

POLICE RESPONSE TIME ITS DETERMINANTS AND EFFECTS

**Tony Pate
Amy Ferrara
Robert A. Bowers
Jon Lorence**

**Gary Nuss, Division Director
MIDWEST RESEARCH INSTITUTE**

**George L. Kelling, Project Director
POLICE FOUNDATION**



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FOREWORD

The research reported here is a by-product of the Kansas City experiment on preventive patrol. Several sets of observational and survey data were collected to aid in measurement and interpretation of results of that experiment. Although these data were not ideal for the purpose, they could be reanalyzed so as to shed light on another important subject--police response time, its determinants, and its effects.

Another study of response time, the Kansas City Response Time Analysis Study, is nearing completion by the Kansas City Police Department under the sponsorship of the National Institute of Law Enforcement and Criminal Justice of the Law Enforcement Assistance Administration. It represents the first major direct attempt to answer key questions about the effects of response time, in particular those effects related to arrest productivity and the probability of injury and its consequences. A preliminary report of the study, which appeared as an article in the May 1976 issue of The Police Chief, indicates that the study will suggest both the categories of calls for which short response times are unimportant, in terms of arrest productivity or injury, and those categories that require and would benefit from short response times. The study may also suggest those categories of calls which citizens should be urged to make as soon as possible so that a quick response capability could be more useful.

The research reported here contributes interesting insights into what helps to determine response time. But perhaps of more importance from a resource and policy viewpoint, this report suggests that response time is not always a strong, direct determinant of citizen satisfaction. The comparison between citizen expectation and actual experience affects citizens' satisfaction with police service. If response times are no longer than expected, they can be quite long without reducing satisfaction. If they are longer than expected, satisfaction may be reduced even though actual times might be fairly short. Satisfaction with the results of police-citizen contact is also important as a determinant of citizen satisfaction.

The implications are important. Police could use some of their resources to attempt to create more realistic citizen expectations for situations in which short response times cannot improve resolution of the particular matters at hand. What the police tend to do now is to continue to create public expectation of short response times in all instances and to expend the resources required to meet those expectations.

This Police Foundation study, besides contributing an increment of knowledge about response time and how citizens react to it, can serve as a useful

background for the Kansas City Response Time Analysis Study. Further, by pointing to citizen expectations as the important intervening factor, the Foundation study may ease acceptance and, ultimately perhaps, implementation of the results of the final study.

One thing is certain. City budget stringencies will continue pressure for more selective use of resources.

Joseph D. McNamara
Chief of Police
Kansas City, Missouri

Patrick V. Murphy
President
Police Foundation

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Teresa Bronston, Renee McClue, the late Sophronia "Nick" Coffman, Chuck Bay, and Sherry Tobiason provided inexhaustible typing support.

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Patrick V. Murphy, President of the Police Foundation, has remained most understanding and supportive of our work. Charles Brown, former Kansas City police officer, currently a member of the Police Foundation's Washington staff, was a tireless source of valuable advice and assistance.

The important suggestions and criticisms provided by the Police Foundation Evaluation Advisory Group (EAG) are greatly appreciated. Members of the EAG include Professor Francine Rabinovitz, School of Urban and Regional Planning, University of Southern California; Professor Albert J. Reiss, Jr., Department of Sociology, Yale University; Professor Lee Sechrest, Department of Psychology, The Florida State University; and Professor Hans Zeisel, University of Chicago Law School. We are particularly grateful to Dr. George L. Kelling, Project Director, and to Joseph H. Lewis, Director of Evaluation of the Police Foundation, for their very useful comments, advice, and continued encouragement and support.

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Tony Pate
Amy Ferrara
Robert A. Bowers
Jon Lorence

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EXECUTIVE SUMMARY

It has traditionally been assumed that rapid police response to calls-for-service is of sufficient importance to justify the expenditure of considerable amounts of money and effort. Response time is a difficult variable to measure and its interpretation as a performance criterion has not yet been clearly established. Rapid police response to citizen calls-for-service is commonly believed to be associated with increased feelings of community security and satisfaction, a high level of police efficiency, and a greater possibility of criminal apprehension and deterrence of criminal activity. Many would argue that the more rapidly a department responds to calls, the more effectively that department is serving the public. However, it may also be argued that the allocation and distribution of personnel and resources to maintain a uniformly short response time negatively affects other police services such as traffic control, crime prevention, and the investigation of crimes. No conclusive evidence exists to support either view.

The present report is designed to contribute to the discussion of some of these issues by exploring the degree of association between selected determinants and consequences of police response time. However, because this report is strictly exploratory, no hypotheses have been formulated and, although the analysis suggests that potentially important redirection of resources may be possible, further research is necessary to confirm the results.

The data for this report were collected as part of the Kansas City, Missouri, Police Department's Preventive Patrol Experiment which was conducted from October 1972 to September 1973. Although the subject of response time was only peripheral to the main focus of the experiment, an examination of data concerning that topic was considered worthwhile because of the current paucity of published information.

It should be noted that this report contains some of the defects which are unavoidable when data collected for one purpose are used for another. However, every effort has been made to describe these deficiencies fully wherever they may be important for interpretation of the results. Descriptions of the sources of data are provided in Chapter II. Chapter III presents an analysis of those variables which may affect response time. An analysis of variables which may be affected by response time is reported in Chapter IV. Chapter V includes a summary of the findings and a discussion of their implications.

SUMMARY OF RESULTS

Excluding the time citizens take between the occurrence of a criminal event and calling the police and also the time taken within the department to process the information and direct a patrol unit to respond, the variables thought likely to affect response time most directly were:

- the distance an officer must travel,
- the amount of time elapsing before an officer starts to the scene of the incident,
- the traveling speed of the officer, and
- where applicable, the amount of time the officer must wait for an assisting officer.

The only two variables that were found to be significantly correlated with response time were starting time and distance, although only about ten percent of the officers required three or more minutes before starting to respond to a call. Officers' traveling speed was not significantly correlated with response time largely because the variance in speed was quite limited, thus precluding any substantive analysis.

Variables considered likely to be affected by response time were:

- outcome of encounter,
- citizen satisfaction with response time,
- satisfaction with responding police officers, and
- attitudes toward the police in general.

Response time itself was not found to be the most significant predictor of any of these variables. Citizen expectation about response time was an intervening variable; the difference between citizen expectations and the response time they observed was the most significant predictor of their satisfaction with response time in all three surveys for which data were available. The best predictor of general attitudes toward the police was the citizens' level of satisfaction with the responding police officer.

The data presented here suggest that response time, when compared with other variables, may not be as crucial a determinant of citizens' evaluations of the police as has been hypothesized. It is possible that public assurances of rapid police response may inadvertently result in citizen dissatisfaction, when response time exceeds that which citizens have been led to expect. Additionally, any pressure on officers to respond immediately to all calls could negatively affect officers' behavior by depriving them of an area of discretion and making them unwilling to initiate some of the time-consuming contacts with citizens which also promote good police-community relations.

As a result of these considerations, it may be worthwhile for police departments to play a larger role in forming realistic citizen expectations of response time. Dispatchers could be trained to differentiate those calls requiring immediate response and those for which longer response times would be tolerable. Citizens could be advised of how soon they might reasonably expect the police to respond. Other methods could be the use of civilians for taking reports at the scene of an incident or using the telephone for taking certain reports.

The statistically significant associations found among age, race, and attitudes toward the police suggest that many factors other than response time are important predictors of citizen attitudes toward the police. These factors should be systematically identified, the causes of their association with attitudes toward police examined, and training devised which addresses those causes.

In conclusion, the usefulness of manipulating factors which affect response time must be judged in the light of the apparently limited consequences of response time. Further police efforts to reduce response time could be costly, and the benefits might be only marginal.

I. INTRODUCTION

Rapid police response to citizen calls-for-service is commonly believed to be associated with feelings of community security and satisfaction, a high level of police efficiency, and a greater probability of criminal apprehension and deterrence of criminal activity. Because response time is often considered a major determinant of the quality of police service, many police departments devote sizable amounts of their resources to ensure rapid police response to calls-for-service.

Many task force reports and commission statements have addressed the importance of response time, including a report by the National Commission on Productivity, which suggested that:

Rapid response time may contribute to deterrence in at least three ways. First, there may be some deterrent effect in the knowledge that police can respond quickly to crimes in progress, although no indisputable correlation has been established. Second, there is evidence that suggests that below certain time levels, quicker response to crimes in progress does result in higher apprehension rates; higher apprehension rates in turn may have some deterrent effect, although with qualifications as mentioned above. Third, rapid response probably does or could increase citizen confidence in the police, which in turn could encourage greater citizen involvement in the observation, reporting, and prevention of crime; such public involvement may, in turn, have some effect in deterring crime.

In short, there is no definitive relationship between response time and deterrence, but professional judgement and logic do suggest that the two are related in a strong enough manner to make more rapid response important.¹

In a further discussion of response time, James S. Kakalik and Sorrel Wildhorn comment:

¹ National Commission on Productivity, Opportunities for Improving Productivity in Police Services, Washington, D.C.: United States Government Printing Office, 1973, p. 19.

Some police officials also claim that quick response time...to fires and accidents may save lives, reduce suffering and prevent some economic loss. Reduced response time to calls for assistance involving family or other disturbances may prevent some from escalating to serious crimes. But the value of response time in the provision of police services is not known, nor are we likely to understand it without long, costly, and careful analysis and experimentation.^{2/}

As Kakalik and Wildhorn suggest, there is little empirical evidence of the consequences of police response time, its effect on citizens' feelings of security and satisfaction, or how it relates generally to police effectiveness. Response time is a difficult variable to measure, and its interpretation as a performance criterion has not been clearly established. Many would argue that the more rapidly a department responds to calls, the more efficiently that department is serving the public. However, it is also arguable that the allocation and distribution of personnel and resources to maintain a uniformly low response time results in negative effects on the provision of other police services such as traffic control, crime prevention, and the investigation of crimes.

To date, the four most important studies of the effects of police response time have been conducted in Los Angeles; Seattle; Ottawa, Ontario; and Kansas City, Missouri. The Los Angeles study was made in 1966 by the Los Angeles Police Department for the President's Commission on Law Enforcement and Administration of Justice.^{3/} The results suggested that rapid response time was directly correlated with the police officer's ability to make an arrest: Police response time averaged 6.3 minutes for those cases involving crimes not subsequently solved and 4.1 minutes for cases in which the police made an arrest. A recently completed analysis prepared by the Seattle Police Department, based on dispatch records of 2,532 calls-for-service in connection with high priority crimes in progress, also yielded significant associations between response time and the frequency of arrests.^{4/} However, conclusions implied by correlations between response time and arrest probability are tenuous. As the President's Commission on Law Enforcement and Administration of Justice notes:

²James S. Kakalik and Sorrel Wildhorn, Aids to Decisionmaking in Police Patrol: A Summary of Findings; Santa Monica: The Rand Corporation, 1971, p. 12.

³Herbert H. Isaacs, "A Study of Communications, Crimes, and Arrests in a Metropolitan Police Department," in President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology, Washington, D. C.: United States Government Printing Office, 1967, pp. 88-106.

⁴Calvin Clawson and Samson Chang, "Impact of Response Delays on Arrest Rates," Inspectional Services Division, Seattle Police Department, September 1975, unpublished.

To this point, arrest probability has only been shown to be correlated with response time. As in any correlation, the relationship may be one of cause and effect, or it may have developed through some uncontrollable third factor to which both arrest and response time are related. It is possible, for example, that the police force responded more rapidly to those incidents in which arrest was recognized to be more probable. More carefully controlled tests than were possible in the time available are needed to establish a cause and effect relationship definitely.^{5/}

In discussing this issue, the Commission report stated that the rate of apprehension of property crime offenders was extremely low (approximately 22 percent of crimes reported), and that there was greater success in apprehending those who had committed violent crimes (for which the rate of apprehension is about 59 percent). These figures, the Commission noted, resulted in large part from the fact that most victims of violent crimes knew or could identify their assailants. They concluded that ". . . the ability of a victim or witness to identify the criminal is a factor responsible for solving a large percentage of crimes that are solved."^{6/}

In contrast to the Los Angeles and Seattle studies, the response time study conducted in Ottawa, Ontario, with the assistance of the Ottawa Police Department indicated that police response time did not affect the outcome or disposition of a call-for-service.^{7/} However, the author cautioned that the results are not conclusive because only one patrol car was used during a 336-hour test period. Moreover, calls of a serious nature (such as murder, rape, and armed robbery) were not available in the Ottawa study.^{8/}

A major effort currently in preparation, the Response Time Analysis Study of the Kansas City, Missouri, Police Department, is comprehensive in terms of both sample size and the number of factors examined, but final results have not yet been published.^{9/}

⁵ Isaacs, "A Study of Communications, Crimes, and Arrests in a Metropolitan Police Department," p. 9.

⁶ Ibid., p. 8.

⁷ William Brown, "Evaluation of Police Patrol Operations," unpublished M.A. thesis, University of Ottawa, Ontario, Canada, 1974, Ch. VI.

⁸ Calls of a serious nature were not purposely excluded from the Ottawa study; it happened that no calls of a serious criminal nature were dispatched to the experimental patrol car during the test period.

⁹ For preliminary findings, see Deborah K. Bertram and Alexander Vargo, "Response Time Analysis Study: Preliminary Findings on Robbery in Kansas City," The Police Chief 43(5), 1976, 74-77.

Literature concerning citizens' satisfaction with police service and its relationship to response time is also sparse. Two studies based on samples of citizens who had called the police in New Haven, Connecticut,^{10/} and Baltimore, Maryland,^{11/} reported that citizens were generally satisfied both with the responding police officers and with response times. In addition, Furstenberg and Wellford found that response time was related to citizens' evaluations of police officers.

