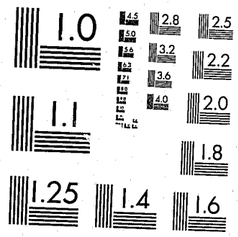

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An Alternative Approach in Police Response

Wilmington Management of Demand Program

a publication of the National Institute of Justice

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James L. Underwood
Acting Director

An Alternative Approach in Police Response:
Wilmington Management of Demand Program

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November 1981

U.S. Department of Justice
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FOREWORD

Traditionally, urban police departments have had one response to the varied requests for police service received daily--the dispatch of a patrol unit to the scene of the incident. The bulk of police department budgets are spent in supporting a patrol presence large enough to assure a timely, on-scene response to such calls for service. The reality of present day financial constraints, however, has necessitated the reevaluation of such traditional patrol strategies. At the same time, the police administrator is faced with the task of maintaining a level of police services acceptable to the community served.

As part of the continuing research into more effective methods of providing police services, the National Institute of Justice funded a project in Wilmington, Delaware, entitled "The Wilmington Management of Demand Program". This project tested the effectiveness of handling noncritical calls for police service through methods other than the timely on-scene response of a patrol unit. The alternatives tested include: delayed on-scene response, telephone reporting and adjustment, walk-in reporting, and scheduled appointment response. Through the use of these alternatives, we have been able to divert a significant amount of workload away from the patrol force. This, in turn, allowed a concomitant reduction in the level of patrol staffing necessary to answer calls for service.

The management of demand program was formally conducted for a nine month period, from January 1 through September 30, 1979. During this time, the project was monitored and evaluated by Public Systems Evaluation, Inc. The findings of this evaluation are contained in this report. They indicate that the management of demand approach can significantly increase the efficiency of the police in responding to calls for service, while maintaining acceptable levels of citizen satisfaction and overall agency effectiveness.

The Wilmington Department of Police is proud to have been chosen to test the management of demand concept. We feel that the results of the program should be studied by anyone interested in increasing police productivity. Many of the program's elements can be adapted to fit an agency's particular environment and needs. As such, we believe the results of the management of demand project will contribute to the overall advancement of police science and administration.

Dennis P. Regan
Chief of Police
Wilmington, Delaware

PREFACE

Following the completion of the Wilmington split-force experiment and the issuance of a formal evaluation report by Public Systems Evaluation, Inc. (PSE), the Police Division of the National Institute of Justice (NIJ) awarded the Wilmington Department of Police (WDP) a second grant to continue testing innovative and productive approaches to policing. In particular, the purpose of the two-year grant, which was awarded in November 1977, was to assess the feasibility and impact of managing the demand for police services and having the police respond in ways other than the traditional procedure of dispatching a patrol car. The alternative police response strategies -- as they were developed and implemented in Wilmington, Delaware -- are detailed and assessed in this evaluation report.

The evaluation of the Wilmington management of demand program has again been undertaken by PSE. As in the case of the split-force evaluation, PSE has not only attempted to determine the efficacy of the management of demand concept but also the relevance and impact of the individual components which effected the concept. In addition, PSE has attempted to view the Wilmington experience from a national perspective. Thus, the findings documented herein are not only relevant for the WDP, but also for other police departments.

Finally, it should be stated that, in addition to PSE, the WDP also retained the services of Dr. Howard Lamb of the National Training Laboratories. Dr. Lamb's responsibility included the preparation of written procedures and material for training those WDP members who were a part of the program.

SUMMARY

Municipal bankruptcies, unbalanced budgets, and ever higher taxes have resulted in a public outcry that government live within its means. On the other hand, the same public is demanding more and better services. It is not surprising, then, that during the past decade there has been a greater emphasis on developing productivity-oriented approaches to meeting the demand for public services. One such approach -- the management of demand (MOD) approach -- has been the focus of a National Institute of Justice (NIJ) supported experiment in Wilmington, Delaware, where a formal program to test the approach in the police environment was developed and implemented by the Wilmington Department of Police (WDP) and evaluated by Public Systems Evaluation, Inc. (PSE). This evaluation report describes the Wilmington program as it was designed to test the MOD approach; details the evaluation findings; and concludes with some remarks about the approach and related policy implications.

WILMINGTON PROGRAM

Traditionally, the demand for public services has been accepted as a given, while the corresponding supply is somehow allocated to meet the given demand. The MOD approach, on the other hand, is based on the premise that the demand pattern can be managed and/or changed so that a more optimal supply pattern could be achieved. In general, the elements or tuners which could be used to manage the demand can be categorized as being either reactive or proactive in focus. The reactive elements are in response to a given demand pattern; they are, in essence, response strategies, which could include formally delaying the responses or providing alternative (less costly and/or more appropriate) responses. The proactive elements, however, attempt to change the underlying demand pattern; they could include economic sanctions, strategies which affect service availability, or strategies which mitigate potential or anticipated demand.

What evolved in Wilmington was a reactive or response-oriented MOD program, which attempted to test the central hypothesis that "alternative response strategies cause an increase in call-for-service response productivity". The initial idea for the program came from the findings of an earlier experiment conducted by the WDP, in which the traditional patrol force was split into two parts: a Basic patrol force with the primary responsibility of responding to calls for police service, and a Structured patrol force with the primary responsibility of undertaking preventive patrol. Also funded by the NIJ and evaluated by PSE, the split-force patrol concept was found to be a productive approach in police patrol and a potentially effective bridge to the detective specialists. Specifically, the findings

which prompted the MOD program were i) the realization that citizen satisfaction is a function of expectation and that a citizen is willing, for example, to accept a 30-minute delay in response to his/her noncritical call (i.e., a call-for-service which does not require an immediate or emergency response), provided he/she is formally advised of the delay; and ii) the knowledge that some 86.1 percent of all calls for service were deemed to be noncritical. Thus, the object was to offer alternative (i.e., other than a Basic patrol unit) responses to noncritical calls for service, realizing that the complainants would be willing to accept such responses.

A number of decisions were made in regard to increasing the WDP's response-related productivity. In sum, it was decided that the existing complaint-taking function should be upgraded to a complaint-screening function, so that calls for service could be prioritized and, if applicable, designated for an alternative response (i.e., either formally delayed or diverted); that a police officer other than the complaint taker should call back those diverted complainants to identify an appropriate means for handling the complaint; that appropriate, alternative response strategies would include formal delay (i.e., formally advising a complainant of a 30-minute delay), phone adjustment (i.e., clearing a complaint on the phone), walk-in (i.e., having a complainant walk in to WDP headquarters to make a report in person), phone report (i.e., taking a report of the complaint over the phone), and specialist appointment (i.e., scheduling a prearranged time for a specialist patrol unit to meet the complainant); that the Basic patrol force should be reduced in size in proportion to the percentage of diverted calls for service, while maintaining appropriate levels of Basic patrol unit utilization and response time to critical calls for service; and that overall WDP effectiveness -- as expressed by citizen satisfaction, crime-related levels and rates, and other measures -- could be monitored throughout the program. Under the complaint screening guidelines, a complaint taker could dispose of a call-for-service by exercising one of the following five options: dispatching a patrol unit; formally advising the complainant of a 30-minute delay in police response; adjusting the complaint on the phone; referring the complainant to walk-in; or referring the complaint to a call-back officer. Similarly, under the call-back guidelines, a call-back officer could dispose of a complaint by exercising one of the following five options: returning the complaint to communications for a patrol unit dispatch; adjusting the complaint on the phone; referring the complainant to walk-in; taking a report over the phone; or scheduling a specialist patrol unit to meet the complainant at a prearranged time. Finally, it should be stated that the WDP realized that the degree to which the alternative response strategies could achieve overall productivity gains was very much a function of the extent to which Basic patrol resources were reduced.

EVALUATION DESIGN

The design for the evaluation of the Wilmington MOD program can be identified in terms of five components. First, the central test hypothesis was that when applied to policing, the MOD concept would bring about improvements in response-related productivity through the implementation of alternative strategies for response to noncritical calls for police service. Second, although the evaluators would have preferred to conduct a more experimentally controlled evaluation, the selection scheme employed was a quasi-experimental, pretest-posttest design entailing "Before" and "During" comparisons, in which the EDP served as its own control. Third, an input, process, outcome and systemic measures framework was developed in which the systemic considerations included such concerns as the generalizability and transferability of the MOD concept. Fourth, the measurement methods included administration of personnel questionnaires; conduct of Before/During telephone surveys of recent WDP clients; formal interviews; pertinent observations; and analysis of call-for-service and related crime data. Fifth, the analytic techniques included the application of statistical tests; the development of some simple structural models; and the use of two computer-based patrol car allocation models.

In sum, it should be stated that the evaluation design was developed in a *purposeful* and *systemic* manner. Specifically, the design included only those elements which could mitigate, if not eliminate, the rival explanations or threats to the validity of the anticipated evaluation findings, especially in relation to the central test hypothesis. Additionally, the design elements were systemically assembled so that they would be complementary in their focus; thus, for example, several independent measurement methods were typically identified to measure or view an important program impact.

EVALUATION FINDINGS

The Wilmington MOD program was formally conducted for a period of nine months (i.e., from January 1, 1979, through September 30, 1979). Except for some initial problems in the training of communications personnel, the WDP was able to implement the MOD program with relative ease and without any major problems. Intimate involvement of the program management team in the program design process and the departmental experience gleaned from the conduct of the earlier split-force experiment were significant factors in this accomplishment.

In terms of effectiveness measures on a Before (i.e., 7/1/77-6/30/78) and During (i.e., 1/1/79-9/30/79) comparison basis, the Index crime rate in Wilmington increased, but well within the increases recorded in comparably-populated United States cities, while Wilmington residents continued to be quite satisfied with the services

provided by the WDP. Coincidentally, the efficiency measure, stated in terms of calls for service per effective 8-hour officer, increased by a significant 15.8 percent -- very much a function of the sizable 21.1 percent reduction in the number of Basic patrol units, which in turn was possible because of the substantial 18.9 percent diversion of calls for service away from the Basic patrol force. Individually, the alternative response strategies accounted for the following portions of the call-for-service diversion level: phone adjustment (3.5 percent), walk-in (1.6 percent), phone report (11.2 percent), and specialist appointment (2.6 percent). The formal delay response strategy accounted for another 3.6 percent, thus raising to 22.5 percent (i.e., 3.6+18.9) the total percent of calls for service which were managed (i.e., either formally delayed or diverted). In sum, because WDP effectiveness remained constant and efficiency increased by 15.8 percent, it can be stated that response productivity increased by the same 15.8 percent.

Although the WDP met its MOD program objectives, the inescapable conclusion is that all the alternative response strategies were underutilized. Given the prevailing willingness on the part of Wilmington residents to accept alternative responses -- they continue to be satisfied with WDP service irrespective of the response received -- and the fact that the WDP personnel consider the MOD approach effective, the authors believe the WDP could reasonably have doubled the level of calls for service which were formally delayed or diverted.

While 77.8 percent of the WDP personnel believe the MOD approach to be effective, a smaller number of them (i.e., 67.5 percent) favored the continuation of the program, past its experimental period. The major reason for the discrepancy is the negative officer attitude toward the reduction in the Basic patrol force. This is not surprising considering that police officers are traditionally opposed to any management-initiated action which is perceived as threatening to their size and safety.

Finally, officials of the WDP, including the Chief of Police, have been very pleased with the MOD program, especially with the resultant increase in response-related productivity.

CONCLUDING REMARKS

Based on the Wilmington experience, the following conclusions can be stated. The reactive management of demand approach:

1. Causes significant increase in call-for-service (CFS) response productivity

   - The development and implementation of a system which appropriately processes demand for police services results in better resource allocations and use and brings about an increase in CFS response efficiency, without compromising response effectiveness.

2. Results in increased capability to assess demand for police services

   - Building on the productive separation of responsibilities inherent in the split-force patrol approach, MOD provides for an equally productive merging of crime analysis and complaint service responsibilities as manifested in the formation of the Resource Management Division in Wilmington. As a result, the gap between the analysis of crime patterns and the analysis of citizen demand patterns can be partially bridged.

   - The formation of a highly professional, response-oriented Complaint Service Unit, improves the quality of complaint-related information on which response decisions are based. Through the call-back approach, the often hectic environment in which call-for-service-related information is received is replaced by a relaxed and more skilled process of follow-up client communication.

3. Permits an increase in police management effectiveness and flexibility

   - The review of complaint screening decisions implicit in the call-back function provides an excellent mechanism for feedback to police supervisors and offers greater capacity for quality control of the Communications Division.

   - Capitalizing on the response specialization of the Basic patrol force, increased use of CFS diversion to alternative responses allows proportional reductions in the size of the Basic patrol force -- and appropriate reassignment of excess patrol personnel to other divisions.

The Wilmington experience has also resulted in other policy-relevant findings, including the observation that the current legalistic, crime-based orientation in classifying calls for police service is inadequate (what is needed is an explicit, response-oriented classification scheme); the indication that proactive MOD could also be a potentially effective and efficient approach (in mitigating potential or anticipated demand -- for example, "career victims" could be the focus of proactive MOD strategies); and the recognition that the computer could provide valuable assistance in effecting the MOD approach (an "intelligent" computer-aided dispatch system could provide complaint-screening and call-back decision assistance, in addition to dispatch assistance).

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

ACKNOWLEDGMENTS

This innovative police program could not have been conceived, developed, implemented and evaluated without the active support and participation of the Police Division of the National Institute of Justice (NIJ), the City of Wilmington, Delaware, and the Wilmington Department of Police (WDP). The NIJ officials -- Messrs. Joseph T. Kochanski (Director, Police Division), David J. Farmer (former Director, Police Division) and William E. Saulsbury (Project Monitor, Police Division) -- should be acknowledged for their vision and support of innovative approaches in policing; the City of Wilmington officials -- Messrs. David W. Singleton (Administrative Assistant to the Mayor) and Reese E. Robinson (former Criminal Justice Coordinator) -- should be recognized for their understanding and willingness to undertake innovative, experimental programs; and the WDP officials -- Chief Dennis P. Regan, former Chief Harry F. Manelski, Inspector Charles E. Byran, III, former Inspector Nicholas M. Valiante, Captain Lawrence M. Curtis, Captain Charles Dougherty, and Sergeant Francis T. Monaghan -- should be commended for their recognition of the need for and difficulties associated with an extensive evaluation of the program; their contribution to this report is acknowledged, but the authors are solely responsible for the points of view and opinions stated herein.

The authors would also like to thank Mr. Edward H. Kaplan for his technical contribution; Mr. Victor O. Li for his programming support; Mr. Vincent F. O'Donnell for his analytical support; Ms. Kathleen Leonard and Messrs. John G. Peters and William G. Spelman for their conduct of the client attitude surveys; Dr. Richard C. Larson for his review and constructive criticism; and Ms. Melissa A. Taggart, Ms. Martha A. Cleary, Miss Joan M. Kanavich, Ms. Phyllis deFano, and Ms. Constance J. Toth for their editorial and typing support. Dr. Floyd J. Fowler, Director of the Survey Research Center at the University of Massachusetts, contributed to the development of the survey questionnaires.

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PART I: BACKGROUND

1 INTRODUCTION

The demand for public services (e.g., police protection, fire protection, health, energy, parks and recreation, transportation, sanitation, and education) is at once unpredictable and growing. The growth in demand has also been sustained by an increased public awareness of the quantity and quality of services being provided by government at all levels, especially at the local municipal level. This awareness has in turn led to a rising expectation for more and better services. Unfortunately, because of their labor-intensive (i.e., high-cost) nature, the service delivery or supply systems have been unable to cope with the growing demand. As a consequence, the public consumer perceives a deterioration in the availability, responsiveness, and quality of the services received, resulting in increased dissatisfaction with and criticism of government.

This mismatch between demand and supply has contributed to and, likewise, been further aggravated by the deteriorating financial solvency of some municipalities. Municipal bankruptcies, unbalanced budgets, and ever higher taxes have resulted in a public outcry that government live within its means. On the other hand, as noted above, the same public is demanding more and better services. It is not surprising, then, that during the past decade there has been a greater emphasis on developing productivity-oriented approaches to meeting

the demand for public services at both the local [Shell et al., 1976]* and national [Frank, 1972] level. One such approach -- the management of demand (MOD) approach -- has been the focus of a National Institute of Justice supported experiment in Wilmington, Delaware, where a formal program to test the approach in the police environment was developed and implemented by the Wilmington Department of Police** (WDP) and evaluated by Public Systems Evaluation, Inc. (PSE). The Wilmington MOD Program is detailed in this report, which, as stated in the preface, also attempts to view Wilmington's experience from a national perspective.

In this introductory section, the MOD approach is first discussed in Section 1.1, and then the context of the Wilmington program is reviewed in Section 1.2. The scope of the report is outlined in Section 1.3.

1.1 MOD APPROACH

In general and as illustrated in Exhibit 1.1 (a), the management of demand (MOD) approach seeks to actively manage and/or change the demand pattern by adjusting appropriate MOD elements so as to achieve an optimum supply pattern. In this respect, the MOD approach is *not* new. It is in fact a cornerstone of Keynesian economics. The pricing of goods and services has long been recognized as a means of controlling (or managing) their demand. The federal government adjusts

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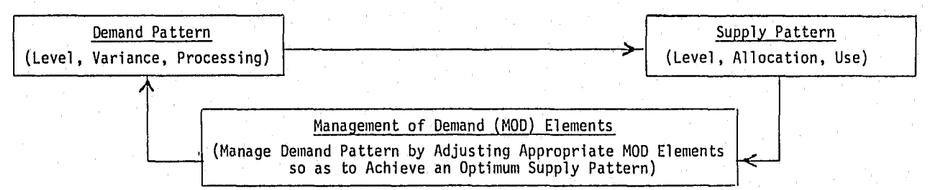
* All references are listed in Appendix A.

** Effective, July 1, 1979, the Wilmington City Charter was changed, eliminating the position of Commissioner of Public Safety and rendering the Bureau of Police a separate Department of Police.

Exhibit 1.1

Management of Demand: A Systemic Framework

(a) MOD in General



(b) MOD as Applied to Public Services

Objectives	Reactive Elements	Proactive Elements	Productivity Impacts
• Decreased Demand Level (Resulting in Decreased Supply Level)		• Economic sanctions (e.g., higher prices)	• Decreased input and output -- due to less overall demand
		• Strategies which affect service availability and/or performance	• Same as above
		• Strategies which mitigate anticipated demands	• Same as above
• Decreased Demand Variance (Resulting in Decreased Supply Level and Better Supply Allocation)	• Formally delayed response procedure		• Decreased input (at constant or increased output)-- due to a requirement for less resources because of a more uniform or less variable demand pattern
		• Economic sanctions (e.g., differential pricing)	• Same as above
		• Strategies which affect service availability	• Same as above
• Appropriate Demand Processing	• Alternative response strategies (i.e., alternative response procedures and resources)		• Decreased input (at constant or increased output) -- due to less costly or more efficient response procedures and resources
		• Economic sanctions (e.g., differential pricing)	• Same as above -- due to more tailored responses

fiscal and monetary policies to manage the economy [Worswick, 1977]. In the private sector, marketing as well as pricing strategies are used, typically, to increase demand so that supply -- and therefore profit -- can be increased. In instances where there are material shortages or failures in the supply systems, MOD procedures have been adopted to compensate for such difficulties [Schary and Becker, 1976].

Procedures for managing the demand for *public services* have only recently been adopted and explicitly recognized [Tien et al, 1978 (b); Rosenthal, 1979]. Traditionally, the demand for public services has been accepted as a *given*, and methods -- including resource allocation algorithms -- have been developed to cope with this growing and varying demand. The administrators and managers of the public service delivery or supply systems have taken their responsibilities too literally; they have primarily been concerned with the delivery of public services, without realizing that they can and should influence the demand for such services. Instead, the growth in demand has been met by a *growth* in resources; the temporal variation in the demand level has been met by an allocation of resources which is aimed at meeting the *higher* levels; and the wide range in the demand types or priorities has been met by using resources which are capable of serving *all* priorities.

The application of the MOD approach to meeting the demand for public services can be systemically viewed in terms of the framework presented in Exhibit 1.1 (b). Three aspects of the approach are summarized in the exhibit. First, *assuming* that the public administrator would like to decrease the supply or resource level and have

a better resource allocation and use, then the MOD objectives are to decrease the demand level, decrease the demand variance, and provide for adequate demand processing. The impacts of these objectives on specific attributes of the supply pattern are indicated in the exhibit.

The second MOD aspect that is addressed in Exhibit 1.1 (b) concerns the elements or tuners which could be used to manage the demand for public services. The MOD elements can generally be divided into *reactive* and *proactive* elements. The reactive elements are obviously in *response* to a given demand pattern. Consequently, the reactive MOD function is effected in terms of the different response strategies, which could include formally delaying the responses, developing alternative and less costly response procedures (e.g., scheduling the demand for services), and identifying alternative and less costly resources (e.g., use of a physician's assistant as a provider of certain health services). The proactive elements, on the other hand, attempt to change the *underlying* demand pattern; they could include economic sanctions (e.g., higher prices and differential pricing), strategies which affect service availability (e.g., provision of an express lane during rush hours for buses and car pools), and strategies which mitigate anticipated demand. Some MOD elements may be difficult to classify as being either reactive or proactive. For example, a strategy not recommended is that of providing poor service, which is a reactive response requiring limited resources and at the same time a proactive element in the sense that it will tend to forestall future demand.

The third MOD aspect considered in Exhibit 1.1 (b) is that of productivity impacts. Although there are numerous definitions of productivity (see, for example, Hatry [1973], Thomas [1975], and Wise [1976]), perhaps the simplest way of defining it is as a ratio of output (expressed in terms of *both* quantity and quality) over input. Using this simplified definition of productivity, five out of the nine possible combinations of input and output would yield an increase in productivity; these preferred combinations are listed in the last column of Exhibit 1.1 (b).

The application of the MOD approach to the demand for *police* services is of course the subject matter of this report. It is obvious that the Wilmington Department of Police (WDP) is not the first to implement a MOD-related program: other police departments have implemented various MOD elements, in particular *reactive* or response-related elements. For example, alternative response procedures (including telephone adjustment and reporting of complaints) have been tried in Albuquerque (NM), Ann Arbor (MI), Atlanta (GA), Baltimore County (MD), Boston (MA), Dade County (FL), Dallas (TE), DeKalb County (GA), Duluth (MN), Hamilton County (TN), Montgomery County (MD), Pittsburgh (PA), and Stockton (CA); while alternative resources (including paraprofessional police aides) have been used in Columbus (OH), Jackson (MI), Newport News (VA), Scottsdale (AZ), and Worcester (MA). The prevailing emphasis on alternative response strategies has been further underscored by a recent study by Sumrall et al. [1980] which contains a survey of the 200 largest law enforcement agencies in the United States and a summary of their experiences with various alternative response strategies.

However, what evolved in Wilmington is a MOD program that is *unique* in three respects. First, although it developed into a limited, reactive MOD application, the Wilmington program was conceived *within* the MOD framework and the emphasis has been on managing police demand for the purpose of improving police *productivity*. Thus, Wilmington complemented the testing of alternative response strategies with a *reduction* in the size of its response-oriented patrol force. Second, the program can be considered to be a culmination of earlier police research efforts; it *builds* on the findings of these efforts and provides a basis for synthesizing several of the efforts. Third, the conduct of a *formal* evaluation makes Wilmington the site of the first evaluated MOD program.

The significance of the Wilmington MOD program in relation to other national studies and programs is discussed at appropriate points in the text of the report. Based on the Wilmington experience, the concluding section of the report addresses the potential of the MOD approach in policing, as well as in public services in general.

1.2 CONTEXT OF PROGRAM

In addition to considering the Wilmington MOD program in terms of the MOD approach depicted in Section 1.1, it is necessary to view the program in the context of the City of Wilmington, the Wilmington Department of Police (WDP), and the earlier Wilmington split-force experiment, which in essence prompted the subsequent MOD effort.

CITY OF WILMINGTON

Wilmington is the most populous city in the State of Delaware and occupies about 15.7 square miles. Situated amid the Northeast

corridor, Wilmington is approximately 20 miles south of Philadelphia and linked by rapid rail transit with Philadelphia and New York City to the north, and with Baltimore and Washington, D.C., to the south. The 1970 census recorded its resident population at 80,386, a decrease of more than 15% from 1960. The migration to the New Castle County suburbs of Wilmington has been responsible for this decrease, which has continued into the 1970s, but at a slower pace. Current estimates place the City's population at approximately 76,000.

Wilmington is perhaps best known nationally as the corporate headquarters for E. I. duPont de Nemours, but the City also features an active Delaware Bay port with a heavy traffic in imported foreign automobiles as well as in exported domestic automobiles. Not only has the port undergone dramatic growth in activity in the past several years, but current plans also call for increased use of containerization, which should bring about still further growth.

The demographic characteristics, according to the 1970 United States census, are summarized in Exhibit C.8. For the most part, the characteristics are similar to those of other major United States cities. Like other cities during the past two decades, 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 United States 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 DEPARTMENT OF POLICE

The Wilmington Department of Police (WDP) is currently staffed by 246 sworn officers, 15 cadets, 23 civilian aides, and 29 civilian support personnel. There are four major commands in the WDP, each headed by an Inspector reporting directly to the Chief of Police. Of all the organizational units, the Patrol Division is by far the largest, accounting for some 50 percent of the WDP's sworn personnel. By way of contrast, the Detective Division encompasses less than 10 percent of the sworn strength. A more detailed breakdown of WDP personnel appears in Exhibit 4.1.

Except for the split-force patrol procedure, which is described in the following subsection, the organizational structure and basic operating procedures of the WDP are traditional and similar to those of other metropolitan police departments. In fact, with an annual operating budget of over six million dollars, the WDP is typical of a small to medium sized police department. The structure of the WDP and the distribution of its personnel are considered in greater detail in the report, with emphasis on the explicit and implicit changes engendered by the MOD program.

SPLIT-FORCE EXPERIMENT

On June 1, 1975, the Police Division of the National Institute of Justice awarded the WDP 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 WDP 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.

Following an evaluation by Public Systems Evaluation, Inc. [Tien et al., 1978 (b)], it was concluded that the split-force patrol approach caused a significant increase in both the call-for-service response productivity and the Patrol Division's arrest-related productivity; the approach also allowed for an overall increase in police professionalism and accountability. Inasmuch as the WDP has continued to function under the split-force procedure ever since the formal experiment concluded in November 1976, an attempt is made in Section 4 to update the split-force findings.

As alluded to earlier, the idea for a MOD program in Wilmington came from the split-force findings. In particular, as explicitly stated by Tien and Valiante [1979], the findings which prompted the MOD program were i) the realization that *citizen satisfaction is a function of expectation* and that a citizen is willing, for example, to accept a 30-minute delay in response to his/her noncritical call (i.e., a call-for-service which does not require an immediate or

* For convenience, a glossary of terms that are used in this report is contained in Appendix B.

emergency response), provided he/she is *formally advised* of the delay; and ii) the knowledge that some 86.1 percent of all calls for service were deemed to be noncritical. Corroboration of these findings by other police research efforts (e.g., Pate et al. [1976] and Kansas City Police Department [1977]) strengthened the WDP's resolve that the demand for police services can be managed and convinced the National Institute of Justice that such an effort -- like the earlier split-force approach -- merited an explicit test and evaluation.

1.3 SCOPE OF REPORT

The report is comprised of five parts, including ten sections and four appendices. Part I is essential reading since it describes the evolution of the program's approach, design, and evaluation. The casual reader can then turn to Part IV, which presents the program's results and national implications. Parts II and III address the issues of process and impact in some detail.

In brief, Part I consists of three background discussions. Section 1 defines the management of demand (MOD) approach, reviews the context of the Wilmington MOD program, and surveys the scope of the report. Section 2 details the design of the program, including a discussion of design considerations; an accounting of how the various MOD program components evolved; and a summary description of the program as it was finally implemented. Section 3 explains the evaluation's approach, design, and conduct.

Part II, consisting of two sections, addresses the various process measures. Section 4 updates the major split-force findings

contained in Tien et al. [1978], including a summary of the performance statistics; a review of the status of the split-force elements; and an assessment of the split-force approach as it has been continued in Wilmington. Section 5 provides additional process measures and relates them to specific MOD program elements.

Part III, encompassing the impact measures, consists of Sections 6 through 8, which focus on the crime and related statistics, the overall reactions to the MOD program, and the productivity impacts, respectively.

Part IV concludes the main portion of the report with a summary of the evaluation results in Section 9 and a discussion of national implications in Section 10.

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

2 DESIGN OF PROGRAM

Following the National Institute of Justice's approval of its application in November 1977, the Wilmington Department of Police (WDP) undertook to translate the management of demand (MOD) concept into a programmatic reality. Site visits and planning sessions were carried out in early 1978.

Of particular importance to the program design process were two sets of site visits, which were conducted in mid-January and early March 1978. The first involved visits to the San Jose, Oakland, Fremont, and Sunnyvale police departments; the second took the WDP staff and other team members to Dallas and Las Vegas to meet with local law enforcement personnel. The site visit team included representatives from the City of Wilmington (i.e., Criminal Justice Coordinator), the WDP (i.e., Chief of Police, Inspector of Operations, Captain of Patrol, Captain of Investigations, and a planning sergeant), the National Training Laboratory (i.e., WDP's training consultant), and Public Systems Evaluation, Inc. (PSE). In hindsight, the site visits were essential to the program design process since they not only provided examples of some implemented alternative response strategies, but also an opportunity for the site visit team members to be together and to get to know each other on a working level.

Several planning or working sessions were held. Perhaps the most significant single planning activity took place at PSE in Cambridge,

Massachusetts, on March 22-24, 1978. During those three days an intensive working session was convened by top-level WDP officials; key administrative and programmatic decisions regarding the scope and content of the MOD program were made during this session. With PSE staff providing technical assistance, the following WDP officials participated in the session:* the Inspector of Operations, the Captain of Patrol, the Captain of Detectives, the Captain of Planning and Research, and a planning sergeant. In addition, the Criminal Justice Coordinator for the City of Wilmington and the training consultant were in attendance. Having conducted a similar working session at PSE's office while planning the earlier split-force experiment, the WDP officials realized the importance of sequestering themselves away from the constant interruptions which prevail at WDP headquarters. Once again, the success of the working session was in part due to this important factor.

PSE's role in the session was confined to that of technical assistance. Specifically, the PSE staff prepared a detailed statistical analysis of dispatch and patrol data to serve as both an update to the split-force evaluation report [Tien et al., 1978 (b)] and as a baseline for MOD program planning. In addition, PSE presented the results of its first MOD-focused client attitude survey** as well as a preliminary analysis of those results. More generally, PSE offered insights at the

*The Chief of Police was unable to attend the session, but he reviewed and formally approved all the resultant decisions.

**PSE undertook two client attitude surveys for this evaluation effort; one in February 1978 and the other in June 1979. The results of both surveys are summarized in Appendix C; the surveys were of Wilmington residents who had recently called the WDP for assistance on a noncritical (i.e., non-emergency) matter.

session regarding the potential impacts of various alternatives. All program design decisions, however, were made exclusively by the WDP.

A final remark about the working session concerns the use of two computer-based patrol car allocation models. During the split-force planning process, PSE assisted the WDP in applying both the Patrol Car Allocation Model (PCAM) [Chaiken and Dormont, 1975] and the Hypercube Queuing Model [Larson, 1975] to the design of the split-force experiment. The former model is used to assist in determining the number of Basic patrol units required as well as their temporal allocation; while the latter model assists in the spatial allocation of the units. In the period between the split-force experiment and the MOD program, both the PCAM and Hypercube models were installed on the New Castle County, Delaware, computer system for use by the WDP. In support of the March working session, PSE prepared a series of PCAM and Hypercube computer runs to assist the WDP officials in assessing the impact of selected planning decisions. During the working session additional runs were executed with the WDP decision makers interacting directly with the models and using the results as aids in their decision making. Because of the WDP's split-force experience with the models and their Wilmington-based "proprietorship" of the models, the WDP officials were conversant with the models' input requirements, assumptions, and output measures, and were thus able to make appropriate and efficient use of the models.*

* The WDP's continued dependence on and use of the two computer-based patrol car allocation models is quite unique and noteworthy; it demonstrates that analytical models can play a central role in policy analysis and decision making. Chaiken [1977] has identified other applications of the PCAM and Hypercube models.

Shortly after the March working session, the WDP [1978] issued a formal planning report detailing the Wilmington MOD program. The contents of the report are summarized in Section 2.2 which describes the program components, while program design considerations and implementation issues are discussed in Sections 2.1 and 2.3, respectively.

2.1 DESIGN CONSIDERATIONS

Like the split-force experiment, this new Wilmington program was designed to test a concept or hypothesis -- that it is possible and practical to increase police productivity by managing the demand for police services. As stated earlier, the design of such a test required careful and extensive planning leading to the formulation of major administrative and programmatic decisions which had to be resolved by the WDP officials.

Perhaps foremost in the minds of the WDP decision makers was the major shift in philosophy or policy that is implicit in the MOD approach. As with most law enforcement agencies, the WDP had for many years operated under a policy which required that virtually all citizen calls for service should be responded to by a patrol unit. On the other hand, as detailed in Section 1.1, the MOD approach emphasized the adoption of alternative response strategies which were potentially more cost efficient and at least as effective as the traditional approach of dispatching a patrol unit. How would the citizenry react to such a dramatic departure from tradition? Related questions focused on: What alternatives might be acceptable to the Wilmington citizenry? How would these alternatives be implemented? And to what extent should the alternatives be exercised?

The adoption of alternative response strategies would, of course, reduce the response-oriented or Basic patrol workload. To what extent, then, could the Basic patrol force be reduced? Finally, by what process could a Communications Unit that had heretofore primarily acted as a link by which a citizen's demand was transmitted to the appropriate patrol unit be changed to include a decision-oriented call-screening role?

In resolving the above issues, the WDP was guided by four key considerations, dealing with the need, first, to develop realistic alternative response strategies; second, to consider Basic patrol utilization within the split-force framework; third, to establish a feasible program schedule; and, fourth, to maintain a modicum of decision flexibility throughout the course of the program.

REALISTIC ALTERNATIVES

Historically, as alluded to earlier, urban police departments have viewed it as their duty to provide rapid and personal response to citizen complaints or calls for service. In fact, the recent study by Sumrall et al. [1980] determined that "Police departments operate on the premise that immediate response by a sworn officer is the most desirable response to nearly all calls for service." It was precisely this philosophy that had prevailed in the WDP until the MOD program. Although the program's designers were willing to challenge and change this traditional philosophy, they recognized the political realities and potential problems of such a commitment. The decisions regarding the types of complaints which could potentially receive an alternative response and the response process itself had not only to be *carefully* thought out but also *acceptable* to the Wilmington citizenry.

In partial response to this concern, PSE conducted its first client attitude survey (which is summarized in Appendix C) prior to the March 1978 working session so that several questions aimed at identifying potentially acceptable alternative response strategies could be included in the survey. This timely effort was essential to the program design process. The specific results and implications of both this survey and a subsequent follow-up survey are discussed throughout the text of the report.

BASIC PATROL UTILIZATION

As stated earlier, what sets the Wilmington MOD program apart from other alternative response applications was the commitment made at the design stage of the program to reduce the size of the Basic patrol force in concert with the achieved reduction in Basic patrol workload. This commitment was especially difficult to make, since it is always politically unpopular to reduce the size of a work force. Moreover, the commitment meant another productivity-oriented realignment of the patrol force, which, as detailed in Section 1.2, had recently been split into two units to enhance patrol productivity. In tracing the evolution of the split-force experiment, one finds that prior to splitting the patrol force, the WDP had an almost constant patrol manning level around-the-clock. With the advent of split-force and the variable allocation scheme made possible by the use of PCAM, Basic patrol units were deployed in accordance with temporal demand patterns; no more than twelve -- and as few as five -- Basic units were deployed in any contiguous four-hour period. For a long time, the reality of having only five Basic units available during the period between 4 A.M. and 8 A.M. was difficult for the patrol officers to accept -- but

now, the MOD program "threatened" to entail further reductions! Despite tneir apprehension, the program's designers realized that without a formal commitment to reduce the number of Basic patrol units, and to free patrol officers for assignment elsewhere, the MOD objective of improving response-related productivity could not be achieved.

Perhaps this issue, more than any other, attests to the vital link between the split-force and the MOD program. Were the response to call-for-service function not primarily vested in the Basic patrol force, it would have been virtually impossible to effect the MOD program -- that is, it would have been extremely difficult to remove patrol units from service if their responsibility included both preventive patrol and call-for-service response.

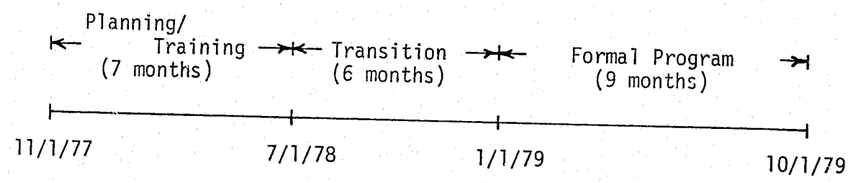
PROGRAM SCHEDULE

As originally envisioned, the 18-month MOD program was divided into tnree consecutive phases: a 6-month planning and training period; a 6-month transition period; and a 6-month test period during which the formal MOD program -- with all its components -- would be fully implemented. The program designers were insistent on the lengths of the first two phases: they felt that at least six months would be required to both plan (i.e., design) the program and train the affected personnel, and that six more months would be needed in order to allow for a gradual reduction of the size of the Basic patrol force. In hindsight, their cautious approach to the program schedule, especially in regard to the planning/training and transition periods, was not only realistic, but insured the successful implementation of the formal MOD program.

Although the original program schedule was sound from a programmatic standpoint, it was lacking from an evaluation perspective: it only allowed for a 6-month formal test period. At PSE's suggestion, the initial 18-month program schedule was extended so that an additional three months were added to the test period. In sum, and as illustrated in Exhibit 2.1, the final 22-month program schedule consisted of a 7-month planning/training period, a 6-month transition period, and a 9-month test period during which the formal MOD program was fully implemented.

Exhibit 2.1

Final Program Schedule



FLEXIBILITY

While committed to implementing the MOD program as designed, the WDP retained the option to institute design changes consistent with their perception of agency responsibility and accountability. However, recognizing that changes could potentially corrupt the integrity of the program, thus threatening the validity of the resultant findings, the WDP agreed to consult PSE *before* any changes were made.

As it turned out, only a few programmatic changes, including the schedule revision described above, were instituted: they are identified and discussed in Section 2.3.

2.2 PROGRAM COMPONENTS

In developing a program to test the MOD approach, the WDP decided to test, in terms of the framework identified in Section 1.1, the *reactive* or *response-oriented* aspect of MOD. In particular, the WDP felt that its response-related productivity could be improved if alternative response strategies could be developed and implemented. Productivity improvement, as perceived by the WDP, would be achieved if the effectiveness of WDP responses to calls for service could at least be *maintained*, while at the same time *fewer* resources would be required to carry out those responses. The WDP's desire to at least maintain its response effectiveness was based on the recognition that it had already achieved a relatively high level of effectiveness, even before the split-force experiment [Tien et al., 1978 (b)]. Consequently, in productivity (i.e., output over input) terms, the WDP hoped to demonstrate how the same output level of police services could be provided using a lower input level of resources.

Maintenance of WDP effectiveness -- in terms of citizen satisfaction, crime level, arrest rate, clearance rate, and other related measures -- was considered to be the first objective of the Wilmington MOD program. The four remaining program objectives listed in Exhibit 2.2 pertained to activities which were required to establish the MOD program; as such, they corresponded to the four basic *components* of the program. The first two components -- the establishment of a complaint-screening function and a call-back function -- supported the third component of alternative

Exhibit 2.2

Program Objectives

1. To maintain the effectiveness of WDP performance as measured by:
   - 1.1 Citizen satisfaction
   - 1.2 Crime level
   - 1.3 Arrest rate
   - 1.4 Clearance rate
   - 1.5 Other related measures

2. To establish a complaint-screening function resulting in:
   - 2.1 Alternative response strategies
   - 2.2 A decrease in the volume of complaints dispatched to Basic patrol of 20 percent

3. To establish a call-back function resulting in:
   - 3.1 Alternative response strategies

4. To establish alternative response strategies consisting of:
   - 4.1 Formally delayed response
   - 4.2 Adjusted response
   - 4.3 Walk-in response
   - 4.4 Phone report response
   - 4.5 Specialist appointment response

5. To establish a Basic patrol reduction resulting in:
   - 5.1 A decrease in the number of Basic patrol units of at least 20 percent
   - 5.2 Maintenance of an average Basic patrol unit utilization factor of 33.5 percent
   - 5.3 Maintenance of an average response time for critical calls for service of less than 7 minutes

response strategies, which, when implemented, provided the means of carrying out the fourth component (i.e., the reduction in the size of the Basic patrol force). Exhibit 2.3 illustrates the relationships between the first three program components in terms of the MOD response to calls for police service; this exhibit is further discussed in the following subsections which consider the four program components and their corresponding objectives in greater detail.

COMPLAINT-SCREENING FUNCTION

The hub of the program is in the Communications Center, for it is here that citizen demand for police services first impacts upon the WDP. Thus, the first step taken by the WDP in designing the program was to reassess the structure and procedures associated with the handling of citizen complaints or calls for service. In the context of the various communications functions identified in Exhibit 2.4, the WDP sought to upgrade the complaint-taking function to a complaint-*screening* function so that, as illustrated in Exhibit 2.3, calls for service could be *prioritized* and, if applicable, designated for an alternative response (i.e., either *delayed* or *diverted*).

PRIORITIZING CALLS FOR SERVICE

As an initial step to managing the demand for police services, it was necessary to prioritize the demand. Although during the split-force experiment and prior to MOD, a complaint taker could designate a call for service as being either "In Progress," "Basic Patrol Critical," "Basic

Exhibit 2.3

MOD Response to Calls for Police Service

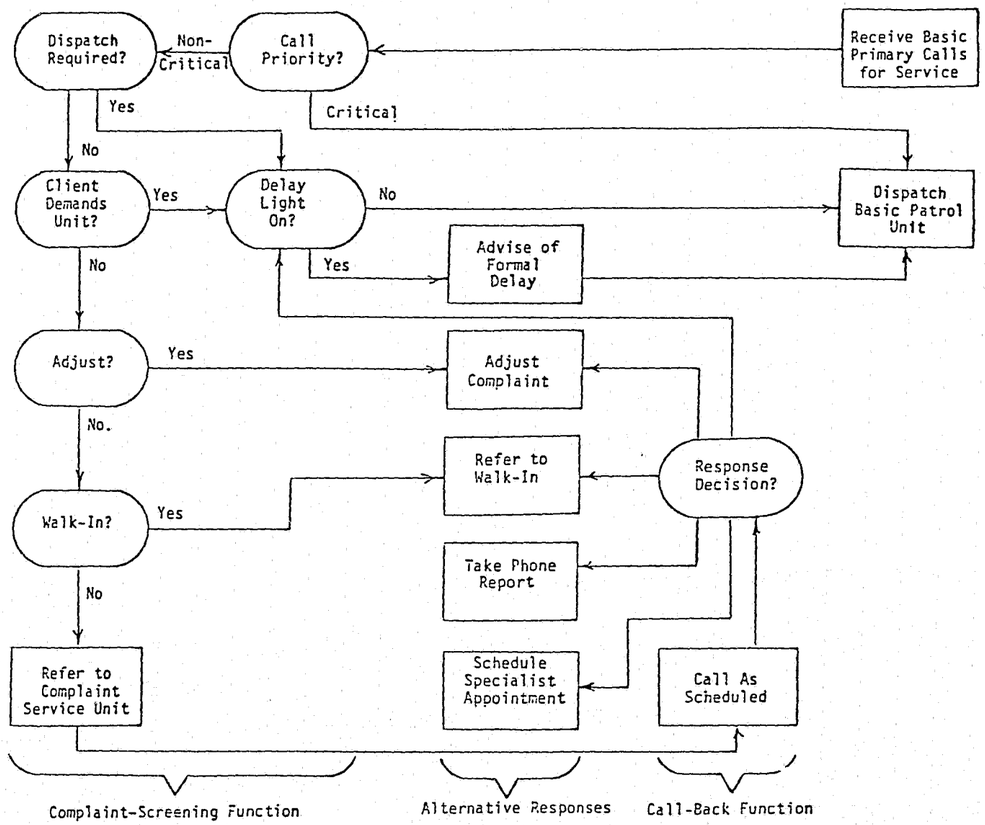


Exhibit 2.4

WDP Communications Personnel and Functions

Personnel [1]		Functions				
Position	Status	Supervise	Take Complaints	Dispatch Calls	Prepare Reports	Operate Data Center [2]
Radio Sergeant	Sworn	x				
Dispatcher	Sworn or Civilian			x		
Radio Cadet (2)	Civilian		x	x		x
Police Service Technician	Civilian		x	x	x	
Data Clerk	Civilian		x			x

[1]Each of the four Communication platoons is staffed by six individuals. Each platoon rotates through all three shifts on a 28-day cycle (in which eight are off-duty days) -- in parallel with its Basic patrol counterpart (e.g., Communications platoon A would always be on duty with Basic platoon A).

[2]Data Center functions include processing incoming warrants, initiating teletype messages, notifying tow trucks, entering wanted persons data into the computer, and running National Crime Information Center (NCIC) checks.

Patrol," or "Other,"* Tien et al. [1978 (b)] reported that the complaint takers found the second and fourth categories to be ambiguous and they therefore tended to classify calls as either "In Progress" or "Basic Patrol." In accepting this fact, the WDP decided to compress the four categories into two -- a "*critical*" (i.e., requiring an immediate or emergency response) and a "*noncritical*" category -- for the purpose of the MOD program. It was then obvious that *only* noncritical calls for service could be considered for MOD responses. However, based on split-force data, Tien et al. [1978 (b)] found that 86.1 percent of all calls for service could be classified as noncritical in nature.

Other priority-related procedures were decided upon by the WDP officials in support of the MOD program. For example and as a guide to complaint takers, an attempt was made to identify priority designation(s) for each type of complaint or call for service; Exhibit 2.5 summarizes this attempt. Additionally, whereas the split-force guidelines prohibited Structured patrol units from being dispatched to a call for service other than an in-progress call, the MOD guidelines involved a similar prohibition and restricted Structured units to responding to or assisting only on critical complaints. Deviations from this rule required the submission of a "deviation slip" to the MOD Project Director.

DELAYING CALLS FOR SERVICE

During peak demand periods when all Basic patrol units were busy, the split-force guidelines prescribed that low-priority or noncritical complaints be delayed and the complainants be *formally* advised of the

* See Exhibit C.1 in Appendix C for a display of the call-for-service card employed before MOD.

