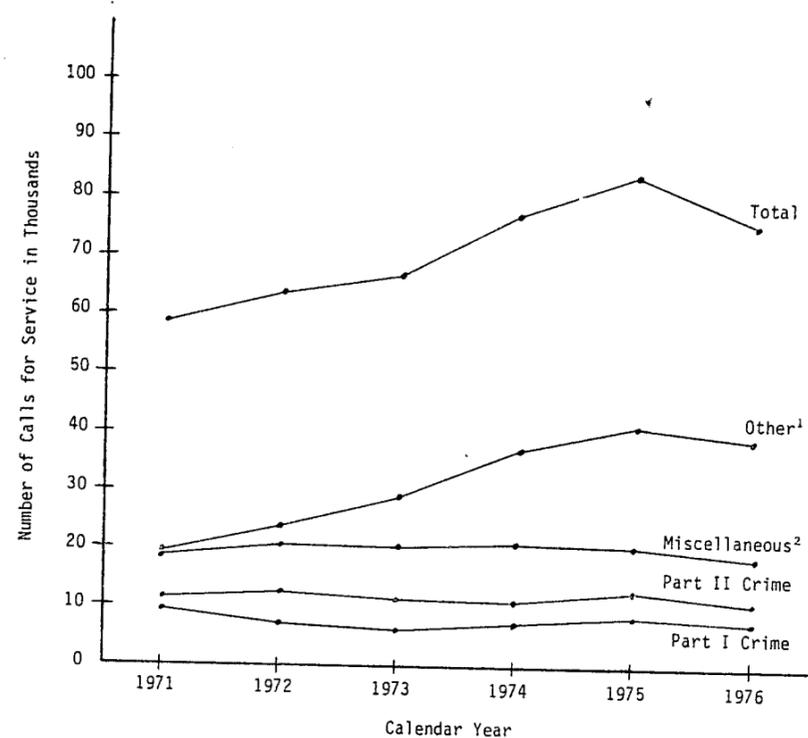


¹ Part II crimes with *victim* include: simple assault, arson, forgery and counterfeit, fraud, embezzlement, stolen property, vandalism, sex offense, offense against family and children, other offenses and suspicion.

² Part II *victimless* crimes include: weapons, prostitution, narcotics laws, gambling, driving under intoxication, liquor laws, drunkenness, disorderly conduct, vagrancy, runaway curfew and loitering.

Exhibit 8.8

Components of Call-for-Service Demand



¹Other calls for service include: unfounded, gone on arrival, civil, voided numbers and mathematical errors.

²Miscellaneous calls for service include: investigations, suspicious cars, persons, deaths, fires, alarms, traffic accidents, lost and found, open door/windows and other miscellaneous.

9 OVERALL REACTIONS

This section sums up the overall reaction of WBP officers and officials to the split-force experiment, as well as to the split-force concept itself. In addition, citizen attitude toward police services in Wilmington is also summarized.

9.1 OFFICER REACTION

Exhibit 9.1 shows that although the majority of WBP officers regard the split-force concept as an effective approach, only one third of the officers would like the split-force to be continued in Wilmington after the experiment.* Several factors have contributed to the officers' dislike of the split-force (as it has been implemented in the WBP): specifically, the divisiveness engendered by the conflict between the Structured Unit and the Detective Division; the concern over the lack of sector identity; and the boredom with fixed-post assignments and structured high-visibility patrol. These factors have already been addressed in Sections 5, 6, and 7. Three other factors--unrelated to the experiment--have, however, been on the minds of the officers: specifically, the concern over a shortage of WBP manpower; the inertial resistance to change; and an underlying morale problem in the WBP.

* Officer opinions about the split-force were not dependent on education or number of years on the force, but were related to how knowledgeable the officers felt about the experiment. The more knowledgeable the officers felt, the more likely they were to feel that the WBP should continue the use of the split-force approach.

Exhibit 9.1

Officer Reaction to Split-Force

At the end of the Experiment, should the WBP continue to deploy a Split-Force Patrol?

Percent Answering:	Basic Patrol Officers (N = 81)	Basic Supervisors (N = 17)	Structured Patrol Officers (N = 24)	Detectives (N = 29)	Communications Personnel (N = 24)	Total (N = 175)
Yes	22.2%	41.2%	83.3%	17.2%	25.0%	32.0%
No	77.8	58.8	16.7	82.8	75.0	68.0

(a) Reaction to Continuance in Wilmington

9-2

Independent of your feelings regarding the Wilmington Split-Force Patrol Experiment, do you think the concept of splitting the patrol force into a call-for-service response force and a directed preventive patrol force is an effective approach to patrol deployment?

Percent Answering:	Basic Patrol Officers (N = 78)	Basic Supervisors (N = 16)	Structured Patrol Officers (N = 22)	Detectives (N = 30)	Communications Personnel (N = 22)	Total (N = 168)
Yes	53.8%	75.0%	86.4%	20.0%	45.5%	53.0%
No	46.2	25.0	13.6	80.0	54.5	47.0

(b) Reaction to Concept

We consider these three factors next, followed by a brief concluding statement.

MANPOWER SHORTGAGE

A common complaint among both Basic and Structured officers has been that "there are not enough men in this department to operate the split-force." The officers felt that they are being overworked because the department is approximately 20 men below the authorized strength of 271. One Basic officer noted that "the split-force is analogous to a 'speed-up'. Work is increased without increasing pay or benefits." It is interesting to note that, because Basic officers have had problems recognizing the reduced emphasis on their crime prevention responsibility, they regard the split-force experiment as only adding to their work by making them handle more calls for service.

Additionally, the WBP officers do not realize that the split-force experiment has in some ways offset the perceived manpower shortage by increasing the productivity of the existing manpower.

RESISTANCE TO CHANGE

Resistance to organizational change has been a problem responsible for considerable dissatisfaction. Even some of the officers who liked the split-force experiment mentioned it as a problem. It is at the root of, first, the difficulty Basic officers have had in accepting their new role as response specialists, and, second, the strenuous objections of the Detective Division whose duties are overlapped by those of Structured patrol.

Several supervisors felt that resistance to change has been the greatest single factor underlying the objections of the patrol officers to the split-force experiment. One noted that "the men may bitch about things the way they are now, but if you were to change them back to the way they were before, they [the men] would be even more upset."

Resistance to change is a relative phenomenon. As new changes occur subsequent to those introduced during the split-force experiment, the older changes will seem less threatening to the status quo and the objections to them will decrease as attention is focused elsewhere.

WBP MORALE

If one were to measure morale by the number of sick days taken, then, according to Exhibit 9.2, morale has deteriorated in the During period.* However, upon closer examination, it is seen that there has been a rising trend in sick leave since 1974. As discussed in Section 2.1, tension between the WBP officers and the City administration has been a constant problem ever since the last negotiation between the police and the City in 1974.

CONCLUSION

Officers in Wilmington have not reacted favorably to the split-force experiment, even though the majority of them feel that the split-force concept is effective. Resistance to change has been the largest

* The 25.2 percent increase in the Structured officers' sick days taken should not be interpreted as their dissatisfaction with the experiment--indeed, as a group, they are very happy with the experiment (see Exhibit 9.1)--since they still take less sick days than the average officer.

Exhibit 9.2
Sick Day Statistics

Divisions ¹	Number of Years in Department ²	Sick Days per Officer ³	
		Before/During ⁴	Change
Patrol Division			
Structured (N=27)	5.46	5.44/6.81	+25.2%
Non-Structured (N=117)	6.42	7.68/8.23	+ 7.2%
Total (N=142)	6.13	7.36/8.08	+ 9.8%
Detective Division (N=32)	11.32	7.20/5.31	-26.3%
Other WBP Divisions (N=66)	--	5.79/7.33	+26.6%
Total WBP (N=240)	6.91	6.91/7.50	+ 8.5%

(a) Before/During Sick Days by Unit

	1972	1973	1974	1975	1976
Total Sick Days	1506	1200	1473.5	2003	2135
Sworn Personnel (Average)	280.5	256	256.5	256	254.5
Average Number of Sick Days per Officer	5.37	4.69	5.74	7.82	8.39

(b) Sick Day Trend in WBP

¹ Membership of the division on 8/30/76 was used as a basis for computing average sick days in both the Before and During periods.

² Based on anonymous questionnaire survey results.

³ Truncated at 20 days per individual officer.

⁴ The Before and During statistics are based on 1/75-12/75 and 1/76-12/76 periods, respectively.

single factor in the gap between acceptance of the concept and acceptance of the split-force experiment in Wilmington. However, increasing familiarity with the split-force seems to be leading to a greater degree of acceptance of the approach. Participant observations subsequent to the administration of the anonymous questionnaires do indicate a growing acceptance of split-force patrol operations.

9.2 OFFICIAL REACTION

Officials of the WBP, including the new Chief of Police, have been very pleased with the split-force patrol experiment, and especially with the resultant increase in productivity. It is significant that the new Chief, upon taking office immediately *after* the split-force experiment ended, chose to continue the split-force approach in Wilmington. The importance of this action is further accentuated by the fact that the Chief had had no direct involvement with the split-force experiment prior to his appointment. During much of the experiment, he was in fact the Captain of the Drug, Organized Crime and Vice Division, which had also developed some conflicts with the Structured force. Encouraging preliminary evaluation results and a decreasing crime trend undoubtedly contributed to the decision to continue with the split-force program.

The WBP officials' appreciation of the split-force approach is in part due to the increased command and control potential offered by the approach. The WBP officials feel that the approach makes the Basic and Structured forces each *accountable* for fulfilling a specific function. Split-force procedures have also increased officer accountability. For example, a prearranged set of fixed-post assignments

performed in between handling calls for service has helped to insure the whereabouts of the Basic officers.

9.3 CLIENT REACTION

The clients of the WBP do not seem to have perceived any differences in service quality due to the experiment. Their opinions were solicited in the two-part client telephone survey (see Appendix B).

The client responses indicate that they remain quite satisfied with the quality of police services (see Exhibit B.7, Question 15) and the safety of their neighborhoods (see Exhibit B.7, Question 25). In an attempt to explain the overall client satisfaction result, a number of variables were cross-tabulated with the satisfaction variable. In summary, it was found that client satisfaction was *correlated* with age (i.e., older clients were more satisfied than younger clients), ethnic origin (i.e., white clients were more satisfied than black clients), residence status (i.e., owners or buyers were more satisfied than renters), length of residence (i.e., clients with longer residence were more satisfied than clients with shorter residence), and safety of neighborhood (i.e., clients in safer neighborhoods were more satisfied than clients in less safe neighborhoods).

Comments regarding client satisfaction ranged from "the police need to respect others more--too many cops act in a Bogart manner," to "young cops are too cocky," to "the police department needs some improvement, but overall, it's pretty good," to "I've had several contacts

with the police--excellent cooperation." In general, the WBP clients were quite sympathetic, as exemplified in the following comment:

The fault is not with the policemen. There just aren't enough jails and people don't go to jail often enough. There should be more jobs for teenagers.

An often-mentioned comment by the WBP clients related to the issue of police follow-up on incidents. Several WBP clients complained that police officers would invariably say, "we will follow up on this incident and *get back to you*." Thus, when the police officers do not show up again, there is ill feeling. This is obviously an instance of raising client expectations beyond realistic levels, at least insofar as the WBP can meet them.

Finally, another client characteristic should be noted--about *half* of all the respondents had requested police assistance *within one year*. This is a significant finding: it should be further explored to determine a more efficient procedure for responding to the more repetitive "career" victims.

PART IV: RESULTS AND IMPLICATIONS

10 EVALUATION RESULTS

11 NATIONAL IMPLICATIONS

What is clear is that the revolution of rising expectations, which has been one of the chief features of Western society in the past 25 years, is being transformed into a revolution of rising entitlements for the next 25...the particular demands will vary with time and place. They are, however, not just the claims of the minorities, the poor or the disadvantaged; they are the claims of all groups in the society, claims for protections and rights--in short, for entitlements.

Daniel Bell, 1976

10 EVALUATION RESULTS

The purpose of this section is to consolidate and summarize the major evaluation results, all of which have already been discussed in the previous nine sections. For the sake of conciseness, the results are indicated in exhibit form. Section 10.1 summarizes the evaluation findings, while Section 10.2 addresses the major problem issues and contains specific recommendations.

10.1 SUMMARY OF FINDINGS

Evaluation findings regarding the Basic and Structured patrol elements are contained in Exhibits 10.1 and 10.2, respectively. The major statistical findings are summarized in Exhibit 10.3, while conclusions about split force, *based* on the Wilmington experience, are listed in Exhibit 10.4. Three additional issues deserve further consideration.

First, except for some initial problems in data collection and training, the WBP has been able to carry out the split-force experiment with surprising ease and without any overwhelming problems. This accomplishment is all the more significant in light of the broad scope and complex nature of the experiment. We attribute the successful conduct of the experiment to three main factors: a) the professionalism of top WBP officials and their total support of the experiment; b) the patrol officers in the WBP are relatively young--having an average age of 29.9--so that they are more amenable to change; and c) the NILECJ overtime contribution has been an important goodwill gesture.