The few published studies of citizens' attitudes toward the police in general have focused mainly on differences among various citizen subgroups. A study of victimization and attitudes toward the police in the District of Columbia^{12/} found that favorable attitudes toward the police were closely associated with citizens' demographic characteristics. Whites and females tended to be more supportive of the police than blacks and males; better educated citizens and those with higher incomes also tended to be favorably disposed toward the police. Citizens who indicated concern about crime tended to have less positive attitudes toward the police than did people who were not concerned about their personal safety.^{13/}

Similar findings emerged from a study conducted by Philip Ennis in 1967.^{14/} Blacks were found to be more critical of the police than whites. Among white respondents, individuals with higher incomes were more supportive of the police than those with lower incomes. In contrast to the Biderman study, Ennis found that attitudes toward the police did not vary by sex.^{15/}

A survey of a sample of residents of Seattle, Washington, concluded that education, income, and sex were not related to citizens' attitudes toward the

¹⁰Raymond T. Galvin, John Angell, and Michael O'Neil, Survey of Public Attitudes Toward Police Services, prepared for the Community Development Action Center of New Haven, Connecticut, 1970.

¹¹Frank F. Furstenberg and Charles F. Wellford, "Calling the Police: The Evaluation of Police Service," Law and Society Review 6(3), 1973, 393-406.

¹²Albert D. Biderman, et al., Report on a Pilot Study in the District of Columbia on Victimization and Attitudes Toward Law Enforcement, prepared by the Bureau of Social Science Research, Inc., for the President's Commission on Law Enforcement and Administration of Justice, 1967.

¹³Ibid., pp. 138-42.

¹⁴Philip H. Ennis, Criminal Victimization in the United States, prepared by the National Research Center for the President's Commission on Law Enforcement and Administration of Justice, 1967.

¹⁵Ibid., pp. 52-60.

police in general, and that race was the only significant demographic variable.^{16/} The data also suggested that citizens who witnessed police misconduct and those who were not satisfied with the police service they had received when they were victims of crime also tended to have negative attitudes toward the police. However, none of these studies attempted to isolate the possible effect of response time on citizen attitudes.

Although several major studies have examined citizens' expectations of police response time, none has correlated perceptions of police response time with feelings of security.^{17/}

This report is designed to contribute to the discussion of some of these issues by exploring the degree of association between selected determinants and consequences of police response time. However, because this report is strictly exploratory, no hypotheses have been formulated and, although the analysis suggests profitable directions for future research, the findings should be interpreted with caution.

Total police response time can be conceptualized to include the time a citizen spends talking with police dispatchers or operators, the amount of time elapsing before the dispatcher can assign a call-for-service to an officer in the field, the amount of time it takes the officer to get underway, and the amount of time required for the officer to contact the citizen who requested the assistance. A complete understanding of total response time requires that each of these segments of response time be measured and combined. "Response time" as defined in this report incorporates only a subset of the above components of total response time. The period of time during which the citizen talks to the police dispatcher has been excluded throughout this report, and in Chapter III the time elapsing before the dispatcher can assign a call-for-service to an officer in the field has also been excluded. A cautionary note concerning these various definitions of response time will be repeated where applicable.

The data for this report were collected as part of the Kansas City, Missouri, Police Department's Preventive Patrol Experiment, conducted from October 1972 to September 1973. Although the subject of response time was only peripheral to the main focus of the experiment, the staff considered an examination of data on that topic worthwhile because of the current paucity of published information.

¹⁶Paul E. Smith and Richard O. Hawkins, "Victimization, Types of Police-Citizen Contacts, and Attitudes Toward the Police," Law and Society Review 8(1), 1973, 135-52.

¹⁷Thomas A. Reppetto, "Survey Methods and the Evaluation of Police Organization," MIT-Harvard Joint Center for Urban Studies, 1971, unpublished.

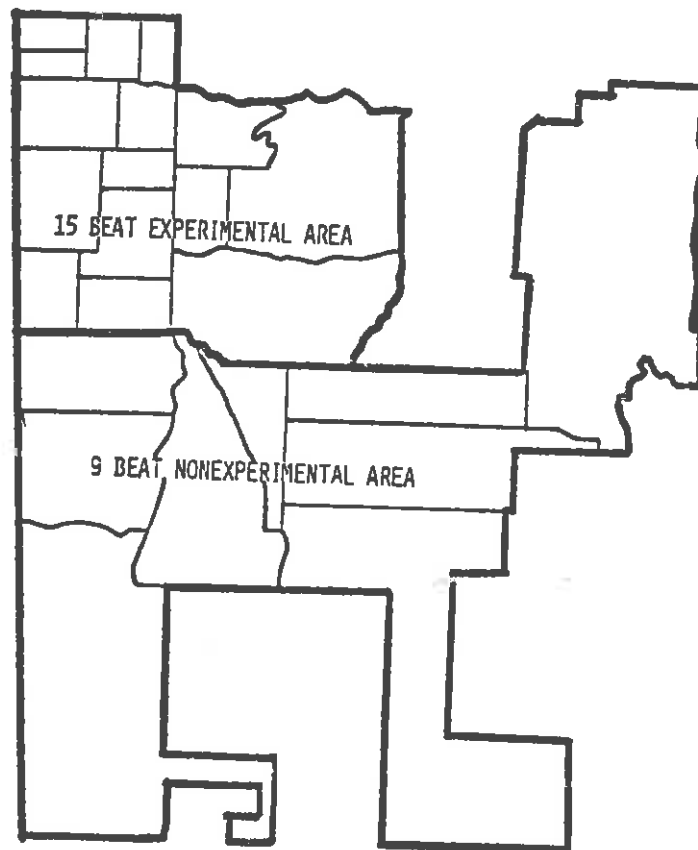
It is important to point out that this report contains some defects that are unavoidable when data collected for one purpose are used for another. However, every effort has been made to describe these deficiencies fully wherever they may be important for interpretation of the results. Descriptions of the sources of data are provided in Chapter II. Chapter III presents an analysis of those variables that may affect response time. An analysis of variables that may be affected by response time is reported in Chapter IV. Chapter V includes a summary of the findings and a discussion of their implications.

II. DATA SOURCES

The data analyzed in this report were derived from four surveys conducted during the Kansas City Preventive Patrol Experiment: the Response Time

Figure 1

THE SOUTH PATROL DIVISION



Survey, the Encounter Survey, and the 1972 and 1973 Community Surveys.^{18/} All but one data set were gathered from the experimental area of the South Patrol Division (SPD) in which the Preventive Patrol Experiment (see Figure 1) occurred. Part of the data collected through the Response Time Survey were derived also from the nine beats of the SPD not involved in the Preventive Patrol Experiment. This chapter describes each survey briefly and discusses the similarities and differences among the surveys.

RESPONSE TIME SURVEY

To examine various aspects of patrol, six observers rode with police officers in the experimental area during the Preventive Patrol Experiment. From June through September 1973, the observers completed questionnaires relating to officers' response time and behavior during calls-for-service. To increase sample size, the survey was expanded to include the nine nonexperimental beats where there were no observers; 12 patrol officers in the nonexperimental area (4 on each of the three eight-hour shifts) were selected to fill out response time questionnaires during the same four-month period.^{19/} Police personnel administering the Preventive Patrol Experiment chose officers who seemed most likely to record accurate information. This procedure produced two sets of data, one based on observer reports made in the experimental area, and one based on officer reports in the nonexperimental area.

The observers and officers did not fill out a questionnaire for every call-for-service received from the dispatcher. They had the discretion to select calls for inclusion in the survey according to the following general guidelines.

1. Only those citizen-initiated calls in which an officer contacted the citizen were to be included, so that citizens' perceptions of response time could be obtained.
2. Only those incidents in which a participating observer or officer was present in the first police vehicle to arrive at the scene were to be included.
3. Observers and officers were to exclude automobile accident calls because of the priority of incidents involving criminal victimization.

^{18/}For a complete description of these surveys, see George L. Kelling, Tony Pate, Duane Dieckman, and Charles E. Brown, The Kansas City Preventive Patrol Experiment, Washington, D.C.: Police Foundation, 1975.

^{19/}Copies of both questionnaires are included in Appendix A.

The data collectors generally followed these guidelines, although they included some calls in which a citizen was not contacted but an address was listed. In addition, officers and observers occasionally recorded data concerning automobile accident and traffic violation calls. A total of 1,106 response time questionnaires were completed. Observers completed 576 in the experimental area and officers completed 530 in the nonexperimental area.

It is important to note that the Response Time Survey was not random. In the experimental area, observers rode principally in the most active beats during peak hours and, as was mentioned above, reporting officers in the nonexperimental area were not randomly selected. Table 1 indicates the kinds of calls-for-service for which observers and officers provided response time data, compared to all calls-for-service for which police vehicles were dispatched in the SPD from June through September 1973. It is encouraging, in view of the nonrandom design, that the distribution of types of calls used in the survey is reasonably close to the activity pattern of the SPD in general between June and September 1973.

The three largest discrepancies between the sample and total SPD calls-for-service were in the burglar alarm, auto accident, and larceny categories. These differences can be attributed largely to the effect of the survey guidelines described above. The smaller proportion of burglar alarm calls in the sample results from the fact that burglar alarms are automatically triggered, so that officers responding to these calls often will not encounter anyone waiting at the scene. Response time data on auto accidents were purposely omitted. It is possible that larceny calls are overrepresented in the survey because, according to the observers, it was easier to obtain a person's name and address for this kind of call than for most other types of calls.

Another aspect of the Response Time Survey was to solicit the opinions of those citizens who had called the police. A one-page questionnaire^{20/} was mailed to the 1,089 citizens whom the police had contacted in responding to a call during the survey period.^{21/} Fifty-one (5 percent) of the questionnaires were returned because the person had moved or the address given by the officer or observer was incorrect. A total of 427 (39 percent) of the questionnaires were completed and returned.

²⁰ A copy of the questionnaire appears in Appendix A.

²¹ This number differs from the 1,106 response time incidents because 17 of the questionnaires completed by observers or officers concerned incidents in which no citizen was contacted when the officer arrived at the scene.

Table 1

SAMPLED CALLS-FOR-SERVICE COMPARED
TO SPD CALLS-FOR-SERVICE

RESPONSE TIME SURVEY

Type of Call	Calls Sampled (June-Sept. 1973)	South Patrol Division (June-Sept. 1973)	Difference between Percentages
Criminal			
Robbery	1.3%	0.9%	0.4
Assault	0.6	0.8	-0.2
Burglar alarm	1.7	8.9	-7.2
Burglary	6.3	3.1	3.2
Larceny	11.7	4.5	7.2
Auto theft	2.2	1.8	0.4
Fraud	1.4	0.2	1.2
Vandalism	5.2	1.4	3.8
Prowler	11.2	11.1	0.1
Suspicious person ^a	12.3	11.3	1.0
Miscellaneous crime ^b	1.0	0.8	0.2
Subtotal	54.9	44.8	10.1
General Service			
Disturbance	13.7	15.5	-1.8
Ambulance	1.2	1.2	0.0
Animal bite	3.1	0.9	2.2
Juveniles	7.6	7.2	0.4
Abandoned car	1.3	2.6	-1.3
Recovered property	2.5	0.9	1.6
Miscellaneous service ^c	7.3	11.5	-4.2
Subtotal	36.7	39.8	-3.1
Traffic			
Auto accident	4.3	11.2	-6.9
Parking problem	2.6	3.7	-1.1
Miscellaneous traffic ^d	1.2	0.4	0.8
Subtotal	8.1	15.3	-7.2
Not reported	0.4	0.0	
Total ^e	100.1	99.9	
N	(1,106)	(39,516)	

^aThe "suspicious person" category includes armed persons.

^bThe "miscellaneous-crime" category includes sex offenses, obscene phone calls, intoxicated persons, and gambling offenses.

^cThe "miscellaneous service" category includes injured parties, mentally disturbed persons, open doors or windows, residence or building checks, report calls, dead bodies, selling fireworks, attempts to locate missing persons, and information calls.

^dThe "miscellaneous traffic" category includes calls about traffic violators, obstructions in the street, and calls to handle traffic.

^eTotal may not equal 100 percent because of rounding.

Table 2

DEMOGRAPHIC CHARACTERISTICS OF CITIZENS IN RESPONSE TIME
SURVEY COMPARED TO THOSE OF CITIZENS IN THE SPD

Characteristic	Response Time Sample	Questionnaire Respondents	Resident Population, SPD 1970 Census
<u>Age</u>			
Under 20	7.3%	6.0%	4.7% ^a
20 - 24	10.3	7.7	11.5
25 - 34	24.2	24.2	18.9
35 - 44	24.1	23.9	16.4
45 - 54	18.2	16.2	16.5
55 - 59	5.6	7.5	7.3
60+	<u>10.4</u>	<u>14.5</u>	<u>24.6</u>
Total ^b	100.1	100.0	99.9
N	(1,021 ^c)	(401 ^d)	(157,598 ^a)
<u>Race</u>			
White	79.4	92.1	86.1
Nonwhite	<u>20.6</u>	<u>7.9</u>	<u>13.9</u>
Total	100.0	100.0	100.0
N	(1,070)	(419 ^e)	(232,251)
<u>Sex</u>			
Male	49.4	52.0	46.3
Female	<u>50.6</u>	<u>48.0</u>	<u>53.7</u>
Total	100.0	100.0	100.0
N	(1,070)	(419 ^f)	(232,251)

^aExcludes the population under 18 years of age, because the sample contains few citizens in this age category.