Exhibit 2.5

Call-for-Service Priority Designations

Radio Code	Type of Complaint	Critical	Non-Critical
10-10	accident (property damage)		x
	accident (personal injury)	x	
	accident (hit and run)	x	x
10-11	second fire alarm		x
10-12	request assistance at headquarters	x	x
10-23	direct traffic		x
10-24	send assistance to scene	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 2.5
(page 2 of 3)

Radio Code	Type of Complaint	Critical	Non-Critical
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
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	

Exhibit 2.5
(page 3 of 3)

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

delay. Critical complaints were still to be serviced by either reassigning a busy Basic patrol unit or dispatching a Structured patrol unit. When all Basic units are tied up, the communications dispatcher is supposed to activate a red "delay" light above the dispatch station; and the complaint taker then advises every noncritical complainant that it will take approximately 30 minutes for a patrol unit to respond. The client surveys, conducted as a part of the split-force evaluation [Tien et al., 1978 (b)], indicated that WDP clients are no less satisfied with a delayed response, provided they are advised of it, *a priori*. In fact, the client survey conducted by PSE in March 1978 in preparation for the Cambridge working session indicated that more than 46 percent of all those surveyed were willing to wait at least one-half hour to one hour for a response to their complaints (see Exhibit C.9, Question 16). Given this continued level of client satisfaction, the WDP saw no reason to alter their formal delay policy and decided to continue it under the MOD program.

DIVERTING CALLS FOR SERVICE

As indicated in Exhibit 2.3, the complaint taker, after prioritizing the complaint or call for service, determines if the call could be *diverted*; that is, if it could be handled by a means other than the dispatch of a Basic patrol unit. (It should be noted that although the formal delay procedure can be considered to be an appropriate MOD response strategy, it does not result in a diverted call since it is eventually handled by a Basic patrol unit.) As suggested in Exhibit 2.3, the complaint taker can divert a call by one of three methods.

First, the complaint taker could *adjust* the call on the telephone. However, knowing that telephone adjustments had routinely been made in the

past, the WDP decision makers determined to redefine the term "adjustment" for the purpose of this program. Heretofore only noncriminal complaints that were clearly not related to police responsibilities had been adjusted (e.g., referral of a complainant to an outside agency). Routinely, no record (i.e., call-for-service card) was created to record the incident -- and for the MOD program, such practice would continue, because it was essential to separate calls for service that had received no response before the program from those receiving alternative responses during the program. On the other hand, many noncritical complaints initially thought to be, for example, theft, malicious mischief, or property damage, turn out upon further questioning not to be crimes at all -- such incidents often are, in reality, minor family disputes or misunderstandings, not crimes. In such cases, the complainant is not attempting to have someone placed under arrest but rather to solicit advice or information which can help to resolve the problem. In the past, the WDP would send a patrol car to investigate such complaints. Under MOD, it would now be incumbent upon the complaint taker, in a decision-making posture, to elicit sufficient complaint-based information to determine the true nature of such an incident. In instances such as those described above, where no arrest is being sought but rather information is being solicited, the complaint could be "adjusted." Thus, the criterion for telephone adjustment focused on incidents in which the WDP could have dispatched a Basic unit to respond prior to the program, but now would clear the complaint by phone, instead. A call-for-service card was to be completed to record all adjusted complaints. The imprecision of this criterion created some initial confusion on the part of the complaint takers -- a situation partly remedied through additional training.

A second method by which the complaint taker could divert a call for service is by having the complainant *walk in* to WDP headquarters to make a report in person. This method seemed ideally suited to, for example, complaints which would require the swearing out of a warrant by a complainant who has been threatened or assaulted, since no police action is possible until the warrant is drawn. It also seemed likely that complainants who work in the downtown area might find it simpler to walk in to WDP headquarters during their work day rather than wait at home for a possible delayed response to their noncritical complaints. The first client survey indicated that fully 37 percent of the respondents would be willing to come to the WDP in person to handle the type of problem for which they had originally called for service (see Exhibit C.9, Question 18). WDP clients who had registered burglary and larceny complaints constituted a large proportion of those expressing willingness to walk in. Program procedures called for the complaint taker to specifically ask all noncritical complainants, not receiving a dispatched unit or adjustment, to walk in to the WDP headquarters. Depending upon the nature of the complaint, the complainant was referred directly to the Detective Division, Youth Aid Division, or another appropriate organizational unit within the WDP.

A final third method by which the complaint taker could divert a call for service is by having another police officer *call back* the complainant at a prearranged time to identify an alternative means of handling the complaint (e.g., a report taken over the telephone). The call-back function is discussed in greater detail in the next subsection.

In sum, it is obvious that the diversion of calls for service away from the Basic patrol force was the main purpose of the Wilmington MOD

program. Significantly, the results of the first client survey indicated that 34 percent of the respondents were willing to accept a response other than an immediate or formally-delayed patrol unit to their noncritical complaints (see Exhibit C.9, Question 20). These findings, however, were tempered by the recognition that the survey respondents had already received WDP services, and the sample population was biased by the availability of substantial complaint-based data (i.e., name, address, and/or telephone number of complainant). Furthermore, virtually all diversion of calls for service would be taking place only during the day and evening shifts, the period in which the call-back unit would be staffed. Taking all these factors into consideration, the WDP established a more modest performance target -- to decrease the volume of complaints dispatched to Basic patrol by at least 20 percent, as stated in Objective 2.2 in Exhibit 2.2. This would permit significant reductions to be made in Basic patrol level, while allowing a margin for further decreases, should they be warranted.

CALL-BACK FUNCTION

In recognizing that complainants had to be called back on schedule and calls should not be "lost" in the system, the WDP was confronted with the decision of where to locate the call-back function organizationally. Among the factors entering into the decision was the impracticality of adding the activity to the Communications Division's burgeoning set of responsibilities. A decision was therefore made to create a new organizational entity designated the Complaint Service Unit (CSU). Procedurally, the newly-formed CSU would receive, via periodic transmittal of call-for-service cards, a record of all complaints referred to call back, complete

with incident-related information, as well as a scheduled time for return of the call. Staffed by experienced sworn personnel during the day and evening shifts (i.e., between 0800 and 2400 hours), seven days a week, the CSU would assume full responsibility for all call-back-related decisions. With the aim of establishing a centralized, coordinated "demand analysis" unit, the Crime Analysis Unit was paired with the new Complaint Service Unit to form a Resource Management Division. Section 2.3 discusses this major organizational change in greater detail.

As illustrated in Exhibit 2.3, it is the function of the CSU to identify, if possible, an appropriate alternative response strategy for handling the complaint; otherwise, it would refer the complaint back to Communications and a Basic patrol unit would be dispatched. In addition to exercising the telephone adjustment and walk-in options described earlier, the CSU could also take a report over the telephone or schedule an appointment for a "specialist" unit. When asked whether the complainant would be willing to have a problem similar to his/her complaint or record handled by telephone, the first client survey found that, with a predominance in the larceny, malicious mischief, and traffic accident categories, 30 percent of the respondents answered in the affirmative (see Exhibit C.9, Question 17). These categorical findings are predictable since the complainant is most probably making a report solely to satisfy insurance claim requirements.

In developing the scheduled specialist appointment option, the WDP decision makers posed the following rhetorical question: What if a certain noncritical complaint in fact warrants the personal response of a sworn officer, but that response need not be immediate or even within a half

hour? Examining the results of the first client survey, they zeroed in on three particular findings. First, almost 35 percent of the respondents indicated that for their particular complaints they would rather have a police specialist come when available, than have a patrol car respond immediately (see Exhibit C.9, Question 15). Second, 25 percent of the respondents felt that a response that occurred after one hour but within 24 hours would be acceptable (see Exhibit C.9, Question 16). Finally, when offered a choice among immediate response, call-back, walk-in, or a patrol car when available, almost 14 percent opted for the latter (see Exhibit C.9, Question 20). Considering the break from tradition the program represented, these percentages, while low, were considered significant. Cumulatively, these facts persuaded the WDP to designate a Structured patrol unit as the Specialist unit between 0900 and 2100 hours, seven days a week. The responsibility of the Specialist unit would be to respond to appointments scheduled for it by the CSU. When not responding to appointments, the Specialist unit would revert to a Structured (i.e., either preventive or directed) patrol assignment, and would at all times be treated by Communications as a Structured unit. At the start of his/her tour, the officer assigned to the Specialist unit would pick up an assignment sheet identifying the scheduled appointments; additionally, the CSU could schedule other appointments during that tour, advising the Specialist through Communications. In selecting the "specialist" designation, the WDP decision makers believed that the unit would be called upon to service certain recurring types of complaints, so that it would in time become a specialist in these types of complaints. It was anticipated, for example, that after-the-fact burglaries, where no suspect is present

and the scene should be inspected, might lend themselves to this alternative response strategy.

ALTERNATIVE RESPONSE STRATEGIES

In the above consideration of the complaint-screening and call-back functions, the various alternative response strategies, which constitute the third component of the MOD program, have already been discussed. However, as the WDP decision makers recognized, there are two aspects about this program component which should be emphasized.

First, as stated earlier, this third program component could not be effected without the support of the first two program components (i.e., establishing the complaint-screening and call-back functions). In turn, without the successful implementation of this third component, the fourth program component (i.e., reducing the size of the Basic patrol force) could not be carried out. Thus, alternative response strategies are central to the Wilmington MOD program.

Second, in terms of the MOD framework depicted in Exhibit 1.1, the purpose of this third component is two-fold: to *decrease demand variance* (through the formal delay strategy)* and to *divert demand* (through the phone adjustment, walk-in, phone report, and specialist appointment strategies).** However, in diverting demand away from the traditional

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* It should be noted that the decrease in demand variance occurs because demand peaks are in effect decreased and the corresponding demand shifted to later points in time as calls for service are delayed during busy periods.

** It should be noted that diverting demand is *not* equivalent to a decrease in demand level: the demand must still be met -- it has just been diverted or shifted to other resource(s).

Basic patrol resource, would the diverted demand be handled by less costly or more efficient resources? The plan was for some of the diverted demand to be handled by a less costly resource (i.e., civilian complaint takers), while the remaining demand was to be handled by sworn officers who could be operating more efficiently in the call-back and specialist capacities. For example, while a Basic patrol unit (manned by one or two officers) typically handles five or six complaints in an 8-hour shift*, a call-back or specialist officer should be able to handle two to three times as many complaints in the same period -- because of the scheduled (i.e., non-random) nature of the latter's complaint assignments. Obviously, as stated earlier, the degree to which alternative response strategies can achieve overall productivity gains is very much a function of the extent to which the Basic patrol resources can be reduced, which is the next subject matter to be considered.

BASIC PATROL REDUCTION

In concert with the objective of diverting 20 percent of the calls for service (i.e., Objective 2.2 in Exhibit 2.2), the WDP decided that the number of Basic patrol units could also be reduced by a corresponding 20 percent -- this then became Objective 5.1, as indicated in Exhibit 2.2. Realizing that, on the one hand, diverting calls for service would tend to decrease both the Basic unit utilization factor (i.e., fraction of time a Basic patrol unit is responding to calls for service during an 8-hour shift) and the response time (i.e., length of time between the receipt of a call for service and the time a patrol unit arrives at the scene of the incident) to the remaining calls, while, on the other hand, reducing the

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* These figures do not include the two or three occasions in which a Basic patrol unit typically "backs-up" another unit during an 8-hour shift.

number of Basic patrol units would tend to increase both variables, the WDP decided that the variables should be *maintained* at approximately the same levels which were achieved during the split-force experiment. Thus, as indicated in Exhibit 2.2, Objective 5.2 states that the average Basic unit utilization factor should be maintained at 33.5 percent, while Objective 5.3 states that the average response time for critical calls for service should be less than 7 minutes.

The decision to reduce the number of Basic patrol units by 20 percent was primarily based on analyses performed using the Patrol Car Allocation Model (PCAM), whose requirements are summarized in Exhibit 2.6. As indicated in Exhibit 2.7 (which contains some PCAM results presented in the March 1978 working session) and at a 20 percent reduced call-for-service level during tours 3 through 6 (i.e., 0800 - 2400), the 42-car plan* yielded an acceptable unit utilization factor of 33.6 percent (i.e., approximating Objective 5.2). Since the WDP was operating at a 54-car plan (i.e., 27, 8-hour patrol units) before MOD, accepting the 42-car plan as a part of the MOD program implied a *22.2 percent* reduction in Basic patrol units. Recognizing the difficulty of going from a 54-car plan to a 42-car plan, the WDP insisted on a six-month transition period during which a 50-car plan would be in effect. As it turned out and as summarized in Exhibit 2.8, the WDP reached the 42-car plan in two steps:** first operating at a 50-car plan for six months and then a 46-car plan for one month.

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* As a result of earlier use of the PCAM model in the split-force experiment, the WDP found it convenient to divide a day into six 4-hour tours or periods and to plan in terms of 4-hour patrol cars or units -- thus the 42-car plan, for example, implies 42, 4-hour patrol units or, equivalently, 21, 8-hour units.

** It should be noted that at each step PCAM was used with the most up-to-date data available to develop the appropriate car plan.

Exhibit 2.6

PCAM Requirements

INPUT DATA

1. Area and patrollable street miles of each precinct
2. Average number of calls for service (CFS) and average service time by hour of day
3. Fraction of non-CFS workload
4. Definition of tours
5. Average number of patrol units by tour by precinct
6. Fraction of calls of each priority
7. Response speed
8. Patrol speed

PCAM MODEL

1. Analytical model
2. Deals with temporal allocation of patrol units
3. Model assumptions:
   - Incidents occur according to a Poisson process
   - All CFS have the same negative exponential service time
   - The system is in steady state during each hour
   - Travel time is estimated from precinct area and response velocity

OUTPUT MEASURES

DESCRIPTIVE MODE

The following performance measures are calculated:

1. Average utilization of patrol units
2. Average travel time to incidents
3. Average patrol frequencies
4. Average number of cars available
5. Fraction of calls delayed
6. Average delay for calls of different priorities

PRESCRIPTIVE MODE

There are three prescriptive capabilities:

1. Allocation of a given number of units to optimize a given performance measure[1]
2. Allocation of the minimum number of units to meet a given constraint[2]
3. Allocation that meets a given constraint and optimizes a given performance measure while meeting that constraint

[1] The available performance measures are:
(i) average fraction of calls delayed in queue, (ii) average length of time calls are delayed in queue by priority, and (iii) average response time (i.e., queueing plus travel time).

[2] The available constraints are:
(i) average utilization of an effective car, (ii) average travel time, (iii) average number of cars available, (iv) patrol hours per suppressible crime, (v) patrol frequency (passings per hour), (vi) minimum number of cars, (vii) fraction of calls delayed, (viii) average delay of calls by priority, and (ix) response time.

Source: [Tien and Colton, 1979, p. 75]

Exhibit 2.7

Summary of PCAM Analyses

(a) Actual Call-for-Service Level[1]

Tour	Prescriptive[2] 35-Car Plan		Descriptive[2] 46-Car Plan		Descriptive[2] 50-Car Plan		Descriptive[2] 54-Car Plan	
	Number of Basic Units	Unit Utilization Factor	Number of Basic Units	Unit Utilization Factor	Number of Basic Units	Unit Utilization Factor	Number of Basic Units	Unit Utilization Factor
1 (0000-0400)	6	0.395	8	0.296	8	0.296	8	0.296
2 (0400-0800)	3	0.401	5	0.240	5	0.240	5	0.240
3 (0800-1200)	6	0.469	7	0.402	7	0.402	7	0.402
4 (1200-1600)	6	0.554	8	0.416	10	0.332	10	0.332
5 (1600-2000)	8	0.481	10	0.385	10	0.385	12	0.321
6 (2000-2400)	6	0.535	8	0.402	10	0.321	12	0.268
Average	5.8	0.479	7.7	0.365	8.3	0.335	9	0.311

(b) Reduced Call-for-Service Level[1] (By 20% in Tours 3-6)

Tour	Descriptive[2] 40-Car Plan		Descriptive[2] 42-Car Plan		Descriptive[2] 46-Car Plan		Descriptive[2] 50-Car Plan	
	Number of Basic Units	Unit Utilization Factor	Number of Basic Units	Unit Utilization Factor	Number of Basic Units	Unit Utilization Factor	Number of Basic Units	Unit Utilization Factor
1 (0000-0400)	7	.338	7	0.338	8	0.296	8	0.296
2 (0400-0800)	4	.300	4	0.300	5	0.240	5	0.240
3 (0800-1200)	6	.375	7	0.321	7	0.321	7	0.321
4 (1200-1600)	7	.378	8	0.331	8	0.331	10	0.265
5 (1600-2000)	9	.344	9	0.344	10	0.310	10	0.310
6 (2000-2400)	7	.364	7	0.364	8	0.318	10	0.255
Average	6.7	.353	7.0	0.336	7.7	0.307	8.3	0.282

[1]Based on sample of 1977 call-for-service data.

[2]Refers to the manner in which PCAM was applied: as indicated in Exhibit 2.6, PCAM can be applied either in a prescriptive or descriptive mode.

Exhibit 2.8

Temporal Allocation of Basic Patrol Units

Shift	Tour	Hours	Number of Basic Patrol Units per Tour			
			Before MOD (7/1/77-6/30/78)	Transition (7/1/78-12/31/78)	During MOD (1/1/79-1/31/79)	During MOD (2/1/79-9/30/79)
Midnight	1	0000-0400	8	8	7	7
	2	0400-0800	5	5	5	4
Day	3	0800-1200	7	7	7	7
	4	1200-1600	10	10	9	8
Evening	5	1600-2000	12	10	9	8
	6	2000-2400	12	10	9	8
	Total	0000-2400	54	50	46	42

Following the decision to have a 42-car plan during the MOD program, the WDP had to develop a corresponding spatial allocation scheme and a feasible schedule. Using the Hypercube Queuing Model, whose requirements are summarized in Exhibit 2.9, a spatial allocation for each car plan was developed. As an example, Exhibit 2.10 contains the spatial allocation for the final 42-car plan; it should be noted that although six different allocations are shown, there are only three different patterns, corresponding to 4, 7, and 8 units, respectively. Additionally, an appropriate manpower schedule was developed for each car plan. Because of the desire to maintain four patrol platoons of approximately equal size, an ingenious "push-pull" scheduling mechanism, which was initially developed for use in the split-force experiment [Tien et al., 1978 (b), p. 2-13], was employed to arrive at feasible schedules.

2.3 IMPLEMENTATION ISSUES

In May 1978, the WDP submitted its program planning report [WDP, 1978] to the National Institute of Justice. Except for a minor modification (i.e., the addition of a set of training/orientation objectives), the report was accepted as submitted. Given that the program's time frame called for implementation of the call-back function and for personnel training to be completed by the end of June, the WDP immediately immersed itself in implementation activities.

In the following subsections, three pertinent implementation issues are discussed; they include department reorganization, personnel training, and subsequent program changes.

Exhibit 2.9

Hypercube Requirements

INPUT DATA

REQUIRED

1. Number of responding patrol units
2. Number of reporting areas
3. Average number of calls for service (CFS) per hour in each reporting area
4. Location (i.e., coordinates) of each reporting area -- from city map
5. Number and identities of reporting areas in each district
6. Spatial location of responding units (i.e., district of patrol units)
7. Travel speed of responding units
8. Average service time per incident

OPTIONAL

To allow for non-zero travel time within reporting areas:
1. Areas of reporting areas
2. Constant of proportionality as per square root law

To find frequency of patrol passings:
1. Speed of patrol
2. Patrollable street miles of each reporting area

HYPERCUBE MODEL

1. Analytical model -- much less expensive to run then simulation models
2. Deals with spatial allocation of patrol units
3. Model Assumptions
   - CFS generated independently from each reporting area
   - Travel time estimated from an assumed travel speed and rectangular travel distance
   - Location of each response unit while not servicing a call is known statistically
   - Reporting areas are collected together to form districts
   - Exactly one responding unit is dispatched to each CFS
   - CFS that arrive when all units are busy enter a queue which is depleted on a first-come, first-served basis
   - All CFS have the same negative exponential service time

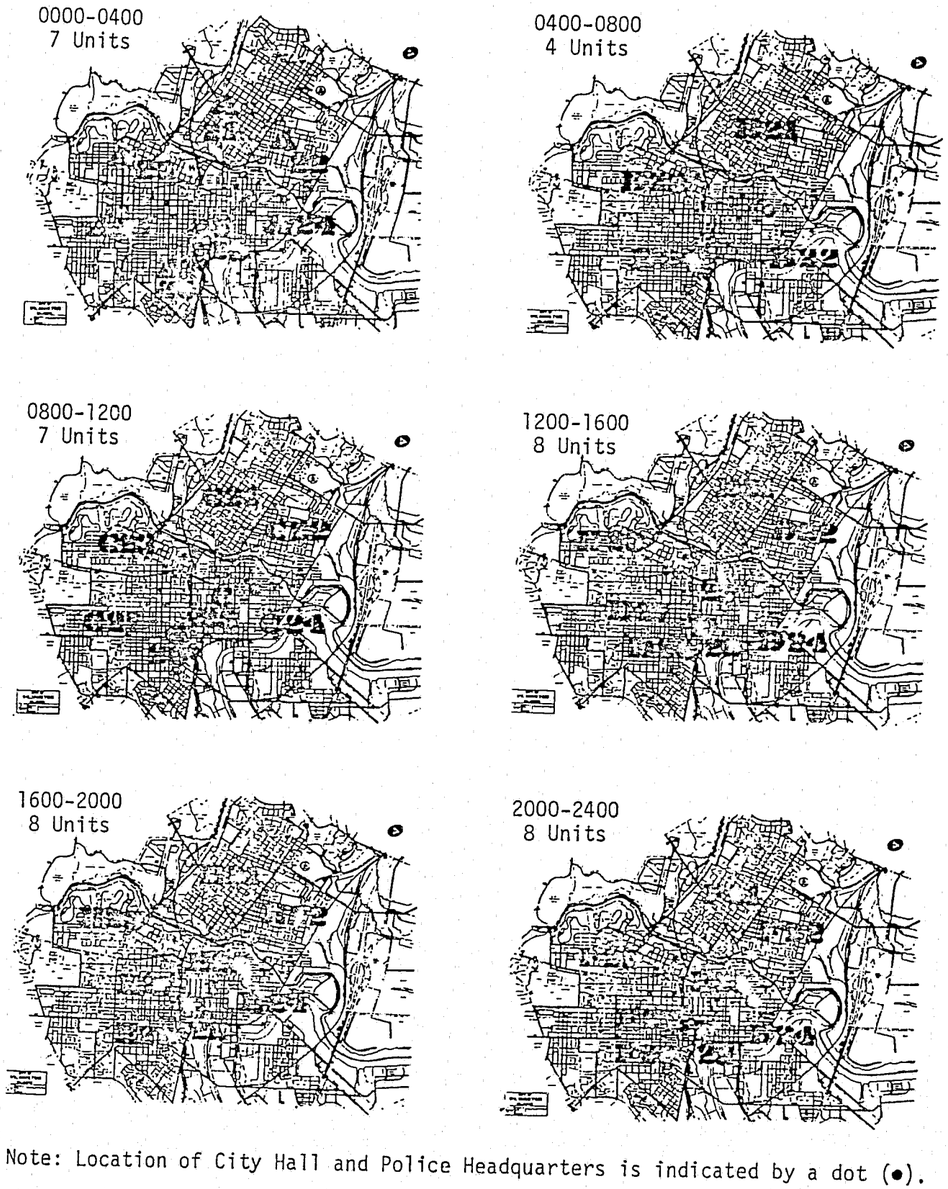
OUTPUT MEASURES

1. City-wide statistics:
   - Probability of saturation (i.e., all units busy)
   - Mean travel time
   - Workload and workload imbalance
   - Percent of interdistrict dispatches
2. Unit-specific statistics:
   - Mean travel time
   - Workload (i.e., utilization)
   - Percent of interdistrict dispatches
3. District-specific statistics:
   - Mean travel time to district
   - Percent of responses in each unit's district handled by other units
4. Optional Statistics:
   - Frequency of preventive patrol passings in each of the reporting areas

Source: [Tien and Colton, 1979, p. 76]

Exhibit 2.10

Spatial Allocation of Basic Units During Program



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

DEPARTMENT REORGANIZATION

As highlighted in Exhibit 2.11 and effective July 1, 1978, the Crime Analysis Division was abolished *per se*, and replaced by the *Resource Management Division*. The new organizational entity consisted of a Crime Analysis Unit and a Complaint Service Unit. The former continued to be responsible for mapping crime trend areas, preparing investigative packages, as well as developing Structured patrol assignments and fixed-area assignments (for Basic patrol units to perform in between handling calls for service). In addition, in February 1979, the Crime Analysis Unit was also assigned the responsibility of screening and assigning all felony and selected misdemeanor complaint reports. The newly formed Complaint Service Unit (CSU) was to be responsible for handling those complaints *diverted* from Basic patrol dispatch and requiring a call-back response. Unit responsibilities were to include acquiring CSU-referred complaint cards from the Communications Division; contacting the complainant, as scheduled; selecting an appropriate alternative response strategy or option; and, if necessary, scheduling the Specialist unit for response by appointment. Staffing of the new CSU was undertaken with care: because of the unit's function, a sergeant and four officers were "hand-picked" to join the unit* -- they were chosen for their enthusiasm, dedication, and ability to communicate.

Other responsible positions in the MOD gram were filled as the planning and design phase progressed. With the support of the Chief of

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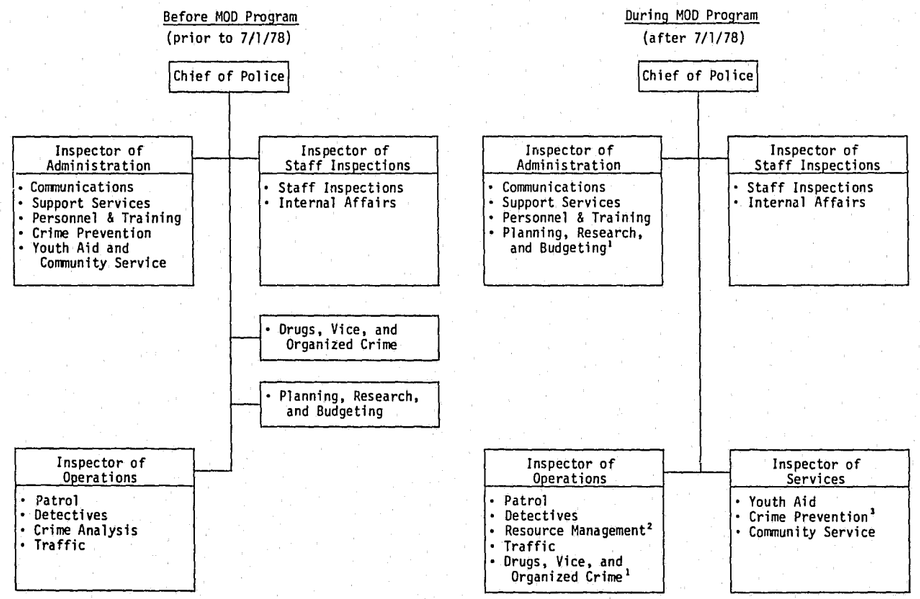
* An equivalent amount of overtime money (provided as a part of the National Institute of Justice grant) was given to the Patrol Division in compensation for the sergeant and four officers who were all drawn from the Patrol Division to form the CSU.

EXHIBIT 2.11

WDP Organization Structure



[1]Transferred from independent status on 10/16/78
[2]Resource Management Division consists of Crime Analysis Unit and Complaint Service Unit
[3]Transferred from Administration on 7/6/78

Police, the Inspector of Operations became the Project Director (the identical role he had filled during the split-force experiment); the Captain assigned as commanding officer of the new Resource Management Division became the Project Manager; and key program roles were established for the Captain of Patrol, the sergeant in charge of the Complaint Service Unit, the supervising sergeant in Communications, and the planning sergeant who coauthored the planning report. The Criminal Justice Coordinator of the City of Wilmington reverted from the role of planner (having also coauthored the planning report) to that of program monitor and provided liaison with PSE, the program's evaluator. The strength of the program management team lay in its intimate involvement in the program design process and the experience gleaned from the conduct of the earlier split-force experiment. In sum, the program's designers had now become its managers.

PERSONNEL TRAINING

The WDP officials placed great emphasis on the significance of the training and orientation aspect of the MOD program. They recognized that assuming new roles required learning new skills. Consequently, several hours of front-end training and orientation were planned, with refresher and on-the-job training/orientation during the program, as needed. Assistance to the WDP was provided under contract by the National Training Laboratories Institute for Applied Behavioral Sciences in the person of a management and training consultant. His responsibilities included guidance in the development of formal procedures and materials for the training of the instructors as well as the affected WDP personnel. Exhibit 2.12 lists the training/orientation objectives as stated by the

Exhibit 2.12

Stated Training/Orientation Objectives

1. All personnel in the Communications unit will be trained to understand and be able to function under the new complaint-screening system.
   - Training will focus on decisions required by the complaint takers
   - Training will highlight extensions of the alternatives now available to the complaint takers
   - Training of complaint takers will feature a public relations approach
2. All personnel in the Complaint Service Unit will be trained to understand and be able to operate under the call-back response system.
   - Training will highlight call-back response alternatives
   - Training will employ role-play techniques to transfer face-to-face methods to telephone methods
3. Other personnel in the Resource Management Division will be trained to back up Complaint Service Unit staff.
4. All Bureau personnel will be oriented to understand the need for determining whether walk-ins have been referred by the Communications unit.
5. All personnel in the Complaint Service Unit will be trained to determine situations appropriate for Specialist units or dispatch.
   - Training will highlight understanding and management of scheduling complexities
6. All personnel in the Communications unit will be trained to monitor the appointment schedule for Specialist units.
7. All patrol personnel will be oriented to understand the role of the Specialist units.
8. All Bureau personnel will be oriented to understand the objectives of the program.
9. All Bureau personnel will have a generally positive attitude toward the program as a result of the training effort.

training consultant in consultation with the WDP. The training/orientation sessions were conducted between May 9 and June 17, 1978, taking place primarily during five consecutive weekends, with special Tuesday and Thursday sessions for the Resource Management Division personnel. The sessions included 12 hours of training/orientation for the resource management personnel,* 8 hours for the communications personnel, 4 hours for the patrol personnel, and 4 hours for the detective personnel. Although the sessions provided adequate training for the resource management personnel** and adequate orientation for the patrol and detective personnel, they did not meet the needs of the communications personnel.

Since the Communications Division was the hub of the MOD decision process, its personnel required intensive training, particularly in understanding the complaint-screening function, and in developing skills to make appropriate call-for-service response decisions. However, no special training materials or methods were employed, other than the use of some exhibits and passages from the planning report [WDP, 1978]. Although, in general, the communications personnel considered the training sessions effective in providing them with an understanding of the complaint-screening function and related complaint-taking procedures (see page 6 of Exhibit D.2, Question 22), their performance throughout the transition period did not demonstrate such understanding. Not only did complaint takers experience substantial difficulty in completing the new call-for-service card

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* All 8 members of the Resource Management Division attended the training sessions to insure back-up support for the CSU, if required.

** The fact that there were only 8 resource management personnel and that at least half of them were "hand-picked" for the job certainly simplified the task of training them to perform the call-back function.

(see Exhibit C.2) correctly, but they also failed to gather sufficient incident-related information on which to base alternative response decisions; as a result, they were very reluctant to exercise the alternative response options. The situation grew so untenable that members of the CSU had to, at various times, take over the complaint-screening function and demonstrate to the complaint takers the "fine art of offering the complainant an alternative response." The complaint takers' lack of understanding of the MOD program was reflected in other ways. Several of them kept referring to all alternative responses as "adjustments." An adjustment, of course, is only one type of alternative response. Other complaint takers, including a communications sergeant, thought that the walk-in option should not be offered until after the call-back option has been declined by the complainant.

In an attempt to remedy these difficulties, additional training sessions for the communications personnel were held in August 1978. Although these sessions seemed to focus more precisely on the problem areas, they tended to degenerate into "rap sessions" and, again, could not be considered to be formal training sessions. As the program progressed and the staff gained experience, many of the complaint-screening problems cleared up, but, to this date, there is still a reluctance on the part of complaint takers to exercise the alternative response options. It is, therefore, the considered judgment of this evaluation that training insufficiencies -- especially the lack of written training materials -- were a primary reason for the program's slow start and continued restraint. What was needed, for example, was a complete set of documented complaint-screening statements which could have been initially used by the complaint takers until they developed confidence in their decision making and

communications skills. In sum, the stated objectives in Exhibit 2.12 can be considered met only in so far as the affected personnel were oriented -- as opposed to trained -- with respect to the MOD program.

PROGRAM CHANGES

Following the design of the Wilmington program, very few adjustments or changes to the program were made. Certainly, none of the changes threatened the potential validity of the evaluation findings. In fact, one change, as discussed earlier in Section 2.1, resulted in the extension of the program schedule; thus, contributing to a more valid evaluation. Another change which has also been discussed earlier (in Section 2.2) was the decision to take an extra, interim step (i.e., the deployment of a 46-car plan) before the final 42-car plan was implemented.

A third programmatic change occurred when the Inspector of Operations -- and program Project Director -- left the WDP, effective December 15, 1978, to assume the job of Chief of the New Castle County Police Department. As can be ascertained from the program schedule (see Exhibit 2.1), this was a critical point in time, marking the end of the transition period and the beginning of the actual program conduct, at the final, reduced 42-car plan. Replacing him in both capacities -- as Inspector of Operations and program Project Director -- was the then Captain of Patrol, who took the new assignment to heart and gave his best effort in directing the program into and through the final but critical nine months of the program. Though he performed well, it must be stated that a significant break in programmatic continuity, which actually began with the inception of the split-force experiment in 1975, took place. As a result of the Patrol Captain's promotion, the then commanding officer of the Resource Management Division

was assigned to also command the Patrol Division, which in effect left the day-to-day management of the Resource Management Division in the capable hands of a sergeant -- a highly unusual circumstance. As it turned out, the sergeant was promoted to lieutenant on April 12, 1979, which lent formal credence to his authority.

Finally, other minor adjustments to the program were actually not changes but refinements which in essence clarified the intentions of the initial program design. For example, as a result of the WDP's own monitoring of the program and the corroboration provided by PSE's monitoring activities, certain steps were taken during the program to enhance the use of alternative response options -- these steps are detailed in Section 5.

3 EVALUATION OF PROGRAM

It is widely recognized that a major reason for the failure of program evaluations is inadequacy of the evaluation designs. One of the prevalent factors contributing to this inadequacy is that the design does not occur in conjunction with the development of the program itself. Public Systems Evaluation, Inc. (PSE) was fortunate in the case of the Wilmington MOD program to be able to specify the evaluation design in parallel with the development of the program plan -- prior to program implementation. PSE's attendance at the major program planning sessions was critical in two respects. On the one hand, the planning effort benefitted from PSE's presence since all planning decisions were continuously assessed relative to their potential impact on the evaluation effort; several decisions were discarded because they threatened to invalidate the anticipated evaluation findings. On the other hand, the fact that the WDP's decision-making process in regard to the program's rationale, objectives, and components was fully exposed to PSE resulted in the development of a sound evaluation design, characterized by pertinent test hypotheses, a quasi-experimental selection scheme, an appropriate measures framework, relevant measurement methods, and valid analytic techniques.

Before detailing the evaluation design in Section 3.2, the approach employed to develop the design is summarized in Section 3.1. Section 3.3 concludes with a discussion of some issues pertaining to the conduct of program evaluations.

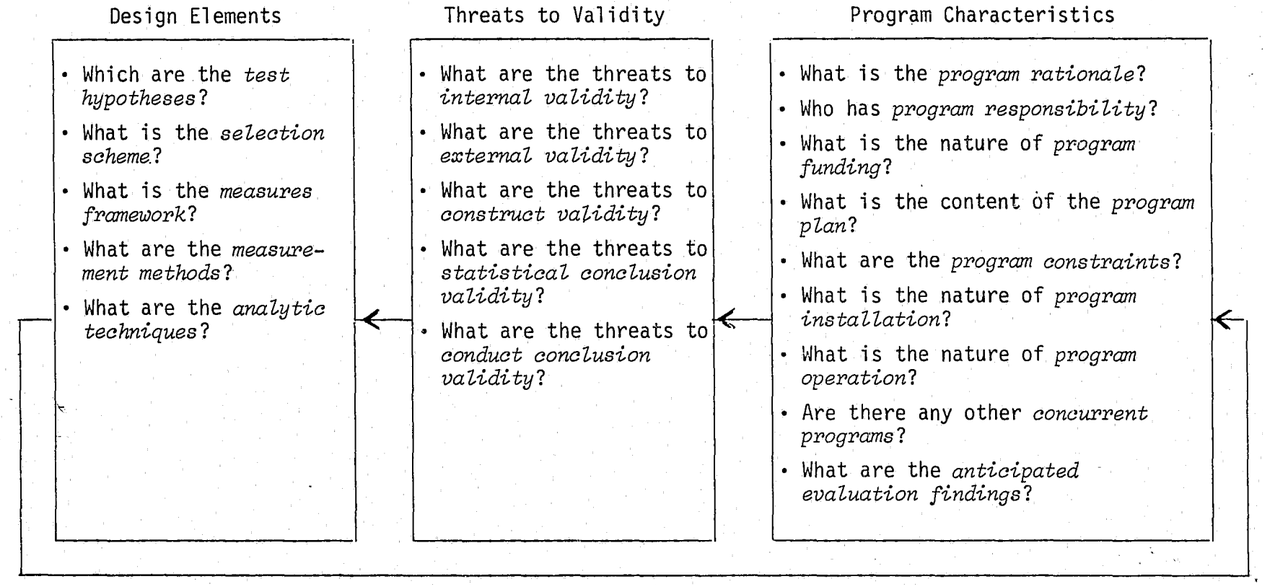
3.1 EVALUATION APPROACH

The evaluation design which is presented in Section 3.2 is based on an application of the evaluation design approach advanced by Tien [1979]. As illustrated in Exhibit 3.1, it is a *dynamic roll-back* approach which consists of three sets of interrogatories that must be considered before an evaluation design can be developed.

The "roll-back" aspect of the approach is reflected in the ordered sequence of interrogatories or steps that are identified in Exhibit 3.1: the sequence rolls back in *time* from i) a *projected* look at the range of program characteristics (i.e., from its rationale through its operation and *anticipated* findings); to ii) a *prospective* consideration of the threats (i.e., problems and pitfalls) to the validity of the final evaluation; and to iii) a more *immediate* identification of the evaluation design elements. The logic of this sequence of steps should be noted; that is, the anticipated program characteristics identify the possible threats to validity, which in turn point to the design elements that are necessary to mitigate, if not to eliminate, these threats. The sequence of steps can be stated in terms of two sets of links which relate, respectively, an anticipated set of program characteristics to an intermediate set of threats to validity to a final set of design elements. Although, as Tien [1979] suggests, some of the links between program characteristics and threats to validity are obvious (e.g., a concurrent program may cause an extraneous event threat to internal validity), the links between program characteristics and threats to validity have yet to be identified -- it will require a significant amount of analysis of past and on-going evaluations. Similarly, the second set of links between threats to validity and design elements requires further development.

Exhibit 3.1

A Dynamic Roll-Back Approach to Evaluation Design



Source: [Tien, 1979, p. 496]

The "dynamic" aspect -- as identified by the feedback loop in Exhibit 3.1 -- of the approach refers to its *nonstationary* character; that is, the components of the process must *constantly* be updated, throughout the entire development and implementation phases of the evaluation design. In this manner, the design elements can be refined, if necessary, to account for any new threats to validity which may be caused by previously unidentified program characteristics. In sum, the dynamic rollback approach is a systematic method of developing more purposeful and valid evaluation designs.

In applying the above approach, it is important to note that the threats to validity form the basis of the approach; they link program characteristics to evaluation design elements. Alternatively, the threats can be considered to be potential *problems* which must be addressed by the design elements. Adapting primarily from Campbell and Stanley [1966], Tien [1979] has identified 20 threats to validity; they are listed in Exhibit 3.2 and can generally be grouped into the following five categories:

- *Internal validity*, which refers to the extent that the statistical association of an intervention and measured impact can reasonably be considered a causal relationship.
- *External validity*, which refers to the extent that the causal relationship can be generalized to different populations, settings, and times.
- *Construct validity*, which refers to the extent that the causal relationship can be generalized to different interventions, impact measures, and measurements.
- *Statistical conclusion validity*, which refers to the extent that an intervention and a measured impact can be statistically associated.

Exhibit 3.2

Design Considerations: Threats to Validity

Threats to Internal Validity

1. *Extraneous events* (i.e., history) may occur during the period of evaluation, inasmuch as total test or experimental isolation cannot be achieved in social experimentation.
2. *Temporal maturation* of subjects or processes (e.g., growing older, growing more tired, becoming wiser, etc.) -- including cyclical maturation -- may influence observed impacts.
3. *Design instability* (i.e., unreliability of measures, fluctuations in sampling units or subjects, and autonomous instability of repeated or equivalent measures) may introduce biases.
4. *Pretest experience*, gained from a response to a pretest measurement (e.g., questionnaire, test, observation, etc.) may impact the nature and level of response to a subsequent posttest measurement.
5. *Instrumentation changes* (e.g., changes in the calibration of a measuring instrument, changes in the observers or evaluators used, etc.) may produce changes in the obtained measurements.
6. *Regression artifacts* may occur due to the identification of test or control subjects (or periods) whose dependent or outcome measures have extreme values -- these extreme values are artificial and will tend to regress toward the mean of the population from which the subjects are selected.
7. *Differential selection* -- as opposed to random selection -- of subjects for the test and control groups may introduce biases.
8. *Differential loss* (i.e., experimental mortality) of subjects from the test and control groups may introduce biases.
9. *Selection-related interaction* (with extraneous events, temporal maturation, etc.) may be confounded with the impact of the intervention, as, for example, in the case of a self-selected test group or in test and control groups which are maturing at different rates.

Threats to External Validity

10. *Pretest-intervention interaction* (including "halo" effect) may cause a pretest measurement to increase or decrease a subject's sensitivity or responsiveness to the intervention and thus make the results obtained for a pretested population unrepresentative of the impacts of the intervention for the unpretested universe from which the test subjects are selected.
11. *Selection-intervention interaction* may introduce biases which render the test and/or control groups unrepresentative of the universe from which the test subjects are selected.
12. *Test-setting sensitivity* (including "Hawthorne" and "placebo" effects) may preclude generalization about the impact of the intervention upon subjects being exposed to it under non-test or non-experimental settings.
13. *Multiple-intervention interference* may occur whenever mutliple interventions are applied to the same subjects, inasmuch as the impacts of prior interventions are usually not erasable.

Threats to Construct Validity

14. *Intervention sensitivity* may preclude generalization of observed impacts to different or related interventions -- complex interventions may include other than those components responsible for the observed impacts.
15. *Measures sensitivity* may preclude generalization of observed impacts to different or related impact measures -- complex measures may include irrelevant components that may produce apparent impacts.

Threats to Statistical Conclusion Validity

16. *Extraneous sources* of error (including "post hoc" error) may minimize the statistical power of analyses.
17. *Intervention integrity* or lack thereof may invalidate all statistical conclusions.

Threats to Conduct Conclusion Validity

18. *Design complexity* (including technological and methodological constraints) may preclude the complete and successful conduct of the evaluation.
19. *Political infeasibility* (including institutional, environmental and legal constraints) may preclude the complete and successful conduct of the evaluation.
20. *Economic infeasibility* (including hidden and unanticipated costs) may preclude the complete and successful conduct of the evaluation.

Source: [Tien, 1979, p. 498]

- *Conduct conclusion validity*, which refers to the extent that an intervention and its associated evaluation can be completely and successfully conducted.

Finally, from a statistical perspective, the threats to validity can be regarded as plausible rival hypotheses or explanations of the observed program impacts. That is, the assumed causal relationships (i.e., test hypotheses) may be threatened by these rival explanations. Again, it is the purpose of the resultant evaluation design to minimize, if not eliminate, the rival explanations.

3.2 EVALUATION DESIGN

The first step in the development of an evaluation design is, according to the dynamic roll-back approach depicted in Exhibit 3.1, to understand the various program characteristics. Section 2 addresses most of these characteristics, including the program design process and related issues. The second step is to identify the possible threats to validity. It is obvious that the complexity of the Wilmington MOD program would aggravate all the potential threats or problems listed in Exhibit 3.2. However, in carrying out the third step (i.e., development of an evaluation design), most of these threats have been either controlled for, minimized, or eliminated,* as highlighted in the following subsections which discuss various evaluation design elements. The discussion focuses on the evaluation design's test hypotheses, selection scheme, measures framework, measurement methods, and analytic techniques.

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* One potential threat to validity which could not have been controlled for, minimized, or eliminated was an extraneous event threat caused by the implementation of a county-wide school desegregation plan in the fall of 1978. Fortunately, the anticipated disturbances never materialized and the MOD program and its evaluation were not affected by this event.

TEST HYPOTHESES

In a general sense, all the program objectives listed in Exhibit 2.2 can be considered to be hypotheses or statements which require testing or evaluation. In fact, as suggested by Exhibit 3.3, every evaluation task that was undertaken was for the purpose of shedding light on one or more of the program objectives.

More specifically, the central hypothesis of the Wilmington MOD program is simply that "alternative response strategies cause an increase in call-for-service response productivity". In testing this causal hypothesis, PSE had two main concerns. First, it was important that no rival hypotheses (i.e., threats to validity) could be identified which could explain the observed productivity finding. In hindsight, PSE is satisfied that, as a result of the purposeful evaluation design described in this section, there is no rival explanation to the fact that it was the alternative response strategies which caused the observed productivity results that are summarized in Section 8.

PSE's second concern related to quantifying the stated hypothesis in terms of readily accessible and stable measures, so as to minimize the threats to internal (i.e., design instability), construct (i.e., measures sensitivity), and conduct conclusion (i.e., design complexity) validity. As alluded to in Section 2.2, the causal variables can be simply stated as the number of calls for service which were *delayed* (through the formal delay response strategy) and *diverted* (through the phone adjustment, walk-in, phone report, and specialist appointment response strategies). The productivity variable, however, was more difficult to quantify, since, as stated in Section 1.1, there is no single accepted definition for the

CONTINUED

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Exhibit 3.3

Evaluation Tasks and Program Objectives

Evaluation Tasks	Program Objectives				
	1. To maintain the effectiveness of WDP performance	2. To establish a complaint-screening function	3. To establish a call-back function	4. To establish alternative response strategies	5. To establish a Basic patrol reduction
A. Background Review					
(1) Related Programs	---	X	X	X	---
(2) WDP Data Sources	---	X	X	X	X
B. Technical Assistance					
(1) Design of Program	X	X	X	X	X
(2) Monitoring Feedback	X	X	X	X	X
C. WDP Data Analyses					
(1) Dispatch Data	X	X	X	X	X
(2) Patrol Car Sheets	X	---	---	---	---
(3) Communication Tapes	X	X	X	X	---
(4) CSU Monitoring Records	X	---	X	X	---
(5) UCR Data	X	---	---	---	X
(6) Personnel Records	X	---	---	---	---
(7) Other WDP Sources	X	X	X	X	X
D. Questionnaire Surveys					
(1) Communications Personnel	X	X	X	X	X
(2) Resource Management Division Personnel	X	X	X	X	X
(3) Patrol Personnel	X	---	---	X	X
(4) Detectives	X	---	---	---	---
E. Client Attitude Surveys					
(1) Before Survey	X	X	X	X	X
(2) During Survey	X	X	X	X	X
F. Process Monitoring					
(1) Participant Observation	X	X	X	X	X
(2) Interviews	X	X	X	X	X
(3) Meetings	X	X	X	X	X
(4) Working Sessions	X	X	X	X	X
G. Evaluation Products					
(1) Interim Briefings	X	X	X	X	X
(2) Interim Data	X	X	X	X	X
(3) Final Report	X	X	X	X	X

variable. Nevertheless, especially because the term effectiveness is explicitly mentioned in the first program objective (see Exhibit 2.2), it was reasonable to define productivity 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 a specified level in resources). The effectiveness measures for this MOD program are in fact detailed in Exhibit 2.2; they include citizen satisfaction, crime level, arrest rate, clearance rate, and other related measures. Appropriate efficiency measures can also be defined for the MOD program; the activity or response level can be stated in terms of the manpower required for the response. These effectiveness and efficiency measures are considered in Section 8 which addresses the overall productivity issue.