Second, although the evaluation has endeavored to be all-encompassing in its outlook, it has, of necessity, been limited in

Exhibit 10.1

Basic Patrol Elements: Summary of Findings

Before/During Comparison of Basic Patrol Element's Impact on Indicated Measure: D = Decrease; I = Increase									
Basic Patrol Element	Proportional Temporal Deployment	Adaptive Response Sectors	Prioritized FCFS Dispatch	Formalized Response Delays	Streamlined Roll-Call Procedures	Reduced Manning Level per Unit	Fixed-Post Assignments	NILECJ Overtime	Net Impact
<u>Time Component</u>									
Delay Time	D	--	D	I	--	--	--	--	D
Travel Time	--	D	I	--	--	--	--	--	I
On-Scene Time	--	--	--	--	--	--	--	--	--
<u>Call-for-Service (CFS)</u>									
Primary Calls	--	--	--	--	--	--	D	--	D
Assist Calls	--	--	--	--	--	I	--	--	I
Demand/Supply Mismatch	D	D	--	D	--	--	--	--	D
<u>Workload-Related</u>									
Unit Utilization Factor	--	--	--	--	--	I	D	--	I
Utilization Imbalance	D	D	D	--	--	--	--	--	D
Officers per Unit	--	--	--	--	--	D	--	I	D
Officer Workload Index	--	--	--	--	--	I	D	D	I
<u>Unit Activity</u>									
Sector Identity	--	D	D	--	--	--	--	--	D
Response Mileage	--	D	I	--	--	--	--	--	I
Patrol Mileage	--	--	--	--	--	--	D	--	D
On-Street Time	--	--	--	--	I	--	--	--	I
<u>Officer Perception</u>									
WBP Effectiveness	I	D	--	--	I	--	D	I	I
Job Satisfaction	--	D	D	--	--	D	D	I	D
<u>Client Perception</u>									
Client Satisfaction	--	--	--	I	--	--	--	--	I
Contribution to CFS Response Effectiveness ¹ /Efficiency ²	Very Effective and Efficient	Effective But Not Understood	Efficient But May Be Ineffective	Potentially Very Effective and Efficient	Efficient	Very Efficient But Not Accepted	Effective But Not Accepted or Understood	Effective	Set of Basic Elements Are Effective and Efficient
Contribution to the Formation of Structured Patrol Force	Very Significant	Significant	Somewhat Significant	Somewhat Significant	Significant	Very Significant	Not Significant	Significant --As A Goodwill Gesture	Set of Basic Elements Are Significant But Not Uniform

¹Effectiveness of a Basic element is the extent to which the element is accomplishing the Patrol Division's call-for-service response function.

²Efficiency of a Basic element is the extent to which the element is undertaking the Patrol Division's call-for-service response activities at minimum cost in resources.

Exhibit 10.2

Structured Patrol Elements: Summary of Findings

Before/During Comparison of Structured Patrol Element's Impact on Indicated Measure: D = Decreased; I = Increased			
Structured Patrol Element Measure	Directed Problem-Oriented Patrol	Immediate Incident-Oriented Investigation	Net Impact
<u>Patrol Division</u>			
Arrests	I	I	I
Charges/Arrest	--	I	I
Clearances	I	I	I
<u>Officer Perception</u>			
WBP Effectiveness	I	I	I
Job Satisfaction	I	I	I
Contribution to Crime Prevention Effectiveness	Somewhat Effective and Still Developing; There Is a Paucity of Explicit Prevention-Oriented Methods	Very Effective	Structured Patrol Force Has Significantly In- creased Patrol Division's Arrest-Related Productivity
Contribution to Conflict between Structured and Detective	Some Contribution	Significant Contribution	Creation of Structured Patrol Force Has Caused Severe Conflict with Detective Division, Resulting in Significant Decrease in Detective Productivity

10-3

Exhibit 10.3

Split-Force Experiment: Summary of Findings

Police Objective	Measure	Statistics Pertaining To:				Summary Statement
		Patrol Division		All WBP Divisions		
		Before/During	Change ¹	Before/During	Change ¹	
Deter Crime	Part I Crime Level	--	--	7,627/7,165	- 6.1%	The decrease in reported crime is significant-- it could be partially attributed to the split-force experiment.
	Part II Crime Level	--	--	12,461/11,346	- 9.0%	
Detect Crime	Patrol Miles Per Basic Unit Per 8-Hour Tour ²	26.0/20.8	- 20.0%	--	--	Although total miles travelled by marked units decreased, the total miles travelled by all units remained unchanged. Unfortunately, no direct measures of crime detection are being maintained by the WBP.
	Total (i.e., Patrol and Response) Miles Per Basic Unit Per 8-Hour Tour	38.0/34.5	- 9.2%	--	--	
	Total Miles Per Marked Structured Unit Per 8-Hour Tour ²	-- /32.6	--	--	--	
Apprehend Offenders	Part I Crime Arrests Per Assigned Officer Per Month	0.5430/0.5645	+ 4.0%	--	--	Although the Structured force has significantly increased the Patrol Division's arrest-related productivity, it has done so at the partial expense of the Detective Division. The net result is a decrease in clearance rate for the WBP--this is especially distressing in light of the decrease in Part I crime level.
	Part I Crime Charges Per Arrest Per Assigned Officer Per Month	0.0100/0.0113	+ 13.2%	--	--	
	Part I Crime Clearances Per Assigned Officer Per Month ²	-- / --	+105.5%	0.684/0.498	-27.2%	
	Part I Crime Clearance Rate Structured Officers	--	--	27%/21%	-28.0%	
	Detectives	--/27	--	--/27	--	
	Total Officers	145/150	+ 3.4%	254/251	- 1.2%	
Provide Emergency Service ¹	Number of 8-Hour Basic Units Per Day	24.90/24.78	--	--	--	The significant increase in response-related productivity and concomitant decrease in workload imbalance are very commendable. The increase in assist calls--due mainly to a decrease in the number of Basic units manned by two officers--has only contributed to an increase of 2.9% of the total Basic unit utilization factor ³ .
	Primary Calls Per Day	149.4/154.6	+ 3.5%	--	--	
	Assist Calls Per Day	39.1/51.4	+ 31.5%	--	--	
	Incident Response Time: Primary	9.47/9.33	--	--	--	
	Assist	4.37/4.16	--	--	--	
	Incident Service Time: Primary	23.53/23.32	--	--	--	
	Assist	16.24/14.74	- 9.2%	--	--	
	Basic Unit Utilization Factor: Primary	0.295/0.301	+ 2.0%	--	--	
	Assist	0.053/0.063	+ 18.9%	--	--	
	Total	0.348/0.364	+ 4.6% ³	--	--	
	Officers Per Unit	1.46/1.27	- 13.0%	--	--	
	Officer Workload Index	0.238/0.287	+ 20.8% ³	--	--	
	Basic Unit Utilization Imbalance	0.243/0.175	- 28.0%	--	--	
Demand/Supply Mismatch Index	0.077/0.045	- 41.6%	--	--		
Maintain Community Security	Percent of WBP Clients Indicating that the Quality of Police Services is "Acceptable," "Good" or "Excellent"	--	--	88.2%/86.7%	--	The residents of Wilmington continue to be relatively satisfied with the performance of their police department and the safety of their neighborhoods.
	Percent of WBP Clients Indicating that Their Neighborhood is "Reasonably" or "Very" Safe	--	--	62.2%/61.7%	--	

¹ Only statistically significant changes in the Before (9/1/74-8/31/75) and During (12/1/75-11/30/76) periods are cited.
² Indicated statistics are estimated.
³ All statistics pertain to activities undertaken by the Basic units. As indicated in Exhibit 4.2, Basic units handled 71.6% and 73.7% of all calls for service in the Before and During periods, respectively.
⁴ The 31.5% increase in the number of assist calls reflects only an 18.9% increase in terms of assist utilization, and only a 2.9%--i.e., (0.063-0.053)/0.348--increase in terms of overall utilization.
⁵ If one were just to consider call-for-service levels--without weighting them by the appropriate service times--then the number of calls for service per Basic unit per day would have increased by 9.8% (i.e., from 7.57 to 8.31) and the corresponding officer call-for-service index would have increased by 25.1% (i.e., from 5.19 to 6.54).

Exhibit 10.4

Split-Force Patrol: Conclusions Based on the Wilmington Experience

Split-Force Patrol

1. Causes Significant Increase in Call-for-Service (CFS) Response Productivity

- The *very act* of forming a dedicated, prevention-oriented Structured force from an *existent*, traditionally-oriented patrol force causes the remaining, response-oriented Basic force to be more *efficient*, without compromising its *effectiveness*.
- The increase in Basic efficiency can be *practically* achieved by any one or combination of three methods. First, *careful planning* can minimize the workload imbalance among Basic patrol units, allowing for increased unit efficiency. Second, a *decision* to decrease the number of two-officer units would correspondingly increase the CFS workload per officer. Third, judicious *management* of CFS demand can reduce random demand peaks and/or decrease the level of demand that requires Basic patrol unit response, allowing for a more efficient allocation of Basic resources.

2. Results in Significant Increase in the Patrol Division's Arrest-Related Productivity

- The formation of a dedicated, prevention-oriented Structured force provides the Patrol Division with Structured officers who could engage in arrest-related activities, resulting in an increase in the *quantity* of arrests and clearances--at the *partial* expense of the Detective Division--without seemingly compromising on the *quality* of the arrests.
- The increase in arrest-related productivity can be primarily attributed to the *immediate* incident-oriented investigation conducted by Structured officers at or near the scene of the incident. Secondly, it can be attributed to the *directed* problem-oriented patrol undertaken by Structured officers.

3. Allows for Increase in Police Professionalism and Accountability

- The rotation of patrol officers between the Basic and Structured forces enables the officers to focus on and *develop* their response-oriented and prevention-oriented skills, respectively.
- The Structured force does not only contribute to patrol specialization but can also, in effect, serve as a *bridge* between the response-oriented, Basic force and the specialized Detective force. It is both a functional and a professional bridge, serving to expand the functional skills and the professionalism of police officers.
- The implementation of the split-force approach makes the Basic and Structured forces each *accountable* for fulfilling a specific function. Officer accountability is also increased through greater *direction* of officer duties and activities.

its ability to collect and analyze data which have not been readily available. In particular, qualitative data on patrol effectiveness have been lacking. Although citizen attitude toward the police has been assessed, other measures of effectiveness (e.g., quality of investigations, quality of arrests, quality of convictions, and offender attitude) have only been cursorily determined, based primarily on the subjective opinions of the WBP officers and supervisors. The authors, however, feel that, had the costly step been taken to collect and analyze these qualitative measures, the findings would have indicated that the measures had not changed between the Before and During periods.

Third, it should be noted that this evaluation effort has resulted in the identification of new techniques for analyzing police productivity, especially police efficiency. For example, an officer workload index has been defined and calls for service have been categorized into primary and assist calls. Additionally, several insights into police operation have been gained; they include a tendency on the part of patrol officers to keep their workload *constant* and a relationship between the ratio of assists to primary calls for service and the number of officers per Basic patrol unit. Continued research in this area should be encouraged and sponsored.

10.2 PROBLEM ISSUES AND RECOMMENDATIONS

The *major* problem issues identified in the text of the report are summarized in Exhibit 10.5, along with a corresponding set of recommendations. A word of caution is required. Inasmuch as the

Exhibit 10.5

Major Problem Issues and Recommendations

<u>Major Problem Issues</u>	<u>Recommendations</u>
Conflict Between Structured Unit and Detective Division	<ul style="list-style-type: none"> • Change the current WBP organizational structure so that both the Patrol and Detective Divisions report to the same Inspector, who could mitigate and mediate any problem before it develops into a severe conflict requiring the attention of the Chief. • Split the Detective force into a "generalist" force--which could be integrated with the Structured force--and a "specialist" force--which could concentrate on those crimes (e.g., homicide, rape, etc.) that require special investigative skills. • Assign a lieutenant to command the Structured Unit since all equivalent units in the WBP are commanded by either lieutenants or captains.
Concern Over the Lack of Sector Identity	<ul style="list-style-type: none"> • Assign Basic officers judiciously to sector cars so as to maximize sector identity. The Basic officers should understand that the current procedure of changing sector designs every four hours (with each Basic unit being assigned to one sector) is more in their <i>interest</i> than the previous procedure of having a fixed sector design (with each Basic unit being assigned usually to one or more sectors)--<i>both</i> procedures result in sector identity problems, but the current procedure causes less workload imbalance among Basic units. • Minimize intersector dispatches by making greater and more judicious use of the formalized delay procedure: that is, a call-for-service should first be considered for a formal delay--if it is feasible to do so (i.e., in the case of a non-critical call) <i>and</i> if it is necessary (i.e., when all Basic units are busy or when the particular unit in whose sector the call originates is busy)--and then be dispatched on a first-come, first-served basis.
Boredom With Fixed-Post Assignments	<ul style="list-style-type: none"> • Change fixed-post assignments to fixed-<i>locale</i> assignments--the latter would allow the Basic units to patrol around a one to four block area within their respective sectors. • Insure the <i>relevancy</i> of the fixed-locale assignments--an up-to-date list of relevant assignments should be made available to the Communications Unit every four hours. • Inform Basic officers of the reason for fixed-locale assignments: that is, locales are selected based on their likelihood for generating calls for service, which should be of <i>primary</i> concern to Basic officers. Moreover, Basic officers should be encouraged to identify and inform the Communications Unit of such locales.

purpose of this effort is not to plan but to evaluate, the recommendations listed in Exhibit 10.5 should be considered tentative, since they have not been reviewed in light of other fiscal, political, technical and social constraints. The recommendations have been made primarily to provide a basis for discussion.

Other minor recommendations have also been made throughout the report; they include developing explicit split-force guidelines, providing periodic split-force training, and upgrading crime analysis and communications.

Finally, safety has been another key concern of patrol officers; they feel that officer safety may be endangered--especially during the early morning hours when there are only five patrol units--because the proportion of two-officer units has decreased. Although the concern is real, we believe that it may be unfounded, since there has been *no* instance in which an officer's safety has been compromised due to the unavailability of backup units or for any other reason. The decrease in two-officer units has resulted in an increase in assist or backup calls for service.

11 NATIONAL IMPLICATIONS

The contents of this section are a by-product of the evaluation effort. Section 11.1 contains a brief discussion of the "replicability" of the split-force approach, while Section 11.2 addresses four key policy implications suggested by the Wilmington experience.

11.1 SPLIT-FORCE REPLICABILITY

At the outset, it should be stated that, based on the Wilmington experience, the split-force patrol approach appears to be an *efficient* and *effective*--i.e., *productive*--approach in police patrol, worthy of emulation by other police departments. It also provides a *bridge* between the response and investigative functions of a police department, and further increases police *professionalism* and *accountability* through the *separation* of the response and crime prevention functions of a patrol force and greater *direction* of officer duties and activities.

In replicating the split-force approach in other police departments, three related questions arise: How unique is the Wilmington split-force experiment? What is required to implement the split-force approach? And what are alternate split-force designs?