^bTotal may not equal 100 percent because of rounding.

^cThe age of 49 individuals was not reported.

^dThe age of 21 respondents was not reported.

^eThe race of three respondents was not reported.

^fThe sex of three respondents was not reported.

Table 2 provides a comparison of the demographic characteristics of citizens in the total response time sample who called the police,²² questionnaire respondents, and the general population within the SPD.

The data in Table 2 reveal that citizens who called the police and who returned the questionnaire were younger than the resident population. An almost equal number of males and females appeared in the samples, and the vast majority were white. The demographic profile of all residents within the division indicates that, except for racial differences (nonwhites are overrepresented in the response time sample and underrepresented among questionnaire respondents), the sample and subsample are reasonably representative of the resident population.

ENCOUNTER SURVEY

The Encounter Survey went to much greater lengths than the Response Time Survey to explore the perceptions and attitudes of observers, police officers, and citizens. The Encounter Survey, conducted from July through September 1973, was limited to the 15-beat experimental area of the SPD and involved the same observers who were recording data for the Response Time Survey.

In order to observe situations involving the greatest amount of police-citizen interaction, data were collected for specific types of incidents: robbery, assault, burglary, vandalism, animal bite, and larceny. Because both surveys included questions on response time, observers did not complete a Response Time Survey form on any call for which they completed an Encounter Survey form.

Three separate but similar encounter questionnaire forms were developed, one for observers, one for the officers with whom the observers rode, and one for citizens. Included in each were questions about response time and about various behaviors and attitudes exhibited before, during, and after the encounter. As soon after an encounter as possible, police officers and observers completed their questionnaires. Trained interviewers contacted the citizens involved, usually within 24 hours.

To obtain a more representative cross-section of incidents and to increase sample size, the evaluation staff developed a supplemental method of administering the survey. A staff member reviewed officers' daily activity logs and selected additional incidents for inclusion in the Encounter Survey. In each supplemental case selected, the officer involved completed the questionnaire,

²²Because observers did not want to interfere with the course of an incident, they did not ask citizens who had called the police. Identification of the initiator of the call was therefore based on information obtained by listening to citizens at the scene of an incident. For this reason, there may be a small amount of error in these data.

and interviewers contacted the citizen. It was, of course, impossible for the observer forms to be completed in these supplemental cases.

In nearly half (49 percent) of the 299 incidents in which either an observer or an officer completed a questionnaire, the interviewers were also able to contact the citizen involved. Table 3 compares the demographic characteristics of citizens surveyed with those of all residents of the experimental area.

Table 3

DEMOGRAPHIC CHARACTERISTICS OF CITIZENS IN THE ENCOUNTER SURVEY
COMPARED TO ALL RESIDENTS IN THE SPD EXPERIMENTAL AREA

Characteristic	Sample July-September 1973	Resident Population, Experimental Area 1970 Census
<u>Age</u>		
Under 20	7.7%	5.2% ^a
20 - 24	16.8	12.0
25 - 34	28.0	16.5
35 - 44	17.5	13.3
45 - 54	13.3	15.3
55 - 59	4.2	7.8
60+	<u>12.6</u>	<u>30.0</u>
Total ^b	100.1	100.1
N	(143 ^c)	(109,661 ^a)
<u>Race</u>		
White	62.7	79.3
Nonwhite	<u>37.3</u>	<u>20.7</u>
Total	100.0	100.0
N	(142 ^d)	(151,988)
<u>Sex</u>		
Male	45.1	44.8
Female	<u>54.9</u>	<u>55.2</u>
Total	100.0	100.0
N	(142 ^e)	(151,988)

^aExcludes the population under 18 years of age, because the sample contains few citizens in this age category.

^bTotal may not equal 100 percent because of rounding.

^cThe age of three respondents was not reported.

^dThe race of four respondents was not reported.

^eThe sex of four respondents was not reported.

The Encounter Survey sample appears to be generally representative of the 1970 census with respect to age and sex. Nonwhites may be overrepresented partly because of a migration of nonwhites into the area since the 1970 census.

The types of calls-for-service sampled in the Encounter Survey are shown in Table 4. Categories differ from those in the Response Time Survey because of the decision to focus only on selected types of incidents for the Encounter Survey. Therefore, these calls are not representative of all calls in the SPD.

Table 4
CALL-FOR-SERVICE CATEGORIES SAMPLED
ENCOUNTER SURVEY

Type of Call	Percent
Money or property taken by force	15.8
Burglary	39.0
Larceny	20.6
Vandalism	9.6
Animal bite	7.5
Miscellaneous ^a	7.5
Total	100.0
	N = 146

^aThe "miscellaneous" crime category includes assault, auto theft, hit-and-run, and disturbance calls.

1972 AND 1973 COMMUNITY SURVEYS

A multistage cluster sampling design was used to survey 1,201 households in July and August 1972, and 1,203 households in September and October 1973 for the Preventive Patrol Experiment. ^{23/} Trained interviewers surveyed

²³ A description of the sampling procedure is in Kelling, et al., Kansas City Preventive Patrol Experiment, Appendixes I and N.

residents living in the experimental area, asking all respondents when they had last called the police for service; only those households for which an officer had been requested within the preceding 12 months were included in the analysis.^{24/} This restriction resulted in sample sizes of 270 and 315 for the 1972 and 1973 surveys, respectively. Although any citizen who had called for police service during the year preceding the date of the survey interview was included in the sample, the majority (66 percent in 1972 and 69 percent in 1973) of survey participants said they had called the police within the previous six months.

One hundred forty-one of the 315 households in the 1973 sample had also been contacted by interviewers in 1972, but fewer than 40 qualified for inclusion in the Community Survey in both years. Tests of significance computed between the average response scores of households surveyed in both years and scores of households surveyed only in 1973 indicated that repeated surveying of households did not bias responses.

Table 5 compares the demographic characteristics of citizens included in the Community Surveys with those of all residents in the experimental area.

In both the 1972 and 1973 samples, males were slightly underrepresented, possibly because females were more likely to be at home when the surveys were conducted. The oversampling of nonwhites may reflect the migration of black families into the area since 1970.

Table 6 shows the kinds of problems for which citizens contacted the police. Broad call-for-service categories were used in the Community Survey, in order to obtain adequate sample sizes for each category.

²⁴Biderman, et al., D.C. Pilot Study, p. 37, suggests that people find it difficult to recall the details of encounters with police officers unless the event occurred within the recent past.

Table 5

DEMOGRAPHIC CHARACTERISTICS OF COMMUNITY SURVEY RESPONDENTS
COMPARED TO THOSE OF CITIZENS IN THE SPD EXPERIMENTAL AREA

Characteristic	1972 Sample	1973 Sample	Resident Population, Experimental Area 1970 Census
Age			
Under 20	6.0%	2.5%	5.2% ^a
20 - 24	11.2	10.8	12.0
25 - 34	27.6	28.0	16.5
35 - 44	17.5	16.2	13.3
45 - 54	11.6	13.0	15.3
55 - 59	7.5	8.0	7.8
60+	<u>18.7</u>	<u>21.6</u>	<u>30.0</u>
Total ^b	100.1	100.1	100.1
N	(268 ^c)	(315)	(109,661 ^a)
Race			
White	68.9	70.5	79.3
Nonwhite	<u>31.1</u>	<u>29.5</u>	<u>20.7</u>
Total	100.0	100.0	100.0
N	(270)	(315)	(151,988)
Sex			
Male	29.1	23.2	44.8
Female	<u>70.9</u>	<u>76.8</u>	<u>55.2</u>
Total	100.0	100.0	100.0
N	(268 ^d)	(314 ^e)	(151,988)

^aExcludes the population under 18 years of age because the sample contains few citizens in this age category.

^bTotal may not equal 100 percent because of rounding.

^cThe age of two respondents was not reported.

^dThe sex of two respondents was not reported.

^eThe sex of one respondent was not reported.

Table 6

TYPES OF CALLS-FOR-SERVICE INCLUDED IN COMMUNITY SURVEYS

Call-for-Service Category	Survey Year	
	1972	1973
<u>Criminal</u>		
Stolen property	21.5%	15.6%
Burglary	2.6	6.0
Vandalism	10.7	5.7
Prowlers	21.9	20.3
Miscellaneous crime ^a	<u>3.3</u>	<u>4.8</u>
Subtotal	60.0	52.4
<u>General Service</u>		
Disturbance	8.9	14.3
Juveniles	12.2	9.8
Miscellaneous service ^b	<u>8.2</u>	<u>9.8</u>
Subtotal	29.3	33.9
<u>Traffic</u>		
Auto accident	4.1	3.2
Traffic problem	<u>5.9</u>	<u>8.3</u>
Subtotal	10.0	11.5
<u>Not reported</u>	<u>0.7</u>	<u>2.2</u>
Total	100.0	100.0
N	(270)	(315)

^aThe "miscellaneous crime" category includes assault, sex offenses, drugs, and fencing calls.

^bThe "miscellaneous service" category includes animal bite, fighting, children out late, abandoned car, suicide, salesman, missing person, emergency medical care, automobile on fire, and public hazard calls.

SIMILARITIES AND DIFFERENCES AMONG SURVEYS

The surveys from which the staff derived data for this report are not strictly comparable, and the most important differences are outlined in this section. One difference among the four surveys was sample size. Table 7 illustrates this difference.

Table 7

COMPARISON OF THE SAMPLE SIZE OF THE FOUR SURVEYS

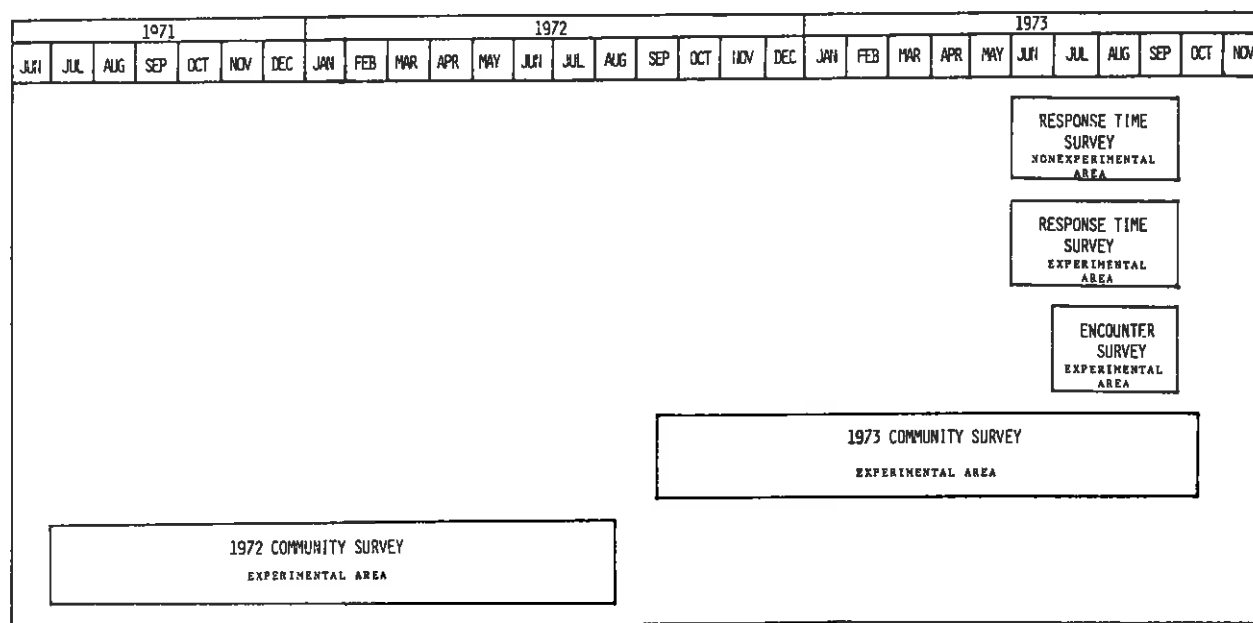
<u>Survey</u>	<u>N</u>
Response Time: Observer reports	576
Officer reports	530
Encounter	146
Community, 1972	270
Community, 1973	315

As Figure 2 shows, the time periods covered by the surveys and, in one case, the geographic area, also differed. While the Response Time and Encounter Surveys involved relatively immediate follow-up of the incidents as they occurred, the two Community Surveys were essentially retrospective studies. Data for the 1972 Community Survey, collected in July and the first half of August 1972, concerned encounters dating back to July 1971; data for the 1973 survey, collected in the last half of September and the first half of October 1973, covered incidents dating back to mid-September 1972.

Table 8 summarizes differences between the experimental and nonexperimental areas. Beats in the nonexperimental area are much larger than in the experimental area; this difference is reflected in the distances officers had to travel to reach the scene in response to calls-for-service. The mean distance officers in the nonexperimental area traveled was twice the distance those in the experimental area traveled. Because it might be expected that this difference would affect response time, Chapter III presents data separately for the two areas. Although the average beat size is larger in the nonexperimental area than in the experimental area, Table 8 shows that the population per beat in the two areas is relatively similar. However, because the Kansas City Police Department increased the number of patrol officers assigned to certain beats during the Preventive Patrol Experiment, the number of patrol officers per 10,000 population is somewhat greater in the experimental area.