SELECTION SCHEME

The selection scheme or research design employed in this evaluation is a quasi-experimental, "pretest-posttest" design, requiring a "before" and "during" comparative analysis* in which the WDP serves as its own control. Although PSE would have preferred an experimental design with an *equivalent* control for the WDP, it is doubtful whether such a design could have been carried out within the scope of a financially limited evaluation effort --

* Usually, the method is labelled a "before" and "*after*" analysis: however, the term "*during*" has been substituted in place of the term "after" to emphasize the nature of social program 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").

that is, it would have succumbed to an economic infeasibility threat to conduct conclusion validity.

Unlike an experimental design, the problem with the pretest-posttest or before-during design is that, except for the differential selection and differential loss threats, it does *not* control for the numerous threats to internal and external validity. It is for this reason that PSE has been extremely careful in identifying other evaluation design elements, especially measurement methods, which can compensate for the weak, quasi-experimental design and be able to mitigate the threats to internal and external validity. For example, close monitoring of the WDP procedures for collecting, recording, and coding the relevant data insured that the underlying procedures remained constant throughout the before and during periods of the program; thus minimizing the instrumentation changes threat to internal validity.

MEASURES FRAMEWORK

Four sets of evaluation measures are identified in Exhibit 3.4. In general, as stated by Tien [1979], the input and process measures serve to "explain" the resultant outcome measures. Input measures alone are of limited usefulness since they only indicate a program's potential -- not actual -- performance. On the other hand, the process measures do identify the program's performance but do not consider the impact of that performance. Finally, the outcome measures are the most meaningful observations since they reflect the ultimate results of the program. In terms of this evaluation report, the input, process, and outcome measures of the MOD program are, for the most part, considered in Parts I through III of the report, respectively.

Exhibit 3.4

Program Evaluation Measures

INPUT

- Program Rationale (Objectives, Hypotheses)
- Program Responsibility (Principal Participants, Participant Roles)
- Program Funding (Funding Level, Sources, Uses)
- Program Constraints (Political, Economic, Split-Force)
- Program Plan (Program Schedule, Training Requirements, Program Components)
- Program Resources (Resource Management Division, Communications Division, Patrol Division)

PROCESS

- Program Implementation (Training Impact)
- Program Operation (Complaint-Screening Function, Call-Back Function, Alternative Response Strategies, Basic Patrol Reduction)
- Call-for-Service (Time Statistics, Primary/Assist, Critical/Noncritical, Formally Delayed, Diverted)
- Derived Performance (Unit Utilization Factor, Utilization Imbalance, Officer Workload Index, MOD Productivity)
- Alternative Responses (Formally Delayed, Adjusted, Walk-In, Phone Report, Specialist Appointment)
- Concurrent Programs (County-Wide School Desegregation, Other Extraneous Events)

OUTCOME

- Attitudinal (WDP Client, WDP Personnel)
- Behavioral (WDP Client, WDP Personnel)
- Crime-Related (Crime Level, Arrest Rate, Clearance Rate)

SYSTEMIC

- Organizational (WDP, Other City Agencies)
- Longitudinal (Input, Process, Outcome)
- Programmatic (Comparability, Transferability, Generalizability)
- Perspective (Policy Implications, Alternative MOD Programs)

The fourth set of evaluation measures -- the *systemic* measures -- can also be regarded as impact measures but have been overlooked to a large extent in the evaluation literature. The systemic measures allow the program's impact to be viewed from a *total* systems perspective. Exhibit 3.4 lists four systemic contexts in which to view the program's impacts. First, it is important to view the program in terms of the *organizational* context within which it functions. Thus, the MOD program's impact on the WDP and other city agencies was assessed.

Second, the pertinent input, process, and outcome measures must be viewed over time, from a *longitudinal* perspective, so that certain threats to the internal validity (i.e., design instability, instrumentation changes, and regression artifacts) can be ascertained and corrected, if necessary and if possible. For this reason, PSE has attempted to view all the process and outcome measures indicated in Exhibit 3.4 over a five-year period, since the inception of the earlier split-force experiment. This longitudinal perspective on the measures, which is presented in Section 4 as part of the split-force update, has been reassuring since it has shown that the three above-stated threats to internal validity were not a problem. However, as indicated in Section 4.1, the multi-year look at the measures has revealed the fact that the Basic patrol units have been lax (i.e., call-for-service time statistics have been inexplicably long) during the period between the split-force experiment and the MOD program.

Third, in an overall *programmatic* context, an evaluation should i) compare the program results with findings of other similar programs; ii) assess the potential of transferring the program to other locales or jurisdictions; and iii) determine the extent to which the program

results can be generalized. These considerations are contained, for the most part, in Part IV of the report, while Section 8.3 addresses the extent to which a reactive, response-oriented MOD program can impact police productivity.

Fourth, the first three systemic contexts can be regarded as *program-oriented* in focus as compared to the fourth context which assesses the program results from a broader *policy-oriented* perspective. In addition to assessing the policy implications, it is important to address other feasible and beneficial alternatives to the program. Using the MOD framework developed in Section 1.1, Section 10 addresses some of the policy implications of the Wilmington MOD program, as well as the need to test a proactive MOD program.

Finally, it should be noted that some of the evaluation measures referred to in this report are not generally familiar, and, in some cases, have been developed specifically for the MOD effort. A glossary of terms and abbreviations is included in Appendix B to aid the reader.

MEASUREMENT METHODS

An initial measurement consideration was, of course, the measurement time frame. As indicated in Exhibit 3.5, three evaluation periods were defined -- a Before (i.e., 7/1/77 - 6/30/78), a Transition (i.e., 7/1/78 - 12/31/78), and a During (i.e., 1/1/79 - 9/30/79) period.* Although most results in the report are in terms of the three periods, the analyses were actually performed on a quarterly basis, corresponding to the

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* For convenience, it can be assumed that text references to a *B*efore, *T*ransition, and *D*uring period correspond to the above-defined evaluation periods, unless otherwise noted.

Exhibit 3.5

Measurement Time Frame

Evaluation Quarters

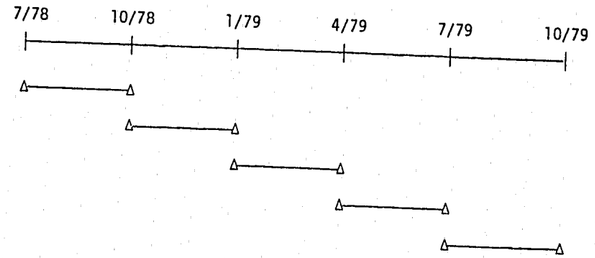
I First Transition Quarter

II Second Transition Quarter

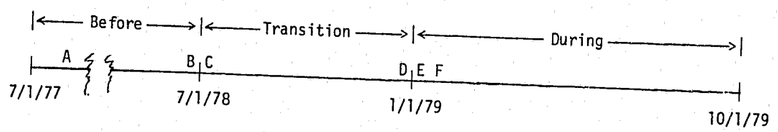
III First Program Quarter

IV Second Program Quarter

V Third Program Quarter



Evaluation Periods



Significant Events

A. During the third quarter of calendar year 1977 a "blue flu" epidemic struck the WDP during contract negotiations.

B. During May and June 1977, preparation for the program was underway: a new call-for-service or complaint card was introduced; training sessions were conducted; and the alternative response strategies were tested.

C. During the Summer of 1978, the WDP was busy preparing for implementation of a county-wide school desegregation plan that Fall. The plan was implemented, but the anticipated disturbances never materialized.

D. On December 15, 1978, the first program Project Director's resignation from the WDP became effective.

E. On January 1, 1979, the Basic patrol allocation was reduced from a 50-car plan to a 48-car plan.

F. On February 1, 1979, the Basic patrol allocation was reduced further to a 42-car plan.

evaluation quarters detailed in Exhibit 3.5. The fact that the During period was only nine months is somewhat problematic, since it would not completely control for any temporal maturation (i.e., seasonal) threat to internal validity. However, the limited program budget precluded any further extension of the During period, which, as indicated in Section 2.1, had already been extended by an extra three months. Nevertheless, PSE feels that, although a one-year During period would have minimized any temporal maturation threat and slightly improved the statistical significance of the evaluation findings, the final conclusions of the evaluation effort would not have changed even if the During period had been extended to one year.

A second measurement consideration was the need to sample the pertinent data since the collection, coding, keypunching,* and analysis of a complete data set would have been too costly and a threat to the evaluation's successful conclusion. Exhibit 3.6 summarizes the sample sizes and corresponding measurement periods. It is seen that both the dispatch data and patrol car sheets were sampled at 20 percent; this was accomplished by a systematic sampling procedure of selecting every fifth day. For most purposes, the 20 percent sample of dispatch data and patrol car sheets is quite adequate.

Other measurement considerations were focused on identifying measurement methods or procedures which could impact the various threats to validity. As examples, several program monitoring activities were carried

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* Inasmuch as the WDP does not possess any automated or computer readable data bases, all the data analyzed by this evaluation effort had to be collected, coded, and keypunched.

Exhibit 3.6

Measurement Periods and Sample Sizes

Evaluation Tasks	Measurement Period	Sample Element	Sample Size	
			Number	% of Total
A. Background Review				
(1) Related Programs	11/01/77 - 12/31/79	-	--	--
(2) WDP Data Sources	11/01/77 - 6/30/78	-	--	--
B. Technical Assistance				
(1) Design of Program				
• Data Collection	11/01/77 - 5/31/78	-	--	--
• Site Visits	1/16/78 - 1/19/78 3/06/78 - 3/08/78	-	--	--
• Working Session	3/22/78 - 3/24/78	-	--	--
(2) Monitoring Feedback	7/01/78 - 9/30/79	-	--	--
C. Data Analyses				
(1) Dispatch Data	12/01/76 - 9/30/79	Call-for-Service Card	64,584	20
(2) Patrol Car Sheets	12/01/76 - 9/30/79	Car Sheet	11,514	20
(3) Communications Tapes	7/18/78 - 8/03/78 12/26/78 - 1/09/79	Call Recordings	--	--
(4) CSU Records				
• Complaint Service Log	6/20/78 - 9/30/79	Daily Record	468	100
• Specialist Appointment Sheet	7/01/78 - 9/30/79	Daily Record	457	100
• Call-Back Summary	7/01/78 - 9/30/79	Monthly Reports	15	100
• Communications Platoon Records	7/01/78 - 9/30/79	Monthly Reports	15	100
• Basic Specialist Summary	7/01/78 - 9/30/79	Monthly Reports	15	100
(5) UCR Data	1/01/68 - 12/31/78	Yearly Reports	11	100
(6) Personnel Records				
• Sworn Rosters	1/12/76 - 8/13/79	Periodic Reports	18	100
• Overtime Records	7/01/77 - 5/31/79	Bi-Weekly Records	100	100
(7) Other WDP Data				
• Case Screening Log	1/01/79 - 9/30/79	Periodic Reports	--	--
• Crime Analysis Reports	1/01/78 - 9/30/79	Monthly Reports	21	100
• Operations Reports	12/01/76 - 9/30/79	Monthly Reports	34	100
• WDP Orders & Memos	1/01/78 - 9/30/79	-	--	100

Exhibit 3.6

Measurement Periods and Sample Sizes

(Page 2 of 2)

Evaluation Tasks	Measurement Period	Sample Element	Sample Size	
			Number	% of Total
D. Questionnaire Surveys				
(1) Communications Supervisors	6/04/79 - 6/11/79	Supervisor	4	80
(2) Communications Staff	6/04/79 - 6/11/79	Officer & Civilian	18	90
(3) Resource Management Division Personnel	6/04/79 - 6/11/79	Supervisor & Officer	7	88
(4) Basic & Structured Patrol Personnel	6/04/79 - 6/11/79	Supervisor & Officer	94	78
(5) Detectives	6/04/79 - 6/11/79	Supervisor & Officer	16	84
E. Client Attitude Survey				
(1) Before Survey	1/25/78 - 2/24/78	Telephone Interview	344	--
(2) During Survey	5/03/79 - 6/06/79	Telephone Interview	364	--
F. Process Monitoring				
(1) Participant Observation	11/01/77 - 9/30/79	--	--	--
(2) Interviews	11/01/77 - 9/30/79	--	--	--
(3) Meetings	11/01/77 - 9/30/79	--	--	--
(4) Working Session	12/11/78 - 12/12/78	--	--	--
G. Evaluation Products				
(1) Interim Briefings	7/01/78 - 9/30/79	--	--	--
(2) Interim Data	7/01/78 - 9/30/79	--	--	--
(3) Final Report	7/01/78 - 9/30/79	--	--	--

out to identify potential threats (e.g., extraneous events,* temporal maturation, and intervention integrity); PSE observers remained the same in order to control for instrumentation changes; questionnaires were not administered during the Before period so as to minimize any pretest-related threats; and, as suggested by Exhibit 3.3, a *multi-measurement* approach was used to view each program objective and to control for many of the threats to internal, external, construct, and statistical conclusion validity, including the threats engendered by unreliable data. The latter threats were minimized by having multiple, but different measurements of the same data element. Using this approach, for example, several data elements on the call-for-service cards were checked with the corresponding information contained in the patrol car sheets, as well as the results of the client attitude surveys and the perception gained during participant observations. Finally, realizing that it is not only important that the measurements be different, but that they be *independent*, extreme care was taken to assume the independence of the multi-measurement data sources.

ANALYTIC TECHNIQUES

Three sets of analytic techniques were employed in this evaluation effort. First, standard statistical methods (i.e., frequency distributions, cross-tabulations, moment analyses, and correlations) and tests (i.e., chi-square, t and F) were extensively used. For the sake of clarity and brevity, however, most of the results of the statistical tests are omitted

* A list of significant events is included in Exhibit 3.5 -- in hindsight, none of the events posed a threat to the evaluation's validity.

from the text of the report. Instead, and where appropriate, only statistically significant differences are indicated -- at a 0.05 level of significance.*

Second, in order to compensate for the lack of an equivalent control group in the before-during selection scheme, simple linear regressions were performed on time series data to predict what values certain unstable measures (e.g., reported crime and clearance rate) would have had in the During period. More sophisticated time series analyses -- see, for example, Box and Jenkins [1976] -- were not deemed necessary, since the simple analyses did not reveal such a need. Additionally, no important, time series-based variables or measures were expected to be significantly impacted by the MOD program; for example, the program was expected to have little or no impact on the crime-related measures.

Third, in much the same way that Larson [1976] employed modeling techniques to show that the integrity of the Kansas City Preventive Patrol Experiment [Kelling et al., 1974] was not upheld during the course of the experiment (thus casting doubt on the validity of the resultant findings), this evaluation effort used the PCAM and Hypercube models to assist in predicting, understanding, and analyzing some of the observed results. Thus, the two computer-based allocation models were not only instrumental in developing the MOD program but also in monitoring the program's progress.

* In nontechnical 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.

3.3 EVALUATION CONDUCT

The conduct of the MOD evaluation, together with the experiences gained in the earlier split-force evaluation, have shed light on several issues confronting program evaluators today. One issue which is always a problem in instances where the program sites are located at a great distance from the evaluator is whether an evaluation team member should be physically located at the program site. Although an on-site person would certainly facilitate the program monitoring aspect of an evaluation effort, it is also a fact that an on-site person may become so involved on a day-to-day basis that he/she might "lose sight of the forest for the trees". Moreover, because of cost considerations, having an on-site person usually means hiring the person locally rather than temporarily assigning and relocating a person who is already on the evaluator's staff. For this reason, the on-site person may not view himself/herself as a full-fledged member of the evaluation team and may in time feel a closer identification with the local program personnel, which in turn may threaten the objectivity of the evaluation effort. Although PSE initially hired an on-site person for the split-force evaluation, the person had to be dismissed after only six months for the above-stated reason. Consequently, for most of the split-force evaluation and the entire MOD evaluation, PSE has taken a flexible, intermittent approach to on-site monitoring, consisting of continuous site presence during critical periods in the program (e.g., training and implementation), attendance at key program meetings, and site visits at random points in time. It should be emphasized, however, that PSE's success with this "at a distance" approach to program monitoring was in large measure due to the cooperation and professional outlook of

the WDP officials, who agreed not only to set up explicit procedures for keeping PSE routinely informed of all WDP activities but also to be available to meet or talk with PSE personnel at all times.

Another critical issue confronting program evaluators is the manner in which an evaluation should be conducted. Two conflicting points of view are being advanced. The *hands-off* advocates see the evaluator entering the picture only after the initial events in the life of the program have occurred and then adopting a noninteractive stance during the course of the evaluation, ending with the delivery of a report which typically reflects the findings of a summative or outcome evaluation. On the other side, the *hands-on* advocates see the evaluator as being involved in the initial planning phase of the program and then adopting an interactive and, possibly, influential stance during the course of the evaluation, ending with the delivery of a report which typically reflects the findings of a more formative or process evaluation. The two points of view have been the focus of a heated, on-going debate among evaluation experts. As exemplified by both the split-force and MOD evaluations, PSE has found that the role of the evaluator should be neither hands-on nor hands-off, but somewhere in between the two extremes. That is, the evaluator should participate in the planning phase of the program so as to insure a viable evaluation design, including the explicit identification of appropriate test hypotheses. Furthermore, in addition to providing a summative judgment at the end of the program, the evaluator should also periodically share evaluation-related data or information with the program administrator,*

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* PSE found it convenient to share evaluation-related information with the WDP every six to eight weeks; this allowed PSE to aggregate enough

who is, of course, responsible for monitoring the progress of the program. This dual use of evaluation-related data should in no way compromise the evaluator's objectivity; it simply minimizes the cost of data collection.

A third issue being debated by program evaluators is whether evaluation designs should remain flexible (i.e., adaptive or dynamic). Although it is always desirable for an evaluation design to remain unchanged during the course of a program evaluation, it is an *unrealistic* expectation. Certainly, after a program has been implemented many uncontrollable events could happen; their potential impact on the program and its evaluation must be ascertained and, if necessary, appropriate changes must be made to the evaluation design in order to minimize their threats to validity. Thus, as stated in Section 3.1, an evaluation design must be *dynamic* in order to remain viable and sound. In undertaking the split-force and MOD evaluations, PSE has not had to make any major changes to the respective evaluation designs; however, numerous refinements had to be made. For example, the WDP's decision to go to a 46-car plan for a period of one month before reducing to the final 42-car plan required PSE to oversample the data in that month in order to fully understand the decision's impact.

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information so that any nonrandom changes in the program's progress could be observed. The WDP officials both sought and used PSE's periodic input, which in general supported and complemented the findings from their own monitoring activities.

PART II: PROCESS MEASURES

4 SPLIT-FORCE UPDATE

As a condition in the award of the MOD grant, the National Institute of Justice specified that the WDP should continue to maintain the split-force concept during the course of the MOD program and that PSE should, as part of its MOD program evaluation responsibility, monitor the split-force conditions to determine whether, and to what extent, the integrity of the concept had been preserved. This determination must, of necessity, be conditioned on the presence of the MOD program which has prompted a significant change in the split-force environment. Additionally, it must be stated that PSE could only devote limited resources to monitoring the split-force activities; thus, it was not feasible to update the broad spectrum of findings compiled in the original split-force evaluation report [Tien, 1978 (b)]. Nevertheless, the pertinent split-force performance statistics are updated and expanded to include related MOD statistics in Section 4.1, while Section 4.2 reviews the status of the individual split-force elements, and Section 4.3 assesses the overall split-force concept, as it is being continued by the WDP today.

Finally, although this section endeavors to review some of the split-force and related MOD findings, it should be noted that the section also provides a *longitudinal perspective* on several important issues and

measures.* As stated in Section 3.2, this perspective helps to control for certain threats to the internal validity of the MOD evaluation.

4.1 PERFORMANCE STATISTICS

The purpose of this section is to present a number of comparative quantitative findings in terms of the process or performance measures of the Wilmington split-force experiment. Although these results are referred to throughout the report, they constitute a foundation for the more detailed discussions of the split-force elements in Section 4.2 and the MOD program components in Section 5. This section addresses several demand, incident time, and workload-related statistics.

First, however, it is important to review the changes in the distribution of the WDP personnel brought about as a result of the MOD program. Exhibit 4.1 summarizes the distributions during split force as well as Before and During the MOD program; note that the 9.4 percent reduction in overall patrol strength During the program came mainly at the expense of the Structured patrol force and the other field units. While the sworn strength of the WDP remained constant -- discounting program-related overtime increases -- there took place an internal shift which saw the two relatively new specialized divisions (i.e., Traffic and Youth Aid) grow in size, while the established Patrol and Detective Divisions suffered substantial cuts. This trend is actually characteristic of many modern

* Although this section is restricted to a discussion of performance measures in the split-force, Before MOD, and During MOD evaluation periods, the six-month Transition period measures were computed; they tended to be quite similar to the During period results, thus supporting the nine-month During period findings.

Exhibit 4.1

WDP Personnel Distribution

	Average Number of Sworn Personnel[1] Split-Force/Before/During				
	Supervisors	Officers	Total	Split-Force/ During Change	Before/ During Change
Communications Division	6/6/5	4/4/4	10/10/9	- 10.0%	- 10.0%
Resource Management Division[2]	2/2/1	2/2/7	4/4/8	+100.0%	+100.0%
Patrol Division					
Basic	8/8/8	62/71/66[3]	70/79/74	+ 5.7%	- 6.3%
Structured	3/2/2	24/18/14	27/20/16	- 40.7%	- 20.0%
Other Field[4]	2/2/1	33/23/21	35/25/22	- 37.1%	- 12.0%
Headquarters	11/12/12	3/3/2	14/15/14	0.0%	- 6.7%
Total	24/24/23	122/115/103	146/139/126	- 13.7%	- 9.4%
Detective Division	14/7/9	20/22/13	34/29/22	- 35.3%	- 24.1%
Other Divisions	28/36/37	29/33/49	57/69/86	+ 50.9%	+ 24.6%
Total[5]	74/75/75	177/176/176	251/251/251	0.0%	0.0%
Overtime Equivalent[6]	--	--	42/28/40	- 4.8%	+ 42.9%
Grand Total	74/75/75	177/176/176	293/279/291	- 0.1%	+ 4.3%

[1]The average number of personnel is given for three periods: Split-Force (12/1/75-11/30/76)/Before (7/1/77-6/30/78)/During (1/1/79-9/30/79).

[2]Crime Analysis Unit only/Crime Analysis Unit only/Crime Analysis Unit and Complaint Service Unit.

[3]Includes 18 new recruits who joined the WDP in 1/79; they were essentially trainees for most of the During period.

[4]Includes evidence detection, radar, wagon, accident investigation, and mounted units/Does not include traffic-related units (which were transferred out of patrol)/Does not include traffic-related and evidence detection units (which were transferred out of patrol).

[5]Includes 1/1/1 Chief, 3/3/4 Inspectors, 11/10/9 Captains, 11/11/11 Lieutenants, 48/50/50 Sergeants, and 177/176/176 Officers.

[6]Based on 104 days off, 12 holidays, an average of 15 vacation days, and 12 days of projected sick time -- resulting in 212 working days per person-year.

metropolitan police departments, which have increased specialization in traffic management, juvenile delinquency prevention and control, and vice control. Contemporary police administration texts such as Wilson and McClaren [1977] point out the advantages and disadvantages of specialization, including the inevitable impact it has on the patrol function. Exhibit 4.1 also identifies the Resource Management Division (consisting of the already-existing Crime Analysis Unit and the newly-established Complaint Service Unit), which, as noted earlier, was the only major organizational realignment engendered by the MOD program.

A second point that should be made regarding the statistics presented in this section is that all the dispatch-related information in the During period was abstracted from a revised call-for-service card (see Exhibit C.2). Instituted in June 1978, the revised, two-sided card had to capture data from both the complaint-screening and call-back functions. Although the front side of the card is basically the same as the call-for-service card used during split-force and before the MOD program (see Exhibit C.1), the revised card included call-back information from both Communications and the Complaint Service Unit (CSU). The back side of the revised card contains CSU-initiated data, including a CSU number which serves as a control number for all CSU transactions, thus reducing the likelihood that a call becomes "lost."

DEMAND STATISTICS

As detailed in Exhibit 4.2, the level of total calls for service remained relatively stable throughout the split-force, Before, and During evaluation periods -- the net change being a slight decrease of 0.05 percent

Exhibit 4.2

Call-for-Service Distribution

Calls for Service / Response Made By	Basic Unit[2]	Special Unit[3]	Structured Unit[4]	Other[5]	Diverted Calls[6]	Total	Split-Force/ During Change	Before/ During Change
	Average Number of Calls for Service Per Day Split-Force/Before/During[1]							
Primary								
Part I	25.8/ 21.7/ 13.7	0.7/ 0.5/ 0.4	0.7/ 0.6/ 1.1	2.5/ 1.6/ 2.4	-- / -- / 9.4	29.7/ 24.4/ 17.6	-40.7%	-27.9%
Part II	62.2/ 51.8/ 44.3	1.6/ 1.3/ 2.9	3.1/ 4.0/11.4	6.0/ 5.6/ 8.0	-- / -- / 3.6	72.9/ 62.7/ 70.2	- 3.7%	+12.0%
Traffic	21.0/ 16.4/ 10.8	2.1/ 1.0/ 0.8	4.2/ 4.1/ 5.4	5.6/ 5.7/12.5	-- / -- / 0.2	32.9/ 27.2/ 29.7	- 9.7%	+ 1.8%
Medical	5.2/ 6.4/ 5.5	0.3/ 0.2/ 0.2	0.1/ 0.1/ 0.5	0.3/ 0.3/ 0.6	-- / -- / 0.1	5.9/ 7.0/ 6.9	+16.9%	- 1.4%
Alarm	12.2/ 11.9/ 9.9	0.5/ 0.5/ 0.2	0.4/ 0.6/ 1.0	1.1/ 1.3/ 1.1	-- / -- / 0.1	14.2/ 14.3/ 12.3	-13.4%	-14.0%
Miscellaneous	28.1/ 30.8/ 19.1	0.8/ 1.6/ 2.1	1.6/ 1.4/ 2.4	8.1/ 8.4/ 7.3	-- / -- / 5.8	38.6/ 42.2/ 36.7	- 4.9%	-13.0%
Total Primary	154.6/138.9/103.1	6.0/ 5.1/ 6.5	10.0/10.8/21.7	23.6/24.9/31.9	-- / -- /19.2	194.2/179.7/182.4	- 6.1%	+ 1.5%
Assist	51.4/ 44.8/ 43.3	7.0/ 5.9/ 6.6	14.1/14.5/20.2	12.7/18.2/25.7	-- / -- / --	85.2/ 83.4/ 95.8	+12.4%	-14.9%
TOTAL	206.0/183.7/146.3	13.0/11.0/13.1	24.1/25.3/41.8	36.3/43.1/57.5	-- / -- /19.2	279.4/263.1/277.9	- 0.5%	+ 5.6%
Split Force/ During Change	-29.0%	+ 0.8%	+73.4%	+58.4%	--	- 0.5%		
Before/During Change	-20.4%	+19.1%	+65.2%	+33.4%	--	+ 5.6%		
Average Number of 8-Hour Units per Day	24.8/ 24.7/ 19.5	3.2/ 2.8/ 2.3	--	--	--	--		

[1]See footnote 1 in Exhibit 4.1 for the dates of the three periods.

[2]Denotes a marked patrol car whose primary responsibility is to respond to calls for service.

[3]Includes evidence detection, radar, wagon, and accident investigation units.

[4]Includes only those Structured units which are marked patrol cars.

[5]Includes foot, mounted, street sergeant, duty officer, cycle, detective, and mobile communications units.

[6]Includes all CFS that were handled by referral to the Complaint Service Unit, advised to walk in to make a report in person, or adjusted on the phone.

and a subsequent increase of 5.6 percent. Despite this fact, the number of calls handled by the Basic units first decreased by 3.8 percent and then by 17.2 percent during the same comparison periods, respectively, resulting in a net decrease of *20.4 percent*. Over the same two time periods the numbers of Basic units, as measured by the computer, decreased by *21.1 percent*. The MOD diversion of 19.2 calls for service per day away from the Basic units accounts for the largest portion of their load reduction, with the remaining difference being handled by other types of units.

Exhibit 4.2 also shows that although the total number of primary* calls for service remained essentially constant, the number of assist* calls for service increased by a significant 15 percent; this was due primarily to a proportional increase in the number of assist calls to the Basic units, as summarized in Exhibit 4.3 and further discussed in Section 5.4.

Another interesting result in Exhibit 4.3 is that the proportion of critical* -- as opposed to noncritical* -- calls for service dispatched to Basic units also increased significantly in the During period, a fact partially explained by the MOD diversion of noncritical calls. A discussion of this result is also contained in Section 5.4.

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* Since the inception of the split-force experiment, PSE has found it convenient and enlightening to categorize all calls for service as being, on one level, either *primary* or *assist*, and, on another level, either *critical* or *noncritical*. The definitions for these terms are contained in the glossary in Appendix B.

Exhibit 4.3

Basic Unit Call-For-Service Distribution

Priority Designation	Percent of Basic Unit Calls for Service[1]								
	Split-Force			Before			During		
	Primary	Assist	Total	Primary	Assist	Total	Primary	Assist	Total
Critical	10.5%	3.5%	14.0%	4.2%	0.4%	4.6%	15.0%	14.0%	29.0%
Noncritical	64.8%	21.2%	86.0%	71.9%	23.5%	95.4%	56.0%	15.0%	71.0%
TOTAL	75.3%	24.7%	100.0%	76.1%	23.9%	100.0%	71.0%	29.0%	100.0%

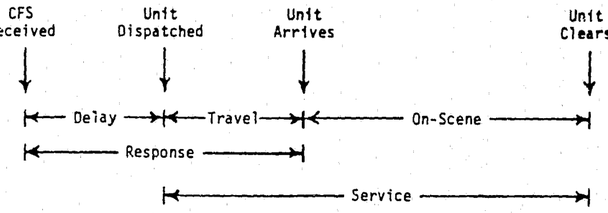
[1]See footnote 1 in Exhibit 4.1 for the dates of the three periods.

INCIDENT TIME STATISTICS

Remembering the definitions of the five incident time measures, as illustrated in Exhibit 4.4 and defined in Appendix B., Exhibit 4.5 presents

Exhibit 4.4

Definitions of Incident Time Measures



the incident time statistics for both primary and assist calls for service. Of particular significance is the fact that, in comparing the Before period to both the split-force and During periods, nearly every incident time statistic is significantly higher in the Before period. In general, it implied a relaxation and subsequent tightening up of the Basic unit response system, which had indeed become lax following the conclusion of the split-force experiment in November 1976. Looking at the ratios of standard deviation to average (commonly referred to as the "coefficient of variation"), one observes a reverse although not statistically significant, tendency -- that is, the ratios in the Before period are typically

Exhibit 4.5

Basic Unit Incident Time Statistics

Measure	Average Time in Minutes[1]						Split-Force/During Change		Before/During Change	
	Split-Force		Before		During					
	Average	SD/Average[3]	Average	SD/Average[3]	Average	SD/Average[3]	Average	SD/Average[3]	Average	SD/Average[3]
Delay Time[2]										
Primary	3.41	2.30	5.21	2.14	4.51	2.38	--	--	-13.4%	+11.2%
Assist	0.25	17.20	0.45	12.07	0.30	15.50	--	--	--	--
Travel Time[2]										
Primary	5.92	1.43	7.12	1.39	5.59	1.44	--	--	-21.5%	--
Assist	3.94	1.49	5.36	1.75	4.28	1.92	--	--	-20.1%	--
On-Scene Time[2]										
Primary	17.40	1.03	20.55	1.18	18.60	1.28	--	+19.6%	--	--
Assist	10.80	1.23	14.28	1.53	12.22	1.45	--	+17.9%	-14.4%	--
Response Time[2]										
Primary	9.33	1.27	12.27	1.34	9.79	1.32	--	--	-20.2%	--
Assist	4.16	1.78	5.56	1.90	4.64	1.94	--	--	-16.5%	--
Service Time[2]										
Primary	23.32	0.95	27.42	0.91	23.70	1.00	--	--	-13.6%	--
Assist	14.74	1.10	20.41	1.10	16.44	1.11	--	--	-19.5%	--

[1]See footnote 1 in Exhibit 4.1 for the dates of the three periods.

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

[3]Ratio of standard deviation to average: 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.

lower than those of both the split-force and During periods. One might think of the coefficient as a measure of response system efficiency which increases as the coefficient decreases. However, that would only apply if the averages remained relatively constant. In each case, the decrease in the average is such that the corresponding increase in the coefficient actually reflects a net decrease in the standard deviation of the measure. For example, the 13.6 percent Before/During decrease in the average primary service time would explain a 16 percent increase in the coefficient of variation, which actually increased by less than 10 percent. Therefore, the standard deviation of the measure must have decreased by some 5 percent.

Exhibit 4.6 displays, as examples, the actual incident time distributions for Basic unit calls for service in the 7/1/79 - 9/30/79 quarter. Comparing Exhibits 4.5 and 4.6, it is interesting to note that while the average delay time* in the During period was 3.25 minutes, almost 60 percent of all calls were delayed by 7 minutes or less. Similarly, the average travel time was 5.20 minutes but 90 percent of all calls took a travel time of 9 minutes or less. Therefore, although the average During call was responded to in 8.45 minutes, less than 10 percent of those calls received a response of greater than 16 minutes.**

Finally, the temporal sensitivity of response and service times is depicted in Exhibit 4.7. As one might expect, primary response time decreases in the early morning hours when traffic is light and calls tend to be more serious in nature. Assist service time does not exhibit the same sensitivity. Interestingly, both the split-force and During service

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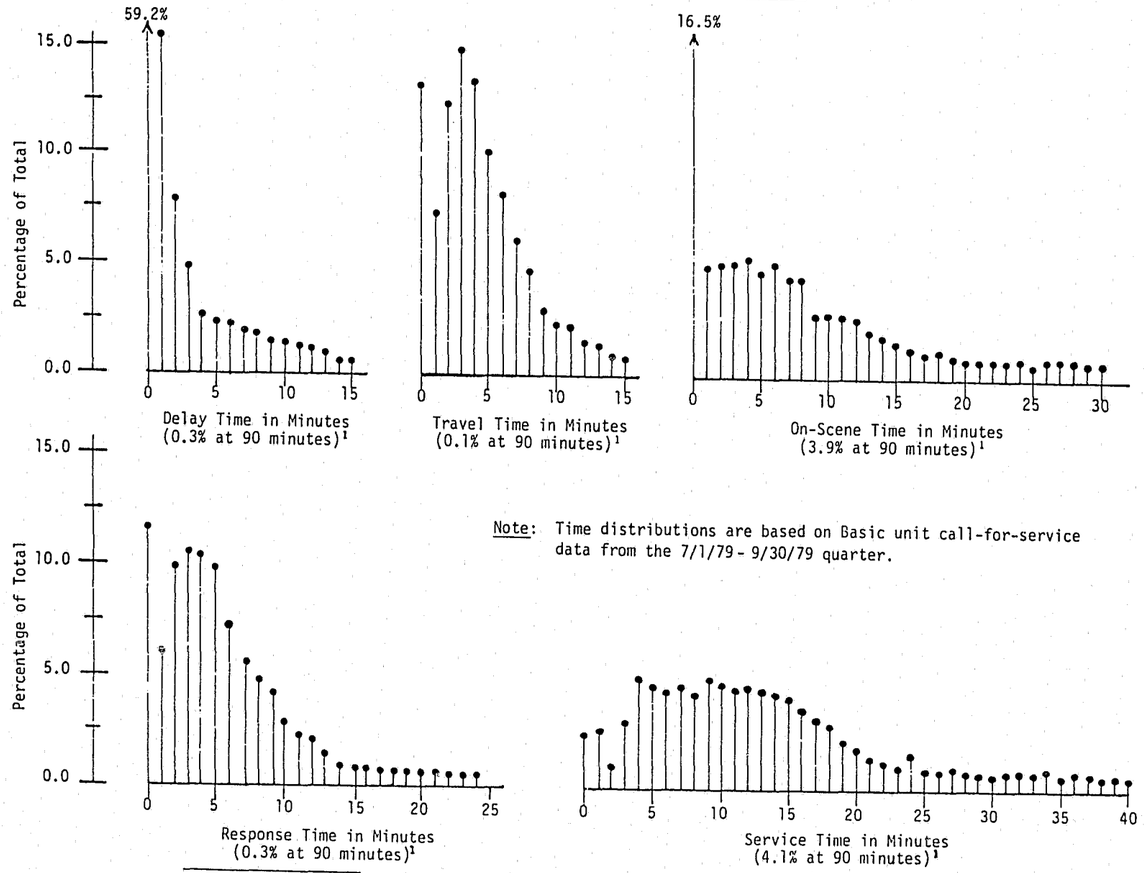
* Weighted sum of the primary and assist times.

** The split-force incident time distributions demonstrate similar results.

Exhibit 4.6

Basic Unit Incident Time Distributions

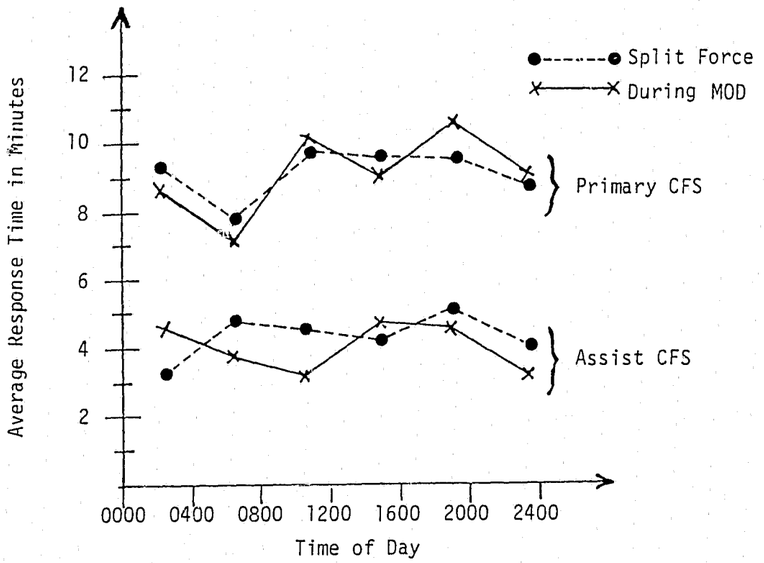


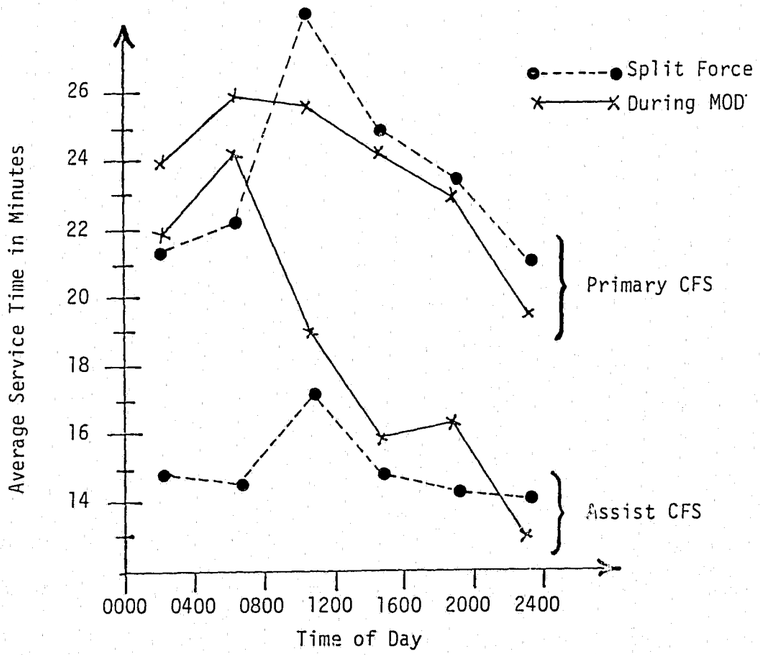
Note: Time distributions are based on Basic unit call-for-service data from the 7/1/79 - 9/30/79 quarter.

[1] Computer analysis truncates all During samples at 90 minutes.

Exhibit 4.7

Temporal Sensitivity of Response and Service Times





times diminish sharply after Tour 3 (0800-1200) as the citizen demand increases, up until midnight. While the analysis did not point to the existence of a true constant workload phenomenon (in which the product of the number of calls served by a unit and its service time remains statistically constant), one would expect busier units to commit less service time to their calls, as suggested by Exhibit 4.7.

WORKLOAD-RELATED STATISTICS

Three workload-related measures are discussed in the split-force evaluation report [Tien et al., 1978 (b), p. 4-12 to 4-14] and defined in the glossary in Appendix B: they are workload, unit utilization factor, and officer workload index. Exhibit 4.8 itemizes the components of the Basic unit workload-related statistics. Although the contents of the exhibit are discussed at various points in the report, it is interesting to note that the Before unit utilization factor of 0.394 was indeed quite high; however, if the inflated Before service times were reduced to split-force levels, then the unit utilization factor would have only been 0.327, and the corresponding officer workload index would have been 0.248. Another point of interest is the During unit utilization factor of 0.338 which is a little better than the established program objective (see Objective 5.2 in Exhibit 2.2) of 0.335.

4.2 SPLIT-FORCE ELEMENTS

To summarize the current status of the individual split-force elements, Exhibit 4.9 rates each element on the basis of its operational integrity (i.e., as compared with the intent of the original split-force design); its contribution to WDP efficiency; its contribution to the WDP

Exhibit 4.8

Basic Unit Workload-Related Statistics

Evaluation Quarter	Number of Calls for Service per Day		Service Time in Minutes		Number of 8-Hour Units per Day	Basic Unit Utilization Factor[1]			Officers per Basic Unit	Basic Officer Workload Index[2]
	Primary	Assist	Primary	Assist		Primary	Assist	Total		
Split-Force										
Quarter 1	140.3	53.1	23.54	14.53	24.47	0.281	0.066	0.347	1.22	0.284
Quarter 2	151.1	54.0	23.19	14.58	25.19	0.297	0.065	0.362	1.26	0.287
Quarter 3	180.2	44.9	21.95	13.13	24.72	0.330	0.055	0.385	1.31	0.294
Quarter 4	140.7	47.8	24.60	16.70	24.70	0.294	0.067	0.361	1.28	0.282
12/75 - 11/76	154.6	51.4	23.32	14.74	24.78	0.301	0.063	0.364	1.27	0.287
Before										
Quarter 1	161.4	46.3	24.29	18.15	25.66	0.318	0.068	0.386	1.38	0.280
Quarter 2	140.7	40.6	30.16	23.55	24.70	0.356	0.081	0.437	1.36	0.321
Quarter 3	118.4	41.1	29.48	20.06	23.83	0.305	0.072	0.377	1.28	0.295
Quarter 4	134.6	51.3	26.66	17.79	24.65	0.303	0.077	0.380	1.25	0.304
7/77 - 6/78	138.9	44.8	27.46	19.71	24.71	0.320	0.074	0.394	1.32	0.299
During										
Quarter 1	95.7	42.5	24.71	17.86	20.00	0.244	0.077	0.321	1.25	0.257
Quarter 2	109.9	43.2	23.22	14.96	19.26	0.275	0.070	0.345	1.26	0.274
Quarter 3	103.6	44.1	23.29	17.49	19.36	0.266	0.081	0.346	1.24	0.279
1/79 - 9/79	103.2	43.3	23.70	16.74	19.53	0.262	0.076	0.338	1.25	0.270

[1]Unit Utilization Factor = Fraction of time a patrol unit is responding to calls for service during an 8-hour tour
= Ratio of calls-for-service workload to number of available unit hours
= (Number of Calls for Service) (Service Time)/(Number of 8-Hour Units) (8 Hours)

[2]Officer Workload Index = Ratio of call-for-service workload to number of available officer hours
= (Number of Calls for Service) (Service Time)/(Number of 8-Hour Officers) (8 Hours)
= Unit Utilization Factor/Officers per Unit

Exhibit 4.9

Status of Split-Force Elements

Split-Force Element	Operational Integrity[1] H = High M = Moderate L = Low	Contribution to WDP Efficiency[2] S = Substantial M = Moderate L = Low	Contribution to WDP Effectiveness[3] S = Substantial M = Moderate L = Low	Officer Attitude toward Element P = Positive M = Moderate N = Negative
Basic Patrol Force (CFS Response Function)				
• Proportional Temporal Deployment	H	M	S	M
• Adaptive Response Sectors	H	L	M	L
• Prioritized FCFS Dispatch	M	S	L	M
• Formal Delay Response	L	L	L	M
• Streamlined Roll-Call Procedures	M	M	L	M
• Reduced Manning Level per Unit	M	M	L	N
• Fixed-Post Assignments	L	L	L	N
• NIJ Overtime	---	L	S	P
Total Basic Patrol	M	---	---	M
Structured Patrol Force (Crime Prevention Function)				
• Directed Problem-Oriented Patrol	L	---	---	M
• Immediate Incident-Oriented Investigation	M	---	---	M
Total Structured Patrol	L	---	---	---
Total Split-Force Patrol	M	---	---	---

[1]Integrity based upon comparison with original intent as reflected in original design of the split-force experiment.

[2]Efficiency of a patrol element is the extent to which the element is undertaking the patrol force's activities at minimum cost in resources.

[3]Effectiveness of a patrol element is the extent to which the element is accomplishing the patrol force's function.

effectiveness; and officer attitude toward the element. The following subsections review each individual element, explaining the reasons for the assigned ratings in selected cases where the explanation offers a particular insight into the split-force status.

BASIC PATROL ELEMENTS

Overall, as indicated in Exhibit 4.9, the integrity of the Basic patrol force is moderate, while officer attitude remains moderate to quite positive. The latter conclusion is based on the plurality of WDP personnel surveyed who said they would prefer assignment to Basic patrol, above all others (see Appendix D.2, Question 6). Note that NIJ (formerly NILECJ) overtime is included as a Basic patrol element, although during the MOD program it was available only in conjunction with the MOD program.

Proportional Temporal Deployment

Proportional temporal deployment represented an attempt to achieve greater efficiency by altering the temporal deployment of patrol resources so that it could more accurately meet the time distribution of demand for police services. Four steps were involved: first, the available patrol resources were assessed; second, the time distribution of call-for-service demand was determined; third, the number of Basic units required to meet that demand was determined with the assistance of the Patrol Car Allocation Model; and fourth, a "push-pull" scheduling mechanism was developed to meet the temporal allocation of Basic (and Structured) units while minimizing the number of shift changes required.