In response to the first question, the Wilmington split-force experiment is *not* unique. Although the set of split-force elements that was implemented was tailored to the particular requirements of Wilmington, it should be noted that Wilmington is like many other cities and is actually a microcosm of other major urban centers. As suggested in Section 1.2 and from a law enforcement perspective, the

Wilmington Bureau of Police can be regarded as a typical "precinct" of, say, the New York City Police Department. One may then ask, Should the split-force approach be implemented at the *precinct level*? The answer is yes. It should be recalled that the success of the Structured force is primarily due to its ability to conduct *immediate* follow-up investigations of crimes, in close coordination with the Basic patrol officers. Thus, centralizing the Structured resources would detract from this ability and might in fact result in the establishment of another centralized detective force.

In regard to split-force implementation requirements, we believe that there are three requirements. First, top-level police officials must *understand* and fully *support* the split-force approach. Second, the department as a whole must, of course, be receptive to change: implementing the split-force approach requires a *major* change in the department's operation. Third, and perhaps the most important requirement, is to undertake *careful* and *detailed* planning in order to develop a viable and effective split-force design.

Finally, in response to the third question, it should be stated that, although the split-force concept is somewhat unique, there are alternate designs to effect the concept, especially in effecting the Basic portion of the concept. It would, of course, be impossible to discuss the innumerable number of alternate designs. Instead, some guidance can be provided by briefly reviewing the three methods for increasing Basic efficiency. First, careful *planning* can minimize the workload imbalance among Basic patrol units, allowing for increased

unit efficiency. Second, a *decision* to decrease the number of two-officer units can result in a corresponding increase in workload per officer. Third, judicious *management* of the call-for-service demand can reduce random demand peaks and/or decrease the level of demand that requires Basic patrol unit response, allowing for a more efficient allocation of Basic resources.

In developing the Structured portion of the split-force design, one could be guided by the Wilmington experience, which has shed light on two areas: *directed* patrol and *immediate* investigation. Specifically, the dedicated and directed concentration on prevention-oriented patrol has highlighted the fact that there is a paucity of explicit prevention-oriented methods; most methods focus on apprehending the offenders. Given the fact that there is some evidence to support the thesis that directed preventive patrol is effective--especially in relation to the traditional preventive patrol method--police departments should engage in more directed patrol activities, in particular in regard to the development of prevention-oriented methods. The second area highlighted by the Wilmington experiment is that pertaining to immediate investigative follow-up on felony incidents. As discussed in Section 6.3, this element of the split-force experiment has been the key factor behind the patrol force's significant increase in crime clearances. Consequently, it should be an area of concentration in all future split-force programs, and, in fact, in *all* police departments. Finally, it should be stated that the scope of Structured activities is as broad as one would wish. Having a

Structured force allows one the flexibility to *concentrate* on a primary police goal: the reduction of crime.

11.2 POLICY IMPLICATIONS

In addition to testing the split-force patrol concept, the Wilmington experiment has also highlighted three other important policy issues, as indicated in Exhibit 11.1. Specifically, the paucity of prevention-oriented patrol methods has been identified; the impact of one-officer versus two-officer patrol units has been analyzed; and the possibility and need for managing police demand have been defined. The policy implications derived from each one of these issues are summarized below.

SPLIT-FORCE PATROL

Exhibit 10.4 contains a set of conclusions regarding the split-force patrol approach, based on the Wilmington experience. It is seen that the approach can yield greater police productivity, professionalism and accountability. In addition, it bridges a functional gap that has traditionally existed between patrol and detective.

It should also be noted that, in effect, the Wilmington split-force experiment has likewise bridged a *knowledge gap* that was recently manifested by the findings of two precedent-setting studies. The gap occurred when, on the one hand, the Kansas City Preventive Patrol Experiment questioned the effectiveness of the traditional method of conducting preventive patrol, and, on the other hand,

Exhibit 11.1 Policy Implications

<u>Policy Issues</u>	<u>'Current Understanding'</u>	<u>Future Needs</u>
<i>Split-Force Patrol:</i> A Productive Approach in Police Patrol and A Potentially Effective Bridge to Detective Specialists	<ul style="list-style-type: none"> • See Exhibit 10.4 	<ul style="list-style-type: none"> • Provide technical assistance in planning and executing other split-force patrol programs. • Conduct a uniform and systematic evaluation of several split-force patrol programs. • Establish split-force standards and guidelines.
<i>Crime Prevention Patrol Methods:</i> A Forgotten Area with Potential Benefits	<ul style="list-style-type: none"> • Most prevention-oriented methods have focused on apprehending offenders: it is assumed that apprehension results in prevention. 	<ul style="list-style-type: none"> • Develop and test alternate prevention-oriented patrol methods.
<i>One-Officer/Two-Officer Unit:</i> A controversial Topic with Potentially Major Implications for Police Productivity	<ul style="list-style-type: none"> • Officer safety need not be compromised, as assist or backup units can be sent: thus, the assist level increases as the proportion of two-officer units decreases.² However, the savings in officer hours are significantly greater than the cost in additional assist workload: the savings to cost ratio is about 15 to 1. 	<ul style="list-style-type: none"> • Conduct evaluation of the impact of different levels of one-officer versus two-officer units.
<i>Management of Police Demand:</i> A Police Management Concept with Potentially Far-Reaching Implications on the Manner in Which Police Services are Delivered and the Level of Police Productivity	<ul style="list-style-type: none"> • Formally delaying non-critical calls for service by 30 minutes does not decrease citizen satisfaction. • Police demand can be <i>managed</i> because a) 86 percent of all calls for service are non-critical in nature, and b) citizen satisfaction is a function of expectation. • Managing police demand would allow for a more efficient and effective allocation of police resources. 	<ul style="list-style-type: none"> • Develop an effective management of police demand model (see, for example, Exhibit 11.2). • Implement and evaluate model.

¹ Based on the findings of the Wilmington split-force experiment.

² Defining X as the average number of officers per unit, averaged over all call-for-service response units, then the ratio of assist to primary workload is equal to $(0.6 - 0.3X)$ for $1 \leq X \leq 1.77$.

the Rand Criminal Investigation Study questioned the effectiveness of the traditional method of conducting criminal investigation. The Wilmington experiment has identified partial answers to these questions; namely, that the assignment of the crime prevention function to a separate but integral part of the patrol force provides a more viable framework for undertaking preventive patrol and that the conduct of immediate investigative follow-up in felony incidents results in a greater likelihood for their eventual clearance or solution.

Another implication of the Wilmington split-force experiment is that it is important to consider the police department as a total system. For too long, police administrators have regarded patrol, investigation, communication and administration as separate and independent areas of responsibility. The Wilmington split-force experiment has clearly shown that one cannot have an experiment in patrol without affecting the areas of investigation and communication, and, to a lesser degree, administration. One approach for instilling a systemic perspective in a police department is to have a flexible and viable plan for rotating officers and supervisors through the different commands without, of course, jeopardizing department effectiveness.

CRIME PREVENTION PATROL METHODS

Allowing the Structured force to concentrate on the crime prevention function has highlighted the fact that there is a paucity

of explicit prevention-oriented methods. As indicated in Section 6.3, most police officers feel that prevention is achieved by the apprehension of offenders. Although prevention through apprehension is a valid approach, the question remains whether there are *effective* methods for directly achieving crime prevention. Despite the fact that there are technical difficulties in measuring the effectiveness of such methods, it is still important to assess the cost-effectiveness of existing prevention-oriented methods.

In much the same manner as Kansas City questioning the traditional preventive patrol approach and Rand questioning the traditional criminal investigation approach, the Wilmington experiment is questioning the traditional or existing set of prevention-oriented methods. However, as in the field of medicine, we do believe that prevention is a valid, necessary and, hopefully, cost-effective function--what is required is a major effort to develop and test alternate and more effective prevention-oriented methods in police patrol and in the broad spectrum of law enforcement and criminal justice.

ONE-OFFICER/TWO-OFFICER UNIT

In Exhibit 1.1 we have listed the five traditional objectives of a police department. However, as the demand for police services has outstripped the potential of local government to provide such services, a sixth objective should be added to the list. The sixth objective is to *increase police productivity*. One of the most effective ways

of achieving productivity is to convert those patrol units or cars that are manned by two officers back to one-officer units.

Safety has, of course, been the major concern of patrol officers as one-officer units substitute for two-officer units. However, as demonstrated by the Wilmington experiment, officer safety need not be compromised, as assist or back-up units can be dispatched. In fact, based upon Wilmington data, an equation relating the average number of officers per unit, averaged over all call-for-service response units, and the ratio of assist to primary workload has been derived. Such an equation, if it could be validated for other police departments as well, could be an invaluable *decision tool* for police administrators.

Finally, an on-going study conducted by the Police Foundation in San Diego, California should provide additional insights into the costs and impacts of one- versus two-officer units.

MANAGEMENT OF POLICE DEMAND

Another very effective way of increasing police productivity is to *manage* the demand for police services. Traditionally, police administrators have accepted the demand for police services as a *given*--something that they could not control or manage. They have accepted the inefficiencies associated with unpredictable demand levels and large demand variances and the need to respond promptly to every call-for-service, usually by dispatching a costly patrol unit to the scene of the call. Such prompt and expansive service is not warranted, inasmuch as some 86 percent of all calls for service are *non-critical* in nature (i.e., not requiring immediate response). Moreover, because citizen satisfaction is a function of

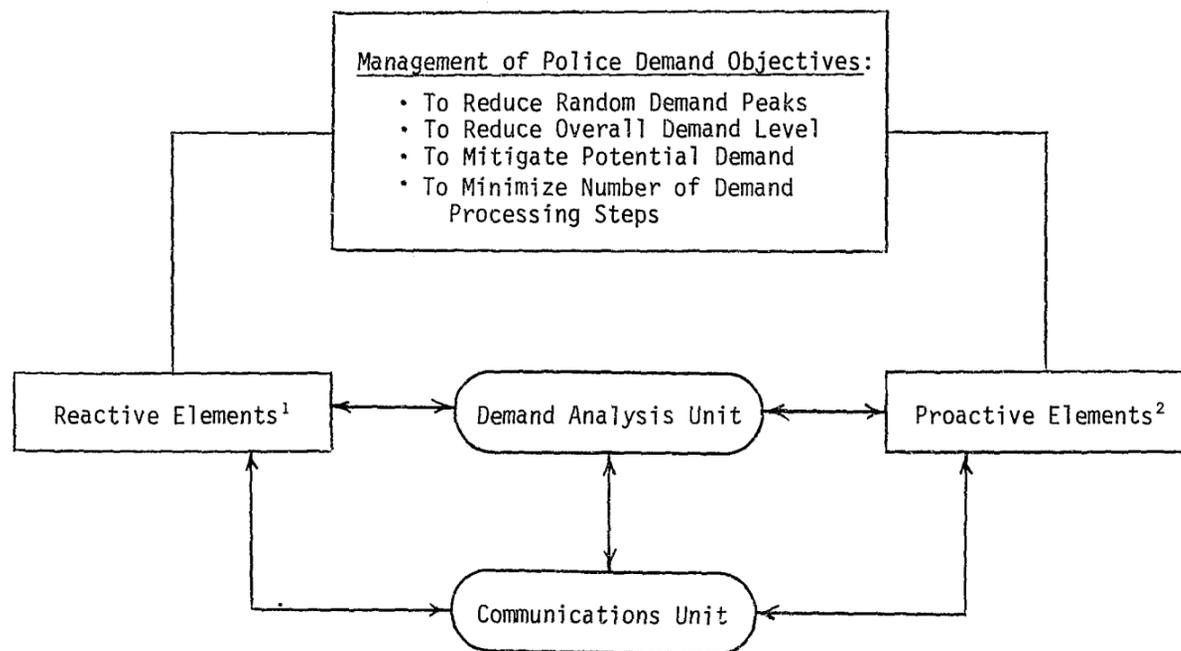
expectation, one could manage the police demand provided the citizens are forewarned and advised.

In general and as in the private sector, the demand for services in the public sector can and should be managed.* Management of demand for public services can reduce or shift random demand peaks and may even lower demand level, so as to allow for a more efficient and effective allocation of limited resources, which would in turn increase the productivity of these resources. Management of demand can be accomplished either in a *reactive* mode or in a *proactive* mode. In reacting to a specific demand, one could either immediately respond to the demand, or formally delay the response, or refer it to be handled by another means. In the proactive mode, one is trying to anticipate the demand and taking appropriate steps either to meet or to mitigate the anticipated demand. As an example, a proposed model for the management of *police* demand is outlined in Exhibit 11.2, and the reactive elements of such a model are contained in Exhibit 11.3. The exhibits are self-explanatory.

* Managing demand in the public sector is, of course, different from that in the private sector; for example, one is usually aiming to increase demand in the private sector, while the goal in the public sector should be to limit demand, as public services are becoming increasingly difficult to support.