Figure 2

TIME PERIODS COVERED BY SURVEYS



The sources of data differed from survey to survey. In the experimental area, data for the Response Time Survey are based on the reports of the observers riding with patrol officers, plus mailed questionnaires returned by citizens who had called for police service. In the nonexperimental area, the response time data were supplied by the 12 selected officers mentioned earlier, plus the mailed questionnaires returned by citizens. The Encounter Survey data include patrol officers' reports as well as the reports of observers riding in patrol cars; citizen attitudes are derived from personal interviews conducted by trained interviewers. Data for the Community Survey also were collected through personal interviews with citizens. These differences in methods used to collect the data undoubtedly introduced reporting biases, but it is impossible to determine their extent or effects.

Finally, the questions in the four surveys are not identically worded because each survey was designed to examine different aspects of the Preventive Patrol Experiment. However, the questions are sufficiently similar to allow comparisons to be made.

Table 8

CHARACTERISTICS OF THE NONEXPERIMENTAL AND
EXPERIMENTAL AREAS OF THE SPD

	NONEXPERIMENTAL AREA	EXPERIMENTAL AREA
Square miles per beat	8.32	2.18
Population per beat ^a	9,038	9,893
Number of officers per beat	1.00 ^b	1.33 ^b
Square miles per officer	8.32	1.63
Number of officers per 10,000 population ^a	1.11 ^b	1.34 ^b

^aBased on 1970 census data.

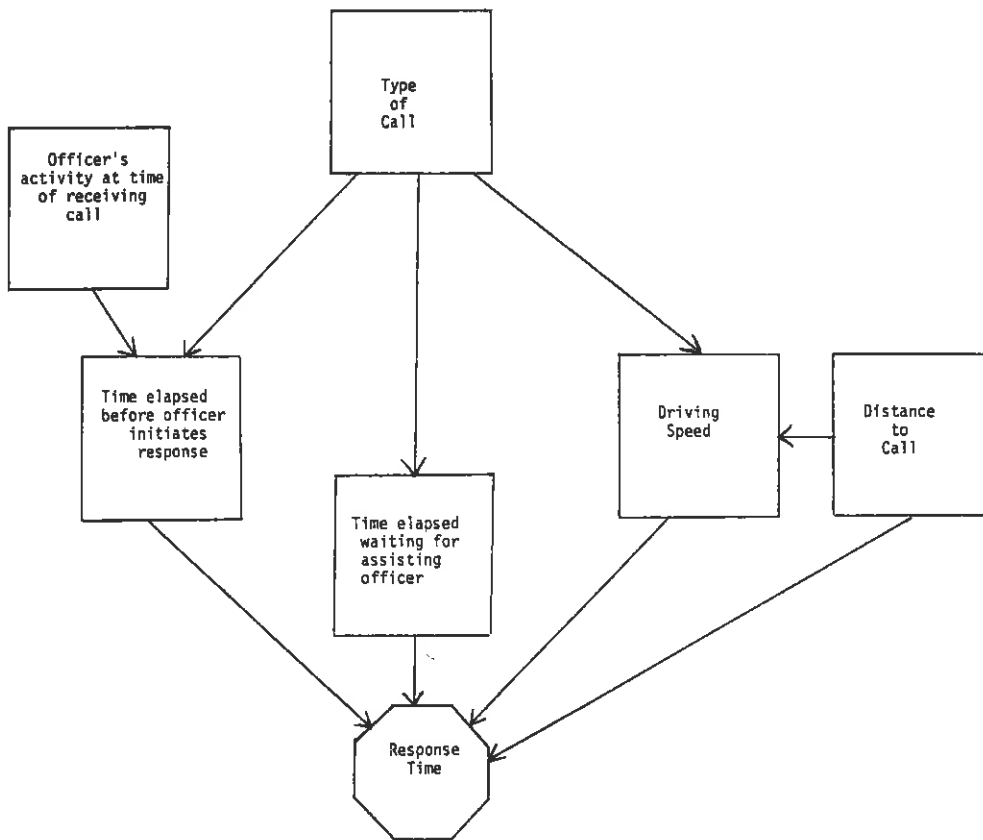
^bDifference because of conditions imposed by the Preventive Patrol Experiment.

III. Factors Affecting Response Time

Figure 3 illustrates the possible relationships among some of the more important factors affecting response time. Four of these factors could be expected to have direct effects on response time while two factors, type of call and officer's activity at the time of receiving the call, can conceivably influence one or more of the four direct determinants of response time.

Figure 3

POSSIBLE RELATIONSHIPS AMONG SELECTED FACTORS AFFECTING RESPONSE TIME



Some of the variables most likely to affect response time directly are: the distance an officer must travel, the amount of time elapsing before an

officer starts to a call, the officer's driving speed and, where applicable, the amount of time elapsing before an assisting officer arrives at the scene.^{25/}

These variables were operationalized as follows:

Response Time: In this chapter, "response time" is defined as the difference between the time an officer received a call and the time the officer contacted the citizen. In the experimental area, observers recorded these times. In the nonexperimental area, the 12 selected officers recorded the times. It is important to note that two components of total response time are excluded here: 1) the time the citizen spends talking to the police dispatcher,^{26/} and 2) the time it then takes for the dispatcher to call the officer.

Distance to Call: Officers and observers reported both their location when they received the call and the location of the incident; evaluators calculated the distances from a map by using the most likely route to be taken in responding to the call. Data on distances traveled were available only from the Response Time Survey.

Time Taken to Start to Call: Observers and officers in the Response Time Survey reported the time they received the call and the time the officer began to respond to the call. Evaluators calculated the time taken to start to a call by subtracting the time the call was received from the time the officer actually started to the call.

Driving Speed: In the experimental area, observers estimated the officer's driving speed as part of both the Response Time and Encounter Surveys. Observers rated officers' driving speeds from fast to slow, using a seven-point scale in the Response Time Survey and a five-point scale in the Encounter Survey.^{27/}

²⁵Kansas City, Missouri, police officers usually ride without partners, and regulations require officers to wait for a back-up car when responding to certain types of calls-for-service.

²⁶In Kansas City, citizens usually talk directly with the police dispatcher.

²⁷Although data were available from the Response Time Survey to calculate the officers' driving speed in miles per hour, the speeds thus derived were found to be unreliable because of measurement error. Using the formula $(d/t) \times 60$, where d = distance and t = time to reach the address of the caller, small errors in estimated distance or time could result in sizable errors in the ratio between the two. Because devices capable of measuring precise distances, speeds, and times were not available, the observers' ratings were considered more reliable as estimates, but should be understood to be subjective.

Time Elapsed Before Arrival of Assisting Officer: Evaluators computed the amount of time that an officer spent at the scene waiting for an assisting officer to arrive by subtracting the time when an officer arrived at the incident from the time the second officer arrived. Data were available only in the Response Time Survey.

RESULTS

The relationship between each of the predictor variables and response time is examined below.

Distance to Call

The data in Table 9 suggest that the distance required to respond to a call is highly correlated with the time required to respond.

In both the experimental and the nonexperimental areas, the greater the distance to a call, the longer the time required to respond; the association was statistically significant in both areas. Officers in the nonexperimental area required a mean time of almost nine minutes to contact the citizen, while officers in the experimental area required about seven minutes. Nevertheless, 32 percent of respondents in the nonexperimental area and 41 percent of respondents in the experimental area reported that an officer contacted them within five minutes after officers had been notified by the dispatcher. Officers in the nonexperimental area traveled an average of 3.5 miles, while officers in the experimental area traveled an average of 1.7 miles to reach the citizen. This difference in distances traveled may explain to a large degree the differences between the two areas in the distribution and variance of response time.^{28/}

Time Taken to Start to Call

The time that elapses before an officer starts to a call is also correlated with response time, as Table 10 shows. Obviously, the more time an officer takes before responding, the longer the response time.

In both areas, relatively little time elapsed before an officer started to a call. Table 10 indicates that officers initiated more than 78 percent of responses to calls in less than one minute, and only about 10 percent of the officers took three or more minutes before responding.

Table 11 indicates that there may be other factors affecting the time an officer takes to start to a call. More than 93 percent of the officers who

²⁸The difference in distances traveled results primarily from the fact that the average beat size in the nonexperimental area is 8.3 square miles, compared to 2.2 square miles for the experimental area.

Table 9

PERCENTAGE DISTRIBUTION OF CALLS ACCORDING
TO RESPONSE TIME AND DISTANCE TRAVELED

RESPONSE TIME SURVEY

Response Time (in Minutes)	NONEXPERIMENTAL AREA						
	Distance Traveled (in Miles)						
	Less Than 1	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0 +	Total
1 - 5	73%	55%	39%	16%	3%	3%	32%
6 - 10	17	36	50	58	46	22	38
11 - 15	5	5	7	17	35	39	17
16 - 20	0	0	4	4	8	16	5
21 - 25	0	0	0	2	3	9	2
26 +	3	0	0	1	3	12	4
Not reported	<u>2</u>	<u>3</u>	<u>0</u>	<u>1</u>	<u>3</u>	<u>0</u>	<u>1</u>
Column total ^a	100	99	100	99	101	101	99
Percentage of grand total	12	21	22	16	7	22	100
N	(63)	(110)	(118)	(86)	(37)	(116)	(530)

$$r = .657 \quad (p < .001)$$

$$r^2 = .432$$

^aTotal may not equal 100 percent because of rounding.

	EXPERIMENTAL AREA						
	Distance Traveled (in Miles)						
Response Time (in Minutes)	Less Than 1	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0 +	Total
1 - 5	61%	44%	30%	5%	4%	6%	41%
6 - 10	25	40	51	56	28	17	37
11 - 15	6	6	9	22	60	39	11
16 - 20	1	3	3	2	4	22	3
21 - 25	0	1	1	5	0	6	1
26 +	0	1	1	5	4	6	1
Not reported	<u>7</u>	<u>6</u>	<u>5</u>	<u>5</u>	<u>0</u>	<u>6</u>	<u>6</u>
Column total ^a	100	101	100	100	100	102	100
Percentage of grand total	33	34	18	7	4	3	99 ^a
N	(190)	(196)	(106)	(41)	(25)	(18)	(576)

$$r = .532 \quad (p < .001)$$

$$r^2 = .283$$

^aTotal may not equal 100 percent because of rounding.

Table 10

PERCENTAGE DISTRIBUTION OF CALLS ACCORDING TO RESPONSE
TIME AND TIME ELAPSED BEFORE STARTING TO CALL

RESPONSE TIME SURVEY

Response Time (in Minutes)	NONEXPERIMENTAL AREA				
	Time Elapsed Before Starting to Call (in Minutes)				
	Less Than 1	1.0-1.9	2.0-2.9	3.0 +	Total
1 - 5	37%	22%	10%	2%	32%
6 - 10	39	56	38	14	38
11 - 15	14	16	34	31	17
16 - 20	4	0	7	19	5
21 - 25	2	0	3	10	2
26 +	1	3	7	24	3
Not reported	<u>1</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>1</u>
Column total ^a	98	100	99	100	98
Percentage of grand total	81	6	5	8	100
N	(427)	(32)	(29)	(42)	(530)

$$r = .475 \quad (p < .001)$$

$$r^2 = .226$$

^aTotal may not equal 100 percent because of rounding.

Response Time (in Minutes)	EXPERIMENTAL AREA				
	Time Elapsed Before Starting to Call (in Minutes)				
	Less Than 1	1.0-1.9	2.0-2.9	3.0 +	Total
1 - 5	49%	31%	15%	4%	42%
6 - 10	34	51	46	42	37
11 - 15	8	10	31	27	11
16 - 20	2	0	0	13	3
21 - 25	1	2	0	5	1
26 +	1	2	0	7	1
Not reported	<u>6</u>	<u>4</u>	<u>8</u>	<u>2</u>	<u>6</u>
Column total ^a	101	100	100	100	101
Percentage of grand total	77	9	4	10	100
N	(444)	(51)	(26)	(55)	(576)

$$r = .550 \quad (p < .001)$$

$$r^2 = .302$$

^aTotal may not equal 100 percent because of rounding.

were not engaged in a particular activity when they received the call started to the call in less than one minute. Of the officers engaged in some specific type of activity at the time of receiving the call, such as performing a building check, controlling traffic, or eating, only 58 percent started to call within one minute.

Table 11

DISTRIBUTION OF CALLS ACCORDING TO TIME ELAPSED BEFORE STARTING
TO CALL AND OFFICER ACTIVITY AT TIME OF RECEIVING CALL

RESPONSE TIME SURVEY: EXPERIMENTAL AREA

Type of Activity	Time Elapsed Before Starting to Call (in Minutes)			
	Less Than 1	1.0-3.0	3.0 +	Total ^a
No specific activity ^b	261 (93.9%)	14 (5.0%)	3 (1.1%)	278 (48.3%)
Patrol related activity ^c	77 (59.2)	31 (23.8)	22 (16.9)	130 (22.6)
Other activity ^d	80 (58.4)	28 (20.4)	29 (21.2)	137 (23.8)
Unknown type of activity	26 (83.9)	4 (12.9)	1 (3.2)	31 (5.4)
Total ^a	444 (77.1)	77 (13.4)	55 (9.6)	576 (100.1)

^aTotal may not equal 100 percent because of rounding.

^bIncludes accidents, parking, abandoned cars, and other miscellaneous traffic calls.

^cIncludes animal bite, juvenile, recovered property, and other miscellaneous service calls.

^dIncludes assault, burglary, larceny, auto theft, fraud, vandalism, suspicious person, and other miscellaneous crime calls.

The type of call was also found to have affected an officer's starting time. Officers may reasonably feel that if a call might involve apprehending a criminal or saving a life, they ought to respond faster than if they expect only to make a report. According to Rubinstein, police officers tend to associate their best chances of apprehending a criminal with calls for robbery,

prowlers, armed persons, and burglar alarms.^{29/} Rubinstein's study also indicated that police officers generally respond immediately to ambulance calls. An examination of data in Table 12 reveals that 88 percent of the officers responding to the five types of calls Rubinstein mentions (robbery, prowlers, armed persons, burglar alarms, and ambulance calls) responded in less than one minute.