The proportional temporal deployment element has been maintained with high integrity, due primarily to the WDP's capability to carry out computer

runs of the Patrol Car Allocation Model (PCAM) which provided updates to the temporal manpower requirements. In fact, the MOD program required three distinct temporal allocation plans (see Exhibit 2.8), each involving a PCAM-based analysis. As Exhibit 4.10 indicates, the temporal allocation plans have been upheld as designed, recognizing that the differences between planned and measured levels are attributable to the particular measurement procedure.

The proportional temporal deployment element continues to support the effective allocation of Basic resources by imposing a sensitivity to the temporal distribution of call-for-service demand. However, the efficiency of the allocation of Basic resources has not kept pace, as evidenced by several factors: first, the primary delay times have slipped from 3.41 minutes during the split-force experiment to 4.51 minutes During the program (see Exhibit 4.5); second, about half of the 28 percent reduction in Basic unit workload imbalance achieved during the split-force experiment has been lost (see Exhibit 4.11); and finally, the mismatch between call-for-service demand and Basic unit supply has returned to a pre-split-force level (see Exhibit 4.12). The latter effect is due, in part, to the During reduction in the number of Basic units, which renders a match more difficult to achieve as a result of minimum unit thresholds in individual tours; by definition the mismatch index (see Exhibit 4.12, footnote 1) is sensitive to the total number of Basic units -- the smaller that number the greater the sensitivity of the mismatch index. Finally, while the number of officers per Basic unit has remained essentially constant, the During Basic unit officer workload index, in comparison with the split-force statistics, has decreased in five of the six tours, due, of course, to the decrease in During Basic unit utilization (see Exhibit 4.13).

Exhibit 4.10

Temporal Distribution of Available Basic Units

Tour	Average Number of Basic Units[1] Planned/Measured[2]			Measured Split-Force/ During Change	Measured Before/During Change
	Split-Force	Before	During		
1 (0000-0400)	8/ 7.55	8/ 7.35	7/ 6.98	- 7.5%	- 5.0%
2 (0400-0800)	5/ 3.97	5/ 3.93	4/ 3.33	-16.1%	-15.3%
3 (0800-1200)	7/ 6.39	7/ 6.26	7/ 5.98	- 6.4%	- 4.5%
4 (1200-1600)	10/ 9.20	10/ 9.24	8/ 7.31	-20.5%	-20.9%
5 (1600-2000)	12/11.36	12/11.30	8/ 7.82	-31.2%	-30.8%
6 (2000-2400)	12/11.22	12/11.35	8/ 7.66	-31.7%	-32.5%
0000-2400	27/24.78	27/24.71	21/19.54	-21.1%	-20.9%

[1]See footnote 1 in Exhibit 4.1 for the dates of the three periods.

[2]The measured 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 4-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 4.11

Basic Unit Utilization Imbalance

Average Basic Unit Utilization Factor[1,2] Split-Force/Before/During						
Tour	Minimum	Average	Maximum	SD/Average[3]	Split-Force/During Change[4]	Before/During Change[4]
1(0000-0400)	0.302/0.221/0.282	0.380/0.398/0.365	0.482/0.591/0.483	0.144/0.321/0.137	- 4.9%	-57.3%
2(0400-0800)	0/188/0.198/0/172	0.237/0.259/0.239	0.380/0.356/0.339	0.199/0.188/0.254	+27.6%	+35.1%
3(0800-1200)	0.318/0.343/0.213	0.406/0.438/0.314	0.532/0.637/0.423	0.117/0.187/0.183	+56.4%	- 2.1%
4(1200-1600)	0.226/0.249/0.165	0.357/0.384/0.298	0.507/0.583/0.482	0.160/0.242/0.245	+58.8%	+ 1.2%
5(1600-2000)	0.210/0.251/0.202	0.390/0.427/0.386	0.520/0.608/0.539	0.196/0.175/0.187	- 4.6%	+ 6.9%
6(2000-2400)	0.214/0.267/0.288	0.352/0.382/0.371	0.495/0.627/0.492	0.192/0.227/0.152	-20.8%	-33.0%
0000 - 2400	0.188/0.198/0.165	0.364/0.394/0.338	0.532/0.627/0.538	0.175/0.168/0.221	+26.3%	+31.5%

[1]See footnote 1 in Exhibit 4.1 for the dates of the three periods.

[2]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, one averages, 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 24 values for the During period which covers three quarters. Thus, the 0000-0400 During statistics are based upon these 24 values.

[3]Ratio of standard deviation to average.

[4]Changes in the ratio of standard deviation to average.

Exhibit 4.12

Basic Unit Demand and Supply Temporal Mismatch

Evaluation Period	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)	
Split-Force							
Quarter 1	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
Quarter 2	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
Quarter 3	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
Quarter 4	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	15.5%/15.2%	5.1/8.0	13.8/12.9	18.3/18.5	24.8/22.9	22.5/22.6	0.045
Before							
Quarter 1	20.2%/15.5%	5.9/9.0	14.4/12.6	17.0/18.4	21.4/22.3	21.1/22.3	0.063
Quarter 2	12.8%/14.6%	6.3/8.6	15.3/12.4	18.0/18.3	24.0/23.7	23.6/22.4	0.043
Quarter 3	14.1%/14.2%	5.1/6.5	15.3/12.8	18.8/19.1	25.4/23.1	21.3/24.1	0.047
Quarter 4	15.5%/15.0%	5.3/7.7	12.1/12.9	17.2/18.9	26.2/22.5	23.7/22.9	0.049
7/77 - 6/78	15.9%/14.8%	5.7/8.0	14.2/12.7	17.7/18.7	24.1/22.9	22.4/22.9	0.034
During							
Quarter 1	17.8%/17.2%	5.6/8.6	11.3/14.9	18.0/18.8	23.2/20.4	24.1/20.2	0.068
Quarter 2	20.0%/18.5%	5.2/8.5	12.3/15.6	15.9/18.9	23.9/19.8	22.7/18.7	0.081
Quarter 3	17.9%/17.8%	5.4/8.5	12.3/15.5	14.9/18.5	23.0/19.8	26.4/19.9	0.092
1/79 - 9/79	18.6%/17.8%	5.4/8.5	12.0/15.3	16.2/18.7	23.4/20.0	24.4/19.6	0.079

[1]Mismatch Index $= \frac{1}{100}\left[\sum_{\ell=1}^{6} (D(\ell) - S(\ell))^2\right]^{1/2}$ for each quarter.

Exhibit 4.13

Temporal Distribution of Basic Unit Workload Statistics

	Basic Unit Workload Statistics Split-Force/Before/During				
Tour	Basic Unit Utilization Factor	Officers Per Basic Unit	Officer Workload Index		
			Index	Split-Force/During Change	Before/During Change
1(0000-0400)	0.380/0.398/0.360	1.26/1.21/1.21	0.302/0.328/0.297	- 1.7%	- 9.5%
2(0400-0800)	0.237/0.259/0.234	1.30/1.27/1.23	0.182/0.205/0.190	+ 4.4%	- 7.3%
3(0800-1200)	0.406/0.438/0.304	1.34/1.57/1.26	0.303/0.279/0.242	-20.1%	-13.3%
4(1200-1600)	0.357/0.384/0.294	1.26/1.46/1.23	0.283/0.263/0.238	-15.9%	- 9.5%
5(1600-2000)	0.390/0.427/0.382	1.27/1.24/1.29	0.307/0.343/0.297	- 3.3%	-13.4%
6(2000-2400)	0.352/0.382/0.369	1.27/1.24/1.28	0.291/0.308/0.289	- 0.7%	- 6.2%
0000-2400	0.364/0.394/0.338	1.27/1.33/1.25	0.287/0.303/0.270	- 5.9%	-11.0%

Adaptive Response Sectors

With the aid of the Hypercube model, six alternative sector designs were developed primarily to minimize the workload imbalance among sector units. The sectors were identified as response rather than patrol sectors, inasmuch as the primary function of the Basic units was to respond to calls for service -- patrol for crime prevention purposes was left to the Structured units.

Originally designed to minimize both the travel time to calls for service and workload imbalance among the Basic units, this element has remained reasonably effective on both counts, and, in fact, the average primary travel time has decreased from almost 6 minutes during the split-force experiment to approximately 5.5 minutes in the During period (see Exhibit 4.5). Despite its effectiveness, the officers continue to resent a system that reduces their perceived sector identity due to the changing sector patterns every four hours. During split-force there were five unique sector maps, while during the MOD program the number of unique sector maps decreased to three.

Prioritized First-Come, First-Served (FCFS) Dispatch

As originally conceived, the FCFS dispatch element called for the assignment of a priority to every call for service and required that each call for service, within a priority, would be dispatched on a first-come, first-served (FCFS) basis -- independent of the call's point of origin. Exhibit 4.3 contains the distribution of Basic unit calls for service by priority designation in the three evaluation periods. While the proportions of primary and assist calls for service have remained relatively constant, there has been a dramatic increase in the assignment of the

critical priority designation to assist calls for service. As a result, the During period reflects a 29 percent incidence of critical calls, in contrast to the 14 percent observed during split force. As indicated in Section 4.1, this issue is further examined in Section 5.4. As in split force, the During delay and travel times remain markedly shorter for critical calls for service (see Exhibit 4.14).

The FCFS dispatch procedure continues to be the key factor behind the shorter delay and longer travel times brought about under split force. The latter impact is primarily attributable to the level of intersector dispatches which, as indicated in Exhibit 4.15, has risen from about two-thirds of all calls for service to over three-quarters. The increase from the already substantial split-force level is due to the 21.1 percent reduction in the number of Basic units. The level of intersector dispatches has unquestionably had an adverse impact on the Basic patrol officers, due to the further reduction in their sector identities. Approximately 55 percent of both communications and patrol personnel interviewed in the personnel survey felt that intersector dispatches had increased (see Exhibit C.2, pages 5 and 9, Question 16), which supports the finding in Exhibit 4.15.

Formal Delay Response

In order to reduce citizen frustration and expectation, it was decided in the planning for split force that if the response to a call for service was to be delayed, the caller would be formally advised of it. Perhaps more importantly, and in the MOD framework, a second motivation for formally delaying responses was the resultant tendency to decrease

Exhibit 4.14

Basic Unit Incident Time Statistics by Priority

Measure	Average Time in Minutes[1]								
	Critical Calls for Service			Noncritical Calls for Service			Total		
	Split-Force	Before	During	Split-Force	Before	During	Split-Force	Before	During
Delay Time									
Primary	1.75	2.33	1.79	3.66	5.35	5.26	3.41	5.21	4.51
Assist	0.02	0.16	0.23	0.27	0.32	0.34	0.25	0.45	0.30
Travel Time									
Primary	4.77	5.89	4.70	6.10	7.19	5.84	5.92	7.12	5.50
Assist	3.48	4.76	3.74	4.01	5.34	4.65	3.94	5.36	4.21
On-Scene Time									
Primary	18.95	17.42	16.22	17.13	20.75	18.12	17.40	20.55	18.60
Assist	11.24	12.34	12.46	10.74	14.42	13.30	10.80	14.28	12.75
Response Time									
Primary	6.52	8.20	6.46	9.76	12.46	10.81	9.33	12.27	9.79
Assist	3.50	4.91	4.34	4.28	5.76	4.88	4.19	5.56	4.39
Service Time									
Primary	23.72	23.03	23.66	23.23	27.59	23.48	23.32	27.42	23.70
Assist	14.72	17.16	15.75	14.75	19.53	17.80	14.74	20.41	16.77

[1]See footnote 1 in Exhibit 4.1 for the dates of the three periods.

Exhibit 4.15

Intersector Dispatches

Evaluation Period	Basic Unit Dispatches per Day	Fraction of Dispatches Which Are Intersector Dispatches
Split-Force		
Quarter 1	193.4	0.630
Quarter 2	205.1	0.680
Quarter 3	225.1	0.620
Quarter 4	188.5	0.666
12/75 - 11/76	206.0	0.648
During		
Quarter 1	138.2	0.793
Quarter 2	153.1	0.781
Quarter 3	147.7	0.773
1/79 - 9/79	146.3	0.782

and shift demand peaks, allowing for a more efficient allocation of patrol resources.

During the split-force experiment, as Exhibit 4.16 indicates, 9.7 percent of the calls for service were formally delayed; that is, when Basic units were unavailable (i.e., when the red delay light was on at the dispatcher's desk), a caller would be told to expect a 30-minute delay in the WDP's response. During the MOD program, the percentage of primary calls with marked delay shrank to 4.4 percent. Not only was this option not exercised as frequently, but, in those cases in which it was utilized, the actual delay increased from an average of 11.5 minutes during the split-force experiment to almost 24 minutes during the MOD program. Moreover, as summarized in Exhibit 4.17, the During incident delay times at shift changes were also lengthier than during split force. Note that the midnight and 4 P.M. shift changes evidence shorter delays than the 8 A.M. change, due to the overlapping shifts on the street at midnight and 4 P.M., a result of the push-pull scheduling of patrol units.

Drawing upon the split-force experience and program monitoring findings, this underutilization of the formal delay response is attributable, in part, to inadequate supervision in the Communications Division. PSE often found the dispatcher-activated red light, designed to warn complaint takers of a current or impending delay, left on in nonpeak load situations. Similarly, it would sometimes remain off in situations during which significant dispatching queues had formed. Further, examination of call-for-service cards indicated some formally delayed calls for service were not stamped with the conspicuous red "DELAY" stamp, thus causing an underestimate in the frequency of its usage. The second client survey confirms

Exhibit 4.16

Formal Delay Response Statistics

Evaluation Period	Average Number of Calls for Service per Day			Average Delay in Minutes		
	Primary Calls with Marked Delay	All Primary Calls	Percent of Primary Calls with Marked Delay	Primary Calls with Marked Delay	All Primary Calls	Ratio of Marked to Primary Delay Times
Split-Force						
Quarter 1	3.4	140.3	2.4%	10.62	3.06	3.47
Quarter 2	11.0	151.1	7.3%	12.40	3.27	3.79
Quarter 3	30.2	180.2	16.8%	11.22	3.77	2.98
Quarter 4	15.3	140.7	10.9%	11.70	3.54	3.31
12/75 - 11/76	15.0	154.6	9.7%	11.49	3.41	3.37
Before						
Quarter 1	12.3	161.4	7.6%	21.73	4.62	4.70
Quarter 2	8.6	140.7	6.1%	26.52	6.37	4.16
Quarter 3	5.0	118.4	4.2%	31.86	5.68	5.62
Quarter 4	6.8	134.6	5.1%	15.37	4.35	3.54
7/77 - 6/78	8.2	138.7	5.9%	23.22	5.22	4.44
During						
Quarter 1	3.9	95.7	4.1%	28.28	4.87	5.81
Quarter 2	5.1	109.9	4.6%	22.08	4.71	4.69
Quarter 3	4.6	103.6	4.4%	21.54	3.97	5.43
1/79 - 9/79	4.5	103.2	4.4%	23.68	4.51	5.25

Exhibit 4.17

Response Delays at Platoon Shift Changes

Platoon Shift Change	Average Delay Time in Minutes[1]					
	Split-Force		Before		During	
	Quarterly	Total	Quarterly	Total	Quarterly	Total
Midnight						
Quarter 1	10.59		6.77		8.78	
Quarter 2	13.68	8.54	10.07	8.25	--	9.54
Quarter 3	4.17		11.25		9.35	
Quarter 4	5.71		4.91		10 50	
8:00 A.M.						
Quarter 1	8.03		8.07		11.50	
Quarter 2	12.05	9.91	9.49	10.12	--	12.40
Quarter 3	9.10		9.19		7.62	
Quarter 4	10.42		13.72		18.02	
4:00 P.M.						
Quarter 1	10.61		12.23		7.00	
Quarter 2	10.29	8.94	13.92	11.59	--	10.06
Quarter 3	5.58		11.00		13.16	
Quarter 4	9.27		9.19		10.02	
24-Hour Period	--	3.41	--	5.21	--	4.51

[1]Average delay times are based on primary calls for service which are received during the half-hour period that overlaps each platoon shift change.

the latter observation since the proportion of call-for-service cards with the delay stamp (4.5 percent -- see Exhibit 4.16) is well below the proportion of clients who recalled being advised of a delay (17.9 percent -- see Exhibit C.10, Question 12).

Finally, further discussion of this response option -- within the MOD framework -- is deferred to Section 5.3.

Streamlined Roll-Call Procedures

An area which readily lent itself to improved efficiency was the roll call -- both on-going and off-going. Procedures were changed during split force to assign patrol supervisors the responsibility for mustering equipment before the on-going roll call, and for inspecting equipment after the off-going roll call, thus allowing additional time for patrol units to be on the street. In addition, briefings and debriefings were restricted in length.

As the split-force evaluation report [Tien et al., 1978 (b)] stated: although streamlining roll-call procedures added some efficiency to Basic patrol operations, its impact was minor. Currently, the application of this Basic patrol element has diminished in intensity and the number of patrol unit hours of street presence it adds per day is not significant. Officer reaction remains ambivalent regarding roll-call effectiveness and the value of information exchanged during roll-call.

Reduced Manning Level per Unit

At the start of the split-force experiment the WDP officials were confident that given a more efficient allocation of patrol resources (due to the other Basic patrol elements), they could convert approximately

50 percent of the two-officer Basic units to one-officer units, without jeopardizing the safety of the single officers.

During the split-force experiment, the number of officers per Basic unit, according to the patrol car sheets, averaged 1.27 (see Exhibit 4.13). At the start of the MOD program, the WDP decision makers targeted to maintain the split-force level. The actual During statistic climbed to 1.38 because of, as stated in Exhibit 4.1, a new recruit class of 19 officers who graduated from the WDP training academy and were placed as the second officers in Basic patrol units, beginning with the During period. However, inasmuch as the recruit officers were on probation for most of the During period and were, in reality, primarily observers, it was decided that each recruit's presence in the patrol unit would be equivalent -- in terms of effectiveness -- to two-thirds that of a full-fledged patrol officer. Consequently, as summarized in Exhibit 4.13, the equivalent number of officers per Basic unit was estimated to be 1.25 in the During period. This is actually a high estimate since the During assist workload has also increased from the split-force period, due, in part, to the dispatcher's recognition that the second officer in a Basic patrol unit was often a newly-sworn officer without field experience, resulting in the treatment of the unit as a one-officer unit.

As a final point, the WDP officers, like police officers throughout the nation, have always reacted negatively to any reduction in the proportion of two-officer patrol units. They perceive one-officer units as potentially threatening to their safety, although no evidence has, as yet,

been developed to support their apprehension,* nor has the union moved formally to demand a greater number of two-officer patrol units.

Fixed-Post Assignments

In an attempt to answer the question of what Basic units should do between calls for service and when not carrying out maintenance-related activities, the designers of the split-force experiment decided that the Basic units should not conduct random preventive patrol (i.e., the job of the Structured units) -- instead, they should be assigned to specific locations (i.e., fixed-posts) in anticipation of potential calls for service. Additionally, the fixed-post assignments were designed to give the Basic officers a chance to complete their incident reports, allowing them to clear incident scenes more rapidly. Uncomfortable with the visibility of fixed posts, the Basic units eventually adopted fixed-area patrols which typically covered a two- to three-block area.

Little energy has been put by the WDP into addressing the fixed-post/area assignments. Largely ignored during the MOD program, it remains a potentially useful element if the issues of boredom and perceived over-visibility can be addressed. However, the intent to establish rationally-designed, fixed-locale assignments was never pursued, leaving the element in limbo, and the officers' attitudes uniformly negative.

NIJ Overtime

The overtime provided by NIJ (formerly NILECJ), was an essential factor in inducing the WDP to conduct the split-force experiment. However,

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* Kaplan's reanalysis [1979] of studies conducted in San Diego [Boydstun et al., 1977] and Kansas City [1977] reveals no significant difference in officer safety between one-officer and two-officer units.

the overtime was distributed among all the elements of the experiment and not employed solely to sustain the Structured force.

Although the overtime available during the MOD program was for program purposes, primarily to replace the patrol officers selected to staff the Complaint Service Unit, it was available to and utilized by other Basic patrol officers. Thus, the increased effectiveness observed in split force resulting from improved officer morale continued in evidence (see Exhibit D.2, Question 10). The one mitigating factor was some abuse of overtime privileges in which increased stress and fatigue exacted a personal and professional toll. Section 7.2 further discusses the issue of officer stress.

Finally, it should be stated that although total overtime during the MOD program was comparable to that during split force (see Exhibit 4.1), overtime was not a key element in the conduct of MOD, although it certainly facilitated the planning and implementation process. When questioned, the majority of WDP personnel felt that MOD overtime had no effect on their job satisfaction (see Exhibit D.2, Question 10).

STRUCTURED PATROL ELEMENTS

As stated in Exhibit 4.9, the operational integrity of the Structured patrol force was uniformly low during MOD. This was almost solely due to the 40 percent reduction in Structured patrol staffing, relative to the split-force level. This reduction came as a result of the staffing of specialized units, primarily the Traffic and Youth Aid Divisions. Another factor contributing to the reduction of the Structured force was "Operation Flytrap" -- a covert "sting" type, anti-fencing project conducted by the WDP in conjunction with other Delaware law enforcement agencies. During the life of the operation -- June 1978 to November 1978 -- the WDP contributed four full-time sworn officers to the effort. Given this limited

staffing level -- 16 officers as opposed to 27 during split-force -- one cannot expect that Structured patrol would remain effective in its preventive and investigative activities. Thus, Exhibit 4.9 does not attempt to reflect an assessment in either of those Structured categories.

In addition, as Exhibit 4.2 points out, there has been an accelerated During utilization of the Structured force to respond to calls for service, particularly in an assist capacity, thus further diminishing the ability of the Structured force to conduct directed, problem-oriented patrol. Indeed, participant observations have supported this finding.

During the split-force experiment, the detectives were overwhelmingly negative about the level of cooperation between their unit and the Structured patrol force (see Exhibit 4.18 (a)).* However, during the MOD program, a greater harmony and understanding was achieved between these two units, resulting in the majority of detectives feeling that cooperation has improved (see Exhibit 4.18 (b)). In many respects, the strength reduction of the Structured patrol force has led to a less-threatening situation for the detectives. In addition, at the conclusion of the split-force experiment, the Patrol and Detective Divisions were brought together under the command of the Inspector of Operations. Prior to that time they were in separate organizational units with their only common commander being the Chief of Police. Since the Inspector of Operations was also the original split-force Project Director, one might have expected the organizational change to have led to improved interdivision harmony. Exhibit 4.18 (b) describes the reactions of other divisions to the issue of

* One of the most important tasks assigned to the Structured patrol force during split force was the immediate response to in-progress felony incidents -- with the intention of increasing apprehension probabilities and providing a deterrent effect. This assignment was immediately perceived by the detectives as infringing upon their territory and responsibilities.

Exhibit 4.18

Officer Reaction to Detective/Structured Cooperation

How would you rate the cooperation between Structured officers and detectives now (since 4/76)?

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

(a) Reaction during split-force experiment (9/76)

Comparing the level of cooperation between Structured patrol officers and detectives now (since 1/79) with the level of cooperation before the Program began, cooperation is now:

Percent Answering	Communication Personnel (N = 23)	Resource Management Personnel (N = 7)	Patrol Personnel (N = 89)	Detective Personnel (N = 16)	Total (N = 135)
Much Stronger	0.0%	0.0%	1.1%	18.8%	3.0%
Stronger	0.0	42.9	18.0	12.5	15.6
About the Same	34.8	42.9	27.0	37.5	30.4
Less Strong	13.0	14.3	9.0	12.5	10.4
Much Less Strong	0.0	0.0	13.5	6.3	9.6
Don't Know	52.2	0.0	31.5	12.5	31.1

(b) Reaction during MOD program (6/79)

detective/Structured cooperation. Overall, the WDP personnel were evenly divided as to the degree of improvement.

4.3 SPLIT-FORCE CONTINUATION

At the supervisory level of the WDP, there is a division of opinion regarding the future of split force. While some supervisors view the MOD program as significant (and split force as a necessary prerequisite), still others would like to return to the pre-split-force patrol staffing: that is, uniformly staffed shifts with a strong sector identity. Although it is not a hard-and-fast rule, there is a tendency for the division of opinion to be along seniority lines. Older supervisors seem to relate most strongly to the procedures in place when they entered the WDP and experienced their earliest field assignments. Younger supervisors have trained under split force and willingly accept it, since they have known no other system.

Towards the end of the split-force experiment (i.e., September 1976), a questionnaire survey was administered to approximately 175 WDP personnel in conjunction with the evaluation of the experiment (see Tien et al., [1978 (b), Appendix C] for detailed survey results). One of the questions posed solicited the officers' attitudes regarding continuation of the split-force patrol concept. As Exhibit 4.19 (a) indicates, of the 168 officers who responded, they were evenly divided in their response. However, on closer examination, the detectives were overwhelmingly opposed, and the patrol personnel heavily in favor, while the communications personnel were split. These attitudes were rooted in the previously discussed conflict between the detectives and the Structured patrol

Exhibit 4.19

Officer Reaction to Split-Force Continuation

At the end of the experiment, should the WDP continue to deploy split-force patrol?

Percent Answering	Communication Personnel (N = 22)	Patrol Personnel (N = 116)	Detective Personnel (N = 30)	Total (N = 168)
Yes	45.5%	62.9%	20.0%	53.0%
No	54.5	37.1	80.0	47.0

(a) Reaction during split-force experiment (9/76)

There is no longer any reason to maintain a split-force approach to patrol operations?

Percent Answering	Communication Personnel (N = 23)	Resource Management Personnel (N = 7)	Patrol Personnel (N = 88)	Detective Personnel (N = 16)	Total (N = 134)
Strongly Agree	4.3%	14.3%	35.2%	25.0%	27.6%
Agree	17.4	42.9	25.0	12.5	23.1
Disagree	43.5	28.6	23.9	31.3	28.4
Strongly Disagree	4.3	14.3	3.4	12.5	5.2
Don't Know	20.4	0.0	12.5	18.8	15.7

(b) Reaction during MOD program (6/79)

force, as well as the general preference expressed by WDP personnel for Basic patrol assignments.

More recently (i.e., June 1979), a questionnaire survey was administered in conjunction with the MOD program evaluation (see Exhibit D.2 for detailed results). Exhibit 4.19 (b) contains the response to a similar question about continuation of split force. Overall, roughly 50 percent of the 134 respondents agreed with the proposition that split force was no longer needed, while approximately 34 percent disagreed, and 16 percent did not express an opinion. Individually, the patrol personnel were strongly opposed to continuation, communications strongly in favor, while detectives and resource management were reasonably divided. For patrol, this constitutes a complete reversal of position, most probably resulting from the Basic officers' dislike for the *reduced* Basic car plan under the MOD program. In fact, 72 percent of the WDP personnel queried felt that the reduced car plan was inadequate to meet the needs of Wilmington's citizens (see Exhibit D.2, Question 15).

Finally, the question remains as to the offical position of the WDP in regard to the issue of split-force continuation. While the Chief of Police remains supportive of the split-force concept -- a posture he has assumed since taking office at the conclusion of the split-force experiment -- there are internal personnel pressures which threaten the integrity of split force. Specifically, the staff required to establish the specialized units -- especially Youth Aid and Traffic -- have come mostly at the expense of the Patrol Division, and Structured patrol has borne the brunt of the cutbacks. As a result, the Structured patrol force has been depleted to a dangerous point; further reductions would threaten

its very existence and virtually eliminate the split-force concept entirely. Thus, the question is not whether the split-force concept will continue to exist in Wilmington, but, more importantly, will it exist at a viable level? In order to fully restore the split-force integrity, the WDP will have to add staff to the Structured patrol force and to make a visible, top-level commitment to its existence.

5 PROGRAM COMPONENTS

The four MOD program components -- complaint-screening function, call-back function, alternative response strategies, and Basic patrol reduction -- described in Section 2.2 are considered in greater detail in this section.

In terms of background information, it is of interest to briefly review the WDP's overall perceptions of the program components, based upon their response to PSE's questionnaire survey. As summarized in Exhibit 5.1, with the notable exception of the Basic patrol reduction component, the WDP officers feel in general that the program has brought about a substantial increase in WDP effectiveness, and has had a less pronounced but still positive impact on their job satisfaction. Similarly, the WDP officers feel that the components are for the most part being underutilized, consistent with other evaluation findings.

Another point of interest is the actual call-for-service flow which has occurred in the Wilmington MOD program; this flow is depicted in Exhibit 5.2, which is a more detailed version of Exhibit 2.3. In addition to the call-for-service distribution in Exhibit 4.2, it is helpful at this time to define the unit of flow in Exhibit 5.2 -- that is the *Basic calls for service*. Prior to the implementation of the alternative MOD responses, each call for service entering the WDP response system (i.e., not cleared by the complaint taker) would receive an immediate or formally delayed dispatch of a Basic patrol

Exhibit 5.1

Officer Reaction to Program Components

Program Components	Percent Answering[1,2]								
	Extent of Use			Impact on WDP Effectiveness			Impact on Job Satisfaction		
	Not Enough	Just Right	Too Much	Increased	No Effect	Decreased	Increased	No Effect	Decreased
Complaint Screening Function	50.0%	41.0	9.0	51.0%	41.2	7.8	33.3%	56.1	10.6
Call-Back Function	47.7%	49.5	2.8	75.9%	18.9	5.2	53.2%	41.3	5.5
Alternative Response Strategies[3]									
Phone Adjustment	61.4%	34.2	4.4	59.4%	29.2	11.4	41.6%	48.7	9.7
Walk-In	70.8%	21.5	7.7	55.6%	35.3	9.1	35.6%	52.5	11.9
Phone Report	53.1%	44.2	2.7	72.9%	19.6	7.5	52.3%	40.0	7.7
Specialist Appointment	46.2%	44.1	9.7	72.4%	21.5	6.1	45.1%	46.0	8.9
Basic Patrol Reduction	32.4%	11.7	55.9	15.7%	12.7	71.6	8.1%	22.5	69.4

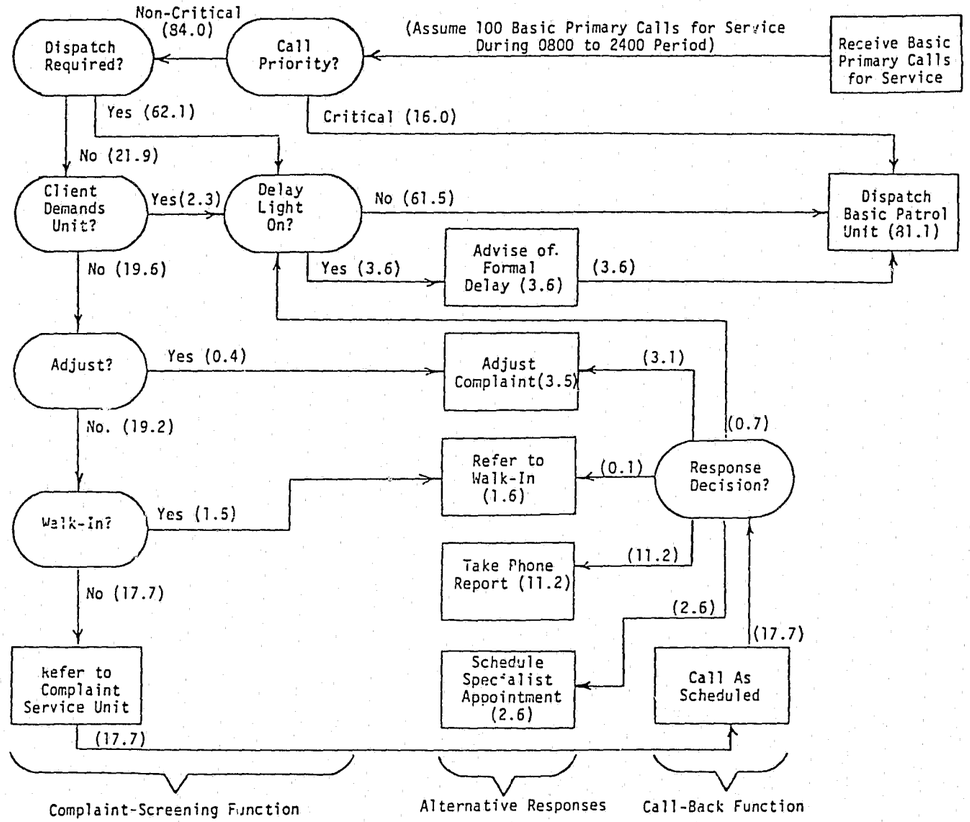
[1]This exhibit is based on information contained in Exhibit D.2, Question 10.

[2]The number of WDP personnel whose responses are summarized ranged from a low of 127 to a high of 134.

[3]The formal delay response strategy was not included in this series of questions.

Exhibit 5.2

MOD Call-for-Service Flow



unit. Deviations occurred in special or emergency situations in which patrol units other than Basic units (e.g., Structured, special, mounted, etc.) would respond in a primary (first unit) or assist (back-up) role. Thus, to analyze the impact of the alternative responses one would have to consider the responses to calls for service which, in the absence of the program, *would have been* dispatched to the Basic patrol force. Consequently, during MOD any call for service which was either dispatched to a Basic patrol unit or diverted to an alternative response is defined for evaluation purposes to be a "Basic call for service." Basic calls for service consist of both primary calls and assists, and may be prioritized as either critical or noncritical. Exhibit 5.2 describes the "outcomes" of 100 typical primary Basic calls for service, arriving during Tours 3 - 6 (0800 - 2400) when the alternative response system was operative.*

In each of the following four sections, which address the four MOD program components, respectively, a program component is identified in terms of its salient features; then the component is discussed from an evaluation perspective; and finally the section closes with a brief concluding statement.

5.1 COMPLAINT-SCREENING FUNCTION

There are three salient features to this MOD program component. First, as detailed in Exhibit 2.5, all incoming calls for service are categorized either as "critical" or "noncritical" in priority, with

* Throughout the remainder of this evaluation report, a Basic call for service should be interpreted as a call for service which is either dispatched to a Basic patrol unit or diverted and which arrives in the period 0800 - 2400, unless otherwise specified.

flexibility on the part of the complaint taker to assign either priority for certain complaint categories. For example, a burglary in progress is clearly a critical incident, while an after-the-fact report of a burglary does not warrant a critical or emergency response. Second, while all critical calls for service and selected noncritical calls for service are dispatched immediately, the complaint taker has the option to dispatch noncritical calls for service on a delayed basis. Third, the complaint-screening function encompasses the option to divert noncritical calls for service to the program's alternative responses.

PRIORITIZING CALLS FOR SERVICE

While Exhibit 4.3 contains the priority designations assigned specifically to calls for service dispatched to Basic patrol units, Exhibit 5.3 considers all During calls for service. During the MOD program, 84.0 percent of all primary calls for service were designated noncritical, as compared with a 94.5* percent Before figure and an 86.1 percent during split-force figure. Looking at Basic unit calls for service (i.e., calls responded to by Basic units) in Exhibit 4.3, it is interesting to note that during MOD the proportion of assists designated critical rose to 50.8 percent, as compared with a 1.7* percent Before figure and a 14.2 percent during split-force figure.

The dramatic During increase in critical assists was due to two primary factors. First, because of the diversion of noncritical calls for service, the calls responded to by Basic patrol units were more

* The abnormal Before figures should be discounted in light of the laxity which existed in the Before period, as discussed in Section 4.1.

Exhibit 5.3

Call-for-Service Priority Distributions

Type of Call for Service/Percent of All Calls for Service	Percent of Calls for Service During MOD		
	Critical	Noncritical	Total
Tours 1,2 (0000 - 0800)			
Primary/ 16.3%	11.4%	54.0%	65.4%
Assist / 8.6%	15.9%	18.7%	34.6%
Total / 24.9%	27.3%	72.7%	100.0%
Tours 3,4,5,6 (0800 - 2400)			
Primary/ 52.8%	10.9%	59.4%	70.3%
Assist / 22.3%	15.0%	14.7%	29.7%
Total / 75.1%	25.9%	74.1%	100.0%
All Tours (0000 - 2400)			
Primary/ 69.1%	11.0%	58.1%	69.1%
Assist / 30.9%	15.2%	15.7%	30.9%
Total /100.0%	26.2%	73.8%	100.0%

serious by definition, requiring a higher proportion of assists -- not only from Basic units but from other patrol units as well. This is supported by the perceptions of WDP clients as reflected in their response to a query concerning the number of patrol units responding to their requests for police service. In the Before client survey 12.3 percent remembered two or more cars responding, while in the During survey more than twice that percentage perceived that their calls for service resulted in at least one assist response (see Exhibit C.9, Question 3). Similarly, approximately 50 percent of both communications and patrol personnel perceived an increase in assists, as reflected in the personnel survey (see Exhibit D.2, pages 5 and 9, Question 16). The increases in the perceived seriousness of the primary calls for service dispatched to patrol units, as well as the absolute number of assists, instilled a sense of urgency in the communications personnel who were responsible for dispatching. As a result, the dispatchers began to view the provision of an assist as a more inherently critical event. A second cause for the increase in critical assists was suggested by participant observations: specifically, because of the significant break with tradition that the MOD program represented, the communications personnel were very hesitant in their approach to the program. While the complaint takers "protected" themselves by dispatching a call for service whose suitability to an alternative response was in doubt, the dispatchers, being sensitive to the reduced number of Basic units, not only initiated more assists but, as is discussed in Section 5.4, channeled some of the calls to non-Basic units so as to "protect the few remaining Basic units". Although, as stated in Section 2.3, more intensive training would have helped to overcome the

above-described hesitancy, it should be stated that the WDP officials themselves were initially quite apprehensive about the MOD program and had in fact urged complaint takers to dispatch a car whenever the complainant appeared at all reluctant to accept an alternative response. As the MOD program progressed, the WDP officials became less apprehensive but the communications personnel remained hesitant and continued to act in the same protective manner, despite repeated efforts by the WDP officials (e.g., issuance of a list containing the types of calls which should be diverted) to increase the use of alternative MOD responses.

In terms of the temporal distribution of the prioritized calls for service, Exhibit 5.4 shows that the temporal distribution of the noncritical calls has not changed over time: approximately 25, 30, and 45 percent of all calls have been designated noncritical during the midnight, day, and evening shift, respectively. Thus, during the 16-hour period (0800-2400) in which the MOD program was in effect, approximately 75 percent of all the calls for service were designated noncritical.

DELAYING CALLS FOR SERVICE

Since the formal delay response was originally developed as an element of the split-force experiment, its performance is discussed in some detail in Section 4.2, which updates the split-force findings. As Exhibit 5.2 indicates, only 3.6 percent of all Basic primary calls for service were formally delayed -- a substantial decrease from the earlier split-force evaluation period. This reflected an underutilization of a key complaint-screening option, which has the potential to decrease the variance of the demand for police services. Further discussion of the variance reduction issue is included in Section 5.3.

Exhibit 5.4

Temporal Distribution of Noncritical Calls for Service

Evaluation Period	Percent of Noncritical Calls for Service					
	Tour 1 (0000 - 0400)	Tour 2 (0400 - 0800)	Tour 3 (0800 - 1200)	Tour 4 (1200 - 1600)	Tour 5 (1600 - 2000)	Tour 6 (2000 - 2400)
Before						
Quarter 1	24.0%	6.7	11.0	15.7	19.3	23.3
Quarter 2	16.1%	6.4	14.0	17.0	22.6	23.9
Quarter 3	16.2%	5.8	14.1	19.4	23.0	21.5
Quarter 4	17.2%	5.8	15.9	18.8	20.5	21.8
7/77 - 6/78	18.4%	6.2	13.8	17.7	21.4	22.5
Transition						
Quarter 1	19.2%	5.9	13.9	16.9	21.5	22.6
Quarter 2	16.3%	6.4	15.3	20.0	22.5	19.5
7/78 - 12/78	17.8%	6.2	14.6	18.5	22.0	20.9
During						
Quarter 1	18.9%	6.0	14.5	17.9	19.9	22.8
Quarter 2	20.1%	5.2	14.4	16.1	21.4	22.8
Quarter 3	17.7%	5.6	15.8	15.9	19.3	25.7
1/79 - 9/79	18.9%	5.6	14.9	16.6	20.2	23.8

DIVERTING CALLS FOR SERVICE

Upon examination of Exhibit 5.5, it is clear that during the midnight shift (i.e., Tours 1 and 2) the proportion of primary calls for service arriving at the WDP that are dispatchable to Basic units is smaller than the proportion of all calls for service. This is consistent with the fact that the alternative responses do not operate during those hours. In the day shift (i.e., Tours 3 and 4), the proportion of primary Basic calls for service rises above the comparable proportion of all calls for service; while during the evening shift the proportions are roughly equivalent. The highest concentration of primary Basic calls for service is in Tours 5 and 6, as is the case with all calls for service as well as noncritical calls for service (see Exhibit 5.4). As expected, the lowest concentration of primary Basic calls for service occurs in Tour 2. It is, of course, the primary Basic call for service occurring during the 0800 - 2400 period that is the focus of a complaint-taker decision since, by definition, all other calls for service would not have been dispatched to a Basic patrol unit in the absence of the MOD program. Exhibit 5.5 shows that 79.2 percent of the primary calls for service which were dispatchable to Basic units occurred during this period.

Referring to Exhibit 5.2, one can see that there are four decision options available to a complaint taker with respect to the disposition of a primary Basic call for service: they are to send an immediate or formally delayed Basic patrol unit, to adjust on the phone, to request the complainant to walk in, and to refer the call to the Complaint Service Unit (CSU). The option selected is heavily dependent upon the type of call for service, as indicated in Exhibit 5.6. For example, as one might

Exhibit 5.5

Temporal Distribution of Calls for Service

Category of Calls for Service	Percentage of Calls for Service[1]					
	Tour 1 (0000 - 0400)	Tour 2 (0400 - 0800)	Tour 3 (0800 - 1200)	Tour 4 (1200 - 1600)	Tour 5 (1600 - 2000)	Tour 6 (2000 - 2400)
All Calls for Service	18.0%	6.7	14.9	15.0	19.2	26.1
Primary Calls for Service Dispatchable to Basic Units[2]	15.4%	5.4	15.4	17.8	23.0	23.0

[1]Based on dispatch data from the July - September quarter of 1979.

[2]Includes primary calls for service dispatched to Basic units or diverted to alternative responses.

Exhibit 5.6

Complaint Taker Decisions

Complaint-Taker Decision	Percentage of Primary Basic Calls for Service					
	Part I Crimes (18.3%)	Part II Crimes (38.5%)	Traffic Medical, and Alarms (21.5%)	Miscellaneous Service (18.9%)	Message and Added Information (2.8%)	Total (100%)
Send Unit	60.5%	92.8%	98.6%	81.7%	67.1%	80.4%
Adjust	0.2	0.0	0.2	1.0	1.0	0.4
Walk-In	1.5	0.3	0.9	2.5	1.5	1.5
Refer to CSU	37.8	6.9	0.3	14.8	30.4	17.7

CONTINUED

2 OF 5

expect, traffic, medical, and alarm-generated calls for service are answered primarily by the dispatch of a Basic patrol unit, while citizens' messages and additional items of information regarding an earlier complaint are more likely to be referred to the Complaint Service Unit. What might at first be surprising is that 39.9 percent of the calls which are designated Part I crimes were referred to the CSU; however, it should be noted that most of the crime-related calls concern after-the-fact thefts and burglaries and the calls are made to the police primarily for insurance claim purposes. Nevertheless, given the high proportion of Part I crime calls being diverted, it is unfortunate that a commensurate proportion of Part II crime calls were not likewise diverted. Another point of interest is contained in Exhibit 5.6; namely, that Part I crimes, which have been the object of the great majority of police programs, account for *only* 18.3 percent of the total calls for service that are being handled by the police.

In exercising the diversion options, the complaint takers were very conservative: as listed in Exhibit 5.6 and illustrated in Exhibit 5.2, only 0.4 percent of all primary Basic calls for service were adjusted on the phone; 1.5 percent were requested to walk in; and 17.7 percent were referred to the CSU (with 0.7 percent being ultimately returned to communications for dispatch of a patrol unit). It is the considered opinion of this evaluation that more calls for service could have been diverted -- Section 8.3 further addresses this issue. Basically, as mentioned earlier, the complaint takers were overly cautious and they did not test the MOD approach to its limit. It is, therefore, not surprising that 91.8 percent of the WDP clients interviewed in the second client survey found the

complaint taker to be polite, with no distinction among dispatch and alternative response clients (see Exhibit C.10, Question 4).

CONCLUSION

In conclusion, although call-for-service prioritization was adequately performed, the complaint-screening function was not successful in formally delaying and diverting calls for service. The complaint takers' exercise of this function was limited: they could have done better. In fact, the 18.9 percent* of all primary Basic calls for service diverted failed to meet the 20 percent program objective (i.e., Objective 2.2 in Exhibit 2.2).

A final question which should be asked is whether the complaint-screening function increased the complaint takers' workload. Participant observation and audits of the communications tapes suggest that, although the complaint takers felt more pressure because of the MOD program, their phone contacts with the complainants were not increased in length. Some phone conversations resulting in call diversions were shorter than those resulting in patrol dispatches, while others were longer.

5.2 CALL-BACK FUNCTION

Call-back responsibility was vested in the newly formed Complaint Service Unit (CSU) which, together with the Crime Analysis Unit, constituted the Resource Management Division. Responsibilities of the Division included traditional crime analysis functions as well as formulating Structured patrol strategies; screening of complaint reports; and contacting call-back clients to select the most appropriate response option. The CSU was staffed by three eight-hour officer shifts from Monday through Saturday, and two eight-hour shifts on Sundays -- an average of 2.86 shifts per day,

*Since 0.7 percent was returned for dispatch (see Exhibit 5.2), the initial 19.6 percent diverted must be correspondingly reduced.

effectively. Operating hours were from 0800 to 2400, with an average of 1.57 shifts between 0800 and 1600 (i.e., day shift) and 1.29 shifts between 1600 and 2400 (i.e., evening shift). A total of four officers shared the CSU assignment throughout most of the Transition and During evaluation periods, supervised by the Lieutenant in the Division.

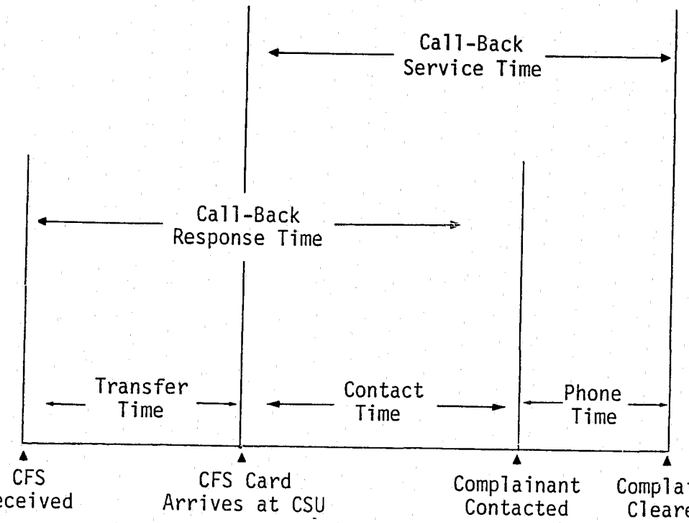
The call-back time statistics and call-back decisions are discussed in this section.