Exhibit 11.2

Management of Police Demand: A Proposed Model



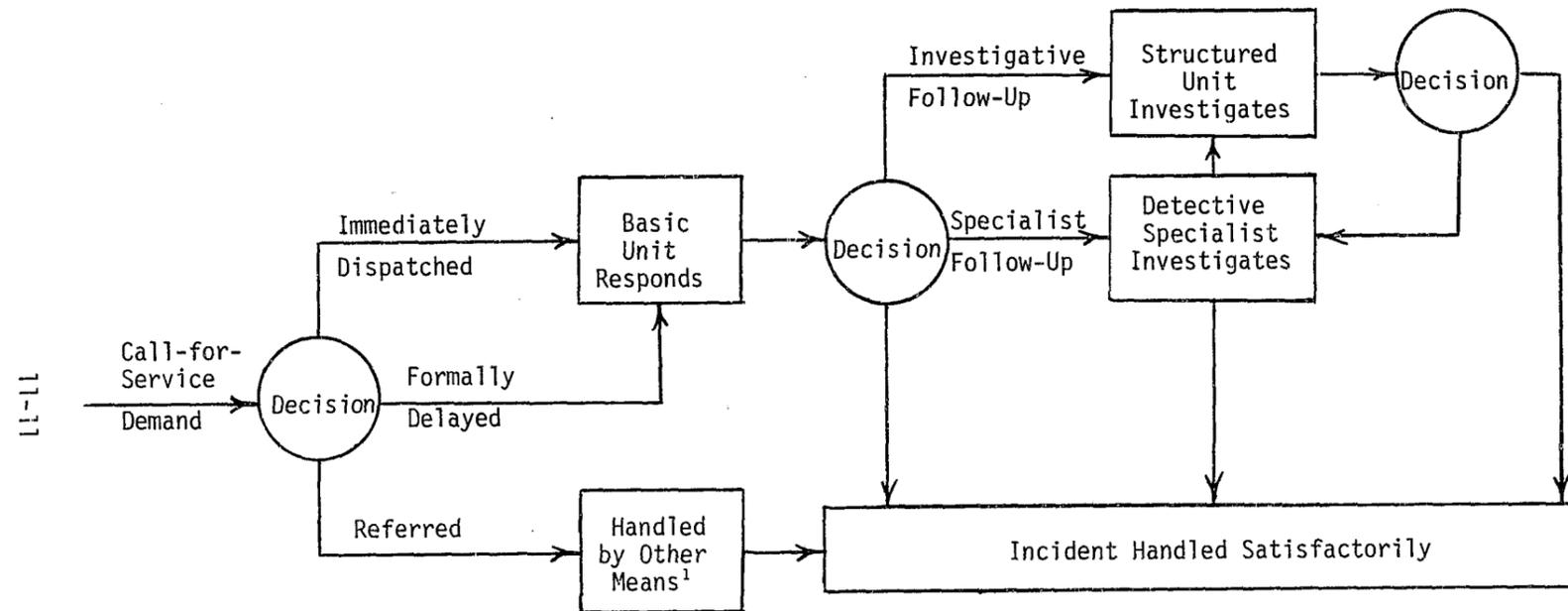
11-10

¹ See Exhibit 11.3.

² For example, the Demand Analysis Unit could recommend deploying Basic units in certain locations in anticipation of calls for service (i.e., fixed-locale assignments); or assigning Structured officers or Detective specialists to monitor the activities of "career" or repeat offenders; or assigning Basic units to provide tailored services for "career" or repeat victims; or assigning Structured units to defined problem areas; or assigning Structured officers or Detective specialists to defined crime problems.

Exhibit 11.3

Management of Police Demand: Reactive Elements



11-11

¹For example, the caller could be referred to another agency; or be requested to appear at the police station at an appointed time to, for instance, file a complaint or report a past incident; or be asked to give pertinent information over the telephone; or be told that a special unit will handle the incident at an appointed time during, say, the next day.

PART V: APPENDICES

- A. BIBLIOGRAPHY AND GLOSSARY
- B. CLIENT SURVEYS
- C. OFFICER SURVEYS

I realized early that what a man or a woman does is built on what those who have gone before have done, that its real value depends on making the matter in hand a little clearer, a little sounder for those who come after. Nobody begins or ends anything. Each person is a link, weak or strong, in an endless chain. One of our gravest mistakes is persuading ourselves that nobody has passed this way before. In our eagerness to prove we have found the true solution, we fail to inquire why this same solution failed to work when tried before--for it always has been tried before, even if we in our self-confidence do not know it.

Ida Tarbell, 1939

A BIBLIOGRAPHY AND GLOSSARY

A bibliography of documents and a glossary of abbreviations and terms are contained in Exhibits A.1 and A.2, respectively. The documents, abbreviations and terms are referenced in the text of the report.

Exhibit A.1

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Exhibit A.2

Glossary of Abbreviations and Terms

<i>Assist Call</i>	A call-for-service--usually initiated by the police--that requires the dispatching of a patrol unit to provide assistance to another unit in the handling of a <i>primary</i> call-for-service incident.
<i>Basic Patrol Force</i>	A patrol force whose primary function is to respond to calls for service.
<i>Before Period</i>	A one-year period (i.e., 9/1/74-8/31/75) defined for evaluation purposes, and covering a period before the implementation of the split-force experiment.
<i>CFS</i>	Call-for-service; a communication to police from a citizen, an alarm system, a police officer, or other detector, reporting an incident that requires on-scene police assistance. All calls for service can be categorized as either <i>critical</i> or <i>non-critical</i> in nature; and they can be divided into <i>primary</i> and <i>assist</i> calls.
<i>Clearance</i>	The solution of a crime either by arrest (i.e., the police have the offender(s) in custody and charged accordingly) or by exception (i.e., the police have sufficient evidence but some element beyond police control precludes the placing of formal charges against the offender(s)).
<i>Critical Call</i>	A call-for-service that requires an immediate or emergency response.
<i>Delay Time</i>	Length of time between when a call-for-service is received by the police and when a radio dispatcher dispatches a patrol unit to handle the call.
<i>During Period</i>	A one-year period (i.e., 12/1/75-11/30/76) defined for evaluation purposes, and during which the split-force experiment was in effect.

Exhibit A.2

(page 2 of 4)

<i>FCFS</i>	First-come, first-served; a procedure whereby each call-for-service of the same priority is responded to in the order that it is received and by the first available patrol unit, irrespective of whether the call is located in the unit's assigned response sector.
<i>Hypercube</i>	Hypercube Queuing Model; a descriptive computer-based queuing model used to determine the spatial allocation of a pre-specified number of patrol units.
<i>Mismatch Index</i>	A derived measure of the temporal mismatch between the call-for-service demand and the supply of call-for-service response units.
<i>NILECJ</i>	National Institute of Law Enforcement and Criminal Justice.
<i>Non-Critical Call</i>	A call-for-service that does not require an immediate or emergency response.
<i>Officer</i>	A sworn police officer.
<i>Officer Workload Index</i>	Ratio of call-for-service workload to number of available officer hours. Equivalently, it is the unit utilization factor divided by the number of officers per unit.
<i>On-Scene Time</i>	Length of time between when a patrol unit arrives at the scene of a call-for-service incident and when the unit indicates the service is completed.
<i>Part I Crime</i>	An offense related to criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny or motor vehicle theft. All Part I offenses can be divided into <i>violent</i> and <i>property</i> crimes.
<i>Patrol Unit</i>	A marked police cruiser or wagon--and its assigned police officer(s)--that is on patrol.

Exhibit A.2

(page 3 of 4)

<i>PCAM</i>	Patrol Car Allocation Model; a descriptive and prescriptive computer-based queuing model used to determine the number of patrol units required to respond to calls-for-service and the temporal allocation of those units, subject to pre-specified performance objectives.
<i>Primary Call</i>	A call-for-service--usually initiated by the public--that requires the dispatching of an initial patrol unit.
<i>Productivity</i>	A program measure which combines the concepts of effectiveness (i.e., the extent to which the program is accomplishing its stated purposes) and efficiency (i.e., the extent to which the program is undertaking its activities at minimum cost in resources). Equivalently, it can be expressed as the ratio of an output measure to an appropriate input measure, based on both the quantity and the quality of each measure.
<i>Property Crime</i>	An offense related to burglary, larceny, or motor vehicle theft.
<i>PSE</i>	Public Systems Evaluation, Inc.
<i>Response Time</i>	Length of time between when a call-for-service is made and when a patrol unit arrives at the scene of the incident. It includes the <i>delay time</i> and the <i>travel time</i> .
<i>Sector</i>	A designated geographic area in which one patrol unit has primary responsibility.
<i>Service Time</i>	Length of time between when a radio dispatcher dispatches a patrol unit to a call-for-service and when the unit indicates the service is completed. It includes the <i>travel time</i> and the <i>on-scene time</i> .
<i>Split-Force</i>	A concept in patrol specialization, based on the separation of the call-for-service response and crime prevention functions of a police patrol force. In the Wilmington Bureau of Police, the Patrol Division is split into a response-oriented, <i>Basic</i> force and a prevention-oriented, <i>Structured</i> force.

Exhibit A.2

(page 4 of 4)

<i>Structured Patrol Force</i>	A patrol force whose primary function is to prevent crime.
<i>Supervisor</i>	A sworn police officer with the rank of sergeant or above.
<i>Transition Period</i>	A three-month period (i.e., 9/1/75-11/30/75) defined for evaluation purposes, and during which preparations were made for the implementation of the split-force experiment.
<i>Travel Time</i>	Length of time between when a radio dispatcher dispatches a patrol unit to handle the call and when the unit arrives at the scene of the incident.
<i>Unit Utilization Factor</i>	Fraction of time a patrol unit is responding to calls for service during an eight-hour tour. Equivalently, it is the ratio of call-for-service workload to number of available unit hours.
<i>Violent Crime</i>	An offense related to criminal homicide, forcible rape, robbery or aggravated assault. Sometimes negligent manslaughter is not defined as a violent crime.
<i>WBP</i>	Wilmington Bureau of Police.
<i>Workload</i>	Amount of patrol unit time consumed in responding to calls for service.

B CLIENT SURVEYS

A limited, two-part telephone survey of Wilmington residents was undertaken primarily to ascertain citizen attitudes towards the Wilmington Bureau of Police (WBP), and secondarily, to gauge the acceptability of formally delaying *non-critical* calls for service.* The survey was *not* based on a random selection of Wilmington residents, but on a sample of residents who had called for police service on a non-critical matter. Thus, the survey focused on only those residents who were recent clients of the WBP *and* who were involved in incidents which did not require an immediate or emergency response. The two parts of the survey corresponded to "before" and "during" measures of client attitudes, respectively. As summarized in Exhibit 3.2, the first survey, Survey 1, included clients who had contacted the WBP in November, 1975; while the second survey, Survey 2, included clients who had contacted the WBP in late August and early September, 1976. In both instances, the clients were interviewed within a month of their WBP contact, which minimized the number of clients who had memory problems.

The remainder of this appendix addresses the sample selection process, the sample profile, and a summary of the survey results. Detailed analysis of the survey results is contained in the text of the report.

* It should be noted that in Wilmington 86.1 percent of all calls for service are deemed to be non-critical in nature: that is, they do not require an immediate or emergency response.

SAMPLE SELECTION

Time and resource availability constrained the size of each client survey to no more than 200 successful interviews. Despite the fact that in each survey we interviewed only one out of every 400 Wilmington residents, the survey results are significant inasmuch as they do reflect *non-ambiguous* expressions of client attitudes.

Although an actual telephone interview took no more than ten minutes, considerable effort was expended in getting the proper and valid telephone information. We developed telephone data from information contained on the call-for-service (CFS) cards which are completed by the WBP communications personnel. A sample of the CFS card is shown in Exhibit B.1. The step-by-step method for selecting interviewees from the CFS cards was as follows:

1. Only those cards checked as "basic patrol" in the type code area of the CFS card were selected--this insured a sample of non-critical calls for service.
2. Only those cards bearing the name of a complainant were selected. If a telephone number was not indicated on the card, then the card was selected only if a telephone number could be located by using the standard or the "inverse" telephone directory.
3. As the telephone survey was being completed, an explicit effort was made to have the sample of successful telephone interviews be representative of the types of non-critical calls for service.

The above steps were followed for both surveys. However, in the selection of interviewees for the second survey, an additional step was included to insure a high proportion of calls for service which were formally delayed (i.e., as indicated by a "delay" mark which was stamped on the CFS card). This oversampling allowed for a more

Exhibit B.1

Sample of A Call-for-Service Card

CODE	TYPE CODE <input type="checkbox"/> BP <input type="checkbox"/> BPC <input type="checkbox"/> IP <input type="checkbox"/> OTHER	CALL NO.	DISTRICT
COMPLAINT LOCATION			
COMPLAINANT INFO <input type="checkbox"/> REFUSED <input type="checkbox"/> SAME ADDRESS			
REMARKS <input type="checkbox"/> WITNESS <input type="checkbox"/> VICTIM			
ADDITIONAL REMARKS			
<input type="checkbox"/> 10-24 (A)S LIST CALL NO.'S			
		TIME RECEIVED	REC'D BY
		TIME SENT	
		TIME ARRIVED	SENT BY
		TIME CLEARED	
REC'D BY <input type="checkbox"/> PHONE <input type="checkbox"/> RADIO <input type="checkbox"/> ALARM <input type="checkbox"/> WALK-IN <input type="checkbox"/> OTHER			
TYPE OF UNIT <input type="checkbox"/> BP <input type="checkbox"/> SP <input type="checkbox"/> OTHER	REASON THIS UNIT SENT <input type="checkbox"/> CORRECT UNIT <input type="checkbox"/> NEAREST UNIT <input type="checkbox"/> NO. IN UNIT <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> MORE	<input type="checkbox"/> N/A <input type="checkbox"/> CORRECT UNIT UNAVAIL. <input type="checkbox"/> EARLY OR LATE CAR <input type="checkbox"/> FIRST UNIT ON SCENE <input type="checkbox"/> BACK UP UNIT	COMPLAINT NO.
DISPOSITION <input type="checkbox"/> WARNED <input type="checkbox"/> TRAFFIC SUM. <input type="checkbox"/> CRIMINAL SUM. <input type="checkbox"/> CUSTODY <input type="checkbox"/> ARREST	<input type="checkbox"/> N/A <input type="checkbox"/> CIVIL <input type="checkbox"/> CLEAR <input type="checkbox"/> T.O.T. <input type="checkbox"/> OTHER	<input type="checkbox"/> UNABLE TO LOCATE <input type="checkbox"/> NOT NEEDED <input type="checkbox"/> UNFOUNDED <input type="checkbox"/> ASSISTANCE GIVEN <input type="checkbox"/> ADJUSTED	
REVISED CODE	REPORT <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> ADDED <input type="checkbox"/> N/A		
REPORTING AREA	CRIME CODE		REVIEWER

Note: This *revised* call-for-service card has been in use since November 1, 1975, when it was introduced as part of the data gathering requirements of the split-force experiment.

critical and concerted look at the formalized delay element of the split-force experiment. In total, 98 out of the 190 successful interviews in Survey 2 were based on CFS cards with marked delays.