Table 12

DISTRIBUTION OF CALLS ACCORDING TO TIME OFFICERS
TOOK BEFORE STARTING TO CALL AND TYPE OF CALL

RESPONSE TIME SURVEY: EXPERIMENTAL AREA

Type of Call	Time Elapsed Before Starting to Call (in Minutes)			
	Less Than 1	1.0-3.0	3.0 +	Total ^a
Robbery, burglar alarm, prowler, suspicious person, ambulance call	91 (87.5%)	9 (8.6%)	4 (3.8%)	104 (18.1%)
Disturbance	92 (85.2)	15 (13.9)	1 (0.9)	108 (18.8)
Traffic related ^b	62 (76.5)	10 (12.4)	9 (11.1)	81 (14.1)
Miscellaneous service ^c	86 (71.7)	20 (16.7)	14 (11.7)	120 (20.9)
Other criminal related ^d	112 (69.1)	23 (14.2)	27 (16.7)	162 (28.2)
Total	443 ^e (77.0)	77 (13.4)	55 (9.6)	575 ^e (100.0)

^aColumn total may not equal 100 percent because of rounding.

^bIncludes accidents, parking, abandoned cars, and other miscellaneous traffic calls.

^cIncludes animal bite, juveniles, recovered property, and other miscellaneous service calls.

^dIncludes assault, burglary, larceny, auto theft, fraud, vandalism, suspicious person, and other miscellaneous crime calls.

^eOne survey was not included because it did not indicate type of call.

²⁹Jonathan Rubinstein, City Police, New York: Farrar, Straus, and Giroux, 1973, pp. 98-101.

Time Elapsed Before Arrival of Assisting Officer

Another variable that may affect response time is the time elapsing before an assisting officer arrives at the scene. In Kansas City, because patrol cars are usually operated by only one officer, regulations require officers to wait for a back-up officer before engaging in certain types of calls or contacts with citizens. Of the 74 incidents included in the Response Time Survey requiring an assisting officer, 55 (74.3 percent) were either disturbances, burglaries in progress, or prowler calls.

Slightly more than half of the officers in the nonexperimental area had to wait at least three minutes before assistance arrived, while in the experimental area, only 30 percent of the officers had to wait that long.

Driving Speed

As Tables 13 and 14 indicate, there was little correlation between driving speed and response time. However, the speed limits generally ranged only from 20 to 35 miles per hour. With so little variation among reported driving speeds, the low statistical correlations between driving speed and response time should not be construed to indicate that driving speeds do not affect response time. The method of estimating driving speeds may not be sufficiently reliable, and the actual range of speeds may be too narrow to permit the accuracy required for correlation analysis.

Table 13

RELATIONSHIP BETWEEN RESPONSE TIME AND OFFICER'S DRIVING SPEED
RESPONSE TIME SURVEY: EXPERIMENTAL AREA

Response Time (in Minutes)	Driving Speed								Total
	Very Fast	Moderately Fast	Slightly Fast	Speed Limit	Slightly Slow	Moderately Slow	Very Slow	Not Reported	
1 - 5	26%	49%	40%	51%	39%	50%	100%	100%	41%
6 - 10	31	33	43	31	37	32	0	0	37
11 - 15	24	10	8	11	12	4	0	0	11
16 - 20	5	3	2	1	4	0	0	0	3
21 - 25	2	0	1	0	2	0	0	0	1
26 +	0	1	2	0	1	0	0	0	1
Not reported	12	5	5	6	4	14	0	0	6
Column total ^a	100	101	101	100	99	100	100	100	100
Percentage of grand total	7	14	35	12	28	4	0	0	100
N	(42)	(80)	(204)	(65)	(161)	(22)	(1)	(1)	(576)

$$r = .016 \quad (p > .25)$$

$$r^2 = .000$$

^aTotal may not equal 100 percent because of rounding.

Table 14

RELATIONSHIP BETWEEN RESPONSE TIME AND OFFICER'S DRIVING SPEED
ENCOUNTER SURVEY: EXPERIMENTAL AREA

Response Time (in Minutes)	Driving Speed						Total
	Very Fast	Moderately Fast	Slightly Fast	Slightly Slow	Moderately Slow	Not Reported	
1 - 5	67%	43%	41%	39%	17%	0%	38%
6 - 10	0	29	32	37	56	0	34
11 - 15	22	21	22	13	17	0	17
16 - 20	11	0	0	9	6	0	6
21 - 25	0	0	5	1	0	0	2
26 +	0	7	0	1	6	0	2
Not reported	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>100</u>	<u>2</u>
Column total ^a	100	100	100	100	102	100	101
Percentage of grand total	6	9	23	50	11	2	101 ^a
N	(9)	(14)	(37)	(82)	(18)	(3)	(163)

$$r = .059 \quad (\rho > .25)$$

$$r^2 = .003$$

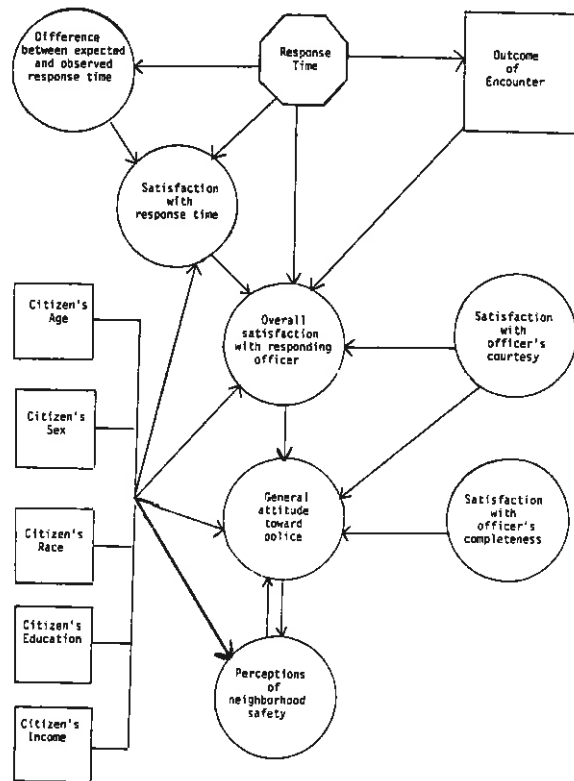
^aTotal may not equal 100 percent because of rounding.

IV. THE EFFECTS OF RESPONSE TIME

Response time has been assumed to have significant consequences for both police and citizens, and is often thought to be directly related to citizens' attitudes toward the police and perceptions of neighborhood safety. This chapter addresses some of these assumptions, examining the effects of response time on the various factors shown in Figure 4. "Subjective" factors (denoted by circles) reflect citizens' levels of satisfaction with the police and police service. "Objective" factors (denoted by squares) include citizens' demographic characteristics and the outcome of the incident.

Figure 4

POSSIBLE EFFECTS OF RESPONSE TIME



Variables were operationalized as follows:

Response Time: "Response time" in this chapter is based on citizens' perceptions, except when it is related to "outcome of the encounter," in which case the observer/officer definition of response time applies. Data collectors asked citizen respondents in the Response Time Survey and the 1972 and 1973 Community Surveys how long (in minutes) it took for the police to arrive after they were called. Citizens in the Encounter Survey were asked what time they called the police dispatcher, how long they talked to the dispatcher, and when an officer arrived. Response time was defined as the time elapsed between the end of the citizen's conversation with the dispatcher and the time the police arrived. It is important to note that, because of the specificity of replies required, more than 40 respondents in the Encounter Survey were unable to answer one or more of the three questions necessary to estimate response time.

Outcome of Encounter: Citizen respondents in the Encounter and Community Surveys were asked to report the outcome of their encounter with the police.

Citizen Satisfaction with Response Time: Citizen respondents in the Response Time Survey and the Encounter Survey were asked, "How satisfied were you with the time it took for the police car to arrive?" Respondents in the Community Surveys were asked, "How satisfied were you with the length of time it took the police to get here?" For each question, possible responses ranged from "very satisfied" (coded 1) to "very dissatisfied" (coded 6).

Citizen Satisfaction with Responding Officer: A citizen's level of satisfaction with the police officer who responded to the call was determined by three slightly different methods, depending upon the survey. Respondents in the Response Time Survey were asked, "How good a job do you feel the police officer(s) who came did in handling the incident?" The answers ranged from a "very good job" (coded 1) to a "very poor job" (coded 6).

Citizens interviewed in the Encounter Survey were asked, "How satisfied were you with the effort the police made in dealing with this incident?" The response categories ranged from "very satisfied" (coded 1) to "very dissatisfied" (coded 6).

In the 1972 and 1973 Community Surveys several questions pertaining to the officer's behavior and the citizen's overall satisfaction with the incident were the basis for determining the respondent's level of satisfaction with the responding police officer. All questions refer to the initial response by police officers to a call-for-service, not to follow-up investigations. Evaluators performed image factor analysis, using varimax rotation, on several items from each of the Community Surveys, resulting in a "satisfaction with the police" factor. Those questions with the highest loading on the "satisfaction with the police" factor were:

	<u>1972 Factor Loading</u>	<u>1973 Factor Loading</u>
How satisfied were you with the completeness of the police investigation?	.804	.813
How satisfied were you with the way the police investigation turned out?	.772	.740
How satisfied were you with the concern the police showed during the investigation?	.759	.800
How satisfied were you with the courtesy the police showed you?	.503	.687

Responses to these four items were summed to form a composite scale measuring citizen satisfaction with the investigating police officer. Summed scores can be interpreted in this way:

4 = Very satisfied	16 = Slightly dissatisfied
8 = Moderately satisfied	20 = Moderately dissatisfied
12 = Slightly satisfied	24 = Very dissatisfied

General Attitude Toward the Police: Questions in the Encounter Survey and the Community Surveys were available to measure citizens' general attitudes toward the police. Factor analysis of the questionnaires revealed a series of items that were highly intercorrelated and appeared to measure a respondent's attitude toward police officers in general.

The questions from the Encounter Survey with the highest loadings on the "general attitude toward police" factor were:

	<u>Factor Loading</u>
What kind of reputation do you feel the Kansas City police have?	.724
How good a job would you say the Kansas City police are doing fighting crime?	.688
How well trained do you think the Kansas City police are to meet the needs of this community?	.664
How would you describe the relationship between the police and the people in your neighborhood?	.617
How much respect would you say you have for the Kansas City police?	.612

The questions from the Community Surveys with the highest loadings on a "general attitude toward police in the neighborhood" factor were:

	<u>1972 Factor Loading</u>	<u>1973 Factor Loading</u>
In your opinion, what kind of reputation do the police in this neighborhood have?	.654	.690
How much respect would you say you have for the police in this neighborhood?	.649	.642
How would you describe the relationship between the police and the people in this neighborhood?	.554	.593
What kind of job do you feel the police in your neighborhood are doing when it comes to fighting crime?	.550	.611
What about other people in the neighborhood-- how much respect would you say they have for the police in this neighborhood?	.542	.535

There were six response categories for the questions in both surveys. Responses were summed to form composite scores measuring the respondent's "general attitude toward the police" and "general attitude toward police in the neighborhood." Summed scores can be interpreted in this way:

5 = Very positive	20 = Slightly negative
10 = Moderately positive	25 = Moderately negative
15 = Slightly positive	30 = Very negative

Neighborhood Safety: The 1972 and 1973 Community Surveys measured, among other things, citizens' perceptions of their neighborhood's safety. Respondents in both surveys were asked how safe they thought their neighborhoods were. Answers ranged from "very safe" (coded 1) to "very dangerous" (coded 6).

ANALYSIS

The dependent variables to be examined are 1) outcome of the encounter, 2) citizen satisfaction with response time, 3) citizen satisfaction with the responding officer, and 4) citizen attitude toward the police. Analysis of each of these variables is presented below.^{30/}

³⁰First order correlations among the variables analyzed are in Appendix B.

Outcome of the Encounter

Tables 15, 16 and 17 present the relationships between response time and the outcome of the encounter, as indicated in the Encounter and Community Surveys. The results from all three surveys suggest no significant relationship between response time and outcome.

Table 15

RELATIONSHIP BETWEEN RESPONSE TIME AND OUTCOME OF ENCOUNTER^a
ENCOUNTER SURVEY

Response Time (in Minutes)	Outcome of Encounter							
	Arrest Made	Property Recovered	Only Report Taken	Police Did Little	Other	Don't Know	Not Reported	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
1 - 5	1 (20.0)	1 (14.3)	11 (21.6)	1 (16.7)	1 (25.0)	2 (5.9)	7 (17.9)	24 (16.4)
6 - 10	1 (20.0)	0 (0.0)	10 (19.6)	1 (16.7)	1 (25.0)	2 (5.9)	4 (10.3)	19 (13.0)
Over 10	0 (0.0)	1 (14.3)	18 (35.3)	3 (50.0)	1 (25.0)	6 (17.6)	15 (38.5)	44 (30.1)
Not reported	3 (60.0)	5 (71.4)	12 (23.5)	1 (16.7)	1 (25.0)	24 (70.6)	13 (33.3)	59 (40.4)
Total	5 (3.4)	7 (4.8)	51 (34.9)	6 (4.1)	4 (2.7)	34 (23.3)	39 (26.7)	146 (100.0)

^aSum of the parts may not equal 100 percent because of rounding.