CALL-BACK TIME STATISTICS

Examination of the revised call-for-service card (see Exhibit C.2) reveals two sets of time stamp spaces; the first (on the front side of the card) was for communications, and the second (on the back side) was for CSU. If a call for service was referred to CSU, the complaint taker would stamp only the time the call was received. Then, CSU was responsible for recording the time (to the nearest minute) at which they received the card; the time contact with the complainant was established; and the time the complaint was cleared. Correspondingly, the elapsed time periods of greatest interest are the transfer time (in transferring the card from communications to CSU); the contact time (before the complainant is called back or contacted); and the phone time (during which the complaint is being cleared). Graphically, the call-back times and their relationship are defined in Exhibit 5.7. Two additional elapsed times are defined in the exhibit; the first, the call-back response time, reflects the citizens' perception of police response to a call for service (i.e., transfer plus contact time), while the second, the call-back service time, indicates how long CSU is involved with the incident (i.e., contact plus phone time).

Exhibit 5.7

Definitions of Call-Back Times



Unlike the incident time statistics defined in Exhibit 4.4 and discussed in Section 4.1, the call-back time statistics must be carefully interpreted. The transfer time was sometimes quite long, especially if it was a late-evening CSU-referred, call-for-service card which would not be picked up by CSU personnel until the next morning.* The contact time was primarily a function of when the complainant was scheduled to be called back. According to the second client survey (see Exhibit C.10, Question 19), 62.6 percent of the call-back clients indicated that they had

* Because the CSU is physically located across the hall from the Communications Division, it was necessary for the CSU officers to periodically pick up the pertinent call-for-service cards; there was no mechanized means by which the cards could be automatically routed to the CSU.

arranged to be called back within one hour. How prompt were the CSU personnel in calling back? The majority (91 percent) of the call-back clients reported that they were called back as scheduled (see Exhibit C.10, Question 20). Perhaps the most meaningful call-back time statistic is the phone time, corresponding, for example, to the on-scene time of a patrol unit. Analysis of the data contained on the revised call-for-service cards resulted in an average phone time of 7.1 minutes, a figure also supported by PSE's audit of a sample of the communications tapes. In comparing 7.1 minutes with 23.70 minutes, which correspond to the average on-scene time of a patrol unit (see Exhibit 4.5), one could say that, in terms of contact time with the complainant, it is at least three times more efficient to call back than to respond in person -- this is, of course, a central point of the MOD approach (i.e., the use of more efficient resources).

CALL-BACK DECISIONS

Before examining the call-back decisions made by the CSU, it should be noted that 95.4 percent of the CSU clients thought the officer calling back to be polite (see Exhibit C.10, Question 21). In addition, when asked about their general feelings about the quality of police services in Wilmington (see Exhibit C.10, Question 28), 75.5 percent of those receiving an alternative response felt it to be good or excellent (see Exhibit C.10, Question 28), and 94.4 percent of the same clients believed their experience had raised or maintained their overall opinion of the quality of police services (see Exhibit C.10, Question 26).

Interestingly, five categories of calls for service constituted 90 percent of those handled by the Complaint Service Unit; they included larceny (43.5 percent), malicious mischief (16.8 percent), added information

(6.4 percent), burglary (5.7 percent), and unspecified (17.5 percent). "Added information" calls result when a complainant has additional information concerning an earlier complaint -- in the past, a patrol car would have been dispatched routinely to take a report at the complainant's residence or place of business. "Unspecified" is a catch-all category for complaints that could not be categorized by the complaint taker according to the classification codes used by the WDP. Exhibit 5.8 identifies the CSU dispositions or decisions for each of the five complaint categories, by evaluation period. In every category but burglary, a phone report was the modal alternative; and, in fact, referring to Exhibit 5.2, 63.3 percent of all CSU referrals were handled by taking a phone report. Burglaries, on the other hand, lent themselves to the use of the specialist appointment response, since after the fact, an on-scene inspection is essential to gather whatever evidence may be available and to attest to the breaking and entering for insurance purposes. While very few calls for service were returned for dispatch, 18.2 percent of the burglary referrals resulted in the dispatch of a patrol unit. In these circumstances it was typically the considered judgment of the CSU officer that a more immediate on-scene presence was required to gather fresh evidence, or that the burglary was, or might be, recent enough to allow for a possible interception of the perpetrator in the vicinity of the burglarized premise. Walk-in referrals constituted an insignificant proportion of the CSU responses, but phone adjustment was employed successfully in almost all complaint categories, with burglary being the only exception, primarily for insurance reasons.

It should be noted that in the Transition evaluation period very few of the calls for service referred to CSU were handled by the specialist

Exhibit 5.8

Call-Back Decisions

Evaluation Period	Percentage of Calls for Service by Decision Option				
	Phone Adjustment	Walk-In	Phone Report	Specialist Appointment	Return for Dispatch
Transition					
Quarter 1	18.3%	0.0	79.6	0.0	2.1
Quarter 2	23.7%	0.0	73.7	0.8	1.7
7/78 - 12/78	21.0%	0.0	76.6	0.4	1.9
During					
Quarter 1	20.6%	0.0	75.0	3.7	0.0
Quarter 2	20.6%	0.0	69.1	4.4	5.1
Quarter 3	19.8%	0.0	68.1	9.9	1.4
1/79 - 9/79	20.3%	0.0	70.7	6.0	2.2

(a) Larceny Calls for Service[1]

[1]Accounted for 43.5% of calls for service referred to the Complaint Service Unit.

Exhibit 5.8

(Page 2 of 5)

Evaluation Period	Percentage of Calls for Service by Decision Option				
	Phone Adjustment	Walk-In	Phone Report	Specialist Appointment	Return for Dispatch
Transition					
Quarter 1	22.9%	0.0	72.9	0.0	4.2
Quarter 2	21.5%	0.0	76.8	1.8	0.0
7/78 - 12/78	21.4%	0.0	75.5	1.2	1.4
During					
Quarter 1	11.1%	0.0	76.4	9.7	2.8
Quarter 2	11.8%	0.0	67.6	16.2	4.4
Quarter 3	28.0%	8.0	56.0	8.0	0.0
1/79 - 9/79	21.9%	1.2	69.7	12.1	3.0

(b) Malicious Mischief Calls for Service[2]

[2]Accounted for 16.8% of calls for service referred to the Complaint Service Unit.

Exhibit 5.8

(Page 3 of 5)

Evaluation Period	Percentage of Calls for Service by Decision Option				
	Phone Adjustment	Walk-In	Phone Report	Specialist Appointment	Return for Dispatch
Transition					
Quarter 1	25.0%	0.0	70.0	0.0	5.0
Quarter 2	36.3%	0.0	63.6	0.0	0.0
7/78 - 12/78	32.3%	0.0	65.9	0.0	1.8
During					
Quarter 1	22.2%	0.0	79.3	3.4	0.0
Quarter 2	25.0%	0.0	58.3	16.7	0.0
Quarter 3	40.0%	0.0	55.0	5.0	0.0
1/79 - 9/79	26.2%	0.0	67.2	6.5	0.0

(c) Added Information Calls for Service[3]

[3]Accounted for 6.4% of calls for service referred to the Complaint Service Unit.

Exhibit 5.8

(Page 4 of 5)

Evaluation Period	Percentage of Calls for Service by Decision Option				
	Phone Adjustment	Walk-In	Phone Report	Specialist Appointment	Return for Dispatch
Transition					
Quarter 1	5.3%	0.0	78.9	0.0	15.8
Quarter 2	12.5%	0.0	37.5	25.0	25.0
7/78 - 12/78	8.3%	0.0	61.5	10.5	19.7
During					
Quarter 1	15.4%	0.0	7.7	69.2	7.7
Quarter 2	6.7%	0.0	16.7	56.7	20.0
Quarter 3	8.6%	17.4	8.7	43.5	21.7
1/79 - 9/79	9.1%	6.1	12.1	54.6	18.2

(d) Burglary Calls for Service[4]

[4]Accounted for 5.7% of calls for service referred to the Complaint Service Unit.

Exhibit 5.8

(Page 5 of 5)

Evaluation Period	Percentage of Calls for Service by Decision Option				
	Phone Adjustment	Walk-In	Phone Report	Specialist Appointment	Return for Dispatch
Transition					
Quarter 1	28.1%	0.0	65.2	0.0	5.6
Quarter 2	29.2%	0.0	66.7	0.0	4.2
7/78 - 12/78	28.6%	0.0	65.9	0.0	4.9
During					
Quarter 1	38.4%	0.0	46.2	11.5	1.9
Quarter 2	41.3%	0.0	43.5	6.5	6.5
Quarter 3	31.7%	0.0	60.0	6.7	1.7
1/79 - 9/79	36.7%	0.0	50.7	8.2	3.2

(e) Unspecified Calls for Service[5]

[5]Accounted for 17.5% of calls for service referred to the Complaint Service Unit.

unit. However, in the During period, the percentage rose substantially to 14.7 percent, largely because complaint takers were ordered to refer all noncritical malicious mischief, larceny, and, later, burglary complaints to the CSU.

Finally, how did CSU personnel view their decision options? They perceived the phone adjustment, phone report, and specialist appointment as effective and the walk-in referral as ineffective (see Exhibit D.2, page 7, Question 19) -- consistent with the relative utilization proportions.

CONCLUSION

Although the CSU personnel did a very commendable job in executing the call-back function, they were *limited* by the amount and type of calls for service which were referred to them by the complaint takers who were responsible for undertaking the complaint-screening function. In this respect, the CSU staff and the corresponding call-back function were both underutilized. In fact, as described in Section 2.3, when the number of calls for service referred to the CSU was low, the CSU staff would occasionally act as complaint takers in order to raise the level. There existed in essence, a fundamental difference in the posture of the CSU and the Communications Division toward the MOD program. The former unit was staffed with experienced officers, chosen specifically for their grasp of WDP operations and articulation. The enthusiasm of the CSU supervisor was contagious, and the unit quickly became committed to the program's philosophy and thoroughly versed in the program's operating guidelines. Communications, on the other hand, was staffed with a mix of sworn and civilian personnel who were reluctant to exercise the nontraditional MOD response alternatives. Unfortunately, the program training/orientation activities did little to

transmit an in-depth understanding of the MOD program or to instill confidence in the communications personnel in their exercise of the nontraditional response options.

5.3 ALTERNATIVE RESPONSE STRATEGIES

The following subsections discuss the performance of the formal delay phone adjustment, walk-in, phone report, and specialist appointment strategies, respectively, followed by a concluding subsection.

FORMAL DELAY

Since this alternative response strategy is at once an element of the split-force experiment as well as an option of the complaint-screening function, it is also discussed in both Sections 4.2 and 5.2.

While the formal delay strategy was not used to its full potential during split force, it was virtually ignored as a tool for improving WDP effectiveness -- by increasing citizen satisfaction and reducing sector identity loss -- during the MOD program. Additionally, as noted earlier in Section 1.1, the formal delay strategy can also serve as a tool for improving the efficiency of police resource allocation -- by decreasing and shifting random demand peaks. In order to check the latter impact, an analysis was performed of the demand placed on the Basic patrol force to ascertain the temporal effect of the formal delay strategy.

It was first necessary to define Basic unit demand and then to establish a reasonable measure of its fluctuation. Basic unit demand was defined to be the number of primary calls for service responded to per Basic unit in each four-hour tour. The measure chosen was the coefficient of variation in the demand (i.e., the ratio of the standard deviation of the demand to the average demand). For purposes of demand

variation comparison it was necessary to speculate on how the Basic unit response system would have performed in the absence of the alternative responses. To do so, one had to project how many calls for service per Basic unit would have been answered in the During evaluation period. In a prescriptive mode, the PCAM model was employed to indicate how many Basic units would have been required to handle all the Basic calls for service, under the constraint of a 33.5 percent ceiling on utilization. Dividing the projected number of Basic unit calls for service by the PCAM-projected number of Basic units, a hypothetical During demand was established, for which the coefficient of variation was calculated.

If the During variation in demand was to be statistically below the hypothetical variation, then one could conclude that the program -- and in particular the formal delay strategy -- had succeeded in reducing the variation in the call-for-service demand as it affected the Basic patrol force. Although in more than half the 84 tour-months examined, this was the case, there was no statistical significance to the results. Given the low level of formal delays, the findings are intuitively satisfying. The best that one could say is that despite the reduction in Basic units, the variation in Basic unit demand was no worse than it would have been in the absence of the alternative response program.

PHONE ADJUSTMENT

It is evident from both Exhibits 5.2 and 5.6 that the phone adjustment strategy was minimally utilized at the complaint-screening level. Only 0.4 percent of all primary Basic calls for service were adjusted by the complaint takers, with no particular complaint categories demonstrating greater success than the others. This outcome is attributable both to

the way in which adjustments were defined in the program context, and to the conditions prevailing in the Communications Division. Recall that, for the purpose of the MOD program, a phone adjustment would only be counted if a Basic patrol unit would have answered the call for service in the absence of the program. Prior to the program, the term "adjustment" was applied to all calls for service terminated by the complaint takers without a dispatch. Given the ambiguity of the new definition, the complaint takers had difficulty distinguishing program-related adjustments from other forms of complaint termination which had been in practice Before the program began (e.g., outside referrals to other agencies, determination that the complaint was a civil matter and not within police jurisdiction, and so forth). Their problems were compounded by the fact that a number of new complaint takers were hired by the WDP and commenced work at the start of the Transition period -- when the alternative responses were being phased in. As a result, the new personnel found it difficult to work with a definition that depended on an understanding of complaint-screening practices which preceded their WDP employment.

An additional reason for the low level of phone adjustments made by the complaint takers was, as mentioned earlier, their basic hesitancy in effecting the MOD program. Operating conservatively throughout the program, they were reluctant to adjust a call for service, given a limited amount of incident-related information -- particularly during busy periods. To be on the safe side, questionable calls for service were either dispatched to patrol units or referred to the Complaint Service Unit, where the phone adjustment option was employed with greater success. Moreover, there can be little doubt that much greater advantage could have been taken by the complaint takers of this potentially efficient response alternative,

or that a more effective training program could have mitigated some of the reluctance exhibited by the complaint takers. As one might expect, while the communications personnel felt that the phone adjustment alternative was underutilized, Exhibit 5.9 shows that they felt less strongly about it than did the other personnel surveyed.

On assessing the impact of phone adjustments on WDP effectiveness and job satisfaction, the WDP personnel were in accord, as indicated in Exhibit 5.9. However, in terms of extent of use, 74.3 percent of the patrol personnel were of the opinion that too little use had been made of the phone adjustment alternative. This is not surprising considering that patrol officers traditionally complain about the size of their workload, and an adjustment terminates the response to the complaint immediately. A similar opinion was expressed by 66.6 percent of the resource management personnel.

The CSU personnel, on the other hand, made greater use of the phone-adjustment alternative. Being under less intense conditions than the complaint takers, the CSU personnel were able to understand the complainant's problem better and to phone adjust, as appropriate. In addition, the CSU staff was better versed in program procedures and was more experienced and articulate. As a result, 17.5 percent of all calls for service referred to the CSU were phone adjusted, accounting for 3.1 percent of all primary Basic calls for service (see Exhibit 5.2). Examination of Exhibit 5.8 indicates that of the five major categories of complaints referred to the CSU, unspecified complaints resulted in the highest percentage of adjustments -- 36.7 percent. In the second client survey, approximately 50 percent of the unspecified complaints were recoded

Exhibit 5.9

Officer Reaction to Phone Adjustment

Organizational Units[1]	Percent Answering								
	Extent of Use			Impact On WDP Effectiveness			Impact On Job Satisfaction		
	Not Enough	Just Right	Too Much	Increased	No Effect	Decreased	Increased	No Effect	Decreased
Communications[2] (N = 22)	31.8%	63.6	4.6	63.2%	26.3	10.5	47.6%	42.9	9.5
Resource Management (N = 6)	66.6%	16.7	16.7	50.0%	33.3	16.7	50.0%	50.0	0.0
Patrol (N = 75)	74.3%	22.9	2.8	60.3%	30.2	9.5	40.0%	49.3	10.7
Detectives (N = 12)	33.3%	58.3	8.7	50.0%	25.0	25.0	36.4%	54.5	9.1
Total (N = 114)	61.4%	34.2	4.4	59.4%	29.2	11.4	41.6%	48.7	9.7

[1]The indicated sample size for each organizational unit reflects the largest number of personnel responding to the three questions.

[2]Communications personnel include both sworn officers and civilians.

based on the client's description of the incident. Approximately one-third of these turned out to be larceny complaints. If the survey proportions can be generalized, then not only were 20.3 percent of the coded larcenies referred to CSU adjusted, but also a substantial number of the adjusted unspecified complaints were larcenies as well.

Unfortunately, the evaluation was unable to ascertain client reaction to the phone adjustment alternative, *per se*. Inasmuch as there were few phone adjustments among the second survey sample and the client attitudes were very similar to those exhibited toward the phone report alternative, the two categories were aggregated for the purpose of analyzing client attitudes by response received.

WALK-IN RESPONSE

While phone adjustments might be expected to occur infrequently, one would expect a substantial level of walk-in referrals by the complaint takers. Response to the first client survey (see Exhibit C.9, Question 18) indicated a strong willingness on the part of the citizens to walk in to the WDP to make their complaints -- in fact, 37 percent found the alternative acceptable. Several factors were responsible for the WDP's failure to exploit the walk-in option. First, and most important, was the "discomfort" of the communications personnel. Neither supervisors nor line staff were comfortable with suggesting to the complainant that he/she should walk in to the WDP in lieu of the WDP's sending a patrol unit to the complainant's home or place of business. This seemed to "cut against the grain" of WDP tradition in which virtually every complaint was answered promptly by a patrol unit.

PSE's monitoring of communications transactions indicated that the complaint takers frequently by-passed the walk-in alternative entirely; and when it was invoked, their tone was apologetic, which did little to convince the complainant of the appropriateness of the request. When asked in the personnel survey how citizens reacted to the walk-in alternative (see Exhibit D.2, page 6, Question 20) 90 percent of the communications personnel felt that the citizens objected. In view of the limited exercise of the alternative, this response is more a statement of suspicion than experience. One must attribute this underutilization of walk-in referrals at least in part to inadequacies in the training/orientation of the communication's personnel. If they had been better acquainted with the underlying rationale for use of the alternative and equipped with operational guidelines, perhaps they would have been less reluctant to ask complainants to walk in. The suggestion was made early in the MOD program that explicit statements be written out for the complaint takers to rely upon when invoking alternative responses. With the exception of some handwritten charts posted briefly on the wall of the radio room, this suggestion was never implemented.

The procedure established for handling walk-in complaints was that the House Sergeant would handle minor complaints such as simple assaults, criminal mischief, petty larcenies, and so forth. More serious reports were to be handled by the appropriate specialized division (e.g., Youth Aid, Traffic, Detective, and so forth). During the hours when the specialized divisions were closed, the House Sergeant would be responsible for handling all walk-in complaints. If no other means of handling a walk-in complaint were available, the CSU was designated to respond by

taking a report in the patrol assembly room or the lounge area. However, during the Transition period and the first MOD program quarter a number of incidents took place in which walk-in clients were either ignored entirely or shunted from division to division. It was not until March 1979 that a supplement to the program guidelines was issued by the Chief of Police in an attempt to correct these deficiencies.

Among the ten walk-in clients surveyed (see Exhibit C.10, Question 14), seven indicated that they followed up the referral by actually going to the WDP. All of those surveyed were satisfied with services received and had their complaints recorded within half an hour, suggesting that the Chief's March guidelines improved the effectiveness of the walk-in response substantially but not its utilization, since only 1.6 percent of all primary Basic calls for service were referred to walk in (see Exhibit 5.2). Given that the survey sample was intentionally biased to include walk-in referrals who actually reported their complaints in person, one might wonder about the true percentage of "no-shows." By design, the revised call-for-service card (see Exhibit C.2) attempted to distinguish between walk-ins who had and those who had not been referred to do so by the WDP. Analysis of the data indicates that of those referred to walk in, *only* 10 percent actually did so. While the loss in walk-ins can substantially reduce the workload (given increased use of the alternative), the outcome would be detrimental since it is tantamount to a denial of police services. Expanded, but judicious use of the walk-in response would be appropriate, with every effort made to assure that those referred will actually walk in.

Unfortunately, little can be said about appropriateness of the walk-in reponse to particular types of calls for service, given the infrequency

of its use. In terms of officer reaction to the walk-in option, Exhibit 5.10 indicates that a majority of WDP personnel believe the walk-in alternative is underutilized, especially the communications and patrol officers. Similarly, a majority feel that use of the alternative would increase WDP effectiveness.

Given the above considerations, the only plausible recommendation is expanded utilization of the walk-in option. Even more careful planning to accommodate walk-in clients would be necessary, with actual appointment scheduling, if required. While, at present, the CSU is the "last resort" for handling walk-in complaints (short of calling a Basic unit), the fact that the CSU staff is underutilized, as well as skilled and experienced in handling complainants, would augur well for the CSU to be the point of contact, at least the initial point of contact, for walk-ins.

PHONE REPORT

It is readily apparent from Exhibit 5.2 that the MOD program enjoyed its greatest success in diverting calls for service through the phone report response strategy. This alternative accounted for 11.2 percent of all primary Basic calls, as well as 63.2 percent of all calls for service referred to the CSU. Citizen satisfaction with the phone report response, as reflected in Exhibit 5.11, was uniformly high. In fact, almost 75 percent of the phone report clients surveyed felt the quality of police services in Wilmington to be good or excellent, while 15.1 percent felt their phone report experience had raised their opinion of police services, while 4.8 percent felt it had been lowered.

Among the five complaint categories which accounted for 90 percent of all calls for service referred to the CSU, the percentages resulting in a

Exhibit 5.10

Officer Reaction to Walk-In

Organizational Units[1]	Percent Answering								
	Extent of Use			Impact On WDP Effectiveness			Impact On Job Satisfaction		
	Not Enough	Just Right	Too Much	Increased	No Effect	Decreased	Increased	No Effect	Decreased
Communications[2] (N = 22)	68.2%	31.8	0.0	47.1%	47.1	5.8	25.0%	60.0	15.0
Resource Management (N = 7)	28.6%	71.4	0.0	57.1%	28.6	14.3	57.1%	28.6	14.3
Patrol (N = 77)	77.9%	11.7	10.4	53.0%	37.9	9.1	36.4%	51.9	11.7
Detectives (N = 14)	50.0%	40.0	10.0	88.9%	0.0	11.1	35.7%	57.1	7.2
Total (N = 118)	70.7%	21.6	7.7	55.6%	35.4	9.0	35.6%	52.5	11.9

[1]The indicated sample size for each organizational unit reflects the largest number of personnel responding to the three questions.

[2]Communications personnel include both sworn officers and civilians.

Exhibit 5.11

Client Reaction to Phone Report

Question \ Percent Answering (N = 143)[1]	The quality of services is . . .					
	Excellent	Good	Acceptable	Not Good	Poor	Don't Know
In general, what is your feeling about the quality of police services in Wilmington?	21.7%	52.4	17.5	1.4	4.9	2.1

Question \ Percent Answering (N = 146)[1]	Raised	Remained the Same	Lowered	Don't Know
How has this contact with the police affected your opinion of the quality of police services?	15.1%	80.1	4.8	0.0

[1]All respondents had recently received a phone report response to their calls for service.

phone report were larceny at 70.7 percent, malicious mischief at 69.7 percent, added information at 67.2 percent, unspecified complaints at 50.7 percent, and burglary at 12.1 percent (see Exhibit 5.8).

While not as efficient a response as adjustment or walk-in (given the high percentage of "no-show" referrals), the phone report alternative is clearly more efficient than either the dispatch of a patrol unit or a specialist appointment. As stated in Exhibit 5.12, 72.8 percent of WDP personnel surveyed were of the opinion that the use of the phone report had the net effect of increasing WDP effectiveness. A majority of personnel also felt that too little use was made of the phone report alternative.

SCHEDULED APPOINTMENT

As originally conceived, the specialist appointment response was to be implemented by a Structured patrol unit, on duty between the hours of 0900 and 2100 for the primary purpose of carrying out appointments scheduled by the CSU. Each morning, the Structured officer assigned to the specialist unit would pick up the roster of appointments scheduled on the previous day. An appointment could also be scheduled while the specialist unit was on duty and transmitted to the specialist car from CSU via the communications dispatcher. When not answering appointments, the specialist unit was to behave like a Structured patrol unit and carry out predetermined directed or preventive patrol assignments. Several deviations from this strategy took place. In the Transition period, the specialist unit's actual duty period was 0800 - 2000; however, in the During period, the cycle was shifted by four hours to 1200 - 2400 to

Exhibit 5.12

Officer Reaction to Phone Report

Organizational Units[1]	Percent Answering								
	Extent of Use			Impact On WDP Effectiveness			Impact On Job Satisfaction		
	Not Enough	Just Right	Too Much	Increased	No Effect	Decreased	Increased	No Effect	Decreased
Communications[2] (N = 22)	31.8%	68.2	0.0	94.7%	5.3	0.0	61.9%	33.3	4.8
Resource Management (N = 7)	14.3%	85.7	0.0	100.0%	0.0	0.0	85.7%	14.3	0.0
Patrol (N = 69)	66.7%	29.0	4.3	60.3%	27.6	12.1	41.5%	47.7	10.8
Detectives (N = 13)	38.5%	61.5	0.0	87.5%	12.5	0.0	75.0%	25.0	0.0
Total (N = 111)	53.2%	44.1	2.7	72.8%	19.6	7.6	52.4%	40.0	7.6

[1]The indicated sample size for each organizational unit reflects the largest number of personnel responding to the three questions.

[2]Communications personnel include both sworn officers and civilians.

permit the CSU the four morning hours to establish afternoon and evening appointments and thereby enhance the possibility of same-day responses.

Three factors seriously inhibited the introduction of the specialist appointment strategy during the Transition period. Interestingly, the first had its roots in a misinterpretation of the intent of an off-hand comment made by the original Project Director. As a result of his skepticism about the utility of the specialist appointment option in relation to the other call-back options, he was heard to conjecture on several occasions that if MOD works, "the specialist unit will be off the street in three months!" As it later turned out, he had offered the comment purely as speculation (thinking that the exercise of the other call-back options would make it unnecessary to make specialist appointments), but it was interpreted as an informal order by the CSU staff, who demurred in establishing an on-going programmatic role for the unit. The result was very few assignments for the specialist unit throughout the Transition period. At the second working session, held in Cambridge in December 1978, this issue was discussed at length. As for the second factor, it further turned out that the program personnel harbored a suspicion that diverting calls from the Basic patrol units to the specialist unit constituted "cheating," in the sense of simply moving the demand from one resource to another. They had failed to recognize that the specialist unit is a more efficient resource than a Basic patrol unit because it could theoretically handle more calls by appointment than a Basic unit which has to handle unscheduled calls and be available for possible emergency responses. In order to rectify the problem, a series of special orders were issued by the Chief of Police directing the complaint takers to divert all not-in-progress (i.e.,

noncritical) theft, malicious mischief, and later, burglary complaints directly to the CSU staff, who in turn were encouraged to use the specialist appointment option. The third factor was that a number of complaints which the WDP had expected to assign to the Specialist unit were in fact satisfactorily handled by phone report.

Despite the efforts to channel additional calls for service to the specialist unit, the unit handled an average of less than three scheduled appointment calls for service per twelve hours. Considering that the average Basic unit responded to approximately 7.5 primary and assist calls for service per 8-hour tour, the potential efficiency of the scheduled appointment remained unexploited. Overall, this response option accounted for 14.7 percent of all calls referred to the CSU, and only 2.6 percent of all primary Basic calls for service. Conservatively, if the average service time of the specialist unit were 20 minutes -- slightly less than the average Basic unit's primary service time of 23.7 minutes (see Exhibit 4.5) -- the unit could handle two to three calls per hour, or upward of 20 calls per 8-hour tour, which would be almost three times as many calls as a Basic unit could handle.

When one considers, in addition, the high level of satisfaction of the specialist appointment clients surveyed (see Exhibit C.10, Question 24), it would seem logical to conclude that much greater use should be made of this response option. Almost 75 percent of surveyed personnel, as indicated in Exhibit 5.13, felt that the specialist appointment option could have a positive impact on WDP effectiveness. However, the resource management personnel were the only group in which a majority believed the option to be underutilized.

Exhibit 5.13

Officer Reaction to Specialist Appointment

Organizational Units[1]	Percent Answering								
	Extent of Use			Impact On WDP Effectiveness			Impact On Job Satisfaction		
	Not Enough	Just Right	Too Much	Increased	No Effect	Decreased	Increased	No Effect	Decreased
Communications[2] (N = 21)	36.8%	57.9	5.3	88.2%	11.8	0.0	42.9%	52.4	4.7
Resource Management (N = 7)	71.4%	28.6	0.0	83.3%	16.7	0.0	66.7%	33.3	0.0
Patrol (N = 63)	48.2%	41.1	10.7	66.0%	24.5	9.5	41.3%	46.0	12.7
Detectives (N = 12)	36.4%	45.5	18.1	75.0%	25.0	0.0	58.3%	41.7	0.0
Total (N = 102)	46.2%	44.1	9.7	72.6%	21.4	6.0	45.1%	46.1	8.8

[1]The indicated sample size for each organizational unit reflects the largest number of personnel responding to the three questions.

[2]Communications personnel include both sworn officers and civilians.

CONCLUSION

The important conclusion is that all five alternative response strategies (i.e., formal delay, phone adjustment, walk-in, phone report, and specialist appointment) have been *underutilized*, despite the fact that the WDP personnel consider the strategies to be effective and that the WDP clients who received such responses are quite satisfied with the received services. The main reason for this underutilization has been reluctance on the part of the complaint takers to exercise these nontraditional response options. As discussed in Section 5.1, the complaint takers have failed to fully carry out the complaint-screening function, partially because their training was lacking.

The efficiency represented in the alternative response options should be exploited further. For example, any situation requiring a patrol response, but not requiring that a unit be dispatched either immediately or on a formally delayed basis, is suitable for a specialist appointment.

5.4 BASIC PATROL REDUCTION

As defined in Exhibit 2.2, one of the MOD program objectives was to establish a Basic patrol reduction resulting in: a decrease of at least 20 percent in the number of Basic units; maintenance of an average Basic patrol unit utilization factor of 33.5 percent; and maintenance of an average response time to critical calls for service of less than 7 minutes. It is the purpose of this section to discuss the WDP's level of attainment of this objective, as well as the response of WDP personnel to the reduction. A concluding statement follows the discussion.

ATTAINMENT OF OBJECTIVE

The reduction in Basic patrol units was designed to take place in three discrete steps resulting in a reduction from 54 4-hour Basic units to 42 4-hour units -- yielding a net reduction of 22.2 percent. As Exhibit 2.8 indicates, the first reduction was planned for the start of the Transition period; it was to reduce Basic patrol to 50 4-hour units. The second reduction was to take place at the start of the During period for one month only; it was to reduce Basic patrol to 46 4-hour units. Finally, for the remaining eight months of the During period, Basic patrol was to be reduced to its final level of 42 4-hour units. On examination of Exhibit 5.14, it is evident that the reduction took place essentially as intended, although the computer measured the overall reduction at *21.1 percent*. The small difference in planned and measured reduction can probably be attributed to the measurement technique rather than to an overmanning in any of the six tours.

With respect to maintenance of the average Basic patrol unit utilization factor, the Before level had climbed to 39.4 percent -- due primarily to lengthy primary and assist service times (see Exhibit 4.9). The objective of 33.5 percent was predicated upon a descriptive PCAM analysis of the projected 42-car plan; this was indeed achieved -- with the actual measured factor being *33.8 percent* (see Exhibit 4.8). The major reason for the substantial Before to During reduction in utilization level was a general tightening-up of the WDP response system, which had become lax after the conclusion of the split-force experiment. As a result, the Basic unit service times decreased by 13.7 percent and 15.1 percent for primary and assist calls for service, respectively (see Exhibit 4.5).

Exhibit 5.14

Basic Patrol Levels

Tour	Average Number of Basic Units Planned for Before/Transition/ During Periods	Average Number of Basic Units Measured[1] in Before/Transition/ During Periods	Before/During Change as Planned	Before/During Change as Measured
1 (0000-0400)	8 / 8 / 7	7.35/ 7.43/ 6.98	12.5%	5.0%
2 (0400-0800)	5 / 5 / 4	3.93/ 4.00/ 3.33	20.0%	16.8%
3 (0800-1200)	7 / 7 / 7	6.26/ 6.08/ 5.98	0.0%	4.5%
4 (1200-1600)	10 /10 / 8	9.24/ 8.89/ 7.31	20.0%	20.9%
5 (1600-2000)	12 /10 / 8	11.30/ 9.53/ 7.82	33.3%	30.8%
6 (2000-2400)	12 /25 /21	11.35/ 9.47/ 7.66	33.3%	32.5%
0000-2400	27 /25 /21 (8-hour units)	24.71/22.69/19.54 (8-hour units)	22.2%	21.1%

[1]Measured levels count Basic units only when they handle calls for service during the middle 3.5 hours of each 4-hour tour. This analytical procedure was instituted to avoid double counting of patrol units which were either slightly early or late for their respective shift changes.

The response time to primary critical calls for service before the program had deteriorated substantially from the 6.52 minutes during split force, to a level of 8.20 minutes (see Exhibit 4.14). As a result, the WDP set a MOD program objective of returning to the split-force response time of less than 7 minutes. In fact, the general tightening-up process described above resulted in an improvement to *6.46 minutes* (see Exhibit 4.14) for the response time to primary critical calls for service.

OFFICER REACTION

Of the four MOD program components, the only one which was met with a uniformly negative attitude was the Basic patrol reduction. As Exhibit 5.15 shows, 55.9 percent of all WDP personnel surveyed felt that too much use was made of the component, while 71.6 percent and 69.4 percent felt that it resulted in a net decrease in WDP effectiveness and their job satisfaction, respectively. As one might expect, both patrol and communications personnel -- the two divisions most directly impacted by the Basic patrol reduction -- were strongly opposed to the reduction; however, the Detectives surveyed were even more negative in their attitudes toward the component (probably because their own unit had been reduced substantially since the split-force days). When asked about the impact of the Basic patrol reduction on the ability of the WDP to meet citizen needs, more than 80 percent of the WDP personnel surveyed felt the reduced manning level to be inadequate (see Exhibit D.2, Question 15).

Considering that police officers are traditionally against any management-initiated action which they perceive as a threat to their size and safety, the response of the WDP personnel is not surprising. In fact, as alluded to in Sections 4.1 and 5.1, the reduction in the number of Basic

Exhibit 5.15

Officer Reaction to Basic Patrol Reduction

Organizational Units[1]	Percent Answering								
	Extent of Use			Impact On WDP Effectiveness			Impact On Job Satisfaction		
	Not Enough	Just Right	Too Much	Increased	No Effect	Decreased	Increased	No Effect	Decreased
Communications[2] (N = 20)	40.0%	20.0	40.0	21.1%	5.3	73.6	5.0%	20.0	75.0
Resource Management (N = 7)	14.3%	57.1	28.6	28.6%	42.9	28.6	28.6%	28.6	42.9
Patrol (N = 74)	33.8%	5.4	60.8	14.7%	11.8	73.5	8.2%	23.3	68.5
Detectives (N = 11)	20.0%	10.0	70.0	0.0%	12.5	87.5	0.0%	18.2	81.8
Total (N = 111)	32.4%	11.7	55.9	15.7%	12.7	71.6	8.1%	22.5	69.4

[1]The indicated sample size for each organizational unit reflects the largest number of personnel responding to the three questions.

[2]Communications personnel include both sworn officers and civilians.

patrol units caused the communication dispatchers not only to increase the number of assists, especially critical assists, but also to shift a substantial number of calls for service for handling by non-Basic units, in particular Structured units. Despite the shift, the Basic units were still maintaining a 0.338 utilization factor, which would have increased to about 0.4 if no shift had been initiated. Although some of the dispatchers' actions were necessary in light of the *lower* than expected level of diversion of noncritical calls for service and the planned reduction in the Basic patrol force, it is the opinion of this evaluation that the dispatchers were too cautious and overreacted. Again, better training/orientation might have tempered the dispatchers' overreaction and, likewise, mitigated some of the ill feelings which the WDP personnel had toward this program component.

CONCLUSION

The Basic patrol reduction component was implemented as planned, the stated objective achieved, and, in the case of critical response time, exceeded. With time the WDP personnel will most likely adjust to the lower level of Basic units (hopefully, by diverting more calls for service to the CSU), while their negative reactions could be tempered through a better understanding of the MOD program's rationale and content.

PART III: IMPACT MEASURES

6 CRIME-RELATED STATISTICS

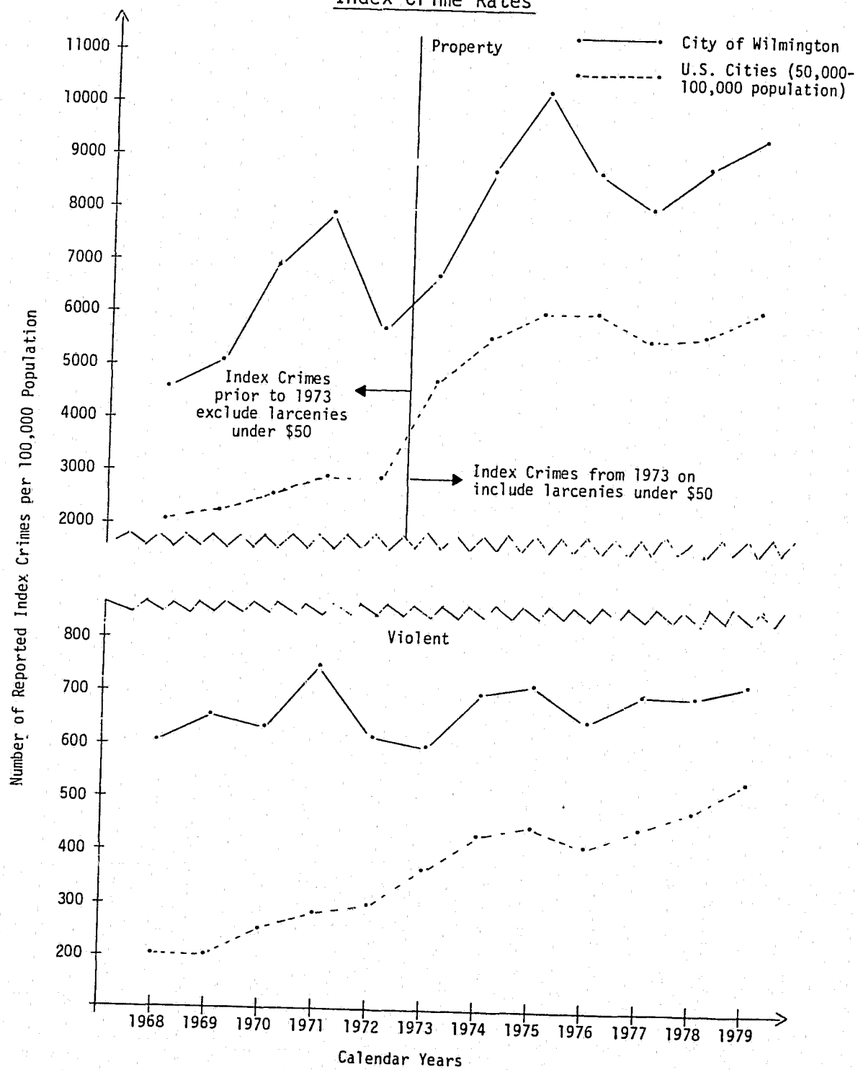
Unlike the split-force experiment which brought about a major change in WDP field operations and included a significant crime prevention component, the MOD program's focus is on response-related improvement in police services. Therefore, one would not intuitively expect to find a statistically significant link between the MOD program elements and changes in Wilmington crime levels -- in fact, Objective 1 (see Exhibit 2.2) seeks to maintain the WDP effectiveness which is partially stated in terms of the crime-related statistics. However, not only were new modes of call-for-service response instituted but also the Basic patrol force was reduced in size. Consequently, it was essential that crime trends and rates be monitored to ascertain whether the Before effectiveness had deteriorated During the program. This section considers both crime and clearance rates as well as arrest-related statistics. It should be noted that since the formal During period spans the months of January through September 1979, the Before period and all evaluation quarters are comparably defined for the remainder of this section.

6.1 INDEX CRIME TREND

Between 1978 and 1979, the violent crime rate in Wilmington increased by approximately 5 percent, less than the 9 percent increase in the rate for comparably-populated United States cities, as shown in Exhibit 6.1. In the decade since 1968, the long-term trend in violent crime rates in Wilmington has been that of a steady increase with substantial fluctuations

Exhibit 6.1

Index Crime Rates



about the trend line. However, the violent crime rate trend nationally exhibits a pattern of more rapid, but stable, growth.* PSE is reasonably certain that the fluctuations in the observed crime rate are not due to changes in police data management practices, since the WDP's procedures for reporting, collecting, and coding crime rate data have been stable at least since 1973.

At the national level, in 1978 assault and robbery accounted for 56.0 percent and 36.2 percent of the violent crime rates, respectively, in cities with populations comparable to Wilmington's. In Wilmington, however, the situation is reversed, with assault rates trailing robbery proportions 27.0 percent to 66.5 percent. From 1978 to 1979, the largest national increase in violent crime rates in comparable jurisdictions occurred in the forcible rape category, which experienced an 18 percent rise. Although forcible rape accounted for only 7 percent of the violent crime in Wilmington in 1978, it increased by 85 percent in the same time period. Nationally, both robbery and assault accounted for the majority of the increase in violent crimes, while Wilmington's increase was due both to robbery and rape, with assaults remaining constant.

The Wilmington property crime rate increased by 5 percent between 1978 and 1979 while comparable national cities reflected an 8 percent rise, as shown in Exhibit 6.1. Over the long term, both Wilmington and the average national property crime rates exhibit comparable upward trends, with Wilmington's rates exhibiting greater fluctuation (not for reasons of changing procedures, as noted above). After a short two-year dip from 1975 to 1977,

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* The United States cities crime trend is obviously less fluctuating than Wilmington's since it is an average of many cities.

the property crime rate in Wilmington has experienced a short two-year rise, almost regaining its 1975 peak.

Both in Wilmington and nationally, larceny accounted for the majority of property crimes in 1978, registering 68.2 percent and 61.4 percent, respectively. However, the major increase in property crimes in comparable United States cities from 1978 to 1979 came in both the burglary and larceny categories, while in Wilmington, burglaries actually experienced a slight reduction. Auto theft experienced a comparable increase for both Wilmington and nationally.

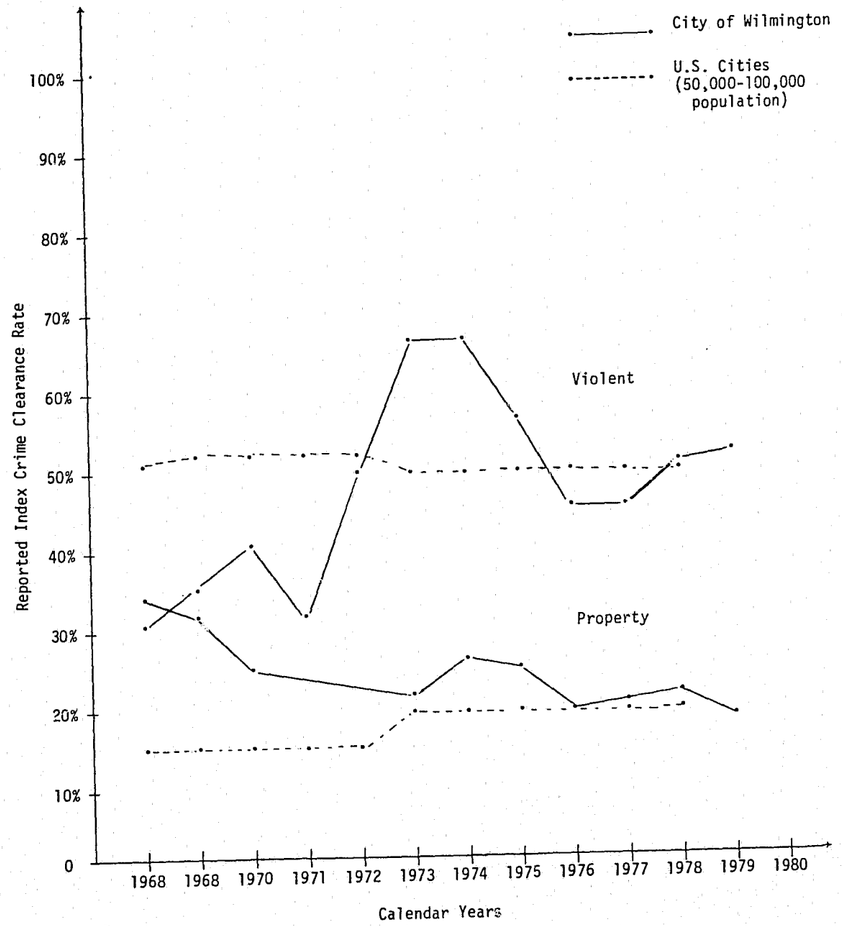
CLEARANCE RATES

Clearance rates in Wilmington, as shown in Exhibit 6.2, increased for violent crimes and decreased for property crimes from 1978 to 1979. Although data for comparable United States cities has not yet become available at this writing, there is no reason to expect a change in the apparently stable long-term trend. The trend in violent crime clearance rates in Wilmington has been upward since 1976, following a five-year period of substantial fluctuations. Overall, the long-term trend has been upward, and is currently above the national average. Property crime clearance rates, on the other hand, exhibit a long-term downward trend characterized by smaller fluctuations, and in 1979 appear to have dipped below the national average for the first time in at least a dozen years.

In 1978, Wilmington reported clearance rates above those of comparable United States cities in all index crime categories but homocide and larceny -- in which cases the rates were comparable. The widest discrepancy occurred in the rape category where Wilmington reported a rate approximately double the national average. For the crimes of robbery, assault, burglary,

Exhibit 6.2

Index Crime Clearance Rates



and auto theft, Wilmington reported clearance rates of 32.2 percent, 27.9 percent, 60.7 percent, and 59.4 percent, respectively -- all above the national average rates.

In attempting to account for recent changes in clearance rates, one might speculate that the case-screening procedures (see Section 6.3) instituted in 1979 account, in part, for the improvement in violent crime clearance rates over 1978 -- since the focus of the screening activity is on the more serious offenses. The long-term decline in clearances of property crimes is partially rooted in the increased sophistication of the property criminal (i.e., both thief and fence) as reflected in the emergence of elaborate nationwide stolen property distribution systems. As a result, since 1974 more than 60 LEAA-funded anti-fencing operations -- known as STINGs -- have been conducted, designed to reduce the incidence of property crime by penetrating the distribution system using undercover operations. One such operation was conducted in Wilmington, concluding in the last quarter of 1979. It will be of interest to determine what impact, if any, the mass arrests which ensued, and resultant prosecutions, may have on both property crime and clearance rates in Wilmington and surrounding jurisdictions. Initially, at least, one might expect their crime and clearance rates to decrease and increase, respectively.