The difficulties encountered in obtaining the final survey samples are summarized in Exhibit B.2. It is seen that about half of the primary (i.e., non-assist), non-critical CFS cards--which had some telephone-related information--resulted in successful interviews.

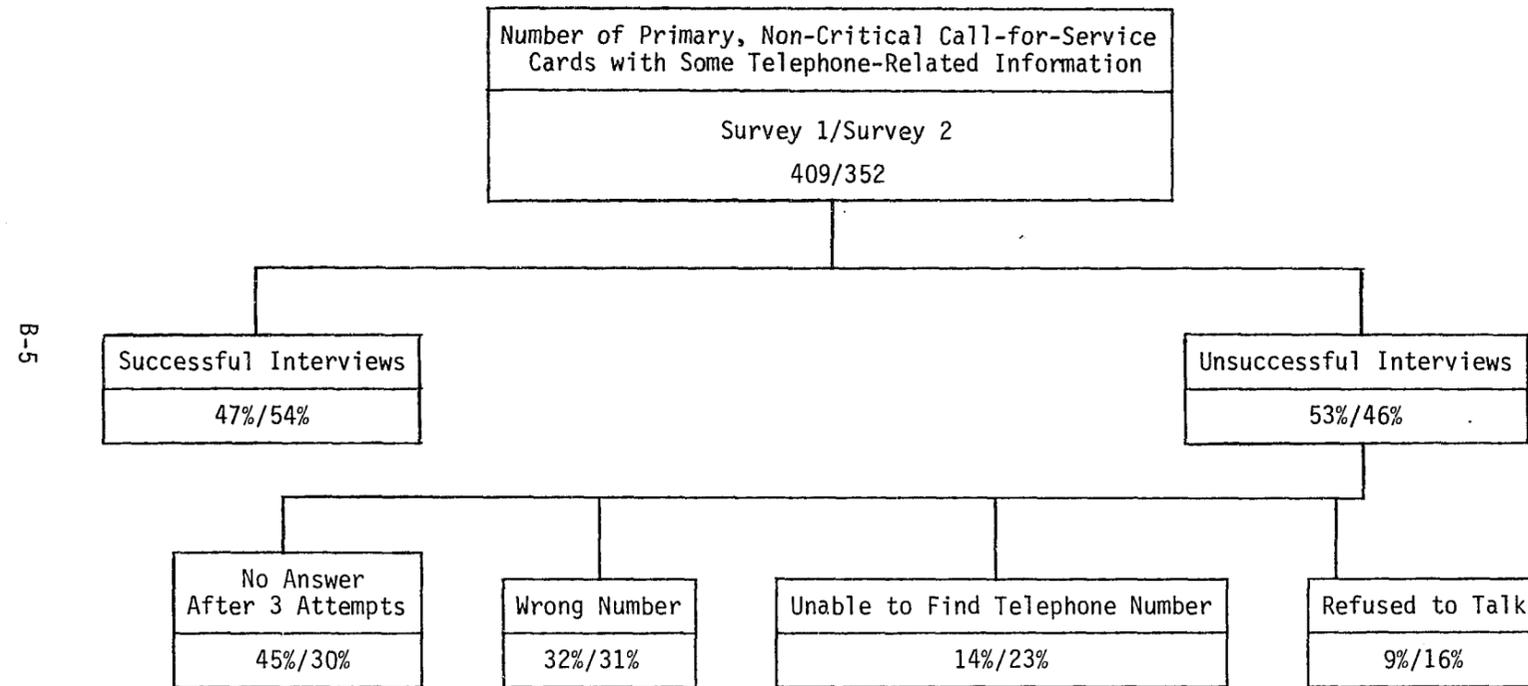
SAMPLE PROFILE

The profile of the final survey samples is presented in this section. The profile statistics provide a means for gauging the "representativeness" of the samples, and also constitute a set of variables that may "explain" the survey results. The representativeness of the survey samples are viewed in terms of their complaint codes, response levels, time statistics, and client characteristics.

Complaint Codes

As can be seen from Exhibit B.3, the complaint distributions for the two survey samples are, by design, similar. They do, nevertheless, differ slightly from a more general sample of CFS cards, primarily in two categories--larceny and "other." The disproportionately greater number of larceny interviews is mainly a result of the fact that telephone-related information is more readily available in larceny incidents. Conversely, the "other" category includes complaint types that are both relatively rare (i.e., each type comprising less than 3% of the total) and lacking in telephone-related information. In

Exhibit B.2
Survey Selection Process



Note: Each percentage is expressed in terms of the entry in the box immediately above it.

Exhibit B.3
Complaint Code Distribution

<u>Type of Complaint</u>	<u>Survey 1</u> (N=192)	<u>Survey 2</u> (N=190)	<u>Primary, Non-Critical Calls for Service¹</u> (N=2,480)
Larceny	20.3%	20.5%	8.7%
Meet Complainant	15.6	15.8	19.0
Disorderly Crowd or Disorderly Conduct	14.6	14.8	15.5
Malicious Mischief	9.4	9.5	4.0
Burglary	7.8	7.9	5.0
Accident	6.8	5.8	6.9
Drunk	4.2	5.3	3.8
Domestic	4.2	4.2	4.6
Parking Violation	3.1	3.2	2.1
Other	14.0	13.2	30.2

¹ Based on a 20% sample of all call-for-service (CFS) cards during the period September 1, 1976 to November 30, 1976.

total, however, we feel that the resultant oversampling of larceny incidents and undersampling of "other" incidents have not biased the survey results.

Response Levels

The survey sample response levels--characterized by the number of police officers and units responding to an incident--are summarized and compared to those from another data source in Section 5.6. It is seen that the *subjective* survey results are quite similar to the more *objective*

results determined from the patrol car sheets.

Incident Time Statistics

Three points should be made regarding the incident time statistics that are summarized in Exhibit B.4. First, the delay time for Survey 2 is significantly greater than that for Survey 1, due mainly to an oversampling in Survey 2 of CFS cards with marked delays. Second, the average delay and travel times for the two surveys are greater than corresponding values for the general sample. The primary reason for this is that the general sample includes a number of self-initiated type of calls for service, which of course have zero delay and travel times. The surveys, on the other hand, are completely based on calls for service which had telephone-related information, or equivalently, those which were initiated by actual telephone calls to the WBP. Third, inasmuch as telephone calls are usually made at the home or place of business, the survey samples have a slightly larger on-scene time than the general sample. Our limited participant observations indicate that citizen interaction with the police tend to be longer when it occurs inside than when it occurs outside on the streets.

Exhibit B.4
Incident Time Statistics

	<u>Average Time in Minutes</u>		
	<u>Survey 1</u> (N=192)	<u>Survey 2</u> (N=190)	<u>Primary, Non-Critical Calls for Service¹</u> (N=9,760)
Delay	5.41	9.05	3.66
Travel	6.71	7.14	6.10
On-Scene	20.95	21.58	17.13

¹Based on a 20% sample of all call-for-service (CFS) cards during the period December 1, 1975 to November 30, 1976.

The time of incident occurrence (i.e., the time that the WBP received a call concerning the incident) statistic is summarized in Exhibit B.5. The statistic distribution for Survey 1 is somewhat different from those for Survey 2 and the general sample. Again, the difference is not significant.

Exhibit B.5
Time of Incident Occurrence

<u>Period</u>	<u>Survey 1</u> (N=192)	<u>Survey 2</u> (N=190)	<u>Primary, Non-Critical Calls for Service¹</u> (N=9,760)
0000-0400	10.5%	12.6%	16.1%
0400-0800	3.6	5.8	5.1
0800-1200	21.4	11.6	12.7
1200-1600	23.4	16.3	18.3
1600-2000	25.6	28.4	24.0
2000-2400	15.6	25.3	23.9

¹ Based on a 20% sample of all call-for-service (CFS) cards during the period December 1, 1975 to November 30, 1976.

Client Characteristics

Although the survey respondents have been labelled "clients," it should be noted that not all of the people we interviewed were the same individuals who required police assistance. 10.4% and 13.2% of Surveys 1 and 2 respondents, respectively, were in fact individuals who requested police assistance for someone other than themselves.

In terms of demographic statistics, Exhibit B.6 compares the

Exhibit B.6
Demographic Statistics

	<u>Survey 1</u>	<u>Survey 2</u>	<u>1970 Census¹</u>
<u>SEX</u>	(N=192)	(N=190)	(N=80,386)
Male	45.6%	43.6%	46.0%
Female	54.4	56.3	54.0
<u>AGE</u>	(N=190)	(N=183)	(N=80,386)
Less than 18	3.2%	2.2%	32.2%
18-29	22.6	27.9	10.3 (18-24)
30-54	47.9	42.6	37.7 (25-59)
55 and over	26.3	27.3	19.8 (60 and over)
<u>ETHNIC ORIGIN</u>	(N=188)	(N=182)	(N=80,386)
White	64.4%	63.3%	55.9%
Black	34.6	34.4	43.6
Spanish-Speaking	1.1	2.2	0.5
<u>MARITAL STATUS</u>	(N=190)	(N=187)	(N=60,163; age 14 and over)
Married	52.1%	62.6%	47.8%
Divorced	6.3	10.2	4.7
Separated	5.8	4.3	5.7
Widowed	12.6	7.5	12.5
Never Married	23.2	15.5	29.3
<u>LENGTH AT ADDRESS</u>	(N=186)	(N=183)	(N=27,565 households)
Less than 1 year	10.8%	8.2%	
1-3 years	16.8	19.1	27.8% (0-27 mos.)
3-5 years	8.6	10.9	18.2 (28-63 mos.)
More than 5 years	63.8	61.7	54.1 (more than 63 mos.)
<u>FAMILIES IN BUILDING</u>	(N=187)	(N=179)	(N=29,959 housing units)
One	71.7%	76.0%	67.2% (one)
2-5	16.0	17.3	16.8 (2-4)
More than 5	12.3	6.7	16.1 (more than 4)
<u>OWNERSHIP STATUS</u>	(N=183)	(N=180)	(N=27,565 households)
Own	65.0%	64.4%	51.9%
Rent	35.0	35.6	48.1

¹ Note that some of the census data categories are somewhat different from those defined in the surveys.

survey statistics with those of the 1970 Census.* If one were to assume that the demographic profile of survey respondents corresponds to that of victims of crime, then one might say that, in comparison to the general demography, victimization in Wilmington tends to be among the more elderly and ethnically white segments of the population. This may be true, but it might also be reflective of the fact that the elderly and the ethnically white are more likely to request police assistance than are their counterparts--the younger and the ethnically black segments of the population, respectively.

Finally, another client characteristic should be noted--over 50% of the surveyed clients had made at least two requests for police assistance within a period of one year: in most cases, the requests were for the *same* reasons. This is a significant finding: it should be further explored so that a more effective police response could be developed to meet the needs of "career" victims.

SURVEY RESULTS

Straight tabulations of Surveys 1 and 2 results are contained in Exhibit B.7. As mentioned earlier, cross-tabulations and a more detailed analysis of the results are contained in the text of the report.

In reviewing Exhibit B.7, it should be noted that the distribution of responses to each question is shown in *italics*; N1 and N2 indicate the number of responses obtained in Surveys 1 and 2, respectively.

* Unfortunately, an update of the 1970 Census is not available--however, it is generally felt that the demography of the City of Wilmington has been quite stable during the past six years.

Exhibit B.7

Client Survey Results



Public Systems Evaluation, Inc.
A NON PROFIT ORGANIZATION

CONFIDENTIAL INFORMATION
(To be disposed of following interview.)

CLIENT ATTITUDE SURVEY: CODING SHEET

[All codes should be left justified with trailing blanks.]

COMPLAINT CODE
1 2 3 4 5 6

DATE (ONLY DAY OF MONTH)
7 8

TIME RECEIVED
9 10 11 12

TIME DISPATCHED
13 14 15 16

TIME ARRIVED
17 18 19 20

TIME CLEARED
21 22 23 24

QUESTIONS: 2-5
25 26 27 28

QUESTIONS: 6-10
29 30 31 32 33

QUESTIONS: 11-15
34 35 36 37 38

QUESTIONS: 17-21
39 40 41 42 43

QUESTIONS: 22-28
44 45 46 47 48 49 50

ADDITIONAL SPACES
51 52 53 54 55 56 57

(Enter information from call-for-service card.)

Name:

Telephone or

Address:

Notes:

- 1.
- 12.
- 14.
- 16.
- 29.

I. INTRODUCTION

[IF CLIENT'S FULL NAME IS KNOWN, READ INTRODUCTION A. IF ONLY LAST NAME, OR NO NAME IS KNOWN, READ INTRODUCTION B.]

[INTRODUCTION A]

May I speak to _____? [IF ANSWER IS NOT AVAILABLE, THEN ASK: Do you know when (he/she) will be home?] Good (evening/morning). My name is _____. I'm calling for Public Systems Evaluation in Cambridge, Massachusetts. We're a private, non-profit research firm doing a survey of police services in Wilmington--we are calling about 200 Wilmington residents to ask them about their feelings concerning the Wilmington Bureau of Police. We are calling you because, according to the records, you requested police services for either yourself or someone else on _____ date at about _____ time received. Is this correct?

- [IF ANSWER IS NO] Can you tell me who did request police services? _____ May I speak with (him/her)? [REPEAT INTRODUCTION A FOR THAT PERSON.]
- [IF ANSWER IS YES] I would like to ask you some questions, very briefly about the incident itself, and more specifically, about your feeling on the quality of police services in Wilmington. Your response will be held in complete confidence, and the results of this survey will be used to improve the quality of police services in Wilmington. May I proceed?

[INTRODUCTION B]

Good (evening/morning). My name is _____. I'm calling for Public Systems Evaluation in Cambridge, Massachusetts. We're a private non-profit research firm doing a survey of police services in

B-11

Exhibit B.7
(page 2 of 5)

Wilmington--we are calling about 200 Wilmington residents to ask them about their feelings concerning the Wilmington Bureau of Police. We are calling this number because, according to the records, a person at this address (by the name of _____) requested police services on _____ date at about _____ time received (for the purpose of _____). Can you tell me who this person is? _____ May I speak with (him/her)? [REPEAT INTRODUCTION A FOR THIS PERSON.]