\bar{X}	5.50	7.00	14.85	9.40	11.00	19.22	_____	18.02
s.d.	3.54	8.49	13.80	5.18	12.49	16.56	_____	16.42

$F_{5,54} \text{ df}=0.70 \quad p>.25$

Table 16

RELATIONSHIP BETWEEN RESPONSE TIME AND OUTCOME OF ENCOUNTER^a
1972 COMMUNITY SURVEY

Response Time (in Minutes)	Outcome of Encounter							Total
	Arrest Made	Problem Solved	Complainant Informed of Rights	Case not Solved	Other	Don't Know	Not Reported	
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
1 - 5	2 (20.0)	31 (34.1)	3 (50.0)	8 (32.0)	1 (16.7)	28 (23.5)	3 (23.1)	76 (28.1)
6 - 10	2 (20.0)	22 (24.2)	1 (16.7)	4 (16.0)	2 (33.3)	26 (21.9)	4 (30.8)	61 (22.6)
Over 10	6 (60.0)	33 (36.3)	1 (16.7)	12 (48.0)	1 (16.7)	50 (42.0)	3 (23.1)	106 (39.3)
Not reported	0 (0.0)	5 (5.5)	1 (16.7)	1 (4.0)	2 (33.3)	15 (12.6)	3 (23.1)	27 (10.0)
Total	10 (3.7)	91 (33.7)	6 (2.2)	25 (9.3)	6 (2.2)	119 (44.1)	13 (4.8)	270 (100.0)

^aSum of the parts may not equal 100 percent because of rounding.

\bar{X}	16.10	11.90	7.80	16.58	14.13	9.75	—————	13.43
s.d.	11.81	8.41	4.66	13.68	10.03	6.90	—————	9.94

$F_{5,227} df=1.59 \quad .10 < p < .25$

Table 17

RELATIONSHIP BETWEEN RESPONSE TIME AND OUTCOME OF ENCOUNTER^a
1973 COMMUNITY SURVEY

Response Time (in Minutes)	Outcome of Encounter						Total
	Arrest Made	Problem Solved	Police Just Wrote up a Report	Other	Don't Know	Not Reported	
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
1 - 5	8 (57.1)	42 (34.1)	19 (20.4)	9 (16.1)	5 (50.0)	4 (21.1)	87 (27.6)
6 - 10	2 (14.3)	29 (23.6)	26 (28.0)	11 (19.6)	2 (20.0)	3 (15.8)	73 (23.2)
Over 10	4 (28.6)	40 (32.5)	35 (37.6)	19 (33.9)	2 (20.0)	2 (10.5)	102 (32.4)
Not reported	0 (0.0)	12 (9.8)	13 (14.0)	17 (30.4)	1 (10.0)	10 (52.6)	53 (16.8)
Total	14 (4.4)	123 (39.0)	93 (29.5)	56 (17.8)	10 (3.2)	19 (6.0)	315 (100.0)

^aSum of the parts may not equal 100 percent because of rounding.

\bar{X}	10.00	11.80	14.21	16.81	10.33	—————	13.09
s.d.	9.38	8.52	10.23	12.23	13.66	—————	10.05

$F_{4,248} df=2.17 \quad .05 < p < .10$

Citizen Satisfaction with Response Time: It is important to emphasize that, in all four surveys, the majority of citizens surveyed were very satisfied with response time.^{31/} Seventy-one percent of the citizen respondents in the Response Time Survey, 56 percent in the Encounter Survey, and 62 and 54 percent in the 1972 and 1973 Community Surveys, respectively, reported being "very satisfied."

Tables 18, 19, 20, and 21 show stepwise multiple regression results, treating citizen satisfaction with response time as the dependent variable.^{32/}

Table 18

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONSE TIME ON SELECTED VARIABLES
RESPONSE TIME SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Observed response time	.405	.164	.164	.000	.052	.000	.417	.417
Age	.427	.182	.018	.002	-.010	.003	-.132	-.144
Race	.428	.183	.001	.519	-.123	.534	-.028	-.030
Sex	.428	.183	.000	.791	-.028	.791	-.012	-.013

³¹ Bivariate distributions of selected predictor variables and satisfaction with response time are provided in Appendix C.

³² A brief description of this analytic technique is presented in Appendix D.

Table 19

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONSE TIME ON SELECTED VARIABLES
ENCOUNTER SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Difference between expected and observed response time	.774	.598	.598	.000	.667	.000	.751	.768
Race	.792	.627	.029	.001	-.378	.009	-.145	-.222
Observed response time	.794	.630	.003	.265	.006	.228	.065	.103
Age	.795	.632	.001	.472	-.003	.437	-.042	-.006
Education	.795	.633	.001	.529	-.021	.505	-.035	-.057
Household income	.796	.634	.001	.542	-.023	.595	-.028	-.045
Sex	.796	.634	.000	.697	-.052	.697	-.021	-.033

Table 20

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONSE TIME ON SELECTED VARIABLES
1972 COMMUNITY SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Difference between expected and observed response time	.576	.332	.332	.000	.075	.000	.396	.373
Observed response time	.620	.384	.053	.000	.055	.000	.288	.285
Age	.626	.392	.008	.065	-.048	.115	-.087	-.097
Household income	.630	.396	.004	.162	-.077	.203	-.069	-.079
Education	.632	.400	.001	.463	.035	.464	.039	.045
Sex	.632	.400	.000	.323	.043	.823	.011	.014

Table 21

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONSE TIME ON SELECTED VARIABLES
1973 COMMUNITY SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Difference between expected and observed response time	.532	.283	.283	.000	.082	.000	.406	.352
Age	.552	.305	.022	.002	-.050	.073	-.096	-.102
Observed response time	.568	.322	.017	.005	.030	.013	.153	.141
Race	.579	.335	.013	.015	-.404	.039	-.105	-.117
Sex	.583	.340	.005	.126	-.334	.093	-.080	-.096
Household income	.586	.343	.003	.237	.063	.152	.075	.082
Education	.588	.346	.003	.209	-.055	.209	-.063	.072

The best predictor in the Encounter Survey and the 1972 and 1973 Community Surveys was the difference between expected and observed response time. Citizens were more satisfied with response time if the officer arrived earlier than they had expected. The only other significant predictor in the Encounter Survey was race. Whites were more satisfied with response time than were nonwhites. The other statistically significant variables that emerged in the Community Survey were observed response time and the citizens' age. The shorter the response time and the older the respondent, the more satisfied the citizen was with response time. Results from the Response Time Survey show that observed response time and age were the only two variables that explained a significant amount of the variance in satisfaction with response time.^{33/}

In summary, the regression results indicate that the difference between expected and observed response time is the most important predictor of citizens' levels of satisfaction with response time. The results also suggest that race and age may affect citizen satisfaction with response time.

^{33/}The Response Time Survey did not include a question about citizen expectations of response time.

Citizen Satisfaction with the Responding Police Officer

Respondents in the four surveys were generally satisfied with the police officers who responded to calls-for-service. About 78 percent of the respondents in the Response Time Survey indicated that officers did a "very good" job of handling the incident, while slightly more than 50 percent of those in the Encounter Survey were "very satisfied" with the police effort. Only five percent of respondents in the Response Time Survey replied that the police did a "bad" job, while only 16 percent of citizens in the Encounter Survey were "dissatisfied" to any degree. Similar findings emerged from the 1972 and 1973 Community Surveys. More than 80 percent of respondents in the 1972 survey were "very satisfied" or "moderately satisfied" with the responding officer, while only slightly more than 10 percent were "dissatisfied" to any extent. About 77 percent of the respondents in 1973 were "very satisfied" or "moderately satisfied" with the responding officer, and only 12 percent were "dissatisfied."

In order to determine which variables predict citizen levels of satisfaction with the responding police officer, evaluators again used multiple regression analysis. Predictor variables inserted into the regression equation were response time, the level of citizens' satisfaction with response time, and citizens' demographic characteristics. Tables 22, 23, 24, and 25 show the regression results.

Table 22

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONDING OFFICER ON SELECTED VARIABLES RESPONSE TIME SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Satisfaction with response time	.409	.168	.168	.000	.305	.000	.374	.351
Age	.430	.185	.018	.003	-.009	.002	-.139	-.149
Response time	.433	.187	.002	.271	.005	.269	.054	.054
Sex	.433	.188	.000	.824	.021	.813	.011	.012
Race	.433	.188	.000	.832	-.034	.832	-.009	-.010

Table 23

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONDING OFFICER ON SELECTED VARIABLES
ENCOUNTER SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Satisfaction with response time	.377	.142	.142	.000	.414	.000	.353	.352
Sex	.423	.179	.037	.012	.613	.008	.208	.223
Age	.441	.195	.016	.099	-.099	.173	-.107	-.116
Household income	.455	.207	.013	.136	-.108	.137	-.114	-.126
Race	.462	.214	.007	.283	-.301	.220	-.099	-.104
Education	.472	.222	.008	.215	.067	.226	.094	.103
Response time	.472	.222	.000	.875	.001	.876	.353	.013

Table 24

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONDING OFFICER ON SELECTED VARIABLES
1972 COMMUNITY SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Satisfaction with response time	.435	.189	.189	.000	1.087	.000	.399	.353
Age	.463	.214	.025	.004	-.282	.003	-.188	-.183
Household income	.468	.219	.004	.224	-.172	.362	-.056	-.056
Education	.470	.221	.002	.390	-.106	.468	-.044	-.045
Sex	.471	.222	.001	.681	-.234	.696	-.021	-.024
Response time	.471	.222	.000	.739	.011	.737	.022	.021
Race	.471	.222	.000	.880	-.099	.880	-.021	-.024

Table 25

STEPWISE REGRESSION OF CITIZEN SATISFACTION WITH RESPONDING OFFICER ON SELECTED VARIABLES
1973 COMMUNITY SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Regression Coefficient	Partial Correlation Coefficient
Satisfaction with response time	.537	.288	.288	.000	1.559	.000	.507	.476
Age	.548	.300	.012	.023	-.159	.000	-.099	-.102
Sex	.553	.306	.006	.107	1.083	.083	.084	.099
Race	.588	.311	.005	.122	-.947	.126	-.080	-.087
Education	.558	.311	.001	.835	.030	.828	.001	.012
Response time	.558	.311	.001	.919	.003	.921	.005	.006
Household income	.558	.311	.001	.961	-.007	.961	-.003	-.003

The best predictor variable in all surveys was the level of satisfaction with response time. People most satisfied with response time were also satisfied with the responding officer. Age was the second-best predictor in three of the four surveys; older respondents tended to be more satisfied with the responding officer than younger respondents. In the Encounter Survey, the analysis revealed a significant difference between the attitudes of males and females.

Because of the difficulty of interpreting results when multiple category nominal variables are entered in regression equations, evaluators omitted outcome of the encounter from the regression analysis. To determine the association between outcome and citizen satisfaction, bivariate relationships were examined. Tables 26, 27, and 28 present the results for the Encounter and Community Surveys. The two Community Surveys indicate a significant relationship between outcome and citizen satisfaction. Although different patterns exist in the various surveys, it appears that citizens are most dissatisfied when they do not know the exact outcome of the encounter.

Table 26

CITIZEN SATISFACTION WITH POLICE EFFORT BY OUTCOME OF ENCOUNTER^a

ENCOUNTER SURVEY

Satisfaction with Police Effort	Outcome of Encounter								Total							
	Arrest Made		Property Recovered		Only Report Taken		Police Did Little			Other		Don't Know		Not Reported		
	N	(%)	N	(%)	N	(%)	N	(%)		N	(%)	N	(%)	N	(%)	
Very satisfied	3	(60.0)	1	(14.3)	31	(60.8)	2	(33.3)	3	(75.0)	12	(35.3)	22	(56.4)	74	(50.7)
Moderately satisfied	0	(0.0)	2	(28.6)	8	(15.7)	2	(33.3)	0	(0.0)	4	(11.8)	2	(5.1)	18	(12.3)
Slightly satisfied	1	(20.0)	3	(42.9)	6	(11.8)	1	(16.7)	0	(0.0)	6	(17.6)	6	(15.4)	23	(15.8)
Slightly dissatisfied	0	(0.0)	0	(0.0)	2	(3.9)	0	(0.0)	1	(25.0)	4	(11.8)	4	(10.3)	11	(7.5)
Moderately dissatisfied	1	(20.0)	0	(0.0)	0	(0.0)	1	(16.7)	0	(0.0)	1	(2.9)	0	(0.0)	3	(2.0)
Very dissatisfied	0	(0.0)	1	(14.3)	3	(5.9)	0	(0.0)	0	(0.0)	3	(8.8)	2	(5.1)	9	(6.3)
Not reported	0	(0.0)	0	(0.0)	1	(2.0)	0	(0.0)	0	(0.0)	4	(11.8)	3	(7.7)	8	(5.5)
Total	5	(3.4)	7	(4.8)	51	(34.9)	6	(4.1)	4	(2.7)	34	(23.3)	39	(26.7)	146	(100.0)

^aSum of the parts may not equal 100 percent because of rounding.