6.2 INDEX CRIME LEVEL

To examine crime levels, it is necessary to redefine a "Before" evaluation period. With the exception of crime, arrest, clearance, and related statistics, the Before period is defined throughout this report as the twelve months from 7/1/77 to 6/30/78. However, since crime-related statistics "count" events which vary seasonally, the Before period must

be defined and analogous to the During period. Therefore, in this section the Before and During evaluation periods are defined as the nine months from 1/1/78 to 9/30/78 and 1/1/79 to 9/30/79, respectively.

Since Wilmington's population has stabilized in the last five or six years, the crime levels are unadjusted for population. In addition to comparing the Before with the During crime levels, actual During levels are also compared with the levels which would have occurred in the During period if the trend in the six years prior to the MOD program had continued -- as predicted by a simple least-squares regression. Exhibit 6.3 compares the Before and predicted crime and clearance rates with the actual observed During rates and identifies 95 percent confidence levels for the predictions. Exhibits 6.4 and 6.5 portray graphically the crime and clearance rates, respectively, emphasizing the predicted versus observed values. Where feasible, the 95 percent confidence interval is depicted; however, the fluctuations of the property crime rate make the confidence interval of the prediction too large to illustrate. In sum, it can be stated that none of the comparisons is statistically significant, suggesting that the observed increases in violent and property crime rates, violent crime clearance rates, and decrease in property crime clearance rate may be attributable to random fluctuations.

6.3 ARREST-RELATED STATISTICS

Average monthly arrest, arrest per officer, and Detective Division statistics are presented in Exhibits 6.6 through 6.8, respectively. Referring to Exhibit 6.6 and with respect to both violent and property index offenses, the number of reported offenses and number of adult arrests have both increased, while the clearance rate has decreased. In the same time

Exhibit 6.3

Index Crime Statistics

	Number of Index Crimes in 9-Month Period					
	Before	During	Change	Predicted[1] (95% Confidence Interval)	During	Change
Violent	349	409	+17.2%	374.9 (±111.2)	409	+ 9.1%
Property	4,893	5,269	+ 7.7%	5,070 (±2,074)	5,269	+ 3.9%
Total	5,242	5,678	+ 8.3%	---	---	---

(a) Index Crime Level

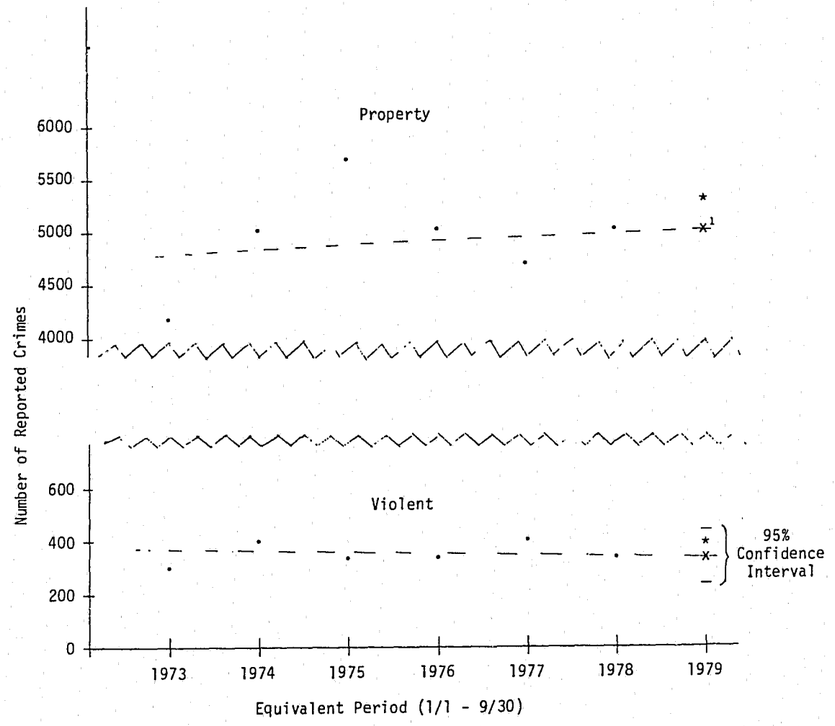
	Index Crime Clearance Rate in 9-Month Period					
	Before	During	Change	Predicted[1] (95% Confidence Interval)	During	Change
Violent	57.0%	54.5%	- 4.4%	48.4% (±19.5%)	54.5%	+12.6%
Property	22.2%	19.0%	-14.4%	22.9% (±12.4%)	19.0%	-17.0%
Total	24.5%	21.6%	-11.8%	---	---	---

(b) Index Crime Clearance Rate

[1]Predicted value based on linear regression of six preceding 9-month periods running from 1/1 to 9/30.

Exhibit 6.4

Index Crime Levels: Predicted Versus Observed



. Before Observed Values

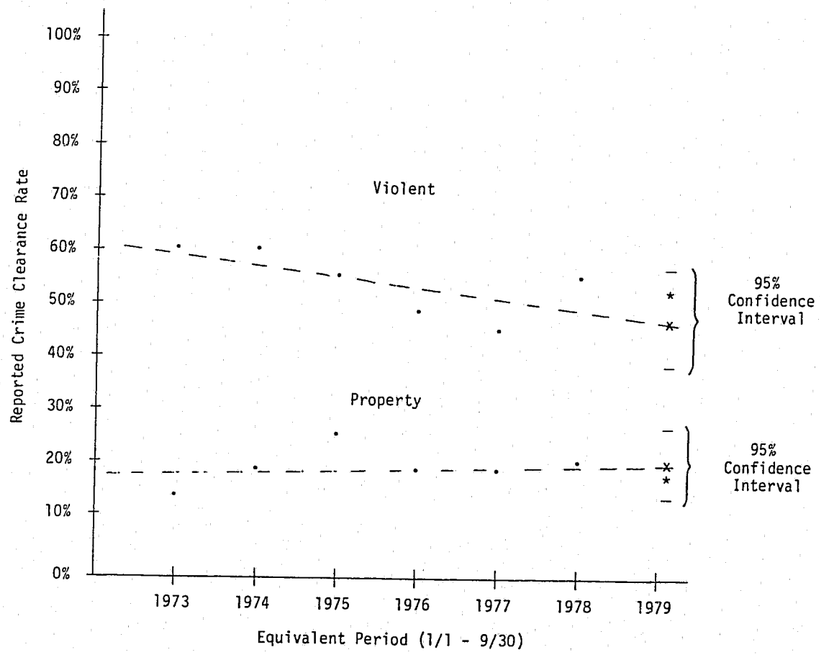
x Predicted Linear Regression Value (i.e., based on Before Observed Values)

* During Observed Value

[1] 95% Confidence Interval too large to be illustrated

Exhibit 6.5

Index Crime Clearance Rate: Predicted Versus Observed



• Before Observed Values

x Predicted Linear Regression Value (i.e., based on Before Observed Values)

* During Observed Value

Exhibit 6.6

Index Offense Arrest Statistics

	Average Monthly Before/During Statistics[1]	
	Number of Individuals Arrested	Change
Violent Crimes		
Adult	69.00/ 73.11	+ 6.0 %
Juvenile	11.11/ 12.22	+10.0
Total	80.11/ 85.33	+ 6.5
Property Crimes		
Adult	54.22/ 60.78	+12.1 %
Juvenile	37.11/ 35.22	- 5.1
Total	91.33/ 96.00	+ 5.1
All Crimes		
Adult	123.22/133.89	+ 8.7 %
Juvenile	48.22/ 47.44	- 1.6
Total	171.44/181.33	+ 5.7

[1]The Before and During statistics are based on 1/78 - 9/78 and 1/79 - 9/79 periods, respectively.

Exhibit 6.7

Index Offense Arrest-per-Officer Statistics

	Average Monthly Before/During Statistics[1]			
	Number of Adults Arrested	Number of Sworn Officers	Arrests per Officer	Change
Violent Crimes	69.00/73.11	279/291	.247/.251	+ 1.62%
Property Crimes	54.22/60.78	279/291	.194/.209	+ 7.73
Total	123.22/133.89	279/291	.442/.460	+ 4.1%

[1]The Before and During statistics are based on 1/78 - 9/78 and 1/79 - 9/79 periods, respectively.

Exhibit 6.8

Detective Division Statistics

	Average Monthly Before/During Statistics									
	Number of Persons Arrested	Number of Assigned Officers	Arrests per Officer	Change	Cases Assigned	Change	Cases Cleared	Change	Clearance Rate	Change
Violent Crimes	13.11/11.78	29/22	.452/0.535	+18.4%	34.11/21.89	-35.8%	12.78/10.89	-14.8%	37.5%/49.7%	+ 32.5%
Property Crimes	47.22/27.11	29/22	1.629/1.232	-22.5%	181.22/50.00	-72.4%	37.33/21.67	-42.0%	20.6%/43.3%	+110.1%
Total	60.33/38.89	29/22	2.080/1.767	-15.1%	215.33/71.89	-66.6%	50.11/32.56	-35.0%	23.3%/45.3%	+ 94.4%

frame, the numbers of juveniles arrested for index offenses have decreased, but not significantly. However, when one examines the index offense adult arrest efficiency of the WDP in Exhibit 6.7, it is readily apparent that a significant increase -- particularly in property crimes -- has been achieved. Some caution must be exercised, however, in interpreting the increase in arrest efficiency as an increase in arrest productivity,* since time and resources did not permit examination of arrest quality. Indicators of quality could include proportions of cases prosecuted, convictions, and rates of charge reduction.

Examination of the Detective Division statistics in Exhibit 6.8 indicate the impact of an investigative case-screening system initiated in February 1979. Under the system the Crime Analysis Unit assumed responsibility for screening all felony complaints as well as all misdemeanor complaints left "open" in the preliminary reports. After screening each applicable case, the Crime Analysis Unit determined whether or not the case should be immediately suspended, as well as which unit should have responsibility for any required follow-up (i.e., Detective Division or Youth Aid Division). Screening criteria included the presence or absence of twelve factors in the preliminary report including witness availability, physical evidence, and so forth. A number of prominent and major studies** have explored the viability of various decision models for determining which cases merit investigative follow-up. As a result, WDP Detective Division assigned cases and case

* Riccio and Heaphy [1972], for example, used Part I arrests per sworn officer as a productivity measure, but cautioned the reader against assuming it to be either valid or all-inclusive.

** Relevant publications include Cahn et al. [1979], Bloch and Bell [1976], Greenberg et al. [1975], and Greenwood et al. [1977].

clearances were reduced by 66.6 percent and 35.0 percent, respectively. As a result of these reductions, the case clearance rate increased by 94.4 percent: this outcome is consistent with the experiences of other jurisdictions employing case-screening systems.

7 OVERALL REACTIONS

This section sums up the citizen attitude toward police services in Wilmington, in particular the reaction of the WDP clients. In addition, the overall reactions of the WDP officers and officials toward the MOD concept, as well as to the program itself, are included in the section.

7.1 CLIENT REACTION

The clients of the WDP seemed to be at least as satisfied with the quality of police services in Wilmington during the MOD program as they had been before it -- their opinions were solicited in the two-part client attitude survey summarized in Appendix C. In fact, a slightly higher percentage felt that their recent police contact during the MOD program had raised their opinion of the WDP, as compared to Before (see Exhibit C.10, Question 26), and that the quality of police services was good or excellent (see Exhibit C.10, Question 28). As Exhibits 7.1 and 7.2 attest, client satisfaction did not depend upon the type of police response -- those receiving the traditional patrol unit response were no more satisfied with WDP services than those receiving one of the alternative MOD responses.

Citizen perceptions of the most appropriate response to their complaints were compared with the responses actually received to establish a mismatch index. Exhibit 7.3 itemizes the relevant percentages of clients receiving and preferring selected alternative responses for the complaint

Exhibit 7.1

Client Satisfaction as a Function of Police Response

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

WBP Response \ Percent Answering	Excellent	Good	Acceptable	Not Good	Poor	Don't Know
Patrol Unit Dispatched[1] (N=148)	23.0%	50.0	19.6	2.0	4.0	1.4
Alternative Response[2] (N=214)	25.2%	49.1	17.3	1.9	3.7	2.8
Total (N=362)	24.3%	49.4	18.3	1.9	3.9	2.2

[1]Includes immediate or formally delayed dispatch of patrol unit (138), and calls returned by the Complaint Service Unit to Communications for dispatch (10).

[2]Alternative responses include phone report (141), phone adjustment (40), specialist appointment (27), and walk-in (6).

Exhibit 7.2

Change in Client Satisfaction as a Function of Police Response

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

WBP Response \ Percent Answering	Raised	Remained the Same	Lowered	Don't Know
Patrol Unit Dispatched[1] (N=148)	19.6%	72.3	7.4	0.7
Alternative Response[2] (N=214)	18.2%	76.2	5.6	0.0
Total (N=362)	18.8%	74.6	6.4	0.2

[1]Includes immediate or formally-delayed dispatch of patrol unit (138), and calls returned by the Complaint Service Unit to Communications for dispatch (10).

[2]Alternative responses include phone report (141), phone adjustment (40), specialist appointment (27), and walk-in (6).

Exhibit 7.3

WDP Response and Client Preference Mismatch

For the type of problem you reported, what do you think would be the most appropriate police response to meet your needs?

Complaint Category	Percent Receiving Response/Preferring Response by Complaint				Mismatch Index[1]
	Dispatch Unit R(1)/P(1)	Walk-In R(2)/P(2)	Specialist Appointment R(3)/P(3)	Phone Report or Adjustment R(4)/P(4)	
Larceny (N=121)	12.2%/34.7%	2.4/ 1.7	5.7/ 9.9	79.6/53.7	.346
Malicious Mischief (N=44)	20.5%/22.7%	0.0/ 2.3	2.3/13.6	77.3/61.4	.198
Disorderly Crowd/Conduct (N=37)	94.6%/94.6%	0.0/ 0.0	0.0/ 5.4	5.4/ 0.0	.076
Burglary (N=29)	34.5%/72.4%	3.4/ 3.4	44.8/17.2	17.2/ 6.9	.480
Accident (N=22)	95.5%/90.9%	4.5/ 4.5	0.0/ 4.5	0.0/ 0.0	.064
Assault (N=16)	62.5%/62.5%	6.3/12.5	12.5/ 0.0	18.8/25.0	.153

[1]Mismatch index given by $\frac{1}{100}\left[\sum_{j=1}^{4}(R(j) - P(j))^2\right]^{\frac{1}{2}}$

categories which predominated in the second client survey (see Exhibit C.10, Question 29). In both larceny and burglary incidents, which have relatively large mismatch indices, the clients would have preferred an immediate dispatch of a patrol unit. In the cases of disorderly crowd/conduct, malicious mischief, traffic accidents and assaults, the WDP's response seemed highly compatible with client preferences. While the mismatch index is meaningless in an absolute sense, it is useful as a relative indicator.

Since the MOD program was directed at improving response-related productivity, there are important cost-related efficiency considerations. If one were to rank the WDP responses in decreasing order of cost, the immediate dispatch of a patrol vehicle would top the list, followed by a specialist appointment, a phone report, a phone adjustment, and a walk-in.* The second client survey asked the citizens if they would be willing to accept a less-costly response than the one received, if they knew it would save money for the City, and ultimately the client taxpayer (see Exhibit C.10, Question 31). The results of this inquiry are summarized in Exhibit 7.4. Overall, 49 percent were willing to accept a less-costly response, with 68.4 percent of those receiving a phone report or adjustment expressing a willingness to walk in to make an in-person report. These surprising results are not only further evidence of the underutilization of the walk-in and scheduled appointment responses, but also of the flexibility in client attitudes about acceptability of alternative police responses. With additional education and program contact, the

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* Actually, it is unclear if walk-in is the least expensive option, especially if the loss factor (i.e., no shows) is minimized and all walk-ins actually show up.

Exhibit 7.4

Client Acceptability of Less-Costly Response Alternatives

If you knew it would cost the City and you the taxpayer less, would you be willing to accept a different, less-costly response?

Response Received	Percent Willing to Accept Less-Costly Response			
	Specialist Appointment	Phone Report or Adjustment	Walk-In	Not Willing
Dispatch Unit (N=146)	4.8%	11.0	12.3	71.9
Specialist Appointment (N=26)		15.4%	23.1	61.5
Phone Report or Adjustment (N=171)			68.4%	31.6

citizens of Wilmington appear willing to accept a much higher percentage of diverted calls for service.

Client comments regarding satisfaction ranged from "the police don't want to work hard," to "they are afraid of my neighborhood -- but so am I," to "I expected to be pushed off, but I was very impressed with their attitude," to "the police were excellent; I can't say enough good things about them." WDP clients, in general, were quite sympathetic to the underlying problems inherent in police work; many of them seemed anxious to blame the courts rather than law enforcement for the City's crime problems.

Finally, although a few alternative response clients would have liked to have had a patrol car come right away, the majority felt that there was no reason for the police to come right away, or at all, under their particular circumstances. Many were conscious of the waste in police manpower implicit in an immediate response. In fact one client insisted that she did not need a patrol car but "they refused to take a report on the phone and sent one anyway."

7.2 OFFICER REACTION

Exhibit 7.5 (a) shows that a majority (77.8 percent) of WDP personnel believe the MOD approach to be an effective way to respond to citizen demand for police services. Furthermore, as indicated in Exhibit 7.5 (b), a majority of WDP personnel (67.5 percent) favor the continuation of MOD at the conclusion of the formal program period. Least favorably disposed to the MOD program and to its continuance are the patrol division personnel, who, as discussed in Section 5.4, object to the reduction in the number of Basic patrol units. At the same time, the communications and resource management personnel, who were most centrally involved in program

Exhibit 7,5

Officer Reaction to Program

Do you believe the MOD approach to be an effective way to respond to citizen calls for service?

Percent Answering	Communication Personnel (N = 21)	Resource Management Personnel (N = 7)	Patrol Personnel (N = 84)	Detective Personnel (N = 14)	Total (N = 126)
Yes	90.5%	85.7%	71.4%	92.9%	77.8%
No	9.5	14.3	29.6	7.1	22.2

(a) Reaction to MOD concept

At the end of the Program, should the WDP continue the MOD approach?

Percent Answering	Communication Personnel (N = 20)	Resource Management Personnel (N = 6)	Patrol Personnel (N = 79)	Detective Personnel (N = 15)	Total (N = 120)
Yes	80.0%	100.0%	57.0%	93.3%	67.5%
No	20.0	0.0	43.0	6.7	33.5

(b) Reaction to continuation of the MOD program

implementation, are extremely positive about the program, particularly the call-back response system and the taking of phone reports.*

Although Section 5 identifies and discusses some of the factors affecting the MOD program implementation and operation, two factors deserve more attention -- they concern officer stress and the resistance to change. These factors are considered in the following subsections, followed by a concluding statement.

OFFICER STRESS

Despite the fact that the existence of police stress is well documented, few studies have focused attention on the elements of police work which cause or contribute to stress -- and the impact they have on the health of the officers. A recent study [Singleton and Teahan, 1978], however, concluded that

> the officer who experiences increased physical stress on duty appears to have a higher risk for interpersonal difficulties in his home life; and he possesses a more heightened sense of anger, suspiciousness, criticism, and social discomforts both on the job and in his home life.

The authors went on to suggest that "Conversely, such personal problems may create increased risk for physical stress and possible injury while on duty." As Wolfgang [1975] noted, the potential for violence and physical injury is a problem for law enforcement officers shared by few other occupations. In all likelihood, the perceived (and often real) threat of injury or death is presumed to account for significant officer stress.

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* While enthusiastic about the MOD program, the detectives were actually peripherally involved in it and considered themselves only partially knowledgable about its structure and content.

As identified in Section 2.2, an essential feature of the MOD program was the 21.1 percent reduction in the number of Basic units. Just as the patrol officers have traditionally felt that a reduction in the number of two-officer cars jeopardizes their safety, their reaction to a reduced patrol street presence is equally negative. In fact, two-thirds of the patrol personnel surveyed felt that the reduction in Basic units decreased their job satisfaction, as well as decreased the effectiveness of the WDP (see Exhibit 5.15). One Basic officer advised PSE to "check the increased number of divorces, increased alcoholism, and mental problems which may be related [to the Basic patrol reduction aspect of the program]." When one adds today's economic pressures -- which result in additional overtime hours -- to the stress equation, it is easy to understand why the reduced Basic patrol strength is viewed by the WDP officers as threatening.

During the split-force experiment the reduction in the proportion of two-officer patrol units was perceived as endangering officer safety, although no evidence was forthcoming to support the contention. So too has the reduction in Basic patrol strength been viewed as imperiling the safety of the Basic force and exacerbating their work-related stress. One Basic officer saw the situation as "endangering the welfare, safety, and even lives of the few men on the street." Yet, as in split force, there were no incidents in the Transition or During evaluation periods in which an officer's injury could be attributed to inadequate patrol presence. Some WDP officers tend to see a return to the old equally-manned district car system, with 17 units on the street, as the panacea which can ameliorate the stressful conditions. However, they fail to recognize that the

concomitant loss of productivity could further increase the already-existing manpower shortage.

RESISTANCE TO CHANGE

Any change in policing of more than an incremental nature is likely to be met with resistance -- especially a dramatic alteration in the approach to responding to citizen calls for service. Resistance was particularly strong among communications supervisors, who had great difficulty sanctioning alternatives to the traditional approach of sending a patrol car to every complaint. While other WDP officers were more supportive of the new procedures, it was the complaint takers who had to interface directly with the complainants.

This resistance to change is at the heart of the problems experienced by the communications personnel in adjusting to their new role as decision makers; and, in part, accounted for the negative reaction of the Basic patrol personnel toward the reduction in Basic unit field strength. However, time can be expected to reduce a great deal of whatever resistance there is to the MOD program. For example, immediately after the split-force experiment, the majority of WDP officers were in favor of discontinuing it, despite a prevalent belief in its effectiveness. By the start of the MOD program two years later, more than 50 percent of the patrol force had worked under no other system, and the split-force patrol was accepted as a condition of the job.

CONCLUSION

Despite the concerns expressed above, WDP officers have reacted favorably to the MOD program. Resistance to change seems to be the

strongest constituent factor responsible for the few negative feelings toward the program. There is, however, every reason to expect that the program -- which has been continued beyond the termination of the formal program period -- will stand the test of time and find even broader officer acceptance. WDP officers are already generalizing from their personal battles for economic survival to the City's need to find productivity-oriented solutions to public problems.

7.3 OFFICIAL REACTION

When the MOD program was in its planning stage, it was approached with extreme caution, particularly by the Chief of Police and his executive staff. Deviation from the traditional response of dispatching a patrol unit was seen as potentially threatening in that it might have resulted in adverse citizen reaction or situations jeopardizing officer safety. As a result, the program began modestly, both in terms of the types of calls to be diverted and the pace at which it would produce Basic patrol car reductions. It is fair to say that the WDP was surprised to find neither a deluge of citizen complaints flooding the switchboard,* nor even a situation in which citizen or officer safety was jeopardized for the sake of program expedience. In light of these outcomes as well as the ability of the program generally to meet its objectives and prove the MOD approach viable, the WDP officials, for the most part, seem quite pleased.

The Chief of Police has opted to continue the approach for the present time; he particularly appreciates the ability to do more with fewer resources.

*Actually, no formal MOD-related complaints were lodged against the City or the WDP during the period of the program.

and also recognizes the residual potential that has yet to be exercised. Since he is the person who must live with the consequences of urban budget pressures, he is anxious to exploit any means of managing the demand for his agency's services. Finally, although there are pressures for him to drop the Basic patrol reduction component of the MOD program, the Chief realizes that the productivity savings are implicit in the components and has, therefore, decided to continue the MOD concept.

8 PRODUCTIVITY CONSIDERATIONS

As identified in Section 3.2, the central hypothesis of the Wilmington MOD program is that "alternative response strategies cause an increase in call-for-service response productivity." Extensive and careful monitoring of the program suggests that whatever response productivity was achieved, it was primarily due to the alternative response strategies (which were, of course, effected by the complaint-screening and call-back components of the program). The issue then is what proportion, if any, of the productivity gains was achieved by formally delaying 3.6 percent and diverting 19.6 percent* of the Basic primary calls for service (see Exhibit 5.2).

The productivity issue is considered in Sections 8.1 and 8.2 in terms of its effectiveness and efficiency components, respectively. Section 8.3 concludes by hypothesizing some limits to the possible productivity gains.

8.1 EFFECTIVENESS CONSIDERATIONS

The first program objective, as stated in Exhibit 2.2, was to maintain WDP effectiveness. This objective was in general *achieved*, at least in terms of the crime-related measures considered in Section 6 and the WDP client and personnel reactions considered in Section 7. The effectiveness-related results are further summarized below.

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* Actually, since 0.7 percent of the Basic primary calls for service were returned for dispatch, only 18.9 percent of the targeted calls were ultimately diverted and handled by the alternative means of phone adjustment (3.5 percent), walk-in (1.6 percent), phone report (11.2 percent) and specialist appointment (2.6 percent).

CONTINUED

3 OF 5

In considering crime-related measures, it is seen that, although both property and violent crime rates increased in Wilmington from the Before to the During evaluation periods, the increases were below the national trend, as reflected in the crime rates of other United States cities of comparable size (see Exhibit 6.1). Additionally, using simple least squares regression, it is shown that the observed increases in Wilmington's violent and property crime levels may be attributable to random fluctuations (see Exhibit 6.3).

When the WDP clients were asked about their satisfaction with the services received, those who received alternative responses were no less satisfied than those to whom patrol cars were dispatched (see Exhibit 7.1). A similar question, having to do with the impact the incident had on the client's continued satisfaction with the WDP services produced no statistically significant difference in the attitude of the two client groups (see Exhibit 7.2). When asked what response was most appropriate to meet the client's needs, there was a reasonably good match between the response received and the response preferred (see Exhibit 7.3). From an economic perspective, half of the WDP's clients expressed a willingness to accept a different, less-costly response, if they were assured that it would indeed cost the City, and them, the taxpayers, less (see Exhibit 7.4). By the same token, a comparison of the Before and During client surveys shows no reduction in overall client satisfaction with police services in Wilmington.

In terms of the reaction of the WDP personnel to the MOD program, it can be stated that, except for the Basic patrol reduction component, the WDP personnel were favorably impressed with the program. Almost 80 percent of the WDP personnel agreed MOD is an effective approach, and 67.5 percent

felt that the WDP should continue with the program (see Exhibit 7.5). The WDP officials' satisfaction with the program is reflected in their decision to continue the program, past the experimental period.

Taken together, the above results suggest that the WDP suffered no diminution in effectiveness during the program. Given the conclusion that the WDP effectiveness has not changed, the productivity impact of the MOD program can, therefore, be stated solely in terms of its efficiency, which is considered next.

8.2 EFFICIENCY CONSIDERATIONS

Although there are several ways of defining efficiency, perhaps the simplest is to define it as the ratio of a noneffectiveness-related output over input. The input in this case is obviously manpower (i.e., effective number of WDP personnel involved in handling Basic calls for service), while the output measure is simply the total number of Basic calls for service* handled by the input manpower. In sum, efficiency for the Wilmington MOD program can be expressed as the number of Basic calls for service handled by an effective 8-hour officer.

Computation of the input, output, and efficiency measures are discussed in the following subsections, while the results are contained in Exhibit 8.1.

INPUT

Prior to implementation of the MOD program, the WDP's responses to calls for service primarily involved the Communications Division and the Basic

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* Usually workload (i.e., call-for-service level weighted by service time) would be a more appropriate output measure. However, the Before service time was inexplicably high (see Exhibit 4.5) -- probably due to laxity in the supervision of the patrol force -- and would have falsely inflated the Basic unit workload level (see Exhibit 4.8). Additionally, comparable service time statistics were not available for the Complaint Service Unit's handling of calls for service.

Exhibit 8.1

Efficiency-Related Statistics

Measures	Evaluation Period[1]			Before/During Change
	Before	Transition	During	
Input				
Effective 8-Hour Basic Patrol Units	19.08	16.99	14.39	-24.6%
Officers per Basic Patrol Unit	1.38	1.28	1.27	- 8.0%
Effective Basic Patrol Officers	26.33	21.75	18.28	-30.6%
Effective Basic Communications Officers[2]	5.75	6.14	5.05	-12.2%
Effective Call-Back Officers	--	2.20	2.20	--
Effective Specialist Unit Officers	--	0.21	0.21	--
Total Effective 8-Hour Officers	32.08	30.30	25.74	-19.8%
Output				
Primary Basic Calls for Service				
• Handled by Basic Unit	110.0	101.0	81.7	-25.7%
• Diverted to Alternative Responses	--	20.5	19.2	--
Assist Basic Calls for Service	32.3	34.8	31.3	- 3.1%
Total Basic Calls for Service	142.3	156.3	132.2	- 7.1%
Efficiency				
Basic Calls for Service per Effective 8-Hour Officer	4.44	5.16	5.14	+15.8%

[1]All input and output statistics are for the 0800 - 2400 period, when the MOD program was in effect.

[2]Includes both sworn and civilian personnel.

patrol force. During the program, responses to the same types of calls for service required the additional participation of the Complaint Service Unit (to perform the call-back function) and the specialist unit (to provide scheduled appontment responses). Thus, in order to compute an overall response-related manpower level, one must consider the effective number of 8-hour officers who i) staff the Basic patrol units, ii) process the Basic calls for service in the Communications Center, iii) call back the complainants whose Basic calls for service were diverted to the Complaint Service Unit, and iv) staff the specialist unit.

Basic Patrol Officers

As part of PSE's analysis of dispatch-related data, the numbers of available Basic units and officers per Basic unit were calculated for each of the six defined, 4-hour tours (see Exhibits 4.10 and 4.13). As detailed in Exhibit 8.1, the effective number of 8-hour Basic patrol units available in the 0800 - 2400 program period (i.e., the sum of Tours 3 - 6) is multiplied by the average number of officers per Basic patrol unit in the same 16-hour program period to yield the number of effective Basic patrol officers. Note that the substantial reduction in Basic patrol units (called for in the program design) and a concomitant, but smaller, staffing reduction resulted in a 30.6 percent overall reduction in effective Basic patrol officers.

Basic Communications Officers

Of the six individuals staffing each communications platoon (see Exhibit 2.4), five are line staff (responsible for processing calls for service), while one is a supervisor. In each 8-hour shift, PSE's participant

observations suggested that approximately 80 percent, or 4 out of the 5 officers, were actually processing calls for service (i.e., serving either as complaint takers or dispatchers). Therefore, during the program period composed of 16 hours, there were effectively 8 communications personnel responsible for call-for-service responses. To derive the proportion of the manpower devoted to Basic calls for service, one can reasonably calculate a proportionality factor defined as

$$\frac{\text{average number of Basic calls for service in 0800 - 2400}}{\text{average number of all calls for service in 0800 - 2400}}$$

and multiply it by the 8 communications personnel. As Exhibit 8.1 indicates, there was a net decrease in effective Basic communications officers of 12.1 percent.

Call-Back Officers

In the Transition and During periods, the four Complaint Service Unit (CSU) officers averaged 2.86 8-hour shifts of duty during the 0800 - 2400 program period. According to the personnel survey (see Exhibit D.2, page 7, Question 17), the average percentage time committed by CSU personnel to the call-back function was 72 percent. Therefore, one can estimate that 2.05 (i.e., 0.72 x 2.86) 8-hour shifts were devoted to the call-back function. However, from the same survey question, it can be estimated that the Crime Analysis Unit personnel supported the call-back function with another 0.15 8-hour shift. Cumulatively, then there were 2.20 effective call-back officers.

Specialist Unit Officers

The Structured patrol unit which was also designated as the specialist unit operated for 12 hours each day, or 1.5 8-hour shifts. It is reasonable to assume on the basis of the number of calls for service per day handled by the specialist unit that no more than 14 percent of its time was devoted to scheduled appointment responses. Thus, approximately 0.21 (i.e., 0.14 x 1.5) effective specialist unit officers responded to Basic calls for service. As in the case of the Complaint Service Unit, this staffing level applied to both the Transition and During periods.

OUTPUT

As noted earlier, the output portion of the efficiency ratio can be expressed in terms of the Basic calls for service which were handled by either a traditional Basic patrol unit or an alternative MOD response. The Basic calls for service can, in turn, be categorized as being either primary or assist.

Primary Basic Calls for Service

Recalling that the Basic calls for service of interest occur during the 0800 - 2400 period, it is a simple matter to compute the number of primary Basic calls for service which were handled by Basic patrol units. Exhibit 4.2 indicates the average number of primary calls for service responded to by Basic units per day, while Exhibit 5.5 indicates that approximately 79.2 percent of all primary calls for service dispatchable to Basic units occurred in the 0800 - 2400 period. Therefore, in the During period, for example, there were 81.7 (i.e., 103.1 x 0.792) primary Basic calls for service which were handled by Basic units. As indicated in

Exhibit 8.1, the diverted component of primary Basic calls for service is simply the total number diverted (see Exhibit 4.2), since the alternative MOD response system operated from 8:00 A.M. to midnight, and diverted calls are primary Basic calls, by definition.

Assist Basic Calls for Service

Since approximately 72.2 percent of all assist calls for service occur during the 0800 - 2400 period (see Exhibit 5.3), one need only multiply the average number of assists responded to by Basic units (see Exhibit 4.2) by 0.722 to estimate the average number of assist Basic calls for service.

EFFICIENCY

As identified in Exhibit 8.1, the comparable output levels were 142.3 and 132.2 Basic calls for service for the Before and During periods, respectively. Did the actual number of calls for service decrease by 7.1 percent? The answer is no; in fact, the overall call-for-service level increased by 5.6 percent (see Exhibit 4.2). Participant observation corroborated the fact that as the number of Basic units decreased, the dispatchers tended to shift calls to non-Basic resources (i.e., Structured units, foot, mounted, and other uniformed resources). In hindsight, and as discussed in Section 5.4, this shift in demand was unnecessary; the remaining Basic patrol units could have handled the balance -- after the MOD diversion -- of the Basic workload, especially if *more* of the primary Basic calls for service were diverted.

Despite the above Hawthorne-like effect, the efficiency measure increased from 4.44 to 5.14 Basic calls per effective 8-hour officer, yielding a significant *15.8 percent* increase in efficiency -- which can also be

interpreted as a productivity gain, given the sustained level of WDP effectiveness. If the effect had not taken place, the net efficiency increase would have been far greater, as much as 36 percent, allowing for the increased call-for-service level. This conclusion is based on the assumption that the proportional increase in calls for service responded to by resources other than Basic units between 0800 and 2400 -- approximately 23 calls per day -- could have been absorbed by the Basic units. The impact on Basic unit utilization would have been to raise it to the Before level of almost 40 percent, with a resulting Basic officer workload index of approximately 0.32 -- a high, but reasonable Basic officer efficiency level. Instead, as suggested earlier, it would have been better to have diverted more of the primary Basic calls for service.

8.3 LIMITING CONSIDERATIONS

Having seen that the Wilmington MOD program of alternative response strategies caused a productivity increase of 15.8 percent, it would be interesting to project what would have happened if more calls for service were diverted. In order to make such projections, it is necessary to first develop a detailed model of the underlying relationships between the pertinent productivity measures and each alternative response strategy. Assuming that the WDP effectiveness would remain unchanged in any productivity projection, the model developed in this section is focused on the efficiency aspect; it is first verified with the actual findings and then used to project other scenarios.

ACTUAL FINDINGS

The efficiency model that is depicted in Exhibit 8.2 relates the number of Basic calls for service handled, the number of effective 8-hour

Exhibit 8.2

Relative Efficiency Considerations

Measures[1]	Evaluation Period			Before/During Change	Projected[2,3]	Before/Projected Change
	Before	Transition	During			
Basic Unit						
NB	142.3	135.8	113.0	-20.5%	104.1	-26.8%
OB	32.00	27.55	22.96	-29.4%	19.40	-28.4%
EB	4.44	4.93	4.92	+10.8%	5.4	+21.6%
RB	1.00	1.00	1.00	--	1.00	--
Phone Adjustment						
NA	--	3.80	3.56	--	7.0	--
OA	--	0.21	0.21	--	0.18	--
EA	--	18.10	16.95	--	40.0	--
RA	--	3.67	3.45	--	7.41	--
Walk-In						
NW	--	1.74	1.63	--	2.3	--
OW	--	0.21	0.21	--	0.05	--
EW	--	8.29	7.76	--	45.0	--
RW	--	1.68	1.58	--	8.33	--
Phone Report						
NP	--	12.15	11.38	--	22.6	--
OP	--	2.00	2.03	--	0.9	--
EP	--	6.08	5.61	--	25.0	--
RP	--	1.23	1.14	--	4.63	--
Specialist Appointment						
NS	--	2.82	2.64	--	6.3	--
OS	--	0.33	0.33	--	0.53	--
ES	--	8.55	8.00	--	12.0	--
RS	--	1.73	1.63	--	2.22	--
Total						
NT	142.3	156.3	132.2	- 7.1%	142.3	0.0%
OT	32.08	30.30	25.74	-19.8%	21.06	-34.4%
ET	4.44	5.16	5.14	+15.8%	6.76	+52.3%

[1] The component efficiency-related measures include N (the number of Basic calls for service handled during the 0800 - 2400 period), O (the number of effective 8-hour officers required to handle the Basic calls for service), E (the efficiency measure, or the ratio of N over O), and R (the relative efficiency measure, or the ratio of a particular efficiency measure over the Basic unit efficiency measure).

[2] All statistics are for the 0800 - 2400 period when the MOD program was in effect.

[3] Based on a projected diversion level of 26.9 percent of noncritical Basic calls for service.

officers required to handle the Basic calls for service, the efficiency measure (i.e., Basic calls handled by an effective 8-hour officer), and the relative efficiency measure (i.e., ratio of a particular efficiency measure over the Basic unit efficiency measure) to each alternative response strategy.* The entries in Exhibit 8.2 were based on several factors, including established staffing levels, personnel survey findings, dispatch-related data analyses, and participant observations. In order to determine the number of equivalent 8-hour officers required for a specialist appointment response, for example, one had to estimate the amount of time devoted to the response by the communications, call-back, and specialist personnel. More specifically, and as another example, the 2.03 estimate in Exhibit 8.2 for the number of effective 8-hour officers required to handle phone reports was determined as follows.

According to Exhibit 8.1, in the During period there were 5.05 effective Basic communications officers; a time-and-motion type of analysis during participant observations suggested that 0.37 of these officers were dedicated to the call-back function, with the balance allocated to Basic unit response. Of the 0.37 officers, 0.03 officers were dedicated to handling phone reports, with the balance allocated between phone adjustments and walk-in responses. Similarly, the analysis indicated that of the 2.20 effective Basic call-back officers, 2.00 of them were dedicated to handling phone reports, with the balance allocated among adjustments, walk-in and specialist appointment responses. Combining the communications and call-back contributions to phone reports, the 2.03 effective figure results.

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* The formal delay strategy is not included because not enough use of the strategy was made; thus, the impact, if any, of a less varying demand level (due to the reduction and shifting of demand peaks) on the resource (i.e., manpower) level could not be ascertained.

In terms of relative efficiencies, it is seen that during the MOD program a phone adjustment was estimated to be 3.45 times as efficient as a Basic unit response, followed by specialist appointment (1.63), walk-in (1.58), and phone report (1.14). Caution must be exercised in interpreting these figures since the alternative response strategies, including the call-back officers, were underutilized, so that the proportional apportionment of an officer's time to the different strategies (i.e., in proportion to the number of Basic calls for service handled) is highly subjective and prone to error.

PROJECTED FINDINGS

An interesting question is: given the Before level of Basic calls for service (i.e., 142.3 per day), what would be the net impact on efficiency of diverting a larger proportion of Basic calls for service than was achieved by the MOD program? Rather than selecting an arbitrary diversion level, it is reasonable to select the diversion level judged acceptable by WDP clients. The results of the first telephone survey (conducted in the Before period) of citizens who had recently requested police services indicated that approximately 35 percent of them were willing to accept an alternative response (see Exhibit C.9, Question 20). Since the survey was based on noncritical primary Basic calls for service and, as Exhibit 8.3 indicates, 76.3 percent of the Basic calls for service are primary (as opposed to assist), the 35 percent figure is equivalent to diverting 26.7 percent (i.e., 0.35 x 0.763) of the noncritical Basic calls for service. As indicated in Exhibit 8.2, the 38.2 (i.e., 0.269 x 142.3) Basic calls for service were apportioned to the various response strategies in a systematic manner. Next an estimate was made of

the optimal efficiency of each alternative response element; thus, it was felt that an equivalent 8-hour officer could exclusively handle either 45 walk-ins,* or 40 phone adjustments, or 25 phone reports, or 12 specialist appointments. Consequently, in terms of relative efficiencies, it was projected that a walk-in response would be 8.33 times as efficient as a Basic unit response, followed by phone adjustment (7.41), phone report (4.63), and specialist appointment (2.22). In comparing the projected to the Before statistics, Exhibit 8.2 indicates a 34.4 percent decrease in the number of equivalent 8-hour officers and a 52.3 percent increase in efficiency.

There are, of course, several other ways of projecting the proportion of Basic calls for service which could be diverted and handled by an alternative MOD response. In correcting for the oversampling of alternative response clients in the second telephone survey, it can be shown that 42.0 percent of the WDP clients were willing to accept an alternative response.** Again, in terms of noncritical Basic calls for service, the 42.0 percent is equivalent to 32.1 percent (i.e., 0.42 x 0.763).

Yet another approach was employed to identify the level of possible call diversion. As detailed in Exhibit 8.4, subjective but careful analysis of each type of call for service was undertaken, and it was determined that 38.0 percent of the noncritical Basic calls for service could theoretically be diverted. While subjective, the assessment of the percentages of non-

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* This large number was based on the fact that the majority -- some 90 percent -- of complainants who were referred to walk in, did not actually do so. However, as discussed in Section 5.3, it is important to develop procedures for minimizing the loss in walk-ins.

** In comparing the two client survey results, one may conjecture that as citizens are introduced to the alternative responses, they become more willing to accept these responses.

Exhibit 8.3

Composition of Basic Calls for Service

Priority Designation	Percentage of Calls for Service During MOD		
	Critical	Noncritical	Total
Primary	12.2%	64.1%	76.3%
Assist	11.4	12.3	23.7
Total	23.6%	76.4%	100.0%

critical Basic calls for service which could be diverted took into account actual MOD performance as reflected in the dispatch data and participant observations; the character of the individual complaint categories as indicated not only by their functional definitions but also interviews with WDP clients; and, finally, the best judgment of the authors. Illustratively, and in terms of burglary, columns (a) and (b) of Exhibit 8.4 indicate that 2.8 percent of all Basic calls for service are burglaries, of which 59.5 percent are noncritical in priority. Therefore, as column (c) states, 1.3 percent of all Basic calls for service are noncritical burglaries. Typically, burglary incidents which are labeled noncritical are "after the fact" and can be diverted and responded to without an immediate dispatch of a patrol unit. Therefore it is not unreasonable to expect that approximately 95 percent of such calls -- see column (d) -- could be diverted.

An obvious question is: what is the upper limit on call diversion assuming that *all* primary, noncritical Basic calls for service are diverted. Since 76.4 percent of all Basic calls for service are noncritical and 64.1 percent of all Basic calls are both primary and noncritical, the answer is 83.9 percent (i.e., 64.1 ÷ 0.764) of all noncritical Basic calls for service.

It should be emphasized that the upper limit is *theoretical* and in general not achievable under practical circumstances. For example, officer-initiated calls for service are, by definition, not divertable to alternative response modes.

Exhibit 8.5 summarizes all the projected estimates for the efficiency-related measures. It is seen that there is a *limiting* effect on the percentage decrease in equivalent 8-hour officers and, likewise, on the increase in the overall efficiency measure. Thus, it is felt that no matter how many primary, noncritical Basic calls are diverted, there is a need to have at

Exhibit 8.4

Extended Estimates of Call Diversion

Type of Call for Service	(a) Percentage of Basic Calls for Service	(b) Percentage of (a) Which Are Noncritical	(c) Percentage of Basic Calls for Service Which Are Noncritical (i.e., (a) x (b))	(d) Percentage of (c) Which Can Be Diverted	(e) Percentage of Basic Calls for Service Which Are Noncritical and Can Be Diverted (i.e., (c) x (d))
Disorderly Persons	19.3%	89.4%	17.3%	25%	4.3%
Unspecified Complaint	13.6	93.0%	12.6	50%	6.3
Larceny	7.4	93.5%	6.9	95%	6.5
Accident	6.1	88.4%	5.4	50%	2.8
Domestic	3.7	90.6%	3.4	30%	1.0
Suspicious Person/Vehicle	3.7	83.4%	3.1	30%	0.9
Added Information	3.3	90.8%	3.0	95%	2.8
Malicious Mischief	3.2	96.1%	3.1	95%	2.8
Burglary	2.8	59.5%	1.7	95%	1.6
Fight	2.8	61.4%	1.7	10%	0.1
Prisoner	2.7	99.0%	2.7	25%	0.6
Attempt Warrant	2.5	99.0%	2.5	50%	1.3
Assault	2.2	72.4%	1.6	10%	0.1
Loud Noise	2.2	100.0%	2.2	20%	0.5
Parking Violation	1.3	100.0%	1.3	25%	0.4
Trespassing, Open Premises	1.0	85.0%	0.9	25%	0.1
Missing Person	1.0	89.5%	0.9	50%	0.5
SUBTOTAL	78.7%	88.7%	69.7%	46.7%	32.6%
Other	21.3	64.1%	13.6	40%	5.4
TOTAL	100.0%	84.0%	83.3%	45.6%	38.0%

Exhibit 8.5

Summary of Projected Efficiency-Related Statistics

Source	Percentage of Noncritical Basic Calls for Service Diverted[1,2]	Percent Decrease in Equivalent 8-Hour Officers	Percent Increase in Efficiency as Compared to Before MOD
Actual Performance	19.0%[3]	19.8%	15.8%
First Client Survey	26.7%	34.4%	52.3%
Second Client Survey	32.1%	41.0%	62.0%
Extended Performance	38.0%	47.0%	71.0%
Upper Limit	83.9%	50.0%	75.0%

[1]Based on analysis for 0800 - 2400 period.

[2]The figures in this column can be converted to a percentage of all Basic calls for service diverted, by multiplying by the factor 0.764 -- the percentage of Basic calls for service which are non-critical.

[3]Since 18.9 percent of the primary Basic calls for service were diverted (and handled by an alternative response) and 76.3 percent of Basic calls for service are primary, then 14.5 percent (i.e., 0.189 x 0.763) of the Basic calls for service were diverted. Inasmuch as 76.4 percent of the Basic calls for service are noncritical, then 19.0 percent (i.e., 0.145 ÷ 0.764) of the noncritical Basic calls for service were diverted as part of the Wilmington MOD program.

least 50 percent of the equivalent 8-hour officers available to handle critical or emergency calls -- this would imply only fielding approximately 18 8-hour Basic patrol units for the entire day. A final point should be made regarding Exhibit 8.5; it is focused on the 0800 - 2400 period. However, if it can be assumed that a proportional amount of Basic calls could also be diverted in the 2400 - 0800 period, then the findings in Exhibit 8.5 would be equally valid for the entire day.