[NOTE TO INTERVIEWER: ALL "DON'T KNOW" RESPONSES SHOULD BE CODED "9" FOR A ONE-DIGIT ENTRY, AND "99" FOR A TWO-DIGIT ENTRY, ETC.]

II. ATTITUDE TOWARDS INCIDENT

1. Can you tell me briefly what happened?
Some of the respondents were hesitant to talk about the incident, but nevertheless agreed to answer the remaining questions.

2. Can you tell me who needed police assistance? Was it

		<u>N1=192</u>	<u>N2=190</u>
<u>25</u>	1 - You	89.6%	86.8%
	2 - Someone else	10.4	13.2

3. How many cars answered the call?

	(enter number)	<u>N1=184</u>	<u>N2=174</u>
<u>26</u>	1 --	84.2%	74.2%
	2 --	12.0	18.2
	3 or more --	3.8	7.5

4. How many police officers answered the call?

	(enter number)	<u>N1=188</u>	<u>N2=180</u>
<u>27</u>	1 --	39.3%	40.0%
	2 --	46.8	44.4
	3 or more --	13.0	15.6

5. How long did it take for the police to arrive? Was it

		<u>N1=184</u>	<u>N2=183</u>
<u>28</u>	1 - Less than 5 minutes	16.8%	19.1%
	2 - Between 5 and 10 minutes	30.4	26.2
	3 - Between 10 and 15 minutes	20.1	20.2
	4 - Between 15 and 30 minutes	19.6	24.0
	5 - More than 30 minutes	13.0	10.4

6. How satisfied were you with the response time?

		<u>N1=186</u>	<u>N2=189</u>
<u>29</u>	1 - Very satisfied	48.9%	34.4%
	2 - Satisfied	34.9	45.5
	3 - Dissatisfied	9.1	11.1
	4 - Very dissatisfied	7.0	9.0

7-1. How long would you have liked the response time to have been?

		<u>N1=108</u>	<u>N2=0</u>
<u>30</u>	1 - Less than 5 minutes	62.0%	
	2 - Between 5 and 10 minutes	20.4	
	3 - Between 10 and 15 minutes	8.3	
	4 - Between 15 and 30 minutes	6.5	
	5 - More than 30 minutes	2.8	

7-2. What do you think an acceptable response time would have been?

		<u>N1=0</u>	<u>N2=180</u>
<u>30</u>	1 - Less than 5 minutes		15.6%
	2 - Between 5 and 10 minutes		36.7
	3 - Between 10 and 15 minutes		20.0
	4 - Between 15 and 30 minutes		18.3
	5 - More than 30 minutes		9.4

B-12

Exhibit B.7
(page 3 of 5)

8. Were you told that the response to the call would be delayed?

		<u>N1=181</u>	<u>N2=166</u>
<u>31</u>			
1 - No	No --	96.1%	88.0%
	Yes --	3.9	12.0

[IF ANSWER IS YES]

- a. How many minutes were you told it would be delayed? (minutes)
- Only 6 out of the 20 respondents who answered "yes" remembered the number of minutes, which ranged from 5 to 15 minutes.*
- b-2. How did you feel about being told of the delay?

	<u>N1=0</u>	<u>N2=20</u>
2 - Appreciated being told		30.0%
3 - Couldn't care less		45.0
4 - Annoyed, but understanding		15.0
5 - Dissatisfied		10.0
6 - Very dissatisfied		0.0

9-1. Do you think that the response time affected the quality of the police service you received?

	<u>N1=177</u>	<u>N2=0</u>
<u>32</u>		
1 - No effect	73.4%	
2 - Detracted some	13.6	
3 - Detracted a lot	13.0	

9-2. Do you think that the response time affected the quality of the police service you received?

	<u>N1=0</u>	<u>N2=188</u>
<u>32</u>		
1 - Improved the quality		10.1%
2 - No effect		80.9
3 - Detracted some		5.9
4 - Detracted a lot		3.2

10-1. For calls similar to the one we are now discussing, and under similar circumstances, how acceptable would it be to you if, in order to improve police productivity, you were told that the response to such calls for service would be delayed up to 40 minutes?

	<u>N1=192</u>	<u>N2=0</u>
<u>33</u>		
1 - Acceptable	26.0%	
2 - Not very acceptable	0.4	
3 - Unacceptable	64.6	

10-2. For calls similar to the one we are now discussing, and under similar circumstances, how acceptable would it be to you if, in order to improve police productivity, you were told that the response to such calls for service would be delayed up to 30 minutes?

	<u>N1=0</u>	<u>N2=189</u>
<u>33</u>		
1 - Acceptable		45.5%
2 - Not very acceptable		20.1
3 - Unacceptable		34.4

11. How satisfied were you with the police services after the police arrived on the scene?

	<u>N1=189</u>	<u>N2=186</u>
<u>34</u>		
1 - Very satisfied	42.9%	36.0%
2 - Satisfied	41.3	47.3
3 - Dissatisfied	10.6	10.2
4 - Very dissatisfied	5.3	6.5

12. Incidentally, do you remember about how long it took between the time you noticed the problem and the time you called the police?

	<u>N1=0</u>	<u>N2=165</u>
<u>35</u>		
1 - Less than 5 minutes		36.4%
2 - Between 5 and 10 minutes		16.4
3 - Between 10 and 15 minutes		4.8
4 - Between 15 and 30 minutes		10.9
5 - More than 30 minutes		31.5

[IF DELAY WAS MORE THAN 5 MINUTES, ASK] Do you remember the reason for the delay? The 28 respondents who remembered, mentioned three main reasons: a) they wanted to take stock of their loss first, checking to see if stolen items hadn't been borrowed; b) they reported only for insurance purposes; and c) they sometimes had difficulty recognizing the severity of the incident (e.g., in disturbance of the peace and missing person incidents).

Exhibit B.7
(page 4 of 5)

13. How has this contact with the police affected your opinion of the quality of police services?

	N1=188	N2=187
36		
1 - Raised	17.6%	12.3%
2 - Remained the same	74.5	78.6
3 - Lowered	8.0	9.1

14. Have you requested other help from the police during the past year?

	N1=191	N2=189
37		
1 - No	No -- 40.4%	50.3%
	Yes -- 59.6	49.7

[IF ANSWER IS YES, ASK]

a. What was the nature of the incident? *Almost all of the respondents stated that the nature of the past incident was the same as the present one.*

b. How would you compare the help you were given before with that in this recent incident? Was the help you received this time

	N1=109	N2=94
2 - Better	9.2%	23.4%
3 - About the same	82.6	62.8
4 - Worse	8.3	13.8

15. In general, what is your feeling about the quality of police services in Wilmington? The quality of the services is

	N1=188	N2=189
38		
1 - Excellent	30.3%	29.1%
2 - Good	34.0	41.3
3 - Acceptable	23.9	16.4
4 - Not good	5.9	4.8
5 - Poor	5.9	8.5

16. Are there any other comments you want to make about this incident? (For example, appearance, age, attitude of the police officer, etc.)

The majority of respondents did not have any additional comments.

III. PERSONAL CHARACTERISTICS OF CLIENT

17. (SEX)

	N1=192	N2=190
39		
1 - Male	45.6%	43.6%
2 - Female	54.4	56.3

18. Finally, so that we can group all comments, please tell me: into which of the following age groups do you fall?

	N1=190	N2=183
40		
1 - Under 18	3.2%	2.2%
2 - 18-29	22.6	27.9
3 - 30-54	47.9	42.6
4 - 55-older	26.3	27.3
5 - (REFUSED)	0.0	0.0

19. Are you

	N1=188	N2=182
41		
1 - White	64.4%	63.3%
2 - Black	34.6	34.6
3 - Spanish-speaking	1.1	2.2
4 - Or of another ethnic origin (SPECIFY _____)	0.0	0.0

20. What is your marital status?

	N1=190	N2=187
42		
1 - Married	52.1%	62.6%
2 - Divorced	6.3	10.2
3 - Separated	5.8	4.3
4 - Widowed	12.6	7.5
5 - Never married	23.2	15.5

B-14

Exhibit B.7
(page 5 of 5)

B-15

21. Was the location of the incident

	<u>N1=190</u>	<u>N2=190</u>
<u>43</u>		
1 - At or near your home	76.3%	73.2%
2 - At or near your business	22.1	23.7
3 - Other (SPECIFY _____)	1.6	3.2

22. How long (have you lived/has the business been located) at this address?

	<u>N1=186</u>	<u>N2=183</u>
<u>44</u>		
1 - Less than a year	10.8%	8.2%
2 - 1-3 years	16.8	19.1
3 - 3-5 years	8.6	10.9
4 - More than 5 years	63.8	61.7

23. How many (families/businesses) in your building?

	<u>N1=187</u>	<u>N2=179</u>
<u>45</u>		
1 - One	71.7%	76.0%
2 - Two to five	16.0	17.3
3 - More than five	12.3	6.7

24. Do you own or rent your (house/apartment/place of business)?

	<u>N1=183</u>	<u>N2=180</u>
<u>46</u>		
1 - Own or buying	65.0%	64.4%
2 - Rent	35.0	35.6

25. How would you describe the safety of the neighborhood where (you live/the business is located)?

	<u>N1=188</u>	<u>N2=183</u>
<u>47</u>		
1 - Very safe	8.5%	13.1%
2 - Reasonably safe	53.7	48.6
3 - Not very safe	26.6	16.4
4 - Very unsafe	11.2	21.9

[THE NEXT THREE QUESTIONS ARE FOR BUSINESS-RELATED INCIDENTS ONLY]

26. What is your position there?

	<u>N1=40</u>	<u>N2=26</u>
<u>48</u>		
1 - Owner	35.0%	26.9%
2 - Manager	27.5	28.9
3 - Employee	37.5	46.2

27. How long have you worked there?

	<u>N1=40</u>	<u>N2=26</u>
<u>49</u>		
1 - Less than a year	25.0%	19.2%
2 - 1-3 years	20.0	26.9
3 - 3-5 years	12.5	19.2
4 - More than 5 years	42.5	34.6

28. How many people work there?

	<u>N1=40</u>	<u>N2=26</u>
<u>50</u>		
1 - 1-5	27.5%	57.7%
2 - 6-10	27.5	7.7
3 - 11-20	15.0	7.7
4 - More than 20	30.0	26.9

[THE LAST QUESTION IS FOR ALL CLIENTS.]

29. Do you have any other comments you would like to make?

The majority of respondents did not have any additional comments.

On behalf of Public Systems Evaluation and the Wilmington Bureau of Police, I would like to thank you for your time and patience in answering these questions.

Have a pleasant (day/evening).

Additionally, in instances where a question was worded differently in the two surveys, the question asked in Survey 1 is numbered "X-1," and correspondingly, the question asked in Survey 2 is numbered "X-2."

C - OFFICER SURVEYS

Five groups of officers in the WBP were administered questionnaires to determine their feelings and perceptions regarding their work in connection with the split-force patrol experiment. Each group was given a slightly different questionnaire. The five groups included Basic patrol officers, Basic patrol supervisors, Structured patrol officers, Detectives, and Communications personnel.*

In order to assure anonymity and a high response rate, each respondent was asked *during* his tour of duty to report to the WBP training room to complete a questionnaire, which took from 15 to 25 minutes and was complemented with coffee and doughnuts. Public Systems Evaluation, Inc. (PSE) personnel monitored the entire effort and were always present to answer any questions that were raised. Inasmuch as some 178 members of five different WBP units (representing 86% of all persons assigned to the units) were being administered questionnaires--with no more than one or two members of each unit completing the questionnaire at any one time (so as to minimize any resultant disruption of the unit's work)--PSE was required to maintain an almost-around-the-clock presence over a period of three consecutive days. This investment of time and effort was quite necessary, and, in hindsight, yielded a more *reliable* snapshot of the *true* feelings and perceptions of the five groups of respondents. Although the questionnaire

* Police cadets and civilian aides were included in the survey of communications personnel, because they do in fact perform similar functions as the officers who are assigned to communications.

cover sheet clearly states that "all responses are strictly anonymous," about one out of every three respondents would invariably ask, "How are you so sure our bosses won't know what we write down?". It was necessary to constantly reassure the respondents of their anonymity. Interestingly enough, several officers who had come in contact with us in connection with our participant observation activity, volunteered to assure their fellow officers of our sincerity and objectivity. "They're OK--you can trust them," they said. Their trust was attested to by the candid and surprisingly numerous comments that were written in the margins of the questionnaires. Some of these comments are quoted in the text of the report.

As in the case of client survey results in Appendix B, the straight tabulations of the officer survey results are contained in Exhibit C.1, while cross-tabulations and a more detailed analysis of the results are contained in the text of the report. Again, the distribution of responses to each question is shown in *italics*.

Exhibit C.1

Officer Survey Results



Public Systems Evaluation, Inc.

A NON-PROFIT ORGANIZATION

SURVEY INSTRUMENT FOR

**BASIC PATROL OFFICERS
BASIC PATROL SUPERVISORS
STRUCTURED PATROL OFFICERS
DETECTIVES
COMMUNICATIONS PERSONNEL** *

This survey has been developed by Public Systems Evaluation, Inc. for the express purpose of facilitating the collection of information pertinent to the study of the Wilmington Split Force Patrol Experiment. The objective of this survey is not to test your knowledge of what Split-Force is supposed to be, but to determine your feelings and perceptions regarding the Split-Force Experiment in Wilmington.

PLEASE TAKE NOTE OF THE FOLLOWING INSTRUCTIONS:

1. In several questions you are asked to compare a *before* period with a *now* period. Please ASSUME that the *now* period corresponds to the period of experimentation since April, 1976 (i.e., after the structured patrol force was formally established as a separate unit). Additionally, ASSUME the *before* period to be before September, 1975, the date the Split-Force Experiment began.
2. Please select the most appropriate answer to every question. Feel free to write comments in the margins. Your answers and comments may help to improve the Wilmington Bureau of Police (WBP) and to make your job better.
3. Do not put your name anywhere on the questionnaire. All responses are strictly anonymous. Your identity will never be known by anyone. ONLY PUBLIC SYSTEMS EVALUATION PERSONNEL WILL SEE THESE QUESTIONNAIRES.
4. After completing the questionnaire, place it in the envelope provided and drop it in the box marked "Public Systems Evaluation." It is estimated that the questionnaire will take about 20 minutes to complete.