\bar{X}^*	2.20	2.86	1.82	2.33	1.75	2.57	—————	2.12
s.d.	1.79	1.57	1.37	1.57	1.50	1.68	—————	1.50

 $F_{5,96} df=1.32$.10<p<.25

* Mean values can be interpreted in this way:

- | | |
|--------------------------|-----------------------------|
| 1 - Very satisfied | 4 - Slightly dissatisfied |
| 2 - Moderately satisfied | 5 - Moderately dissatisfied |
| 3 - Slightly satisfied | 6 - Very dissatisfied |

Table 27

CITIZEN SATISFACTION WITH OFFICER BY OUTCOME OF ENCOUNTER^a

1972 COMMUNITY SURVEY

Citizen Satisfaction with Officer	Outcome of Encounter							
	Arrest Made	Problem Solved	Complainant Informed of Rights	Case Not Solved	Other	Don't Know	Not Reported	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Very satisfied	5 (50.0)	79 (86.8)	5 (83.3)	13 (52.0)	3 (50.0)	56 (47.1)	5 (38.5)	166 (61.5)
Moderately satisfied	3 (30.0)	9 (9.9)	0 (0.0)	4 (16.0)	2 (33.3)	29 (24.4)	4 (30.8)	51 (18.9)
Slightly satisfied	2 (20.0)	3 (3.3)	1 (16.7)	3 (12.0)	0 (0.0)	14 (11.8)	1 (7.7)	24 (8.9)
Slightly dissatisfied	0 (0.0)	0 (0.0)	0 (0.0)	2 (8.0)	1 (16.7)	13 (10.9)	2 (15.4)	18 (6.7)
Moderately dissatisfied	0 (0.0)	0 (0.0)	0 (0.0)	3 (12.0)	0 (0.0)	4 (3.4)	1 (7.7)	8 (2.9)
Very dissatisfied	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (2.5)	0 (0.0)	3 (1.1)
Total	10 (3.7)	91 (33.7)	6 (2.2)	25 (9.3)	6 (2.2)	119 (44.1)	13 (4.8)	270 (100.0)

^aSum of the parts may not equal 100 percent because of rounding.

\bar{X}^*	8.14	5.32	6.24	9.82	8.76	9.63	————	7.96
s.d.	3.91	2.26	4.40	6.05	5.10	5.29	————	4.87

 $F_{5,251} \text{ df}=10.78 \quad p<.001 \quad \omega^2=.160$

*Mean values can be interpreted in this way:

4 - Very satisfied	16 - Slightly dissatisfied
8 - Moderately satisfied	20 - Moderately dissatisfied
12 - Slightly satisfied	24 - Very dissatisfied

Table 28

CITIZEN SATISFACTION WITH OFFICER BY OUTCOME OF ENCOUNTER^a
1973 COMMUNITY SURVEY

Citizen Satisfaction with Officer	Outcome of Encounter						Total
	Arrest Made	Problem Solved	Only Report Taken	Other	Don't Know	Not Reported	
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
Very satisfied	10 (71.4)	102 (82.9)	35 (37.6)	19 (33.9)	4 (40.0)	8 (42.1)	178 (56.5)
Moderately satisfied	1 (7.1)	16 (13.0)	24 (25.8)	13 (23.2)	3 (30.0)	9 (47.4)	66 (20.9)
Slightly satisfied	2 (14.3)	2 (1.6)	14 (15.1)	13 (23.2)	3 (30.0)	0 (0.0)	34 (10.8)
Slightly dissatisfied	0 (0.0)	1 (0.8)	9 (9.7)	7 (12.5)	0 (0.0)	0 (0.0)	17 (5.4)
Moderately dissatisfied	1 (7.1)	1 (0.8)	4 (4.3)	0 (0.0)	0 (0.0)	1 (5.3)	7 (2.2)
Very dissatisfied	0 (0.0)	1 (0.8)	7 (7.5)	4 (7.1)	0 (0.0)	1 (5.3)	13 (4.1)
Total	14 (4.4)	123 (39.0)	93 (29.5)	56 (17.8)	10 (3.2)	19 (6.0)	315 (100.0)

^aSum of the parts may not equal 100 percent because of rounding.

\bar{X}^*	7.45	5.69	10.73	11.40	8.49	—	8.53
s.d.	5.50	3.23	6.04	5.56	3.54	—	5.46

$F_{4,291} df=20.40 \quad p<.001 \quad \omega^2=.208$

* Mean values can be interpreted in this way:

4 - Very satisfied
8 - Moderately satisfied
12 - Slightly satisfied

16 - Slightly dissatisfied
20 - Moderately dissatisfied
24 - Very dissatisfied

Citizen Attitudes Toward the Police

In all three surveys including questions on the subject, respondents gave generally positive overall evaluations of the police. Composite scores on the citizen attitude factors fell between "moderately positive" and "very positive."

Several variables emerge in the regression analysis as predictors of citizens' attitudes toward the police in general. In addition to demographic variables, response time, the level of satisfaction with response time, the level of satisfaction with the responding police officer, and citizens' perceptions of neighborhood safety were also notable predictors. Tables 29, 30, and 31 show the regression results.

Table 29

STEPWISE REGRESSION OF CITIZEN ATTITUDES TOWARD POLICE ON SELECTED VARIABLES

ENCOUNTER SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Satisfaction with police effort	.644	.415	.415	.000	2.132	.000	.563	.597
Age	.709	.502	.067	.000	-.088	.000	-.264	-.354
Race	.725	.525	.023	.010	-2.169	.003	-.186	-.254
Household income	.735	.540	.016	.031	-.457	.031	-.127	-.183
Education	.742	.550	.010	.088	.281	.078	.105	.150
Response time	.745	.555	.005	.200	-.030	.235	-.071	-.101
Sex	.745	.556	.001	.742	.207	.759	.019	.026
Satisfaction with response time	.745	.556	.000	.806	-.071	.806	-.016	-.021

Table 30

STEPWISE REGRESSION OF ATTITUDES TOWARD POLICE ON SELECTED VARIABLES
1972 COMMUNITY SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Satisfaction with officer	.427	.183	.183	.000	.279	.000	.312	.311
Response time	.468	.219	.037	.000	.083	.005	.176	.174
Age	.502	.252	.033	.001	-.260	.002	-.193	-.194
Perception of neighborhood safety	.532	.283	.031	.001	.556	.003	.159	.181
Race	.540	.292	.009	.074	-.678	.230	-.071	-.074
Education	.542	.294	.002	.354	-.105	.403	-.049	-.052
Satisfaction with response time	.543	.295	.001	.549	.097	.551	.040	.037
Household income	.544	.296	.001	.670	-.069	.673	-.025	-.026
Sex	.544	.296	.000	.770	-.151	.770	-.015	-.018

Table 31

STEPWISE REGRESSION OF ATTITUDES TOWARD POLICE ON SELECTED VARIABLES
1973 COMMUNITY SURVEY

Variable	Coefficient of Multiple Correlation	Coefficient of Determination	Change in Coefficient of Determination	Significance of Change	Regression Coefficient	Significance of Regression Coefficient	Standardized Coefficient	Partial Correlation Coefficient
Satisfaction with officer	.517	.267	.267	.000	.261	.000	.319	.329
Race	.582	.339	.072	.000	-1.689	.000	-.174	-.203
Age	.611	.373	.034	.000	.323	.000	-.246	-.270
Perception of neighborhood safety	.641	.411	.038	.000	.592	.000	.176	.208
Response time	.651	.424	.013	.008	.046	.056	.093	.109
Satisfaction with response time	.654	.428	.004	.164	.222	.122	.088	.089
Household income	.656	.431	.003	.227	-.134	.293	-.063	-.073
Sex	.658	.433	.002	.310	.475	.311	.045	.058
Education	.658	.433	.000	.926	-.010	.926	-.004	-.005

The best predictor of general attitudes toward the police in the three surveys was the citizen's level of satisfaction with the responding police officer. People who were satisfied with the responding police officer also had positive attitudes toward the police in general.

In all surveys, age and race were the only demographic variables significantly associated with citizens' attitudes toward the police in general. Older respondents and whites had more favorable attitudes toward the police than younger respondents and blacks. Household income was a significant predictor only in the Encounter Survey; respondents with higher incomes were likely to have more favorable attitudes toward the police.

Response time was a statistically significant predictor in both Community Surveys. Citizens who reported the fastest response to their calls held the most positive attitudes toward the police.

Citizens' perceptions of neighborhood safety emerged as a statistically significant predictor of attitudes toward the police in both the 1972 and 1973 Community Surveys. Citizens who perceived that they lived in a safe neighborhood had more positive attitudes toward the police than those who believed their neighborhood was unsafe.

V. SUMMARY AND IMPLICATIONS

This paper has examined some of the determinants and effects of police response time. Variables thought to affect response time directly were the distance an officer must travel, the amount of time elapsing before an officer starts to the scene of the incident, the driving speed of the officer and, where applicable, the amount of time an officer must wait for an assisting officer. The only two variables found to be significantly correlated with response time were starting time and distance, although only about ten percent of the officers required three or more minutes before starting to respond to a call. Officers' driving speed was not significantly correlated with response time, largely because the variance in speed was quite limited, precluding any meaningful statistical analyses.

It was not surprising to find that distance was significantly correlated with response time. However, it is interesting that officers did not respond immediately to all calls, even though department policy required them to do so. In fact, officers were found to exercise considerable control over the amount of time elapsing between their receipt of a call and their response to it. It may be that officers have an informal system of priorities, based on the type of call and their activity at the time they receive it. Further research should determine the nature of the informal priority system and how such priorities affect response time.

The variables considered to be affected by response time were outcome of the encounter, satisfaction with response time, satisfaction with responding officers, and attitudes toward the police in general. All analyses of these variables are somewhat tenuous because citizens' attitudes were, with relatively little variation, positive.

In all three surveys for which data were available, no significant relationship existed between response time and outcome of the encounter. Nevertheless, in two of the three surveys, outcome of the encounter was significantly related to citizens' satisfaction with the encounter. This fact would suggest that the outcome of an encounter is important to citizens, but that outcome is determined largely by factors other than response time. Thorough investigation at the scene of an incident and patient treatment of citizens could conceivably be more important than rapid police response in solving a case and in satisfying citizens.

The difference between expected and observed response time was the most significant predictor of citizen satisfaction with response time in the three

surveys for which data were available.^{34/} Citizen satisfaction with response time was in turn the best predictor of citizen satisfaction with the responding officer, while satisfaction with the responding officer was the best predictor of general attitudes toward the police. Age and race were also associated with general attitudes, with older respondents and whites generally more satisfied and supportive of the police than younger or black respondents.

These results suggest an interrelated chain of factors, the first link of which is not response time per se but the difference between citizen expectations of response time and observed response time. Several implications are indicated for both police administrators and future research efforts. In attempting to maintain a high level of citizen satisfaction, police administrators often emphasize publicly that officers will respond within minutes to most, if not all, calls-for-service. In addition, many police departments currently devote large amounts of resources to ensure rapid response to most types of calls-for-service. The data presented here suggest that response time, when compared with other variables, may not be so crucial a determinant of citizens' evaluations of the police as police administrators and others have believed. It is possible that public assurances of rapid police response may inadvertently result in citizen dissatisfaction, when response time exceeds that which citizens have been led to expect. Additionally, any pressure on officers to respond immediately to all calls could affect officers' behavior negatively by depriving them of an area of discretion and making them unwilling to initiate some of the time-consuming contacts with citizens which also promote good police-community relations.

As a result of these considerations, it may be worthwhile for police departments to play a larger role in forming realistic citizen expectations of response time. Dispatchers could be trained to differentiate those calls requiring immediate response from those for which longer response times would be tolerable. Citizens could be advised of how soon they might reasonably expect the police to respond. Another alternative would be the use of civilians and/or the telephone for taking certain reports.

The statistically significant associations of age and race with attitudes toward the police suggest that many factors other than response time are important predictors of those attitudes. These factors should be systematically identified, the causes of their associations with attitudes toward police examined, and training devised to address those causes.

In conclusion, the usefulness of manipulating factors that affect response time must be judged in the light of the apparently limited consequences of response time. Further police efforts to reduce response time could be costly, and the benefits might be only marginal.

³⁴ No data concerning expectations of response time were available in the Response Time Survey.

APPENDIX A: OBSERVER, OFFICER AND CITIZEN RESPONSE TIME SURVEY QUESTIONNAIRES

OBSERVER RESPONSE TIME SURVEY QUESTIONNAIRE

SOUTH PATROL DIVISION

Response Time Survey

Date _____ District _____ Observer _____
Location of Call _____
Type of Call _____
Location of District Car When Call Received _____

In what status was the officer when call was received?
☐ In-Service } Answer: What was the officer doing?
☐ Out-of-Service }

TIMES { Time Call Received _____
Time Started to Call _____
Time of Arrival at Incident _____
Time of Arrival of Second Officer _____
Time Contacted Citizen _____

How fast did the officer drive, in relation to speed limit(s), in responding to this call?

☐ Very Fast ☐ Slightly Slow
☐ Moderately Fast ☐ Moderately Slow
☐ Slightly Fast ☐ Very Slow

What emergency equipment, if any, did the officer use at any time in responding to this call?

☐ Red Lights
☐ Siren
☐ Both Siren and Red Lights
☐ None of the above

Weather: ☐ Clear ☐ Cloudy ☐ Fog ☐ Rain ☐ Ice

Citizen's Name _____

Citizen's Race ☐ White Sex ☐ Male Age _____

☐ Black ☐ Female

☐ Other

Citizen's Address _____

Citizen's Phone No. _____

Did the officer have any trouble locating the address of the call?

☐ Yes
☐ No
☐ Don't Know

Was the location given by the dispatcher correct?

☐ Yes
☐ No (provide correct location) _____

Was a police officer(s) already at the scene when you arrived?

☐ No
☐ Yes Answer: How many officer(s)? _____

Was the dispatcher's description the same as the situation you found when you arrived?

☐ Yes
☐ No Answer: What was the situation? (SPECIFY) _____

What was the outcome of the incident?