In conclusion, and based upon the above discussions (see Exhibit 8.5), the authors feel the WDP could have at least *doubled* the level of diverted calls for service. Specifically, instead of the dispatcher channelling calls for service to other non-Basic resources, the complaint takers could have diverted the calls to an alternative response in the first place.

PART IV: RESULTS AND IMPLICATIONS

9 EVALUATION RESULTS

The purpose of this section is to consolidate the major evaluation results, all of which have already been discussed in the previous eight sections. For the sake of brevity, the results are stated in exhibit form. Section 9.1 summarizes the evaluation findings, while Section 9.2 addresses the major problem issues and offers specific recommendations.

9.1 SUMMARY OF FINDINGS

Evaluation findings regarding the MOD program objectives and components are contained in Exhibits 9.1 and 9.2, respectively. The major statistical findings are summarized in Exhibit 9.3, while conclusions about the management of demand approach, based on the Wilmington experience, are listed in Exhibit 9.4. Three additional issues deserve consideration.

First, the WDP's prior experience with the split-force experiment was an asset in carrying out the MOD program. It was an asset in that the MOD approach was both an outgrowth and natural extension of the split-force concept. In addition, the WDP officials' experience with split-force allowed them to understand and appreciate experimentation in a police environment, and lent credibility to both the program and, importantly, its evaluators.

Second, while the evaluation attempted to be all-encompassing, it has, of necessity, been restricted in its ability to collect data not readily available, and to perform related analyses. As an example, since much of the alternative response activity centered on telephone conversations between the WDP and the complainant, it would have been desirable to have

Exhibit 9.1

MOD Program Objectives: Summary of Findings

Program Objective	Associated Measures	Performance		Comments
		Planned/Attained Level	Percentage of Planned Level Attained	
1. To maintain the effectiveness of WDP performance as measured by:	1.1 Citizen satisfaction	--	--	The WDP intended that it remain at least as effective During the program as it had been Before the program. According to every associated measure, this objective was fully achieved.
	1.2 Crime level	--	--	
	1.3 Arrest rate	--	--	
	1.4 Clearance rate	--	--	
	1.5 Other related measures	--	--	
2. To establish a complaint-screening function resulting in:	2.1 Alternative response strategies	--	--	The complaint-screening function embodied formal delay, phone adjustment, and walk-in response strategies as well as referring complaints to the call-back function. The complaint takers were quite reluctant in carrying out this function.
	2.2 A decrease in the volume of complaints dispatched to Basic patrol	20.0%/18.9%	94.5%	
3. To establish a call-back function resulting in:	3.1 Alternative response strategies	--	--	The call-back function embodied phone adjustment, walk-in, phone report, and specialist appointment response strategies as well as returning complaints for dispatch. The Complaint Service Unit personnel undertook this function with enthusiasm and success.
4. To establish alternative response strategies consisting of:	4.1 Formally delayed response	--	--	Each of the alternative response strategies was implemented. However, with the exception of the phone report, they were each underutilized and characterized by large residual capacities.
	4.2 Adjusted response	--	--	
	4.3 Walk-in response	--	--	
	4.4 Phone report response	--	--	
	4.5 Specialist appointment response	--	--	
5. To establish a Basic patrol reduction resulting in:	5.1 A decrease in the number of Basic patrol units	20.0%/21.1%	105.5%	The reduction in Basic patrol was successfully accomplished in accordance with each associated measure. The resistance of the Basic patrol personnel to this reduction was unfortunate, but not unexpected.
	5.2 Maintenance of an average Basic patrol unit utilization factor	33.5%/33.8%	99.1%	
	5.3 Maintenance of an average response time to critical calls for service	7.0 minutes/ 6.5 minutes	107.1%	

Exhibit 9.2

MOD Program Components: Summary of Findings

Measure \ Program Component	Before/During Comparison of Impact on Indicated Measure (D = Decrease, I = Increase)				
	Complaint Screening	Call Back	Alternative Response	Basic Patrol Reduction	Net Impact
Incident Times					
Delay Time	D	--	I	--	D
Travel Time	--	--	--	I	D
On-Scene Time	--	--	--	--	--
Call-for-Service					
Primary	--	--	--	--	--
Assist Calls	I	--	--	I	I
Primary Basic Calls	D	--	--	D	D
Assist Basic Calls	I	--	--	--	--
Primary Non-Basic Calls	I	--	--	I	I
Assist Non-Basic Calls	I	--	--	I	I
Percent of Primary Calls Which Are Critical	I	--	--	I	I
Percent of Assist Calls Which Are Critical	I	--	--	I	I
Demand/Supply Mismatch	--	--	--	I	I
Basic Unit Workload					
Number of Basic Units	--	--	--	D	D
Unit Utilization Factor	D	D	--	--	D
Utilization Imbalance	--	--	--	I	I
Officers per Unit	--	--	--	--	D
Officer Workload Index	D	D	--	--	D
Response Productivity					
Effective Basic Manpower	--	I	--	D	D
Basic Calls per Officer	D	--	--	I	I
Officer Perception					
WDP Effectiveness	I	I	--	D	I
Job Satisfaction	--	I	--	D	--
Client Perception					
Client Satisfaction	--	--	--	--	--
Client Acceptance of Alternative Responses	I	I	I	--	I

Exhibit 9.3

MOD Program Statistics: Summary of Findings

Subject	Measure	Statistics		Comments
		Before/During	Change	
Crime-Related Issues	Index Crimes per Month	582.4/630.9	+ 8.3%	The increase in reported crime is consistent with the trend in United States cities of comparable populations. The reduced overall clearance rate is unfortunate, while the dramatic increase in Detective Division clearances is attributable to the new case-screening procedures.
	Index Crime Arrests per Month	123.2/133.9	+ 8.7%	
	Index Crime Arrests per Sworn Officer per Month	0.442/0.460	+ 4.1%	
	Index Offense Clearances per Month	142.7/136.2	- 4.5%	
	Index Offense Clearance Rate	24.5%/21.6%	-11.8%	
	Detective Division Index Crime Clearance Rate	23.3%/45.3%	+94.4%	
Response to Basic Demand (The statistics are each expressed as a percentage of primary Basic calls for service during 0800-2400 period.)	Noncritical Calls	94.5%/84.0%	-10.1%	The alternative response approach to managing police demand has worked productively; however, every alternative response strategy has been underutilized. In particular, the walk-in and specialist appointment responses have far greater potential for diverting calls for service. Overall, the level of diverted calls could easily be doubled.
	Basic Patrol Unit Response	100.0%/81.1%	-18.9%	
	Formally Delayed Response	9.7%/ 3.6%	-62.9%	
	Adjusted Response	-- / 3.5%	--	
	Walk-In Response	-- / 1.6%	--	
	Phone Report Response	-- /11.2%	--	
	Specialist Appointment Response	-- / 2.6%	--	
	Diverted Calls	-- /18.9%	--	
Efficiency-Related Issues) (The statistics refer to the 0800-2400 period.)	Primary Basic Calls per Day			The significant decrease in response-related manpower and increase in response-related efficiency are commendable.
	• Handled by Basic Unit	110.0/ 81.7	-25.7%	
	• Diverted to Alternative Responses	-- / 19.2	--	
	Assist Basic Calls per Day	32.3/ 31.3	- 3.1%	
	Total Basic Calls per Day	142.3/132.2	- 7.1%	
	Effective 8-Hour Basic Officers	32.08/25.74	-19.8%	
	Calls per 8-Hour Effective Officer	4.44/ 5.14	+15.8%	
Client Reaction	Percentage of WDP Clients Indicating that the Quality of Police Services is "Acceptable," "Good," or "Excellent"			Wilmington's residents continue to be satisfied with the WDP services, independent of the type of response received. Further, they are quite willing to accept alternative responses to their calls for police service.
	• Basic Unit Response	88.4%/93.9%	+ 6.2%	
	• Alternative Response	-- /94.3%	--	
	Percentage of WDP Clients Willing to Accept a Less Costly Response if They Knew It Would Cost the City/Taxpayer Less	-- /48.1%	--	
	Percentage of WDP Clients Willing to Accept an Alternative Response	35.0%/42.0%	+20.0%	
Officer Reaction	Percentage Indicating Reduction in the Number of Basic Patrol Units Is Too Much	-- /55.9%	--	While concerned about the reduction in the numbers of Basic patrol units, the WDP personnel believe the MOD approach to be effective and support its continuation.
	Percentage Believing MOD to Be an Effective Approach in Responding to Calls for Service	-- /77.8%	--	
	Percentage Believing the WDP Should Continue the MOD Approach	-- /67.5%	--	

Exhibit 9.4

MOD Approach: Conclusions Based on the Wilmington Experience

Reactive Management of Demand (MOD):

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

   - The development and implementation of a system which appropriately processes demand for police services results in better resource allocation and use and brings about an increase in CFS response efficiency, without compromising response effectiveness.

2. Results in Increased Capability to Assess Demand for Police Services.

   - Building on the productive separation of responsibilities inherent in the split-force patrol approach, MOD provides for an equally productive merging of crime analysis and complaint service responsibilities, as manifested in the formation of the Resource Management Division in Wilmington. As a result, the gap between the analysis of crime patterns and the analysis of citizen demand patterns can be partially bridged.

   - The formation of a highly professional, response-oriented Complaint Service Unit improves the quality of complaint-related information on which response decisions are based. Through the call-back approach, the often hectic environment in which call-for-service-related information is received is replaced by a relaxed and more skilled process of follow-up client communication.

3. Permits An Increase in Police Management Effectiveness and Flexibility

   - The review of complaint-screening decisions implicit in the call-back function provides an excellent mechanism for feedback to police supervisors and offers greater capacity for quality control of the Communications Division.

   - Capitalizing on the response specialization of the Basic patrol force, increased use of CFS diversion to alternative responses allows proportional reductions in the size of the Basic patrol force -- and appropriate reassignment of excess patrol personnel to other divisions.

monitored a larger sample of communications and call-back phone transactions. However, such an effort would have been time consuming and expensive, and beyond the scope of the available evaluation resources. As a result, the evaluation depended largely on WDP client and personnel attitudes to assess interaction between citizen callers and call-for-service response personnel. In addition, although the issue of response effectiveness has been addressed by assessing client attitudes, other measures of effectiveness such as quality of client interaction and quality of on-scene investigation were only cursorily monitored. If, however, in addition to the subjective opinions of WDP officers and supervisors, the evaluation had undertaken to develop sophisticated indices of response effectiveness, the authors believe that the effectiveness measures would not have changed between the Before and During periods.

Third, it should be noted that this evaluation effort has placed police response in the broader and more appropriate context of managing the demand for police services. Inasmuch as the Wilmington MOD program was reactive in nature, the evaluation design detailed in Section 3.2 allows other reactive MOD programs to be assessed in a similar manner. For example, the techniques for measuring response-related efficiency could be applied to other programs to develop comparable findings. In addition, future proactive MOD programs can be examined with analogous methodologies and placed in the common MOD framework that is developed in Section 1.1. Continued research in these areas should be encouraged, and extended into other urban issue areas which share the dilemma of increasing demand and shrinking resources.

9.2 PROBLEM ISSUES AND RECOMMENDATIONS

The major problem issues identified in the text of the report are summarized in Exhibit 9.5, along with a corresponding set of recommendations -- other minor recommendations appear throughout the report. Inasmuch as the purpose of this effort is not to plan, but to evaluate, the recommendations listed in Exhibit 9.5 should be considered tentative, since they have not been reviewed in light of other fiscal and political constraints facing the WDP. The recommendations have been made primarily to provide a basis for discussion.

Exhibit 9.5

Major Problem Issues and Recommendations

Major Problem Issues	Recommendations
Underutilization of Alternative Response Strategies, Including Formal Delay, Phone Adjustment, Walk-In, Phone Report, and Specialist Appointment	• Develop more precise program guidelines which assist the complaint taker to match certain types of calls for service with appropriate responses -- including explicit flow charts and prepared statements for the complaint taker to employ in conjunction with each alternative. • Enhance complaint taker training and orientation to include role playing and training materials designed to improve complaint taker decision-making capabilities; also provide for immediate training of new personnel and refresher training of on-going personnel (at least semi-annually). • Change the current WDP organizational structure so that both the Communications and Resource Management Divisions report to the same commander, who could assure improved coordination of response-related activities, as well as improved supervision and monitoring.
Inappropriate Utilization of the Specialist Appointment Response	• Identify and schedule complaints which require a patrol unit response, but which can be responded to with a delay of greater than 30 minutes duration, for assignment to the Specialist unit.
Insufficient Preparation for Receiving Walk-In Complainants	• Refer all walk-in complainants to the Complaint Service Unit directly for either an adjustment, taking of a report, scheduling of a specialist appointment, or referral to another WDP unit for special services.
Unnecessary Shift in Demand from Basic Patrol Units to Non-Basic Resources	• Assure that the dispatchers do not interpret the reduced number of Basic units as indicating a need to dispatch Structured, mounted, foot, and other uniformed resources to respond to calls for service which should be handled by Basic units.

10 NATIONAL IMPLICATIONS

The following sections view the Wilmington MOD program from a total systems perspective, by examining the tranferability and generalizability of the program, as well as its policy implications.

10.1 PROGRAM REPLICABILITY

It has been seen from the Wilmington experience that a reactive MOD approach can work and be efficient and effective -- i.e., productive -- in the police environment. It also provides a significant organizational improvement in the ability to assess demand for police services; and further increases police management flexibility and effectiveness through the reassignment of excess patrol strength resulting from call-for-service diversion, and the on-going review of complaint-screening decisions by the call-back function.

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

In response to the first question, the Wilmington MOD program was not unique with respect to the particular set of alternative response strategies selected for implementation, as discussed in Section 1.1. Furthermore, while smaller in scale, Wilmington is environmentally, demographically, and politically similar to many of the nation's urban centers. However, the Wilmington program was unique with respect to the commitment made to reduce

the size of the Basic patrol force in concert with the achieved reduction in Basic patrol workload. What made this feature unique -- and possible -- was the preexisting split-force concept which vested primary responsibility for call-for-service response in the Basic patrol force. This is not to say that other departments would be unable to implement a reactive MOD approach; only that the issue of utilizing excess patrol manpower generated through call diversion must be addressed *a priori*. Further, if patrol forces with responsibility for both call-for-service response and crime prevention are to be reduced, the prevention component must somehow be carried out by other patrol resources.

In regard to the implementation issue, the authors believe that there are three essential requirements, in addition to the aforementioned issue of committing excess patrol manpower. First, a police department's structure must be able to accommodate the organizational constraints inherent in the reactive MOD approach. In particular, the call-back function must be strategically housed in the same command as the communications unit, given the interdependence of the complaint-screening and call-back functions. Also, the crime analysis responsibility should be expanded to include the responsibility for analyzing call-for-service demand patterns. Second, there must be a carefully thought-out and well planned training program designed to orient all department personnel to the MOD concept -- and to train program personnel in MOD procedures. One of the hard lessons learned from the Wilmington experience in which the call-back unit was staffed with hand-picked personnel, was the need to similarly select communications personnel for their skill and experience. Too great an emphasis cannot be placed on the requirement that complaint takers be trained to become

decision makers. Finally, as in the case of all public programs which embody major operational changes, there must be an explicit commitment to the program from the Chief on down. The department as a whole must be receptive to change; and the program must be realistically and practically designed.

In response to the question of alternate MOD designs, it should be recalled that the Wilmington program only tested some reactive, response elements of the MOD approach. There are, of course, other types of MOD responses, including the use of police service aides [Tien and Larson, 1978]. Likewise, there is a host of proactive elements which deserve to be tested. As an example, one could anticipate and proactively meet the needs of the more repetitive "career" clients. It is interesting to note from Exhibit 10.1 that, based on several client telephone surveys, over 50 percent of those who called the Wilmington police for assistance had made at least one other call for assistance within a one-year period, and typically, for the *same* reasons. In testing the "career client" phenomenon, Tien [1980] used a Poisson model to estimate the probability that an individual client would make 5 or more calls for service in one year, given that he/she made *at least* one. Under a random incidence assumption, the model estimated the probability to be approximately 0.02. However, as Exhibit 10.1(b) indicates, the second MOD client survey suggests a probability of 0.2. This order of magnitude difference argues persuasively for the presence of the career client phenomenon. Conservatively, assuming that clients in the "5 or more" group made exactly 5 calls for service, those career clients accounted for 40 percent of *all* calls for service -- a very substantial amount!

Exhibit 10.1

Career Victims: Survey Findings

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

	First Survey (N = 191)	Second Survey (N = 189)
No	40.4%	50.3%
Yes	59.6	49.7

(a) Split-Force Client Survey Findings

Other than this incident, how many times have you requested help from the police during the past year?

	First Survey (N = 342)	Second Survey (N = 361)
None	45.6%	42.4%
Once	19.6	17.7
Twice	12.0	11.6
Three times	4.7	6.9
More than three times	18.1	21.3

(b) MOD Client Survey Findings

10.2 MOD POLICY IMPLICATIONS

In addition to continued testing of the reactive MOD approach, the Wilmington MOD program has also highlighted three other important policy issues, as indicated in Exhibit 10.2. Specifically, the need to develop a response-oriented, call-for-service classification scheme; the need to develop and test proactive MOD programs which could mitigate potential calls for service; and the need to develop computer-aided MOD systems.* The needs associated with each one of these issues are also stated in Exhibit 10.2.

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

* The WDP has in fact awarded a planning grant aimed at the conceptual development of a computer-aided MOD system.

Exhibit 10.2

MOD Policy Implications

Policy Issues	Current Understanding[1]	Future Needs
Reactive MOD: A Productive Approach in Call-for-Service Response and a Potentially Effective Management Tool	• See Exhibit 9.4.	• Provide technical assistance in planning and implementing other reactive MOD programs (which include additional alternative response strategies) and a demand analysis unit (which combines the crime analysis and call-for-service analysis responsibilities). • Conduct a uniform and systemic evaluation of several reactive MOD programs. • Develop reactive MOD standards and guidelines.
Call-for-Service Classification: A Neglected Area with Potential Benefits	• Most call-for-service classification schemes utilize legal, crime-oriented terminology, which inhibits identification of appropriate responses. A reactive MOD program could be enhanced through a response-oriented approach to classification.	• Develop and test alternate response-oriented, call-for-service classification schemes which would aid in identifying appropriate responses.
Proactive MOD: A Police Management Concept with Far-Reaching Implications for Mitigating Potential Demand for Police Services	• The existence of the career victim is documented (see Exhibit 10.1) and constitutes a potential target for proactive MOD strategies. • Proactively managing police demand would result in a more efficient and effective -- hence productive -- allocation and use of police resources.	• Develop and test a proactive MOD program model. • Develop and test a general -- proactive and reactive -- MOD program and refine the MOD framework in Section 1.1.
Computer-Aided MOD: A Modern Command and Control Method for Effecting the MOD Approach with Potential for Improving Response-Related Efficiency and Effectiveness and Mitigating Potential Calls for Service	• Currently computer-aided dispatch systems do little more than automate former manual operations [Tien and Colton, 1979]. An "intelligent" computer-aided MOD system would provide decision assistance to the complaint taker, the dispatcher, and the call-back officer.	• Develop and test an intelligent computer-aided dispatch system in the context of a MOD program. • Develop "front ends" for the patrol car allocations models so that the models could assist in identifying the need for a MOD approach. For example, the model could indicate that if certain demand peaks could be eliminated, then the resources required could be decreased -- appropriate MOD elements could then be sought. • Develop algorithm to assist in estimating response time for formally delayed calls for service.

[1]Based on the findings of the Wilmington MOD program.

PART V: APPENDICES

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B GLOSSARY

Alternative Response Strategy	A response to a noncritical call for service other than the immediate dispatch of a patrol unit (i.e., formally-delayed, phone adjustment, walk-in, phone report, or specialist appointment).
Assist Call	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 primary call-for-service incident.
Basic CFS	A call for service which, before the MOD program, would have been responded to by the dispatch of a Basic patrol unit.*
Basic Patrol Force	That portion of the patrol force whose primary function is to respond to calls for service.
Before Period	A one-year period (i.e., 7/1/77 - 6/30/78) defined for evaluation purposes, and covering a period before the implementation of the MOD program.
Call-Back Function	A MOD-initiated function that involves the calling back of the complainant by an officer of the Complaint Service Unit, usually at or within a predetermined time. Call-back response options include phone adjustment, walk-in, phone report, specialist appointment, or return for dispatch.

* The majority of this report uses the term "Basic CFS" to refer to CFS received during Tours 3 - 6 (0800 - 2400), when the alternative response system was in operation.

CFS — Call for service; a communication to police from a citizen, an alarm system, a police officer, or other detector, reporting an incident. All calls for service can be categorized as either *critical* or *noncritical* in nature, and they can also be identified as being *primary* or *assist*.

CFS Card — A card filled out by the complaint taker in the Communications Division and, if applicable, by an officer in the Complaint Service unit. The card is used to capture all CFS-related data and information, and assists in the management of the calls for service.

Case Screening — A process whereby Resource Management Division personnel review felony and selected misdemeanor cases to determine which should be followed up and by which WDP unit.

Clearance — 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)).

Client — A complainant who has received WDP services.

Complainant — A person registering a complaint with the WDP, thereby initiating a call for service.

Complaint Service Unit (CSU) — An organizational subsection of the Resource Management Division, responsible for call-back initiated responses to calls for service.

Complaint-Screening Function — A MOD-initiated function that prioritizes each incoming complaint as critical or noncritical, and selects from among response alternatives (i.e., dispatch, formally delayed dispatch, phone adjustment, walk-in, or call-back).

Critical Call — A call for service that requires an immediate or emergency response.

Demand — Complainant- or police-initiated calls for service requiring a response by the WDP.

Delay Time — Length of time between receipt of a call for service and the time a patrol unit is dispatched to handle the call.

Diverted CFS — A call for service receiving an alternative response, other than an immediate or formally delayed Basic patrol unit response. The CFS is diverted away from a Basic patrol unit response.

During Period — A nine-month period (i.e., 1/1/79 - 9/30/79) defined for evaluation purposes, and during which the formal MOD program was in effect.

FCFS — 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.

Formal Delay Response — A response to a noncritical call for service in which the complainant is formally advised of an impending 30-minute delay before a Basic patrol unit arrives at the scene of the call.

Hypercube	Hypercube Queuing Model; a descriptive computer-based queuing model used to determine the spatial allocation of a prespecified number of patrol units.
Index Crime	An offense related to criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny, or motor vehicle theft.* All Index offenses can be divided into violent and property crimes.
Management of Demand (MOD)	A concept in which citizen demand for public services is managed either reactively (in responding to the demand) or proactively (in anticipating and minimizing the demand). The purpose of MOD is to reduce the demand level and/or the demand variance (by shifting or reducing random demand peaks), so as to allow for a more efficient and effective (i.e., productive) allocation and use of public resources.
NIJ (formerly NILECJ)	National Institute of Justice (formerly, National Institute of Law Enforcement and Criminal Justice).
Noncritical Call	A call for service that does not require an immediate or emergency response.
Officer	A sworn police officer.
Officer Workload Index	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.
Official	A sworn police officer with the rank of sergeant or above.

* The crime of arson has recently been added to the roster of index offenses. However, this report excludes arson from the index crime discussions.

On-Scene Time	Length of time between the arrival of a patrol unit at the scene of a call-for-service incident and the time the unit indicates the service is completed.
Patrol Unit	A marked police cruiser or wagon -- and its assigned police officer(s) -- that is on patrol
PCAM	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 prespecified performance objectives.
Phone Adjustment Response	A response to a call for service in which the complaint is adjusted on the phone but which would have received a patrol unit before the MOD program.
Primary Call	A call for service -- usually initiated by the public -- that could result in the dispatching of an initial patrol unit.
Productivity	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.
Property Crime	An offense related to burglary, larceny, or motor vehicle theft.
PSE	Public Systems Evaluation, Inc.

Resource Management Division	An organizational unit established in conjunction with the MOD program which includes the Complaint Service Unit and the Crime Analysis Unit.
Response Time	Length of time between the receipt of a call for service and the time a patrol unit arrives at the scene of the incident. It includes the delay time and the travel time.
Sector	A designated geographic area in which one patrol unit has primary responsibility.
Service Time	Length of time between the dispatching of a patrol unit to a call for service and the time the unit indicates the service is completed. It includes the travel time and the on-scene time.
Specialist Appointment Response	A response to a call for service in which an appointment is made with the complainant by an officer of the Complaint Service Unit for a visit by the specialist patrol unit, which, when not busy, is also carrying out Structured patrol assignments.
Split Force	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 Department of Police, the Patrol Division is split into a response-oriented, Basic force and a prevention-oriented, Structured force.
Structured Patrol Force	That portion of the patrol force whose primary function is to prevent crime.
Transition Period	A six-month period (i.e., 7/1/78 - 12/31/78) defined for evaluation purposes, and during which preparations were made for the implementation of the MOD program.

Travel Time	Length of time between the dispatching of a patrol unit to handle the call and the time the unit arrives at the scene of the incident.
Unit Utilization Factor	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.
Violent Crime	An offense related to criminal homicide, forcible rape, robbery, or aggravated assault. Sometimes negligent manslaughter is not defined as a violent crime.
Walk-In Response	A response to a call for service in which the complainant is asked to walk in to WDP Headquarters to make a report of the complaint.
WDP (formerly, WBP)	Wilmington Department of Police (formerly, Wilmington Bureau of Police).
Workload	Amount of patrol unit time consumed in responding to calls for service.

C CLIENT SURVEYS

Two telephone surveys of Wilmington residents were administered as part of the MOD design and evaluation efforts. The first survey, undertaken during February 1978, was used to identify those police response alternatives which were considered acceptable by the clients of the Wilmington Department of Police (WDP), and to determine the impact of each alternative on the calls for police service. A further goal of this first survey was to establish pre-MOD estimates of citizen satisfaction with the WDP. The second survey, undertaken during June 1979, was used to measure program effectiveness as experienced by WDP clients. This survey also ascertained citizen attitudes toward the WDP after the MOD program had been in operation for nearly one year.

Neither survey was based on a random selection of Wilmington residents; rather, both surveys were based on samples of residents who had called for police service on a noncritical matter (i.e., a matter which did not require immediate or emergency response). Attention was focused on noncritical incidents because only noncritical calls were considered for alternative modes of police response. The first survey included Wilmington residents who contacted the WDP in January and February of 1978, while the second survey included residents who contacted the WDP in May and June of 1979. All WDP clients were interviewed within two months of their initial WDP contact, while 70 percent of the first group and

90 percent of the second group of clients were interviewed within one month. Thus, the number of clients who had memory problems was minimal.

The remainder of this appendix addresses the sample selection process, the sample profiles, and a summary of the survey results for both surveys. A more critical review of the survey results is contained in the text of the report.

SAMPLE SELECTION

The sample size for the first survey was 344, while 364 Wilmington residents were interviewed for the second survey. Thus, approximately 4.5 out of every 1,000 Wilmington residents were interviewed in each survey. Although an actual telephone interview took only about ten minutes, considerable effort was expended in getting the proper and valid telephone information. Telephone information was obtained from call-for-service (CFS) or dispatch cards completed by the WDP communications and Complaint Service Unit personnel. A sample of the CFS card used for the first survey is shown in Exhibit C.1, while the CFS card used for the second survey is shown in Exhibit C.2.

In selecting interviewees for the first survey, the following guidelines were employed:

- Only CFS cards dealing with noncritical incidents were selected.
- Only CFS 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 "reverse" telephone directory.

Exhibit C.1

Sample of a Call-for-Service Card Before 1100

CODE	TYPE CODE ☐ BF ☐ BPC ☐ IP ☐ OTHER	CALL NO.	DISTRICT

COMPLAINT LOCATION

COMPLAINANT INFO ☐ REFUSED ☐ SAME ADDRESS

REMARKS
☐ WITNESS
☐ VICTIM

ADDITIONAL REMARKS

☐ 10-24 (A)S LIST CALL NO.'S

	TIME RECEIVED	REC'D BY
	TIME SENT	
	TIME ARRIVED	SENT BY
	TIME CLEARED	

REC'D BY ☐ PHONE ☐ RADIO ☐ ALARM ☐ WALK-IN ☐ OTHER

TYPE OF UNIT ☐ BP ☐ SP ☐ OTHER

NO. IN UNIT ☐ 1 ☐ 2 ☐ MORE

REASON THIS UNIT SENT ☐ N/A
☐ CORRECT UNIT ☐ CORRECT UNIT UNAVAIL.
☐ NEAREST UNIT ☐ EARLY OR LATE CAR
☐ NO. IN UNIT ☐ FIRST UNIT ON SCENE
☐ REQUESTED ☐ BACK UP UNIT

DISPOSITION
☐ WARNED ☐ N/A ☐ UNABLE TO LOCATE
☐ TRAFFIC SUM. ☐ CIVIL ☐ NOT NEEDED
☐ CRIMINAL SUM. ☐ CLEAR ☐ UNFOUNDED
☐ CUSTODY ☐ T.O.T. _____ ☐ ASSISTANCE GIVEN
☐ ARREST ☐ OTHER ☐ ADJUSTED

COMPLAINT NO.

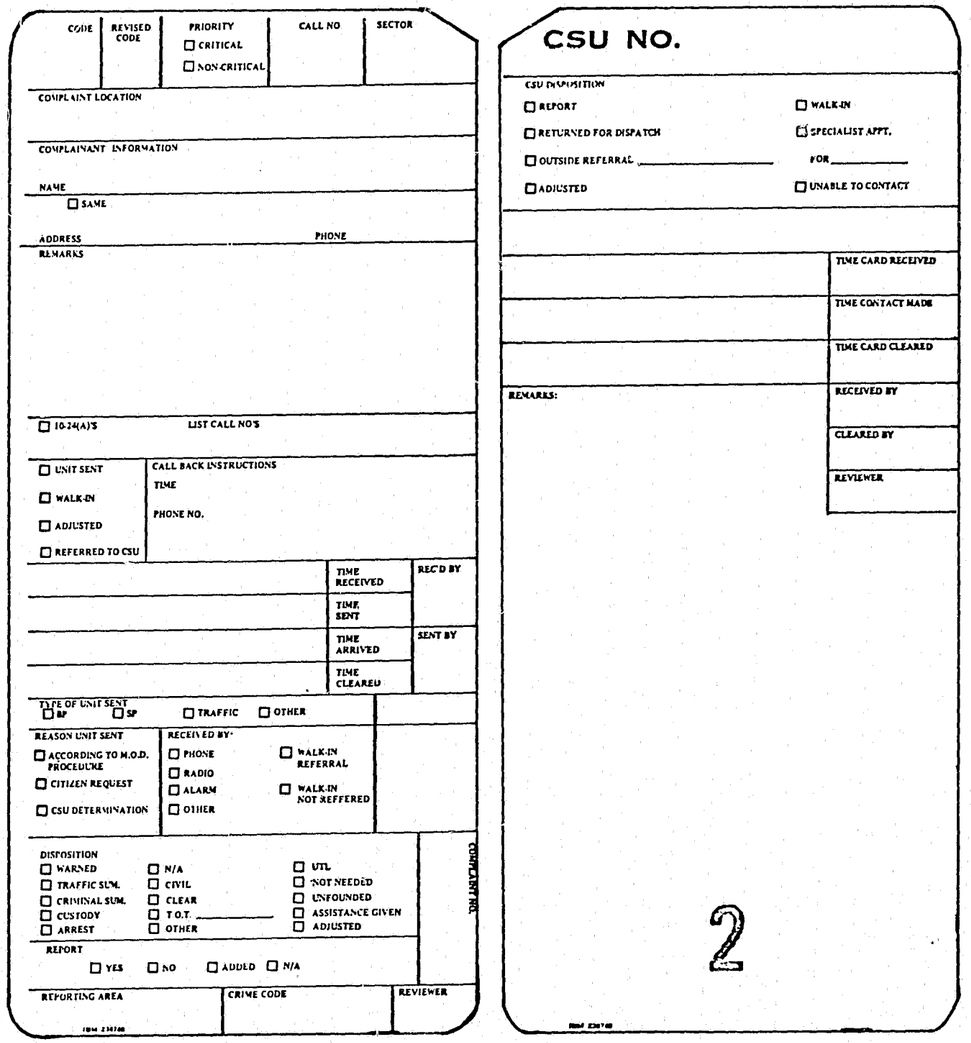
REVISED CODE

REPORT ☐ YES ☐ NO ☐ ADDED ☐ N/A

REPORTING AREA	CRIME CODE	REVIEWER

Exhibit C.2

Sample of a Call-for-Service Card During MOD



In addition to employing the above guidelines in the construction of the sample for the second survey, the following directive was included:

- Cards indicating the use of alternative response modes should be actively sought out and included in the sample.

This directive was included to ensure that a sufficient number of incidents where alternative response strategies were employed would be present in the sample and hence available for analysis.

Exhibit C.3 shows the selection process for the two survey samples. Of the 556 CFS cards pulled in the first survey, 344 or 61.9 percent resulted in successful telephone interviews. Of the 589 CFS cards pulled in the second survey, 364 or 61.8 percent resulted in successful telephone interviews.

SAMPLE PROFILES

The profiles of the final survey samples are 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 survey samples are judged for representativeness in terms of their complaint codes, responses received, response levels, incident time statistics, and client characteristics.

Complaint Codes

As can be seen from Exhibit C.4, the complaint distributions for the two survey samples are different. The second survey included proportionately more larcenies, malicious mischiefs, and disorderly crowds/conducts than the first survey; and proportionately fewer accidents and nonsuffixed

Exhibit C.3

Survey Samples: Selection Process

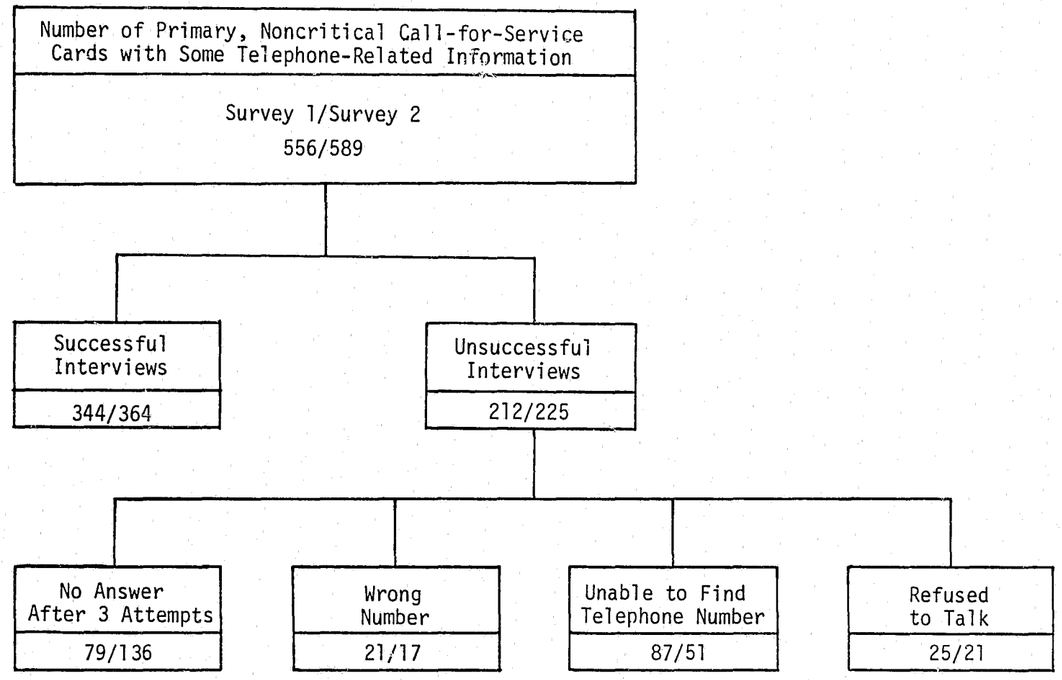


Exhibit C.4

Survey Samples: Complaint Distributions

Type of Complaint	Survey 1 (N = 344)	Survey 2 (N = 364)	Primary, Noncritical Calls for Service[1] (N = 3,105)
Larceny	18.6%	37.1%	9.1%
Accident	16.0	6.3	5.5
Burglary	9.9	8.2	2.6
Malicious Mischief	9.3	12.6	2.1
Meet Complainant	4.7	0.3	0.4
Disorderly Crowd/Conduct	4.1	11.3	15.6
Parking Violation	3.2	0.5	1.5
Domestic	2.6	3.3	4.4
Assault	0.3	6.3	2.0
Non-Suffixed Complaint	19.5	0.3	14.6
Other	11.8	13.8	42.2

[1]Based on a 20% sample of all primary, noncritical Basic call-for-service cards during the period July 1, 1979, to September 30, 1979.

complaints were included in the second survey. Again, the reason for these differences was the desire to highlight those cases where alternative responses to the immediate dispatching of patrol units were utilized. For example, a large number of larcenies were intentionally included in the second survey, as about 80 percent of all larcenies received an alternative response (i.e., a walk-in, phone report, or specialist appointment.

Response Received

This issue pertains only to Survey 2, since Survey 1 occurred prior to the start of the MOD program, when all calls for service were responded to by dispatch of a patrol car. Two levels of decision govern the response received to a CFS during the MOD program. First, the decision made by the complaint taker in communications; and second, the decision made by the officer of the Complaint Service Unit. Exhibit C.5 compares the Survey 2 sample with the actual CFS data in considering the outcomes of the two decision processes. Again, in order to select a reasonable sample of clients receiving alternative responses, a disproportionately small (by a factor of two) percentage of calls for service responded to by sending a unit was included in the sample. In all other respects, the sample is representative of what occurred during the MOD program.

Incident Time Statistics

From Exhibit C.6, it is seen that all incident times (delay, travel, on-scene, response, and service) are shorter in Survey 2 than in Survey 1. This is consistent with the overall improvement in incident time statistics observed during the MOD program as compared with the period before the program. Section 4.1 discusses incident time statistics in detail.

Exhibit C.5

Call-for-Service Dispositions in Survey 2

Call-for-Service Dispositions	Survey 2 (N = 364)	Calls for Service[1] (N = 4,510)
Unit Sent	37.6%	73.2%
Formally Delayed	3.3	4.2
Walk-In	1.6	1.9
Adjusted	10.2	4.2
Phone Report	40.1	13.3
Specialist Appointment	7.1	3.1

[1]Based on a 20% sample of all primary, noncritical Basic calls for service occurring in Tours 3-6 during the period January 1, 1979, to September 30, 1979.

Exhibit C.6

Survey Samples: Incident Time Statistics

Statistic	Average Time in Minutes		
	Survey 1 (N = 344)	Survey 2 (N = 364)	Calls for Service[1] (N = 9,368)
Delay	9.4	6.7	5.3
Travel	11.0	6.8	5.8
On-Scene	28.8	18.4	18.1
Response	20.4	13.5	10.8
Service	36.8	25.1	23.5

[1]Based on a 20% sample of all primary, noncritical Basic call-for-service cards during the period January 1, 1979, to September 30, 1979.

The time of incident occurrence is displayed in Exhibit C.7 for both surveys. Dispatch card information from comparable time periods is also shown. The actual times of incident occurrence do not appear to have changed much from the date of Survey 1 to the date of Survey 2; however, the surveyed times of incident occurrence are different from Survey 1 to Survey 2. In Survey 2, significantly greater numbers of calls which were received between 1200 and 2400 were included, since this was the time period the MOD program components were in effect.

Client Characteristics

At the outset it should be mentioned that not all of the individuals interviewed were the same individuals who requested police assistance. In fact, 10.2 percent of the respondents to the first survey and 11.3 percent of the respondents to the second survey requested police assistance for someone other than themselves.

Exhibit C.8 compares the demographic statistics obtained from the surveys with those obtained from the 1970 census.* If one assumes that the demographic profile of survey respondents is indicative of the profile of victims of crime, then one could infer that the elderly and ethnically white segment of Wilmington's population is victimized proportionately higher than other segments of the population. On the other hand, the profile may only describe a higher rate of calling for police assistance.

* Nineteen hundred and eighty census data were not available at this writing; however, Wilmington's population has remained relatively stable during the past decade.

Exhibit C.7

Survey Samples: Time of Incident Occurrence

Period	Survey 1 (N = 344)	Survey 2 (N = 364)	Calls for Service[1] (N = 9,368)
0000 - 0400	10.3%	1.1%	17.6%
0400 - 0800	5.0	0.0	5.6
0800 - 1200	25.2	12.6	16.5
1200 - 1600	21.1	22.4	17.4
1600 - 2000	24.0	37.9	20.4
2000 - 2400	14.4	25.9	22.5

[1]Based on a 20% sample of all primary, noncritical Basic call-for-service cards during the period January 1, 1979, to September 30, 1979.

Exhibit C.8

Survey Samples: Demographic Statistics

	Survey 1	Survey 2	1970 Census
Sex	(N = 341)	(N = 364)	(N = 80,386)
Male	46.3%	34.2%	46.0%
Female	53.7	65.8	54.0
Age	(N = 341)	(N = 361)	(N = 80,386)
Less than 18	3.8%	3.9%	32.2%
18 - 29	24.3	28.8	10.3 (18-24)
30 - 54	41.5	48.2	37.7 (25-39)
55 and over	24.0	18.3	19.8 (60 and over)
Refused	0.3	0.8	--
Ethnic Origin	(N = 343)	(N = 362)	(N = 80,386)
White	60.8%	56.4%	55.9%
Black	37.1	41.4	43.6
Hispanic	1.2	1.1	0.5
Other	0.9	1.1	--
Marital Status	(N = 340)	(N = 361)	(N = 60,163, age 14 and over)
Married	51.8%	51.5%	47.8%
Divorced	10.6	11.1	4.7
Separated	4.4	5.0	5.7
Widowed	11.2	6.1	12.5
Never Married	22.0	25.8	29.3
Length at Address	(N = 328)	(N = 357)	(N = 27,565 households)
Less than 1 year	15.5%	19.4%	27.8% (0-27 mos.)
1 - 3 years	14.9	16.9	18.2 (28-63 mos.)
3 - 5 years	10.7	10.1	54.1 (more than
More than 5 years	58.8	53.6	-- 63 mos.)
Families in Building	(N = 333)	(N = 330)	(N = 29,959 units)
One	75.7%	78.8%	67.2% (1)
2 - 5	12.0	13.6	16.8 (2-4)
More than 5	12.3	7.6	16.1 (more than 4)
Ownership Status	(N = 331)	(N = 329)	(N = 27,565 households)
Own	64.4%	65.7%	51.9%
Rent	35.6	34.3	48.1

SURVEY RESULTS

Frequency tabulations of the first and second surveys are presented in Exhibits C.9 and C.10, respectively. More detailed results are contained in the text of the report.

In reviewing Exhibit C.9, 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 the first and second surveys, respectively. Where identical questions were posed in both surveys, both sets of response distributions are displayed on each survey response tabulation. Exhibit C.10 presents the frequency tabulations as follows:

- Responses to questions posed to all clients are grouped according to response received -- "unit sent," "alternative response," and "total."
- Responses to the remaining questions are presented as in Exhibit C.9, with N1 and N2 indicating the number of responses to the first and second surveys, respectively.

Exhibit C.9

First Client Survey Results

Public Systems Evaluation, Inc.

FIRST CLIENT ATTITUDE SURVEY:

CODING SHEET

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

COMPLAINT CODE	1 2 3 4 5 6	(Enter information from call-for-service card.)
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
ADDITIONAL SPACES	50 51 52

255

CONFIDENTIAL INFORMATION

Name:

Telephone or Address:

Notes:

1.	
8.	23.
10.	
14.	
28.	

Public Systems Evaluation, Inc.

FIRST

CLIENT ATTITUDE SURVEY

WILMINGTON MANAGEMENT OF DEMAND PROGRAM

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 400 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?

Exhibit C.9
(page 2 of 5)

[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 Wilmington--we are calling about 400 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 TOWARD INCIDENT

1. Can you tell me briefly what happened?

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

25		N1 = 343	N2 = 364
	1 - You	89.8%	88.7%
	2 - Someone else	10.2	11.3

3. How many cars answered the call?

26	(enter number)	N1 = 325	N2 = 166
	1 --	87.7%	74.7%
	2 --	11.4	13.3
	3 or more --	0.9	8.4
	(4 -- Can't recall)	--	3.6

4. How many police officers answered the call?

27	(enter number)	N1 = 335	N2 = 166
	1 --	52.5%	38.6%
	2 --	40.0	39.8
	3 --	3.3	7.2
	4 --	3.3	3.6
	5 or more --	0.9	5.4
	(6 -- Can't recall)	--	5.4

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

28		N1 = 334	N2 = 168
	1 - Less than 5 minutes	11.1%	18.5%
	2 - Between 5 and 10 minutes	21.0	23.8
	3 - Between 10 and 15 minutes	23.4	15.5
	4 - Between 15 and 30 minutes	26.6	22.0
	5 - More than 30 minutes	18.0	17.9
	(6 - Can't recall)	--	2.4

6. How satisfied were you with the response time?

29		N1 = 337	N2 = 173
	1 - Very satisfied	38.3%	32.4%
	2 - Satisfied	47.8	48.6
	3 - Dissatisfied	10.7	10.4
	4 - Very dissatisfied	3.3	7.5
	(5 - Can't recall)	--	1.2

7. What do you think an acceptable response time would have been for a call of this type?

30		N1 = 319	N2 = 169
	1 - Less than 5 minutes	7.5%	26.2%
	2 - Between 5 and 10 minutes	19.4	30.8
	3 - Between 10 and 15 minutes	24.8	20.6
	4 - Between 15 and 30 minutes	26.6	11.3
	5 - More than 30 minutes	21.6	11.2

Exhibit C.9
(page 3 of 5)

8. When you called the Police Department, were you told that the response to the call would be delayed?

		N1 = 336	N2 = 173
31	1 - No	95.8%	82.1%

[IF ANSWER IS YES]

a. How many minutes were you told it would be delayed?

_____minutes

b. How did you feel about being told of the delay?

2 - Appreciated being told	1.8	11.0
3 - Couldn't care less	0.9	2.3
4 - Annoyed, but understood	1.2	0.6
5 - Dissatisfied	0.3	1.7
6 - Very dissatisfied	0.0	1.2
(7 - Can't recall)	--	1.2

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

		N1 = 336	N2 = 170
32	1 - Very satisfied	45.8%	38.9%
	2 - Satisfied	41.7	45.2
	3 - Dissatisfied	10.7	8.3
	4 - Very dissatisfied	1.8	7.6

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

		N1 = 339	N2 = 356
33	1 - Less than 5 minutes	43.4%	44.7%
	2 - Between 5 and 10 minutes	9.7	8.4
	3 - Between 10 and 15 minutes	9.1	5.1
	4 - Between 15 and 30 minutes	8.3	7.6
	5 - More than 30 minutes	29.5	33.1
	(6 - Can't recall)	--	1.1

[IF DELAY WAS MORE THAN 5 MINUTES, ASK] Do you remember the reason for the delay?