YOUR COOPERATION IS APPRECIATED

THANK YOU

** Reader Note: Pages 1 through 3 of the survey instrument were the same for all five groups who were administered the survey--only page 4 was different and tailored to each of the five groups.*

Exhibit C.1
(page 2 of 9)

C-4

1. The division or unit you are currently assigned to is: N=178
- 46.1% Patrol Division (Basic--including mounted and foot)
 - 13.5 Patrol Division (Structured Patrol Force)
 - 16.9 Detective Division
 - 14.0 Communications Unit
 - 9.6 Other (Specify _____)
- You have held this assignment for _____ months. -- Low=1 month; mean=19.9; and high=86.0.
2. Before your current assignment, have you ever been assigned to:
- | | YES | NO |
|--|--------------------|------|
| Patrol Division (Before Experiment) | <u>N=166</u> 86.7% | 13.3 |
| Patrol Division (Basic Patrol Force) | <u>N=110</u> 63.6% | 36.4 |
| Detective Division | <u>N=106</u> 24.5% | 75.5 |
| Other Investigative Unit (Specify _____) | <u>N=109</u> 34.9% | 65.1 |
| Communications Unit | <u>N=101</u> 32.7% | 67.3 |
3. Your current rank is: N=178
- | | | |
|---------------------|-----|-----------------------|
| 3.4% Lieutenant | 6.7 | Police Cadet |
| 16.9 Sergeant | 1.7 | Civilian |
| 71.3 Police Officer | 0.0 | Other (Specify _____) |
4. Indicate your age (_____ years old -- Low=18.0 years; mean=29.9; and high=47.0) and the length of time you have been in the WBP (_____ years -- Low=1.0 year; mean=6.9; and high=20.0)
5. The highest level of education you have completed is: N=178
- 15.2% High school (or G.E.D. certificate)
 - 60.7 Some college but did not graduate
 - 14.0 Graduated from Technical school or associate degree program
 - 8.4 Graduated from college
 - 1.7 Some graduate work beyond bachelor's degree

6. How knowledgeable are you regarding the overall Wilmington Split-Force Patrol Experiment? N=178
- | | | |
|--------------------------|------|------------------------|
| 12.3% Very knowledgeable | 32.0 | Somewhat knowledgeable |
| 51.8 Knowledgeable | 4.0 | Not knowledgeable |

7. How valuable has each of the following factors been in contributing to your understanding of the Split-Force Experiment?
- | | | Very Valuable | Valuable | Somewhat Valuable | Not Valuable | Don't Know |
|--|--------------|---------------|----------|-------------------|--------------|------------|
| November Training Session | <u>N=169</u> | 6.5% | 30.2 | 34.3 | 14.8 | 14.2 |
| March Training Session | <u>N=167</u> | 7.8% | 28.1 | 34.7 | 14.4 | 15.0 |
| WBP Memos and Written Orders | <u>N=172</u> | 4.7% | 26.2 | 45.3 | 21.5 | 2.3 |
| Instructions by Supervisors | <u>N=175</u> | 6.3% | 33.1 | 30.3 | 24.0 | 6.3 |
| Discussions with Fellow Officers | <u>N=176</u> | 13.1% | 30.7 | 34.7 | 15.3 | 6.3 |
| Information from FOP Representatives | <u>N=168</u> | 3.0 | 9.5 | 19.0 | 39.9 | 28.6 |
| Information from Split Patrol Task Force Representatives | <u>N=168</u> | 3.6 | 17.9 | 29.2 | 28.0 | 21.4 |
8. How clear are the WBP guidelines in distinguishing between the functions of the following groups?
- | | | Very Clear | Clear | Not Very Clear | Not at All Clear | Don't Know |
|----------------------------------|--------------|------------|-------|----------------|------------------|------------|
| Basic and Structured Patrol | <u>N=177</u> | 24.9% | 44.1 | 21.5 | 6.2 | 3.4 |
| Structured Patrol and Detectives | <u>N=175</u> | 9.1% | 26.3 | 27.4 | 31.4 | 5.7 |
| Basic Patrol and Detectives | <u>N=175</u> | 24.0% | 40.0 | 13.7 | 17.7 | 4.6 |

Exhibit C.1

(page 3 of 9)

9. This question is in three parts and relates to those elements of patrol operations that are different now (since 4/76), as compared to before the experiment.

In comparison to <i>before</i> the experiment, the following elements of patrol operations are relatively different <i>now</i> (since 4/76).	(a) How well do you feel each element has been implemented in the WBP?						(b) What impact has each element had on the effectiveness of the WBP?						(c) What impact has each element had on your job satisfaction?							
	VERY WELL	WELL	NOT VERY WELL	NOT AT ALL WELL	DON'T KNOW		GREATLY INCREASED	INCREASED	NO EFFECT	DECREASED	GREATLY DECREASED	DON'T KNOW	GREATLY INCREASED	INCREASED	NO EFFECT	DECREASED	GREATLY DECREASED	DON'T KNOW		
Some basic patrol officers begin their shift up to 4 hours earlier than the other officers in their platoon.	N=177	9.0%	42.9	27.7	13.6	6.8	N=174	2.3%	28.2	29.9	23.0	9.2	7.6	N=175	2.9%	13.1	40.6	28.6	12.0	2.9
More basic patrol units are assigned in the evening (1600-2400) shift than at other times of the day.	N=176	17.0%	54.5	18.2	5.7	4.5	N=175	10.9%	42.9	24.0	12.0	5.1	5.1	N=173	5.8%	26.6	37.0	18.5	6.9	5.2
Basic patrol sector boundaries change every 4 hours.	N=176	9.7%	34.1	30.7	22.2	3.4	N=170	2.4%	16.5	33.5	21.2	21.8	4.7	N=172	2.9%	7.6	37.6	25.6	19.8	6.4
Basic roll calls are shorter due to the use of printed handouts and readily available equipment.	N=178	21.9%	43.8	14.6	12.4	7.3	N=175	14.3%	34.3	25.7	12.6	7.4	5.7	N=174	6.3%	26.4	39.1	11.5	10.3	6.3
Calls for service are formally prioritized and dispatched in order of priority.	N=175	11.4%	50.9	18.3	13.7	5.7	N=173	7.5%	35.8	28.9	16.2	5.2	6.4	N=173	3.5%	24.9	43.4	12.1	8.7	7.5
During busy periods, low-priority calls may be deliberately delayed up to 30 minutes before being dispatched.	N=177	13.0%	36.2	22.0	17.5	11.3	N=174	8.0%	21.3	32.8	20.7	9.2	8.0	N=174	4.6%	18.4	42.5	17.8	9.2	7.5
During busy periods, a call is dispatched to the first available car and not saved for the basic car in whose sector the call originates.	N=176	19.3%	43.2	21.0	14.2	2.3	N=174	8.6%	31.6	24.7	18.4	13.2	3.4	N=174	5.2%	21.3	35.6	21.3	15.2	3.4
All calls for service are handled by basic patrol units, except in emergencies.	N=178	18.0%	46.1	20.8	10.7	4.5	N=175	9.1%	24.0	28.6	25.7	8.0	4.6	N=174	6.3%	16.1	40.2	24.1	8.0	4.6
Basic sector cars handle more calls for service than the "district" cars handled before the experiment.	N=176	14.2%	36.9	23.9	11.9	13.1	N=173	7.5%	12.7	27.7	24.9	16.8	10.4	N=174	2.9%	10.3	36.8	23.6	17.8	8.6
Basic cars perform fixed post (10-77) activities which can be interrupted to handle calls for service.	N=178	12.9%	34.8	16.9	32.0	3.4	N=174	8.5%	11.5	16.1	18.4	40.8	4.6	N=174	3.4%	9.2	27.6	19.0	36.2	4.6
Structured patrol units perform preventive patrol tactics without being interrupted to handle calls for service, except in emergencies.	N=176	16.5%	38.6	20.5	20.5	4.0	N=173	9.2%	22.0	22.0	23.7	16.8	6.4	N=173	9.8%	12.1	28.9	24.9	20.2	4.0
Structured patrol units are able to undertake a wider range of preventive patrol tactics.	N=178	15.7%	38.2	22.5	18.5	5.1	N=175	10.3%	27.4	25.1	16.6	15.4	5.1	N=175	9.7%	16.0	34.3	18.3	17.1	4.6
Crime analysis packages are prepared by Special Operations to assist in patrol and investigative operations.	N=176	12.5%	35.8	22.7	19.3	9.7	N=174	7.5%	31.6	33.9	5.7	11.5	9.8	N=174	6.9%	22.4	42.0	9.2	9.8	9.8
The experiment provided additional overtime opportunities for WBP officers.	N=178	23.6%	48.9	10.1	10.1	7.3	N=174	17.8%	36.8	27.0	5.7	6.9	5.7	N=175	14.9%	24.6	41.7	5.7	8.6	4.6

C-15

Exhibit C.1
(page 4 of 9)

10. In general, it has been found that the attitudes of persons and groups involved in social experiments have a great degree of influence on the success of such experiments. Indicate what kind of effect you feel each of the following groups has had on the Split-Force Experiment.

	Major Contribution to Success	Minor Contribution to Success	No Noticeable Effect	Minor Contribution to Problems	Major Contribution to Problems	Don't Know
Basic Patrol Officers	N=176 38.6%	13.6	22.2	11.9	6.8	6.8
Structured Patrol Officers	N=174 29.0%	24.4	13.1	11.4	15.9	6.3
Patrol Sergeants	N=174 24.7%	20.7	33.9	6.3	7.5	6.9
Patrol Lieutenants	N=174 18.4%	20.1	33.3	10.3	8.6	9.2
Captain of Patrol	N=172 31.4%	15.7	15.7	5.2	18.9	15.1
Inspector of Uniform Operations	N=176 25.6%	13.1	16.5	5.7	17.6	21.6
Detectives	N=173 5.8%	15.6	34.1	13.9	16.2	14.5
Captain of Detectives	N=175 4.0%	12.0	42.3	8.0	13.7	20.0
Inspector of Investigative Operations	N=175 8.6%	14.3	37.1	9.7	4.0	26.3
Communications Personnel	N=173 20.2%	19.7	19.1	16.2	17.9	6.9
Other WBP Officers	N=172 7.6%	16.9	37.2	9.9	5.8	22.7
The Chief	N=176 15.9%	10.2	30.7	2.8	5.7	34.7
Other (Specify _____)						

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11. How would you compare the quality of supervision you receive now (since 4/76) with the supervision you received before the experiment?

Supervision is now (since 4/76):		N=175	
0.9%	Much Better	24.0	Worse
12.6	Better	11.4	Much Worse
45.1	No Difference		

12. How would you rate the cooperation between and among each of the following groups of officers now (since 4/76)?

	Very Close	Close	Not Close Enough	Not at All Close	Don't Know
Among all basic officers	N=178 15.2%	38.2	29.8	10.7	6.2
Among all structured officers	N=177 18.1%	29.9	19.2	16.9	15.8
Among all detectives	N=177 7.3%	24.9	23.2	18.6	26.0
Among all communications personnel	N=177 6.2%	31.1	23.2	16.9	22.6
Between basic and structured officers	N=178 5.1%	20.8	35.4	28.8	9.0
Between structured officers and detectives	N=177 0.7%	6.8	23.1	54.4	15.0

13. Comparing the level of cooperation between and among each of the following groups of officers now (since 4/76) with the level of cooperation before the experiment, cooperation is now (since 4/76):

	Much Closer	Closer	About the Same	Less Close	Much Less Close	Don't Know
Among all patrol division officers	N=177 8.5%	15.8	39.5	21.5	9.6	5.1
Among all detectives	N=177 3.4%	12.4	36.7	13.0	6.8	27.7
Among all communications personnel	N=174 4.0%	11.5	35.6	12.6	6.9	29.3
Between patrol officers and detectives	N=177 2.3%	13.0	27.1	27.1	22.6	7.9
Between patrol officers and communications personnel	N=176 1.7%	10.8	36.9	23.9	17.8	9.1

14. If you had a choice, which division or unit would you prefer to be assigned to:

2.9%	Communications Unit	26.1	Patrol Division
5.7	Community Crime Prevention	8.6	Personnel and Training
22.9	Detective Division	1.7	Planning, Research & Budgeting
6.9	Internal Affairs Division	1.7	Special Operations Division
7.4	Investigative Strike Force	1.7	Support Services Division
9.1	Organized Crime, Vice & Intell.	1.7	Youth Aid Unit
		5.1	Other (Specify _____)

15. If you had to be in the Patrol Division, which assignment would you prefer? N=175

40.0%	Basic Patrol	30.3	Structured Patrol	29.7	Makes No Difference
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16. Indicate the extent to which you agree with each of the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know
"Basic patrol officers are less familiar with what's happening in their sectors under split patrol."	N=177 57.6%	26.0	11.9	2.3	2.3
"Basic patrol cars should each be manned by two officers."	N=175 76.6%	15.4	5.7	1.1	1.1
"In between handling calls for service, basic patrol cars usually are not stationary but undertake mobile patrol."	N=176 29.0	35.2	23.3	8.5	4.0
"Structured patrol acts like an elitist force."	N=174 32.8%	28.2	21.8	8.6	8.6
"The police presence on the streets of Wilmington has been increased under split patrol."	N=176 8.5%	31.3	34.1	18.8	7.4
"The citizens' perception of WBP services has not changed since the split patrol experiment began."	N=177 15.8%	39.0	17.5	18.6	11.3

Exhibit C.1
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(Basic Patrol Officers)

17. How has the Split-Force Experiment affected the following elements of dispatching in Wilmington:

	Increased	About the Same	Decreased	Don't Know
Number of calls to which a sector car is dispatched outside of his own sector	N=82 79.3%	14.6	3.7	2.4
Frequency of dispatching backup cars	N=82 72.0%	13.4	13.4	1.2
Time allowed for the patrol officers to take meal breaks	N=82 23.2%	52.4	24.4	0.0
Duration of delay (between time call is received until it is dispatched) for high-priority calls	N=82 14.6%	48.8	15.9	20.7
Duration of delay (as above) for low-priority calls	N=78 23.1%	41.0	12.8	23.1
Overall quality of dispatching	N=81 11.1%	43.2	45.7	0.0

18. What procedure do you usually follow in writing up reports? N=82
Reports are usually written:

23.2%	At the scene, before "clearing"
14.6	At the scene, after "clearing"
53.7	At an assigned fixed post (10-77) activity
1.2	At the end of the shift
7.3	During a meal or coffee break
0.0	Other (Specify _____)

19. How useful do you think each of the following fixed post (10-77) activities is:

	Very Useful	Useful	Not Very Useful	Not At All Useful
Schools	N=81 12.3%	53.1	28.4	6.2
Hospitals	N=81 8.6%	38.3	43.2	9.9
Corner stores	N=80 12.5%	56.3	25.0	6.3
Bars	N=79 8.9%	53.2	32.9	5.1
Locations where groups gather	N=81 22.2%	58.0	14.8	4.9
Problem traffic areas	N=81 13.6%	55.6	21.5	7.4
Other (Specify _____)				

20. How would you rate the effectiveness for patrol operations of the following tactics when performed without being interrupted to handle calls for service:

	Very Effective	Effective	Not Very Effective	Not At All Effective
Foot patrol	N=81 28.4%	44.4	21.0	6.2
Mounted patrol	N=81 17.3%	35.8	29.6	17.3
High visibility patrol	N=78 24.1%	53.1	19.0	3.8
Plainclothes patrol	N=81 23.5%	61.7	12.3	2.5
Decoy operations	N=80 26.3%	52.5	20.0	1.3
Stakeouts	N=80 37.5%	47.5	13.8	1.3
Investigating tips from informants	N=81 28.4%	58.0	12.3	1.2
Other (Specify _____)				

21. At the end of the Experiment, should the WBP continue to deploy a Split Patrol Force? N=81

22.2% Yes 77.8 No

Briefly explain why or why not _____

22. Independent of your feelings regarding the Wilmington Split-Force Patrol Experiment, do you think the concept of splitting the patrol force into a call-for-service response force and a directed preventive patrol force is an effective approach to patrol deployment? N=78

53.8% Yes 46.2 No

Briefly explain why or why not _____

23. Do you have any additional suggestions or comments about the Split-Force Experiment? Please feel free to use the back of this page for additional comments.

THANK YOU FOR YOUR COOPERATION.

CONTINUED

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17. How has the Split-Force Experiment affected the following elements of dispatching in Wilmington:

		Increased	About the Same	Decreased	Don't Know
Number of calls to which a sector car is dispatched outside of his own sector	N=17	76.5%	11.8	0.0	11.8
Frequency of dispatching backup cars	N=17	76.5%	11.8	5.9	5.9
Time allowed for the patrol officers to take meal breaks	N=17	17.6%	35.3	29.4	17.6
Duration of delay (between time call is received until it is dispatched) for high-priority calls	N=17	35.3%	17.6	17.6	29.4
Duration of delay (as above) for low-priority calls	N=15	33.3%	40.0	0.0	26.7
Overall quality of dispatching	N=17	23.5%	41.2	29.4	5.9

18. How has the Split-Force Experiment affected your ability to provide supervision? Providing supervision is now (since 4/26):

		Much Easier	Easier	About the Same	More Difficult	Much More Difficult	Not a Supervisor Before the Experiment
N=17	0.0%	17.6%	12.8	29.4	0.0%	41.2	0.0

19. How does your workload now (since 4/76) compare to supervisory workloads before the Experiment? It is now (since 4/76):

		Much Greater	Greater	About the Same	Less	Much Less	Not a Supervisor Before the Experiment
N=17	29.4%	47.1	23.5	0.0%	0.0%	0.0	0.0

20. How useful do you think each of the following fixed post (10-77) activities is:

		Very Useful	Useful	Not Very Useful	Not At All Useful
Schools	N=16	6.2%	68.8	12.5	12.5
Hospitals	N=17	5.9%	35.3	52.9	5.9
Corner stores	N=17	5.9%	58.8	29.4	5.9
Bars	N=17	0.0%	64.7	29.4	5.9
Locations where groups gather	N=16	18.8%	68.8	12.5	0.0
Problem traffic areas	N=16	12.5%	50.0	37.5	0.0
Other (Specify _____)	N=4	25.0%	50.0	0.0	25.0

21. How would you rate the effectiveness for patrol operations of the following tactics when performed without being interrupted to handle calls for service:

		Very Effective	Effective	Not Very Effective	Not At All Effective
Foot patrol	N=17	17.6%	70.6	11.8	0.0
Mounted patrol	N=17	5.9%	47.1	47.1	0.0
High visibility patrol	N=17	17.6%	70.6	11.8	0.0
Plainclothes patrol	N=16	18.8%	37.5	43.8	0.0
Decoy operations	N=17	17.6%	64.7	17.6	0.0
Stakeouts	N=17	29.4%	52.9	17.6	0.0
Investigating tips from informants	N=17	17.6%	70.6	11.8	0.0
Other (Specify _____)					

22. At the end of the Experiment, should the MBP continue to deploy a Split Patrol Force? N=17

41.2% Yes 58.8 No

Briefly explain why or why not _____

23. Independent of your feelings regarding the Wilmington Split Force Patrol Experiment, do you think the concept of splitting the patrol force into a call-for-service response force and a directed preventive patrol force is an effective approach to patrol deployment? N=16

75.0% Yes 25.0 No

Briefly explain why or why not _____

24. Do you have any additional suggestions or comments about the Split-Force Experiment? Please feel free to use the back of this page for additional comments.

THANK YOU FOR YOUR COOPERATION.

Exhibit C.1
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Page 4 of 4
(Structured Patrol Officers)

17. How would you rate the effectiveness for patrol operations of the following tactics when performed without being interrupted to handle calls for service:

		Very Effective	Effective	Not Very Effective	Not At All Effective
Foot patrol	N=24	20.8%	50.0	25.0	4.2
Mounted patrol	N=24	0.0%	37.5	37.5	25.0
High visibility patrol	N=24	16.7%	62.5	20.0	0.0
Plainclothes patrol	N=24	70.8%	25.0	0.0	4.2
Decoy operations	N=24	62.5%	25.0	8.3	4.2
Stakeouts	N=24	70.8%	29.2	0.0	0.0
Investigating tips from informants	N=24	66.7%	33.3	0.0	0.0
Other (Specify _____)					

18. How would you rate the crime analysis and Structured Patrol assignment packages prepared by Special Operations in terms of each of the following factors?

		Very Good	Good	Poor	Very Poor
Timeliness of information	N=24	33.3%	54.2	12.5	0.0
Detail in descriptions of problems	N=24	25.0%	50.0	25.0	0.0
Detail in descriptions of suspects	N=24	12.5%	41.7	45.8	0.0
Overall usefulness	N=24	29.2%	50.0	12.5	8.3

19. How much, if any, has each of the following factors contributed to strained relations between the Structured Patrol Force and the Detective Division?

		Major Contribution	Minor Contribution	No Contribution	Statement Not True
Lack of information exchange	N=24	58.3%	20.8	12.5	8.3
Structured Patrol has first priority in debriefing those arrested by the Patrol Division	N=23	65.2%	13.0	8.7	13.0
Structured Patrol has first priority in following up leads obtained by the Patrol Division	N=24	58.3%	16.7	8.3	16.7
Disagreement between higher ranking officers of the two units	N=24	50.0%	29.2	8.3	12.5
Vagueness in WBP guidelines on which unit should handle certain types of incidents	N=24	54.2%	33.3	8.3	4.2
Other (Specify _____)					

20. At the end of the Experiment, should the WBP continue to deploy a Split Patrol Force? N=24

83.3% Yes 16.7 No

Briefly explain why or why not _____

21. Independent of your feelings regarding the Wilmington Split-Force Experiment, do you think the concept of splitting the patrol force into a call-for-service response force and a directed preventive patrol force is an effective approach to patrol deployment? N=22

86.4% Yes 13.6 No

Briefly explain why or why not _____

22. Do you have any additional suggestions or comments about the Split Patrol Experiment? Please feel free to use the back of this page for additional comments.

THANK YOU FOR YOUR COOPERATION.

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Exhibit C.1
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17. How would you rate the effectiveness for patrol operations of the following tactics when performed without being interrupted to handle calls for service:

		Very Effective	Effective	Not Very Effective	Not At All Effective
Foot patrol	<u>N=27</u>	37.0%	44.4	18.5	0.0
Mounted patrol	<u>N=27</u>	74.8%	63.0	18.5	3.7
High visibility patrol	<u>N=26</u>	23.1%	53.8	23.1	0.0
Plainclothes patrol	<u>N=28</u>	17.9%	71.4	10.7	0.0
Decoy operations	<u>N=28</u>	21.4%	42.9	32.1	3.6
Stakeouts	<u>N=29</u>	34.5%	48.3	17.2	0.0
Investigating tips from informants	<u>N=29</u>	34.5%	55.2	10.3	0.0
Other (Specify _____)					

18. How would you rate the crime analysis packages prepared by Special Operations in terms of each of the following factors?

		Very Good	Good	Poor	Very Poor
Timeliness of information	<u>N=27</u>	3.7%	48.1	29.6	18.5
Detail in descriptions of problems	<u>N=26</u>	0.0%	46.2	46.2	7.7
Detail in descriptions of suspects	<u>N=27</u>	3.7%	70.4	18.5	7.4
Overall usefulness	<u>N=28</u>	0.0%	46.4	28.6	25.0

19. How much, if any, has each of the following factors contributed to strained relations between the Structured Patrol Force and the Detective Division?

		Major Contribution	Minor Contribution	No Contribution	Statement Not True
Lack of information exchange	<u>N=30</u>	86.7%	6.7	6.7	0.0
Structured Patrol has first priority in debriefing those arrested by the Patrol Div.	<u>N=29</u>	93.1%	0.0	6.9	0.0
Structured Patrol has first priority in following up leads obtained by the Patrol Div.	<u>N=30</u>	70.0%	20.0	10.0	0.0
Disagreement between higher ranking officers of the two units	<u>N=30</u>	73.3%	10.0	16.7	0.0
Vagueness in MBP guidelines on which unit should handle certain types of incidents	<u>N=30</u>	90.0%	3.3	6.7	0.0
Other (Specify _____)					

20. At the end of the Experiment, should the MBP continue to deploy a Split Patrol Force? N=29

17.2% Yes 82.8 No

Briefly explain why or why not _____

21. Independent of your feelings regarding the Wilmington Split-Force Experiment, do you think the concept of splitting the patrol force into a call-for-service response force and a directed preventive patrol force is an effective approach to patrol deployment? N=30

20.0% Yes 80.0 No

Briefly explain why or why not _____

22. Do you have any additional suggestions or comments about the Split Patrol Experiment? Please feel free to use the back of this page for additional comments.

THANK YOU FOR YOUR COOPERATION.

Exhibit C.1
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17. How has the Split-Force Experiment affected the following elements of dispatching in Wilmington?

		Increased	About the Same	Decreased	Don't Know
Number of calls to which a sector car is dispatched outside of his own sector	<u>N=25</u>	92.0%	8.0	0.0	0.0
Frequency of dispatching backup cars	<u>N=25</u>	84.0%	12.0	4.0	0.0
Time allowed for the patrol officers to take meal breaks	<u>N=25</u>	8.0%	60.0	28.0	4.0
Duration of delay (between time call is received until it is dispatched) for high-priority calls	<u>N=25</u>	32.0%	56.0	8.0	4.0
Duration of delay (as above) for low-priority calls	<u>N=25</u>	52.0%	44.0	4.0	0.0
Overall quality of dispatching	<u>N=25</u>	36.0%	32.0	32.0	0.0

18. Considering those calls for service that are "delayed" (i.e., those calls whose complaint cards are stamped "delay" and whose complainants have been informed of a possible 30 minute delay), is the number of such calls being delayed: N=23

26.1%	Much Too Many	13.0	Somewhat Too Few
43.5	Somewhat Too Many	4.3	Much Too Few
13.0	Just the Right Number		

19. How often do you serve as a dispatcher or telephone complaint handler?

		Always	Usually	Sometimes	Never
Dispatcher	<u>N=25</u>	16.0%	28.0	36.0	20.0
Telephone Complaint Handler	<u>N=24</u>	37.5%	29.2	33.3	0.0

20. How do most citizens react to being informed of a possible 30-minute delay? N=24

33.3%	Object Strongly	12.5	Appreciate the Warning
45.8	Object Somewhat	0.0	Don't Know
8.3	No Reaction		

21. Comparing the amount of work now (since 4/76) with that before the experiment, how has each of the following changes affected your workload:

		Greatly Increased	Increased	No Effect	Decreased	Greatly Decreased	Don't Know
Use of priority categories	<u>N=25</u>	28.0%	28.0	36.0	0.0	0.0	8.0
Use of 30-minute delay option	<u>N=25</u>	20.0%	48.0	24.0	0.0	0.0	8.0
Overall workload	<u>N=25</u>	44.0%	36.0	12.0	0.0	0.0	8.0

22. At the end of the Experiment, should the WBP continue to deploy a Split Patrol Force? N=24

25.0% Yes 75.0 No

Briefly explain why or why not _____

23. Independent of your feelings regarding the Wilmington Split-Force Experiment, do you think the concept of splitting the patrol force into a call-for-service response force and a directed preventive patrol force is an effective approach to patrol deployment? N=22

45.5% Yes 54.5 No

Briefly explain why or why not _____

24. Do you have any additional suggestions or comments about the Split Patrol Experiment? Please feel free to use the back of this page for additional comments.

THANK YOU FOR YOUR COOPERATION.

END