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

		N1 = 338	N2 = 369
34	1 - Raised	14.5%	19.1%
	2 - Remained the same	79.0	74.6
	3 - Lowered	6.5	6.3

12. Other than this incident, how many times have you requested help from the police during the past year?

		N1 = 342	N2 = 361
35	1 - None	45.6%	42.4%
	2 - Once	19.6	17.7
	3 - Twice	12.0	11.6
	4 - Three times	4.7	6.9
	5 - More than three times	18.1	21.3

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

		N1 = 336	N2 = 356
36	1 - Excellent	25.3%	24.7%
	2 - Good	45.2	50.8
	3 - Acceptable	17.9	18.5
	4 - Not good	5.1	2.0
	5 - Poor	6.5	4.0

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

Exhibit C.9
(page 4 of 5)

III. MANAGEMENT OF DEMAND SECTION

[INTRODUCTION] The Wilmington Police Department is attempting to find a system that will be more efficient in responding to calls for service from the citizens. In some NON-EMERGENCY cases this may involve responses other than immediately sending out a patrol car. Of course, a patrol car will always be dispatched in emergency situations or whenever the citizen feels it is necessary. However, we would like your opinion (name of respondent) _____ about other ways the police might respond to calls that are similar in nature to the one you made. Under all circumstances your complaint would be followed up.

15. In order to obtain the most appropriate service for the type of problem you reported, would you rather have a police specialist come to you when available, or have a patrol car come right away?

		N1 = 333
37	1 - Police specialist	34.6%
	2 - Patrol car	65.2

16. Thinking about the urgency of this type of call, would it be acceptable if the amount of time it took the police to respond was:

		N1 = 339
38	a. Between a half hour and one hour?	
	1 - No	53.7%
	[IF ANSWER IS YES]	
	b. Would it be acceptable if the response took more than one hour, but occurred the same day?	
	2 - No	34.8
	[IF ANSWER IS YES]	
	c. Would it be acceptable if the response occurred the next day?	
	3 - No	14.2
	[IF ANSWER IS YES]	
	d. Would it be acceptable if the response occurred within a week at the convenience of the police department?	
	4 - Yes	2.4
	5 - No	5.0

17. Would you be willing to have a problem similar to this one handled over the phone or not?

		N1 = 343
39	1 - No	69.7%
	2 - Yes	30.3

18. Would you be willing to go down to police headquarters to handle this type of problem?

		N1 = 343
40	1 - No	63.0%
	2 - Yes	37.0

19. Would it be acceptable to you if someone who works for the police department who is not a sworn police officer, such as a civilian aide or police cadet, assisted you with this type of problem?

		N1 = 341
41	1 - No	31.1%
	2 - Yes	68.9

20. For the type of problem you reported, what do you think would be the best police department response to meet your needs? Would you say it was:

		N1 = 342
42	1 - Having a patrol car come to you immediately	65.8%
	2 - Having a patrol car come to you when available, but within 24 hours	13.5
	3 - Having the police department call you back on the telephone (this would result in a police visit whenever appropriate)	18.4
	4 - Going to the police department in person (this would also result in a police visit whenever appropriate)	2.3

Exhibit C.9
(page 5 of 5)

IV. PERSONAL CHARACTERISTICS OF CLIENT

[INTRODUCTION] Now I'd like to ask a few background questions that will help us to compare your answers with those of other people.

21. (Sex)

43

	N1 = 341	N2 = 363
1 - Male	46.3%	34.2%
2 - Female	53.7	65.8

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

44

	N1 = 341	N2 = 361
1 - Under 18	3.8%	3.9%
2 - 18 - 29	24.3	28.8
3 - 30 - 54	47.5	48.2
4 - 55 - older	24.0	18.3
5 - (REFUSED)	0.3	0.8

23. Are you

45

	N1 = 342	N2 = 362
1 - White	60.8%	58.4%
2 - Black	37.1	41.4
3 - Spanish-Speaking	1.2	1.1
4 - Or of other ethnic origin	0.9	1.1

(SPECIFY _____)

24. What is your marital status?

46

	N1 = 340	N2 = 360
1 - Married	51.8%	51.5%
2 - Divorced	10.6	11.1
3 - Separated	4.4	5.0
4 - Widowed	11.2	6.1
5 - Never Married	22.0	25.8

25. How long have you lived at this address?

47

	N1 = 328	N2 = 354
1 - Less than a year	15.5%	19.4%
2 - 1 - 3 years	14.9	16.9
3 - 3 - 5 years	10.7	10.1
4 - More than 5 years	58.8	53.6

26. How many families in your building?

48

	N1 = 333	N2 = 330
1 - One	76.7%	78.8%
2 - Two to five	12.0	13.6
3 - More than five	12.3	7.6

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

49

	N1 = 331	N2 = 329
1 - Own or buying	64.4%	65.7%
2 - Rent	35.6	34.3

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

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).

Exhibit C.10

Second Client Survey Results

PUBLIC SYSTEMS EVALUATION, INC.

SECOND CLIENT ATTITUDE SURVEY: CODING SHEET

All codes left justified with trailing blanks

Status
- ☐ Completed
- ☐ Refused
- ☐ No police contact
- ☐ Duplicate
- ☐ Wrong #/Disconnected
- ☐ Unable to reach

Call back:

Complaint Code (1 2 3 4 5 6)

Date of Incident (7 / 8 9)

Time Received (10 11 12 13)

Time Dispatched (14 15 16 17)

Time Arrived (18 19 20 21)

Time Cleared (22 23 24 25)

Complaint Taker Decision (26)
1 - unit sent
2 - walk in
3 - refer to CSU

Reason Unit Sent (27)
1 - MOD procedure
2 - citizen request
3 - CSU Decision

CSU Disposition (28)
1 - report
2 - return for dispch
3 - outside referral
4 - adjusted
5 - walk in
6 - specialist apt
7 - no contact

Call Formally Delayed (29)
1 - No
2 - Yes

Caller ID (30)

Recode (31 32 33 34 35 36)

Questions 2 through 5 (37 38 39 40)

Questions 6 through 9 — UNIT SENT (41 42 43 44)

Questions 10 through 13 (45 46 47 48)

Questions 14 through 18 — WALK IN (49 50 51 52 53)

Questions 19 through 24 — CALL BACK (54 55 56)

Questions 22 through 24 (57 58 59)

Questions 26 through 28 (60 61 62)

Questions 29 and 31 (63 64)

Questions 32 through 35 (65 66 67 68)

Questions 36 through 38 (69 70 71)

Confidential Information
Name:
Phone Number or Address:

1. *Description of Incident*

3. *Reason for Delay in Reporting*

4. *Other Response*

6. *Reason for Rejecting Alternatives*

12a. *Delay Time Advisory*

14. *Why Client Didn't Walk In*

16. *Where Client Was Told to Report*

19. *Other Call-Back Time*

20. *Why Client Didn't Talk to WDP at Time*

21. *Other Call Back Result*

22. *Why Specialist Didn't Come at Time*

25. *Comments on Incident*

30. *Most Appropriate Response Comments*

34. *Other Ethnicity*

39. *General Comments*

Public Systems Evaluation, Inc.

SECOND CLIENT ATTITUDE SURVEY

WILMINGTON MANAGEMENT OF DEMAND PROGRAM

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]

Is _____? [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 400 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 brief questions about the incident itself, and, more specifically, about your feeling toward the quality of services provided by the police in Wilminton. 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 Wilmington -- we are calling about 400 Wilmington residents to ask them about their feelings toward the quality of services provided by the police in Wilmington. 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. ALL DON'T RECALL RESPONSES SHOULD BE CODED "8"]

II. ATTITUDE TOWARD INCIDENT

1. Can you tell me briefly what happened?

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

		Unit Sent (N = 149)	*Alternative Response (N = 215)*	*Total (N = 364)*
37	1 - You	82.6%	93.0%	88.7%
	2 - Someone else	17.4	7.0	11.3

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

38		Unit Sent (N = 147)	Alternative Response (N = 209)	Total (N = 356)
	1 - Less than 5 minutes	59.2%	34.4%	44.7%
	2 - Between 5 and 10 minutes	15.0	3.8	8.4
	3 - Between 10 and 15 minutes	6.8	3.8	5.1
	4 - Between 15 and 20 minutes	4.8	9.6	7.6
	5 - More than 30 minutes	12.2	47.8	33.1
	6 - Can't recall	2.0	0.5	1.1

[IF DELAY WAS MORE THAN 5 MINUTES, ASK]

Do you remember the reason for the delay?

II-a. PATROL UNIT SENT

6. Did the person who took your complaint offer you an alternative to having a patrol car come to you?

41		N2 = 169
	1 - No	94.1%

[IF ANSWER IS YES, ASK] Was it

2 - An invitation to walk-in	0.6
3 - An appointment to be called back	3.0
4 - Both 2 and 3	1.2
5 - Can't Recall	1.2

[ASK] Why was the alternative(s) rejected?

4. How would you rate the politeness of the person who took your complaint on the telephone?

39		(N = 147)	(N = 207)	(N = 354)
	1 - Very polite	54.4%	58.0%	56.5%
	2 - Polite	37.4	33.8	35.3
	3 - Adequately polite	4.1	4.8	4.5
	4 - Not polite	2.7	1.9	2.3
	5 - Can't recall	1.4	1.4	1.4

5. What was the response of the Police Department to your complaint? Did they

40		N2 = 359
	1 - Send a patrol car [GO TO #6]	46.1%
	2 - Ask you to walk-in [GO TO #14]	1.9
	3 - Make an appointment to call you back [GO TO #19]	35.4
	4 - Adjust your complaint [GO TO #25]	15.9
	5 - Other [GO TO #25]	1.7
	[SPECIFY]_____	

7. How many cars answered the call? [ENTER NUMBER]

42		N1 = 325	N2 = 166
	1 --	87.7%	74.7%
	2 --	11.4	13.3
	3 or more --	0.9	8.4
	4 - Can't recall	--	3.6

8. How many police officers answered the call? [ENTER NUMBER]

43		N1 = 335	N2 = 166
	1 --	52.5%	38.6%
	2 --	40.0	39.8
	3 --	3.3	7.2
	4 --	3.3	3.6
	5 or more --	0.9	5.4
	6 - Can't recall	--	5.4

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

44		N1 = 334	N2 = 168
	1 - Less than 5 minutes	11.1%	18.5%
	2 - Between 5 and 10 minutes	21.0	23.8
	3 - Between 10 and 15 minutes	23.4	15.5
	4 - Between 15 and 30 minutes	26.6	22.0
	5 - More than 30 minutes	18.0	17.9
	6 - Can't recall	--	2.4

10. How satisfied were you with the response time?

45		N1 = 337	N2 = 173
	1 - Very satisfied	38.3%	32.4%
	2 - Satisfied	47.8	48.6
	3 - Dissatisfied	10.7	10.4
	4 - Very dissatisfied	3.3	7.5
	5 - Can't recall	--	1.2

11. What do you think an acceptable response time would have been for a call of this type?

46		N1 = 319	N2 = 169
	1 - Less than 5 minutes	7.5%	20.2%
	2 - Between 5 and 10 minutes	19.4	30.8
	3 - Between 10 and 15 minutes	24.8	20.6
	4 - Between 15 and 20 minutes	26.6	11.3
	5 - More than 30 minutes	21.6	11.2

12. When you called the Police Department, were you told that the reponse to the call would be delayed?

47		N1 = 336	N2 = 173
	1 - No	95.8%	82.1%
	[IF ANSWER IS YES, ASK]		
	How many minutes were you told it would be delayed?		
	_____ minutes		
	How did you feel about being told of the delay?		
	2 - Appreciated being told	1.8	11.0
	3 - Couldn't care less	0.9	2.3
	4 - Annoyed, but understood	1.2	0.6
	5 - Dissatisfied	0.3	1.7
	6 - Very dissatisfied	0.0	1.2
	7 - Can't recall	--	1.2

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

48		N1 = 336	N2 = 170
	1 - Very satisfied	45.8%	38.9%
	2 - Satisfied	41.7	45.2
	3 - Dissatisfied	10.7	8.3
	4 - Very dissatisfied	1.8	7.6
	[GO TO #25]		

II-b. WALK-IN

14. Did you go to the Police Department to report your complaint?

49		N2 = 10
	1 - No	30.0%
	2 - Yes	70.0
	[IF ANSWER IS NO, ASK] Why not? [THEN, GO TO #25]	

15. How long did you wait, after making your complaint, to go to the Police Department? Was it

		N2 = 5
50	1 - The same day	40.0%
	2 - The next day	40.0
	3 - Two or three days	0.0
	4 - Four days to a week	0.0
	5 - More than a week	20.0

16. Were you told where to report when you arrived at the Police Department?

		N2 = 7
51	1 - No	14.3%
	2 - Yes [SPECIFY] _____	85.7

17. After arriving at the Police Department, how long did you have to wait before someone took your complaint? Was it

		N2 = 7
52	1 - Right away	57.1%
	2 - Less than fifteen minutes	14.3
	3 - Between fifteen minutes and half an hour	28.6
	4 - Between half an hour and an hour	0.0
	5 - More than an hour	0.0

18. How satisfied were you with the police services after you arrived at the Police Department?

		N2 = 7
53	1 - Very satisfied	71.4%
	2 - Satisfied	28.6
	3 - Dissatisfied	0.0
	4 - Very dissatisfied	0.0
	[GO TO #25]	

II-c. CALL BACK

19. Did the Police Department arrange a specific time to call you back?

		N2 = 134
54	1 - No	18.7%
	[IF ANSWER IS YES, ASK] Was it	
	2 - Right away	14.9
	3 - Within half an hour	32.8
	4 - Within one hour	14.9
	5 - Other [SPECIFY] _____	15.7
	6 - Can't recall	3.0

20. Did you talk to the Police Department at the scheduled time?

		N2 = 122
55	1 - No [ASK WHY NOT]	4.9%
	2 - Yes	91.0
	3 - Never talked to them [ASK WHY NOT, THEN GO TO #25]	2.5
	4 - Can't recall	1.6
	[SPECIFY WHY NOT] _____	

21. How would you rate the politeness of the person who called you back?

		N2 = 132
56	1 - Very polite	62.1%
	2 - Polite	33.3
	3 - Adequately polite	2.3
	4 - Not polite	0.0
	5 - Can't recall	2.3

22. What happened when the Police Department called you back? Did they

57		N2 = 134
	1 - Take a report on the phone [GO TO #25]	75.4%
	2 - Return the call for dispatch [GO TO #6]	7.5
	3 - Refer you to an outside agency [GO TO #25]	0.7
	4 - Adjust the complaint on the phone [GO TO #25]	6.0
	5 - Ask you to walk-in [GO TO #14]	0.7
	6 - Make an appointment for a specialist [GO TO #23]	9.0
	7 - No contact [GO TO #25]	0.7

23. Did the specialist arrive at or close to the scheduled time?

58		N2 = 14
	1 - No [ASK WHY NOT]	28.6%
	2 - Yes	71.4

24. How satisfied were you with the specialist after he arrived?

59		N2 = 13
	1 - Very satisfied	53.8%
	2 - Satisfied	38.5
	3 - Dissatisfied	0.0
	4 - Very dissatisfied	7.7

25. Are there any other comments you want to make about this incident?

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

60		Unit Sent (N = 149)	Alternative Response (N = 215)	Total (N = 364)
	1 - Raised	20.1%	18.1%	19.0%
	2 - Remained the same	71.8	76.3	74.5
	3 - Lowered	8.1	5.6	6.6

27. Other than this incident, how many times have you requested help from the police during the past year?

61		(N = 149)	(N = 212)	(N = 361)
	1 - None	35.6%	47.2%	42.4%
	2 - Once	14.1	20.3	17.7
	3 - Twice	14.1	9.9	11.6
	4 - Three times	8.7	5.7	6.9
	5 - More than three times	27.5	17.0	21.3

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

62		(N = 148)	(N = 212)	(N = 360)
	1 - Excellent	23.0%	25.5%	24.4%
	2 - Good	50.7	50.0	50.3
	3 - Acceptable	20.3	18.9	19.4
	4 - Not good	2.0	1.9	1.9
	5 - Poor	4.1	3.8	3.9

29. For the type of problem you reported, what do you think would be the most appropriate police response to meet your needs?

		Unit Sent (N = 149)	Alternative Response (N = 208)	Total (N = 357)
63	1 - Have a patrol car come to you immediately	87.9%	26.9%	52.4%
	2 - Have the Police Department call you back to arrange an appointment with a Specialist	3.4	12.0	8.4
	3 - Have the Police Department call you back so you could make a report on the phone	8.1	56.7	36.4
	4 - Have you come to the Police Department in person to make a report	0.7	4.3	2.8

30. Please explain your answer to the last question (i.e., why do you think the response you received was the most appropriate; or, why would another alternative be more appropriate?).

31. If you knew it would cost the City and you the taxpayer less, would you be willing to accept a different, less-costly response? The [INSERT #] less-costly responses are: [READ ALTERNATIVES IN DECREASING ORDER OF COST AND EXPLAIN]

		Unit Sent (N = 146)	Alternative Response (N = 203)	Total (N = 349)
64	1 - No	71.9%	35.5%	50.7%
	2 - Have the Police Department call you back to arrange an appointment with a specialist	4.8	7.4	6.3
	3 - Have the Police Department call you back so you can make a report on the phone	11.7	26.6	20.1
	4 - Have you come to the Police Department in person to make a report	11.6	30.5	22.6

III. PERSONAL CHARACTERISTICS OF CLIENT

[INTRODUCTION] Now I'd like to ask a few background questions that will help us to compare your answers with those of other people.

32. (Sex)

		Unit Sent (N = 149)	Alternative Response (N = 215)	Total (N = 364)
65	1 - Male	26.2%	40.0%	34.4%
	2 - Female	73.8	60.0	65.7

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

		(N = 149)	(N = 212)	(N = 361)
66	1 - Under 18	4.7%	3.3%	3.9%
	2 - 18 - 29	30.9	27.4	28.8
	3 - 30 - 54	43.0	51.9	48.2
	4 - 55 - older	20.8	16.5	18.3
	5 - (REFUSED)	0.7	0.9	0.8

34. Are you

		(N = 148)	(N = 214)	(N = 362)
67	1 - White	47.3%	62.6%	56.4%
	2 - Black	51.4	34.6	41.4
	3 - Spanish-speaking	0.7	1.4	1.1
	4 - Or of other ethnic origin	0.7	1.4	1.1
	[SPECIFY] _____			

35. What is your marital status?

		(N = 148)	(N = 213)	(N = 361)
68	1 - Married	46.6%	55.9%	52.1%
	2 - Divorced	10.8	11.3	11.1
	3 - Separated	4.1	5.6	5.0
	4 - Widowed	8.1	4.7	6.1
	5 - Never Married	30.4	22.5	25.8

Exhibit C.10

(page 8 of 8)

36. How long have you lived at this address?

		Unit Sent (N = 148)	Alternative Response (N = 209)	Total (N = 356)
69	1 - Less than a year	15.5%	22.0%	19.3%
	2 - 1 - 3 years	19.6	14.8	16.8
	3 - 3 - 5 years	10.8	9.6	10.1
	4 - More than 5 years	54.1	53.6	53.8

37. How many families in your building?

		(N = 137)	(N = 193)	(N = 330)
70	1 - One	76.9%	80.8%	78.8%
	2 - Two to five	13.9	13.5	13.6
	3 - More than five	10.2	5.7	7.6

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

		(N = 137)	(N = 192)	(N = 329)
71	1 - Own or buying	56.9%	71.9%	65.7%
	2 - Rent	43.1	28.1	34.3

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

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).

D PERSONNEL SURVEYS

Four groups of officers in the Wilmington Department of Police (WDP) were administered questionnaires to determine their feelings and perceptions regarding their work in connection with the MOD program. Each group received a somewhat different questionnaire. The four groups included patrol officers, detectives, communications personnel, and resource management personnel: they represented the organizational units most involved in the conduct of the MOD program.* The surveyed sample included about 55 percent of the 250 sworn WDP personnel; a complete statistical breakdown of the sample is presented in Exhibit D.1.

In order to assure anonymity and a high response rate, each respondent was asked during his/her duty to complete a questionnaire, which took from fifteen to twenty minutes and was complemented with coffee and doughnuts. Using the Lieutenant in charge of the Resource Management Division as a liaison, personnel in the Detective, Communications, and Resource Management Divisons were able to answer their questionnaires in their respective workspaces. Patrol personnel were requested to report to the roll-call room to complete the questionnaire, with no more than two officers responding at any one time (so as to minimize any resultant disruption of patrol work). This procedure was necessary, and in

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

CONTINUED

4 OF 5

Exhibit D.1

Personnel Survey Sample

Organizational Unit	Unit Strength	Surveyed Personnel	
		Number	% of Total
Communications Division	25	23	92.0%
Resource Management Division	8	7	87.5%
Patrol Division[1]	129	92	71.3%
Detective Division	22	16	72.7%
TOTAL	184	142	77.2%

[1]Includes Evidence Detection Unit, which was a part of the Patrol Division prior to the MOD program and was switched to the Support Services Division during the MOD program.

hindsight, yielded a more reliable snapshot of the true feelings and perceptions of the four groups of respondents.

Although the cover sheet clearly states that "all responses are strictly anonymous," several respondents were concerned that their answers to certain questions could be self-incriminating. It was necessary to reassure the respondents constantly of their anonymity. As a result, several respondents did make candid comments regarding the MOD program in particular and the WDP in general; some of these comments are included in the text of the report.

As in the case of client survey results in Appendix C, the straight tabulations of officer survey results are contained in Exhibit D.2, while cross-tabulations and a more critical 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 D.2

Personnel Survey Results*

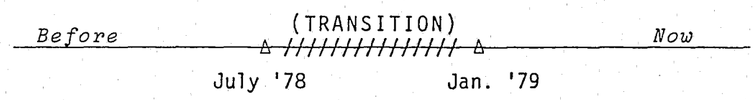
Public Systems Evaluation, Inc.

SURVEY INSTRUMENT FOR { COMMUNICATIONS PERSONNEL / RESOURCE MANAGEMENT PERSONNEL / PATROL PERSONNEL / DETECTIVES }

This survey has been developed by Public Systems Evaluation, Inc. for collecting information about the Wilmington Management of Demand for Police Services Program. It is not a test of your knowledge about the Program. Rather, its objective is to determine your perceptions and feelings about the Management of Demand Program and its effects. Your responses are strictly anonymous--only Public Systems Evaluation personnel will see the completed questionnaires.

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. Several questions ask you to compare a *before* period with a *now* period. Please assume that the *now* period corresponds to the period since January 1979 (i.e., since the Management of Demand Program began). Additionally, assume the *before* period to be before July 1978.



2. Please select the most appropriate answer to every question. Feel free to write comments in the margins.

3. DO NOT PUT YOUR NAME ANYWHERE ON THE QUESTIONNAIRE.

4. When you have completed the questionnaire, place it in the envelope provided and drop it into the box marked "Public Systems Evaluation." It is estimated that the questionnaire should take less than a half hour to complete.

THANK YOU FOR YOUR COOPERATION

* *Note*: Questions 1 - 15 of the survey instrument were the same for all four groups. Questions 16 - conclusion were tailored to each group.

Exhibit D.2
(page 2 of 11)

All Personnel

1. The division or unit you are currently assigned to is: *N = 137*

16.8%	Communications Division
2.2	Complaint Service Unit
3.6	Crime Analysis Unit
50.4	Patrol Division (Basic--including mounted and foot)
13.1	Patrol Division (Structured Patrol Force)
11.7	Detective Division
0.0	Planning and Research Division
2.2	Other (Evidence, Detection, ID)

You have held this assignment for _____ months. *N = 111*
mean = 34.0 months

2. Before your current assignment, have you ever been assigned to

	Yes	No	
Communications Unit (*before* Program; i.e., before July 1978)	*40.9%*	*59.1*	*N=115*
Communications Unit (since July 1978)	*18.2%*	*81.8*	*N= 99*
Basic Patrol Force	*68.5%*	*31.5*	*N=111*

3. Your current rank is: *N = 138*

4.3%	Lieutenant	*5.1*	Police Cadet
13.0	Sergeant	*5.8*	Civilian
70.3	Police Officer	*1.4*	Other (Specify *Captain, Fire Commander*)

4. Indicate your age (_____ years old) and the length of time you have been in the WBP (_____ years). *N = 135 mean age = 30.1 years*
N = 137 mean service = 7.7 years

5. The highest level of education you have completed is: *N = 138*

12.3%	High school (or G.E.D. certificate)
57.2	Some college but did not graduate
14.5	Graduated from technical school or associate degree program
13.8	Graduated from four-year college program
2.2	Graduate work beyond bachelors degree

6. If you had a choice, which division or unit would you prefer being assigned to: *N = 138*

2.2%	Communications	*8.7*	Personnel & Training
2.2	Community Service	*3.6*	Planning & Research
1.4	Crime Prevention	*4.3*	Resource Management
17.4	Detective	*1.4*	Support Services
13.8	Drugs, Vice, and Organized Crime	*6.5*	Traffic
2.9	Internal Affairs	*4.3*	Youth Aid
17.4	Patrol (Basic)	*7.2*	Other (Specify_____)
6.5	Patrol (Structured)		

7. If you were in the Resource Management Division which assignment would you prefer? *N = 133*

20.3%	Complaint Service	*57.1*	Crime Analysis	*22.6*	Report Screening

8. How knowledgeable do you believe yourself to be with respect to the overall Wilmington Management of Demand Program? *N = 136*

8.1%	Very knowledgeable	*35.3*	Somewhat knowledgeable
45.6	Knowledgeable	*11.0*	Not knowledgeable

9. How valuable has each of the following factors been in contributing to your understanding of the Management of Demand Program?

	Very Valuable	Valuable	Somewhat Valuable	Not Valuable	Don't Know	
May/June '78 Training and Orientation Sessions	*8.3%*	*27.3*	*36.4*	*16.7*	*11.4*	*N = 132*
Refresher Training Sessions for Communications Personnel	*5.5%*	*23.6*	*18.9*	*16.5*	*27.6*	*N = 127*
WBP Memos and Written Orders	*8.8%*	*34.6*	*43.4*	*9.6*	*3.7*	*N = 136*
Discussions with Fellow Officers	*16.8%*	*37.6*	*32.3*	*8.3*	*6.0*	*N = 133*
On-the-Job Experience	*43.3%*	*32.1*	*16.4*	*4.5*	*3.7*	*N = 134*

10. This question is in three parts and relates to those elements of Bureau operations that are different *now* (since 1/79) as compared to *before* the Program.

In comparison to *before* the Program the following elements of Bureau operations are relatively different *now* (since 1/79).	(a) How do you feel about the extent to which each element has been used?					(b) What impact has each element had on the effectiveness of the WBP?							(c) What impact has each element had on your job satisfaction?						
		TOO MUCH	JUST RIGHT	NOT ENOUGH	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
Citizens making non-critical complaints are being asked to walk in to the WBP to make their reports.	N = 133	6.8%	18.9	62.1	12.1	N = 132	2.3%	39.4	26.5	6.8	0.0	25.0	N = 131	2.3%	29.8	47.3	7.6	3.1	9.9
Communications Unit telephone complaint handlers are adjusting non-critical calls for service.	N = 134	3.7%	29.1	52.2	14.9	N = 132	6.1%	37.1	21.2	8.3	0.0	27.3	N = 132	5.3%	30.3	41.7	5.3	3.0	14.4
Non-critical calls for service are being referred to the Complaint Service Unit for call back.	N = 133	2.3%	40.6	39.1	18.0	N = 131	10.7%	44.3	13.7	2.3	1.5	27.5	N = 132	9.8%	34.1	34.1	1.5	3.0	17.4
Communication Unit personnel are called upon to make decisions about the response to non-critical calls for service.	N = 133	6.8%	30.8	37.6	24.8	N = 130	1.5%	33.8	28.5	4.6	0.8	30.8	N = 131	1.5%	25.2	45.0	4.6	3.8	19.8
Complaint Service Unit personnel are taking reports regarding non-critical complaints on the telephone.	N = 131	2.3%	37.4	45.0	15.3	N = 127	8.7%	44.1	14.2	3.9	1.6	27.6	N = 128	7.0%	35.9	32.8	2.3	3.9	18.0
Complaint Service Unit personnel are scheduling appointments for non-critical complaints with the Basic Specialist Unit.	N = 133	6.8%	30.8	32.3	30.1	N = 129	7.6%	39.5	14.0	3.1	0.8	34.9	N = 129	4.7%	31.0	36.4	2.3	4.7	20.9
Certain felony and misdemeanor reports are being screened by the Crime Analysis Unit to determine if they should be suspended, or who should follow them up.	N = 132	3.8%	38.6	18.9	38.6	N = 129	10.1%	30.2	10.9	3.9	2.3	42.6	N = 129	9.3%	23.3	27.9	6.2	4.7	28.7
The number of eight-hour Basic Patrol cars has been reduced from 27 eight-hour cars *before* the Program to 21 eight-hour cars *now*.	N = 132	47.0%	9.8	27.3	15.9	N = 128	2.3%	10.2	10.2	28.1	28.9	20.3	N = 129	0.8%	6.2	19.4	25.6	34.1	14.0
The Program provided additional overtime opportunities for WBP officers.	N = 132	5.3%	35.6	34.1	25.0	N = 128	6.3%	33.6	22.7	6.3	1.6	29.7	N = 130	7.7%	29.2	33.8	5.4	2.3	21.5

11. In general, it has been found that the attitudes of persons and groups involved in social experiments have a great influence on the success of such experiments. Indicate what kind of effect you feel each of the following has had on the Management of Demand Program.

	MAJOR CONTRIBUTION TO SUCCESS	MINOR CONTRIBUTION TO SUCCESS	NO NOTICEABLE EFFECT	MINOR CONTRIBUTION TO PROBLEMS	MAJOR CONTRIBUTION TO PROBLEMS	DON'T KNOW	
Communications Lieutenant	22.4%	16.4	20.1	5.2	3.0	32.8	N = 134
Communications Sergeants	27.4%	15.6	15.6	11.1	6.7	23.7	N = 135
Communications Officers	26.7%	21.5	14.1	11.9	3.7	22.2	N = 135
Communications Cadets/Civilians	19.5%	20.3	15.8	12.0	7.5	24.8	N = 133
Planning & Research Personnel	14.2%	14.9	17.2	8.2	2.2	43.3	N = 134
Resource Management Division Captain	28.4%	11.9	17.9	1.5	1.5	38.8	N = 134
Resource Management Division Lieutenant	31.1%	11.9	15.6	2.2	2.2	37.0	N = 135
Complaint Service Unit Personnel	33.8%	29.4	9.6	1.5	2.2	23.5	N = 136
Crime Analysis Personnel	30.4%	21.5	11.9	1.5	0.7	34.1	N = 135
Inspector of Operations	11.9%	16.3	20.7	4.4	2.2	44.4	N = 135
Captain of Patrol	31.1%	25.9	9.6	2.2	0.0	31.1	N = 135
Patrol Lieutenants/Sergeants	22.8%	22.8	19.9	8.1	2.9	23.5	N = 136
Patrol Officers	31.3%	20.1	16.4	3.7	4.5	23.9	N = 134
Captain of Detectives	9.0%	12.7	28.4	4.5	2.9	41.7	N = 134
Detectives	11.3%	16.5	21.1	8.2	3.8	39.1	N = 133
The Chief	18.7%	14.9	20.1	1.5	1.5	43.3	N = 134
Other WBP Officers	10.7%	15.3	19.8	6.1	2.3	45.8	N = 131
Other (Specify_____)	8.3%	16.7	8.3	0.0	0.0	66.7	N = 12

12. How would you compare the quality of supervision you receive *now* (since 1/79) with the supervision you received *before* the experiment? Supervision is *now*:

N = 130

- 13.1% Much Better
- 17.7 Better
- 52.3 No Difference
- 13.8 Worse
- 3.1 Much Worse

13. How would you rate the cooperation between Communications and Resource Management personnel *now* (since 1/79)? N = 137

- 17.5% Very Close
- 24.1 Close
- 12.4 Not Close Enough
- 3.0 Not At All Close
- 43.1 Don't Know

14. Comparing the level of cooperation between and among each of the following *now* (since 1/79) with the level of cooperation *before* the Program, cooperation is *now*:

	Much Stronger	Stronger	About the Same	Less Strong	Much Less Strong	Don't Know	
Among all Communications personnel	5.9%	13.3	41.5	5.2	0.7	33.3	N = 135
Among all Patrol Division personnel	3.0%	15.7	55.2	9.0	3.0	14.1	N = 134
Between Basic Patrol Officers and Communications personnel	1.5%	9.6	43.0	16.3	14.8	14.8	N = 135
Between Basic Patrol Officers and Detectives	1.5%	9.0	47.8	16.4	6.0	19.4	N = 134
Between Structured Patrol Officers and Detectives	3.0%	15.6	30.4	10.4	9.6	31.1	N = 135

15. Indicate the extent to which you agree with each of the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know	
"The WBP is taking chances with the safety of Wilmington citizens by not sending patrol cars in response to virtually all calls for service."	5.8%	10.3	47.8	30.1	5.9	N = 136
"The reduced number of Basic Patrol cars in each tour since the Program began is inadequate to meet the needs of Wilmington's citizens."	43.4%	38.2	10.3	2.9	5.1	N = 136
"Too much responsibility is placed in the hands of communications personnel under the complaint screening system."	5.9%	25.0	47.1	5.1	16.9	N = 136
"Using the Basic Specialist car is not really managing demand--it's just taking work away from the Basic sector cars and putting it somewhere else."	11.9%	40.0	29.6	6.7	11.9	N = 135
"There is no longer any reason to maintain a split-force approach to patrol operations."	27.4%	23.0	28.1	5.2	16.3	N = 134
"The citizens' perceptions of WBP services has improved since the Management of Demand Program began."	1.5%	14.8	21.5	17.2	44.8	N = 134

16. How has the Management of Demand Program affected the following call-for-service response elements in Wilmington? N = 23

	Increased	About the Same	Decreased	Don't Know
Number of calls to which a Basic sector car is dispatched outside of his own sector	56.5%	21.7	13.0	8.7
Frequency of dispatching backup cars	47.8%	39.1	0.0	13.0
Frequency of "deviations" where other than a Basic sector car is the first car dispatched to answer a call-for-service	56.5%	17.4	8.7	17.4
Duration of delay (between time call is received until it is dispatched) for critical calls for service	13.0%	52.2	30.4	4.3
Duration of delay (between time call is received until it is dispatched) for non-critical calls for service	47.8%	30.4	17.4	4.3
Overall quality of dispatching	43.5%	39.1	17.4	0.0

17. How does your workload *now* (since 1/79) compare to your workload *before* the Program? It is *now* (since 1/79): N = 23

17.4%	Much Greater	4.3	Less
43.5	Greater	0.0	Much Less
30.4	About the Same	4.3	Not in Communications Before the Program

18. In the case of each of the following non-critical categories, which of the Program's call-for-service response strategies do you think is the most appropriate?

Non-Critical Categories	Send a Patrol Unit Right Away	Have the Complainant Walk-In to Make a Report	Call the Complainant Back and Take a Report on the Phone	Make an Appointment for the Basic Specialist car to meet the Complainant	
Disorderly crowd (AB)	95.5%	0.0	0.0	4.5	N = 22
Not-In-Progress Robbery (IF)	69.6%	8.7	13.0	8.7	N = 23
Not-In-Progress Theft (IG)	0.0%	26.1	60.9	13.0	N = 23
Malicious Mischief (IT)	4.3%	17.4	73.9	4.3	N = 23
Not-In-Progress Burglary (IS)	8.7%	0.0	30.4	60.9	N = 23
Domestic (IZ)	100%	0.0	0.0	0.0	N = 23

19. What percentage of your time do you spend serving as a dispatcher, telephone complaint handler, or supervisor?

	100%	75% to 100%	50% to 75%	25% to 50%	0% to 25%	Never	
Dispatcher	4.5%	9.1	22.7	13.6	40.9	9.1	N = 22
Telephone Complaint Handler	9.1%	18.2	31.8	22.7	18.2	0.0	N = 22
Supervisor	14.3%	4.8	0.0	0.0	14.3	66.7	N = 21

(If you are a supervisor: How has the Management of Demand Program affected your ability to provide supervision? Providing supervision is *now* (since 1/79):

0.0% Easier 40.0 About the Same 60.0 More Difficult) N = 5

20. How do most citizens react to being asked if they would accept the following alternative responses? *N = 22*

	Object Strongly	Object Somewhat	Don't Object	Don't Know
Walk-In	*13.6%*	*77.3*	*9.1*	*0.0*
Call-Back	*0.0%*	*9.1*	*90.9*	*0.0*

21. Comparing the amount of work *now* (since 1/79) with that *before* the Program, how has each of the following procedural elements affected a telephone complaint handler's workload? *N = 22*

	Greatly Increased	Increased	No Effect	Decreased	Greatly Decreased	Don't Know
Adjustments	*18.2%*	*54.5*	*22.7*	*0.0*	*0.0*	*4.6*
Walk-In Investigations	*0.0%*	*45.5*	*40.9*	*4.5*	*0.0*	*9.1*
Complaint Service Unit Referrals	*27.3%*	*40.9*	*27.3*	*0.0*	*0.0*	*4.5*

22. How would you rate the impact of the following training components on the implementation of the Management of Demand Program? *N = 22*

	Very Effective	Effective	Not Very Effective	Not at all Effective	Don't Know
Training of Communications personnel in understanding the complaint screening system	*13.6%*	*63.6*	*13.6*	*0.0*	*9.1*
Training of communications personnel in complaint handler decision making	*27.3%*	*54.5*	*4.5*	*9.1*	*4.5*
Training of communications personnel in monitoring the Basic Specialist Unit ("30" car) appointment schedule	*0.0%*	*36.4*	*22.7*	*4.5*	*36.4*
Written procedural guidelines distributed as part of training	*18.2%*	*54.5*	*13.6*	*4.5*	*9.1*

23. At the end of the Program, should the WBP continue the Management of Demand approach? *N = 20* Yes *80.0%* No *20.0*

Briefly explain your answer _____

24. Do you believe the Management of Demand approach to be an effective way to respond to citizen calls for service? *N = 21*

Yes *90.5%* No *9.5*

Briefly explain your answer _____

25. Do you have any additional suggestions or comments about the Management of Demand Program? Please feel free to use the back of this page for additional remarks. _____

THANK YOU FOR YOUR COOPERATION

*Resource Management Personnel**

16. How has the Management of Demand Program affected the following call-for-service response elements in Wilmington? *N = 7*

	Increased	About the Same	Decreased	Don't Know
Number of calls to which a Basic sector car is dispatched outside of his own sector	3	--	2	2
Frequency of dispatching backup cars	3	3	--	1
Frequency of "deviations" where other than a Basic sector car is the first car dispatched to answer a call-for-service	3	3	1	--
Duration of delay (between time call is received until it is dispatched) for critical calls for service	2	1	4	--
Duration of delay (between time call is received until it is dispatched) for non-critical calls for service	5	1	1	--
Overall quality of dispatching	3	3	1	--

17. How do you divide your time between complaint service, crime analysis, and report screening activities?

		100%	75% to 100%	50% to 75%	25% to 50%	0% to 25%	Never
N = 6	Complaint Service	1	1	1	2	1	--
N = 6	Crime Analysis	--	1	1	2	1	1
N = 7	Report Screening	1	1	--	--	3	2

18. In the case of each of the following non-critical categories, which of the Program's call-for-service response strategies do you think is the most appropriate? *N = 7*

Non-Critical Categories	Send a Patrol Unit Right Away	Have the Complainant Walk-In to Make a Report	Call the Complainant Back and Take a Report on the Phone	Make an Appointment for the Basic Specialist car to meet the Complainant
Disorderly crowd (AB)	7	--	--	--
Not-In-Progress Robbery (IF)	5	--	--	2
Not-In-Progress Theft (IG)	--	--	7	--
Malicious Mischief (IT)	--	--	6	1
Not-In-Progress Burglary (IS)	1	--	1	5
Domestic (IZ)	6	1	--	--

19. How would you rate the Complaint Service Unit's effectiveness in carrying out the following call-for-service response alternatives? *N = 7*

	Very Effective	Effective	Not Very Effective	Not at all Effective	Don't Know
Outside Referral	1	3	1	2	--
Adjustment	3	4	--	--	--
Walk-In Referral	2	--	3	1	--
Phone Report	4	3	--	--	--
Basic Specialist Appointment	2	5	--	--	--

20. How do most citizens react to having a report taken on the telephone? *N = 7*

4 Appreciate it
-- No reaction
3 Object somewhat
-- Object strongly
-- Don't Know

* *Note: Due to the small size of the Resource Management survey sample, frequency counts are used instead of percentages in this section.*

Resource Management Personnel *

21. What other duties or Management of Demand procedures should the Complaint Service Unit handle? _____

22. How would you rate the impact of the following training components on the implementation of the Management of Demand Program? *N = 7*

	Very Effective	Effective	Not Very Effective	Not at all Effective	Don't Know
Training of Complaint Service Unit personnel in understanding call-back response system	3	3	--	1	--
Training of Complaint Service Unit personnel to determine situations appropriate for the Basic Specialist Unit or to return for dispatch	3	3	--	1	--
Training of Resource Management Division personnel to back-up Complaint Service Unit staff	2	4	--	1	--
Written procedural guidelines distributed as part of training	2	3	--	2	--

23. At the end of the Program, should the WBP continue the Management of Demand approach? *N = 6*

Yes *6* No --

Briefly explain your answer _____

24. Do you believe the Management of Demand approach to be an effective way to respond to citizen calls for service? *N = 7*

Yes *6* No *1*

Briefly explain your answer _____

25. Do you have any additional suggestions or comments about the Management of Demand Program? Please feel free to use the back of this page for additional remarks. _____

THANK YOU FOR YOUR COOPERATION

* *Note: Due to the small size of the Resource Management survey sample, frequency counts are used isntead of percentages in this section.*

Patrol Personnel

16. How has the Management of Demand Program affected the following call-for-service response elements in Wilmington?

	Increased	About the Same	Decreased	Don't Know	
Number of calls to which a Basic sector car is dispatched outside of its own sector	54.4%	21.1	10.0	14.4	N = 90
Frequency of dispatching backup cars	52.2%	31.1	4.4	12.2	N = 90
Frequency of "deviations" where other than a Basic sector car is the first car dispatched to answer a call-for-service	37.8%	36.7	4.4	21.1	N = 90
Duration of delay (between time call is received until it is dispatched) for critical calls for service	18.9%	35.6	8.9	35.6	N = 89
Duration of delay (between time call is received until it is dispatched) for non-critical calls for service	27.8%	34.4	4.4	33.3	N = 90
Overall quality of dispatching	7.8%	52.2	24.4	14.4	N = 89

17. How does your workload *now* (since 1/79) compare to your workload *before* the Program? It is *now* (since 1/79): N = 89

18.0% Much Greater	13.5 Less
22.5 Greater	3.4 Much Less
34.8 About the Same	7.9 Not in Patrol *before* the Program

18. In the case of each of the following non-critical categories, which of the Program's call-for-service response strategies do you think is the most appropriate?

Non-Critical Categories	Send a Patrol Unit Right Away	Have the Complainant Walk-In to Make a Report	Call the Complainant Back and Take a Report on the Phone	Make an Appointment for the Basic Specialist car to meet the Complainant	
Disorderly crowd (AB)	88.9%	1.1	4.4	5.6	N = 90
Not-In-Progress Robbery (IF)	84.4%	3.3	5.6	6.7	N = 90
Not-In-Progress Theft (IG)	11.1%	15.6	48.9	24.4	N = 90
Malicious Mischief (IT)	4.4%	14.4	58.9	22.2	N = 90
Not-In-Progress Burglary (IS)	36.7%	5.6	15.6	42.2	N = 90
Domestic (IZ)	85.4%	7.8	3.4	3.4	N = 89

19. How has the reduction in the size of the Basic Patrol force (i.e., from 27 to 21 eight-hour cars) affected the following elements of patrol operations in Wilmington?

	Increased	About the Same	Decreased	Don't Know	
Time spent on "fixed-post" (10-77) activities	16.7%	26.7	46.7	10.0	N = 90
Time available for meal breaks	4.4%	47.8	40.0	7.8	N = 90
Delays in returning to WBP headquarters for shift changes	42.4%	38.8	11.1	7.8	N = 90
Overall quality of call-for-service response	14.4%	44.4	31.1	10.0	N = 90
Other (Specify_____)	16.7%	16.7	66.7	0.0	N = 18

20. When responding to non-critical calls for service, are you advised by the dispatcher that, although another response was more appropriate, the complainant demanded that a patrol car be sent? N = 89

Yes 43.8% No 56.2

21. If your answer to the above question #20 is "Yes," do you advise the complainant that there are alternative responses more appropriate to his/her complaint? N = 54

20.4% Always 35.2 Sometimes

25.9 Most of the Time 18.5 Never

22. How would you rate the impact of the following orientation components on the implementation of the Management of Demand Program?

	Very Effective	Effective	Not Very Effective	Not at all Effective	Don't Know	
Orientation of patrol personnel in understanding the objectives of the program	6.7%	33.7	39.3	5.6	14.6	N = 89
Orientation of patrol personnel in understanding the role of the Basic Specialist	4.5%	36.4	35.2	9.1	14.8	N = 88
Written procedural guidelines distributed as part of training	5.6%	33.7	33.7	9.0	18.0	N = 89

23. At the end of the Program, should the WBP continue the Management of Demand approach? N = 79

Yes 56.9% No 43.1

Briefly explain your answer _____

24. Do you believe the Management of Demand approach to be an effective way to respond to citizen calls for service? N = 84

Yes 71.4% No 28.6

Briefly explain your answer _____

25. Do you have any additional suggestions or comments about the Management of Demand Program? Please feel free to use the back of this page for additional remarks. _____

THANK YOU FOR YOUR COOPERATION

Exhibit D.2
(page 11 of 11)

16. How has the Management of Demand Program's investigative case screening component affected the following elements of detective operations in Wilmington?

	Increased	About the Same	Decreased	Don't Know	
Quality of preliminary investigation reports prepared by Basic Patrol officers	13.3%	80.0	6.7	0.0	N = 15
Solvability of the cases assigned to the Detective Division	73.3%	26.7	0.0	0.0	N = 15
Size of detective caseload	25.0%	0.0	75.0	0.0	N = 16
Amount of work devoted to an individual case	87.5%	12.5	0.0	0.0	N = 16
Clearance rate of cases assigned to the Detective Division	75.0%	25.0	0.0	0.0	N = 16

17. How does your workload *now* (since 1/79) compare to your workload *before* the Program? It is *now* (since 1/79): N = 16

- 12.5% Much Greater
- 18.8 Greater
- 6.3 About the Same
- 31.3 Less
- 18.8 Much Less
- 12.5 Not a Detective *before* the Program

18. At the end of the Program, should the WBP continue the Management of Demand approach? N = 15

Yes 93.3% No 6.7

Briefly explain your answer _____

19. Do you believe the Management of Demand approach to be an effective way to respond to citizen calls for service? N = 14

Yes 93.0% No 7.0

Briefly explain your answer _____

20. Do you have any additional suggestions or comments about the Management of Demand Program? Please feel free to use the back of this page for additional remarks. _____

THANK YOU FOR YOUR COOPERATION

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