A. Did the officer take a report?

☐ No
☐ Yes Answer: What type of report? (SPECIFY) _____

B. Did the officer make an arrest?

☐ No
☐ Yes Answer: What type of arrest? (SPECIFY) _____

C. Other outcomes

☐ Citizen was only contacted
☐ Other citizen(s) were contacted
☐ Other (SPECIFY) _____

Other Comments: _____

OFFICER RESPONSE TIME SURVEY QUESTIONNAIRE

SOUTH PATROL DIVISION Response Time Survey

Date _____ District _____
 Location of Call _____
 Type of Call _____
 Location of District Car When Call Received _____

In what status were you when call was received?
 ☐ In-Service ☐ Out-of-Service Answer: What were you doing? _____

TIMES { Time Call Received _____
 Time Started to Call _____
 Time of Arrival at Incident _____
 Time of Arrival of Second Officer _____
 Time Contacted Citizen _____

What emergency equipment, if any, did you use at any time in responding to this call?

☐ Red Light(s)
☐ Siren
☐ Both Siren and Red Light(s)
☐ None of the above

Weather: ☐ Clear ☐ Cloudy ☐ Fog ☐ Rain ☐ Ice

Citizen's Name _____

Citizen's: Race ☐ White Sex ☐ Male Age _____
 ☐ Black ☐ Female
 ☐ Other _____

Citizen's Address _____

Citizen's Phone No. _____

Did you have any trouble locating the address of the call?

☐ Yes (EXPLAIN) _____
☐ No

Was the location given by the dispatcher correct?

☐ Yes
☐ No (provide correct location) _____

Was a police officer(s) already at the scene when you arrived?

☐ No
☐ Yes Answer: {How many officer(s)? _____

Was the dispatcher's description the same as the situation you found when you arrived?

☐ Yes
☐ No Answer: What was the situation? (SPECIFY) _____

What was the outcome of the incident?

A. Did you take a report?

☐ No
☐ Yes Answer: What type of report?
 ☐ Felony ☐ Warrant
 ☐ Misdemeanor ☐ Other (SPECIFY) _____
 ☐ Traffic _____

B. Did you make an arrest?

☐ No
☐ Yes Answer: What type of arrest?
 ☐ Felony ☐ Warrant
 ☐ Misdemeanor ☐ Other (SPECIFY) _____
 ☐ Traffic _____

C. Other outcomes

☐ Citizen was only contacted
☐ Other citizen(s) were contacted
☐ Other (SPECIFY) _____

Other Comments: _____

COVER LETTER FOR CITIZEN RESPONSE TIME SURVEY



MIDWEST RESEARCH INSTITUTE

425 Volker Boulevard

Kansas City, Missouri 64110

Telephone (816) 561-0202

Dear Kansas City Resident:

Could you take a small amount of time to help your city's police department? All that would be required is for you to complete the enclosed survey sheet and return it, using the self-addressed, postage paid envelope. The survey is part of a program in which the police department is determining the effects of its patrol procedures, in an effort to find ways in which they can provide better protection and service to you.

What we want from you on the survey is two things. First, to obtain an accurate estimate of the amount of time it takes for police to respond when they are called. Secondly, it involves your satisfaction with response time and the way in which the police handle incidents which cause them to be called.

We understand you have had recent contact with the police (on the day, date, and time shown on the survey sheet), and we are interested in getting your feelings about that incident. While your name has been chosen by chance, the method of selection makes it important that your opinions be obtained to help insure the accuracy of the results of the survey. Won't you please take time to complete and mail the sheet now?

No individual involved in the survey will ever be named or otherwise identified with the results of the survey. Each reply is kept in strict confidence, but the statistical results of replies will be considered carefully by the city's law enforcement officers.

We look forward to your cooperation, and thank you for your attention. If you have any questions, you may call Mr. Duane Dieckman or Mr. Alex Vargo at Midwest Research Institute, 561-0202.

Sincerely,

A handwritten signature in cursive script that reads "Duane Dieckman".

Duane Dieckman
Economics and Management Science Division

CITIZEN RESPONSE TIME SURVEY QUESTIONNAIRE

Date and Approximate Time of Contact _____ : A.M.
_____ : P.M.
Day Date Time

What kind of incident was it that caused you, or someone in your household, to call the police?

At what time was the call to the police made? _____ : A.M. (circle one)
_____ : P.M.

What phone number was used to call the police?

___ 421-1500 (Crime Alert)

___ 842-6525 (Police Department Operator)

___ Telephone Company Operator

Did you, or the person who called the police, have any trouble getting the call through to the police?

___ No

___ Yes

___ Don't Know

How much time did it take for you, or the person who called the police, to explain the situation . . .

to the police telephone operator? _____ minutes

to the police dispatcher? _____ minutes

How satisfied were you with the way the police dispatcher handled the call for service?

___ very satisfied

___ slightly dissatisfied

___ moderately satisfied

___ moderately dissatisfied

___ slightly satisfied

___ very dissatisfied

How much time, after the call was made, did it take for a police car to arrive?

_____ minutes

How satisfied were you with the time it took for the police car to arrive?

___ very satisfied

___ slightly dissatisfied

___ moderately satisfied

___ moderately dissatisfied

___ slightly satisfied

___ very dissatisfied

How much time did the police spend in handling the incident for which they were called?

_____ minutes

How good a job do you feel the police officer(s) who came did in handling the incident?

___ a very good job

___ a slightly bad job

___ a moderately good job

___ a moderately bad job

___ a slightly good job

___ a very bad job

Have you had reason to call for police service before this incident?

___ yes

___ no

Other Comments _____

APPENDIX B: FIRST ORDER ANALYSIS

Tables 32 through 35 show Pearson product-moment correlations among all variables for which survey data are available. Although many of these correlations are statistically significant, "statistical significance" can occur from the use of large samples as well as from the degree of relationship between two variables; these correlations are based on samples of more than 250 citizens, except those from the Encounter Survey, which includes less than 90 observations. Nevertheless, these intercorrelations suggest that many factors other than response time are associated with citizens' attitudes toward the police and feelings of safety.

Table 32

PRODUCT-MOMENT CORRELATION COEFFICIENTS OF SURVEYED VARIABLES RESPONSE TIME SURVEY

	X ₁	X ₂	X ₃	X ₄	X ₅
X ₁					
X ₂	.074				
X ₃	.100*	-.010			
X ₄	.003	-.035	.088		
X ₅	-.041	-.027	-.098	.405***	
X ₆	-.038	-.001	-.172**	.193**	.409***

* $p < .05$

** $p < .01$

*** $p < .001$

X₁ = Race

X₂ = Sex

X₃ = Age

X₄ = Response time

X₅ = Citizen's satisfaction with response time

X₆ = Citizen's perception of how good a job police did

Table 33

PRODUCT-MOMENT CORRELATION COEFFICIENTS OF SURVEYED VARIABLES
ENCOUNTER SURVEY

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉
X ₁									
X ₂	-.003								
X ₃	.228**	-.136							
X ₄	.175*	-.104	.041						
X ₅	.012	.175*	-.019	-.005					
X ₆	-.130	.019	.039	.052	-.011				
X ₇	-.045	.041	-.002	-.073	.046	.240*			
X ₈	-.203*	.016	-.072	-.112	.002	.261**	.774***		
X ₉	-.182*	.199*	-.177*	.013	-.077	.123	.318***	.377**	
X ₁₀	.321***	.132	-.405***	.065	-.164	.015	.209*	.243**	.644***

* p<.05
** p<.01
*** p<.001

X₁ - Race
X₂ - Sex
X₃ - Age
X₄ - Education
X₅ - Household income

X₆ - Response time
X₇ - Citizens' observed response time compared to expected response time
X₈ - Satisfaction with response time
X₉ - Satisfaction with police effort
X₁₀ - Attitude toward police

Table 34

PRODUCT-MOMENT CORRELATION COEFFICIENTS OF SURVEYED VARIABLES
1972 COMMUNITY SURVEY

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁
X ₁											
X ₂	.038										
X ₃	.258***	-.089									
X ₄	.289***	-.050	-.183**								
X ₅	.104	.064	-.341***	.323***							
X ₆	.149*	-.012	.035	-.008	-.020						
X ₇	-.091	-.035	-.041	-.083	.043	.292***					
X ₈	-.200**	-.041	-.021	-.086	.047	-.431***	.596***				
X ₉	-.189**	-.013	-.109	-.043	-.001	.007	.527***	.576***			
X ₁₀	-.155*	-.017	-.205***	-.051	-.008	-.034	.243***	.261***	.435***		
X ₁₁	-.221***	-.027	-.264***	-.090	-.014	.061	.289***	.251***	.312***	.427***	
X ₁₂	-.070	-.062	.028	-.094	-.221***	-.039	-.007	.056	.043	.012	.174**

* p<.05
** p<.01
*** p<.001

X₁ - Race
X₂ - Sex
X₃ - Age
X₄ - Education
X₅ - Household income
X₆ - Expected response time

X₇ - Observed response time
X₈ - Observed response time - expected response time
X₉ - Satisfaction with response time
X₁₀ - Satisfaction with officer
X₁₁ - Attitude toward neighborhood police
X₁₂ - Neighborhood safety

Table 35

PRODUCT-MOMENT CORRELATION COEFFICIENTS OF SURVEYED VARIABLES
1973 COMMUNITY SURVEY

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁
X ₁											
X ₂	.126*										
X ₃	.246***	.095									
X ₄	.185***	.016	-.218***								
X ₅	.050	.076	-.328***	.310***							
X ₆	.023	-.141*	-.012	-.052	.016						
X ₇	-.145*	-.107	-.073	-.080	-.032	.361***					
X ₈	-.213	.009	-.054	-.046	-.035	-.372***	.645***				
X ₉	-.254***	-.110	-.176**	-.071	.062	.063	.449***	.532***			
X ₁₀	-.220***	.008	-.201***	-.018	.072	-.031	.242***	.260***	.537***		
X ₁₁	-.376***	-.016	-.334***	-.056	.031	-.058	.278***	.287***	.424***	.517***	
X ₁₂	-.220***	.038	.059	-.196***	-.207***	-.077	.155*	.223***	.247***	.250***	.331***

*
**

$p < .05$
 $p < .01$
 $p < .001$

X₁ - Race
X₂ - Sex
X₃ - Age
X₄ - Education
X₅ - Household income
X₆ - Expected response time

X₇ - Observed response time
X₈ - Observed response time - expected response time
X₉ - Satisfaction with response time
X₁₀ - Satisfaction with officer
X₁₁ - Attitude toward neighborhood police
X₁₂ - Neighborhood safety

APPENDIX C: BIVARIATE DISTRIBUTIONS OF SELECTED PREDICTOR VARIABLES AND CITIZEN SATISFACTION WITH RESPONSE TIME

The tables below show the bivariate relationships between citizen satisfaction with response time and two predictor variables: 1) response time,^{35/} and 2) the difference between expected and observed response time.

Response Time

Chapter IV reported that citizens' levels of satisfaction with police response time are inversely correlated with response time itself. Tables 36 through 39 provide details of this relationship.

Table 36

RELATIONSHIP BETWEEN CITIZEN SATISFACTION WITH RESPONSE TIME AND RESPONSE TIME^a

RESPONSE TIME SURVEY

Response Time Satisfaction	Response Time (in Minutes)						Not Reported	Total
	Up to 5	6-10	11-15	16-20	21-25	26 +		
Very satisfied	92%	80%	64%	48%	50%	31%	63%	71%
Moderately satisfied	6	13	19	22	13	23	4	14
Slightly satisfied	1	3	7	13	0	11	0	5
Slightly dissatisfied	0	3	1	4	25	17	0	3
Moderately dissatisfied	0	0	2	0	0	3	0	1
Very dissatisfied	1	0	6	11	13	14	3	4
Not reported	0	1	1	2	0	0	33	3
N	(115)	(105)	(86)	(46)	(8)	(35)	(27)	(422)

$$r = .405$$

$$r^2 = .164 \quad (p < .001)$$

^aColumn totals may not equal 100 percent because of rounding.

³⁵In this appendix, "response time" is based on citizens' perceptions, i.e., the citizen's estimate of the time elapsed between the completion of a call to the dispatcher and the responding officer's first contact with the citizen.

Table 37

RELATIONSHIP BETWEEN CITIZEN SATISFACTION WITH RESPONSE TIME AND RESPONSE TIME^a
ENCOUNTER SURVEY

Response Time Satisfaction	Response Time (in Minutes)							Total
	Up to 5	6-10	11-15	16-20	21-25	26 +	Not Reported	
Very satisfied	92%	79%	67%	57%	67%	56%	31%	56%
Moderately satisfied	8	16	13	29	17	6	14	13
Slightly satisfied	0	5	13	0	0	13	20	12
Slightly dissatisfied	0	0	7	14	17	6	7	6
Moderately dissatisfied	0	0	0	0	0	0	3	1
Very dissatisfied	0	0	0	0	0	19	3	3
Not reported	0	0	0	0	0	0	22	9
N	(24)	(19)	(15)	(7)	(6)	(16)	(59)	(146)

$$r = .261 \quad (p = .011)$$

$$r^2 = .068$$

^aColumn totals may not equal 100 percent because of rounding.

Table 38

RELATIONSHIP BETWEEN CITIZEN SATISFACTION WITH RESPONSE TIME AND RESPONSE TIME^a
1972 COMMUNITY SURVEY

Response Time Satisfaction	Response Time (in Minutes)							Total
	Up to 5	6-10	11-15	16-20	21-25	26 +	Not Reported	
Very satisfied	95%	80%	60%	22%	22%	25%	22%	62%
Moderately satisfied	4	7	24	26	22	7	11	12
Slightly satisfied	0	3	10	11	11	0	0	4
Slightly dissatisfied	0	3	7	7	11	11	4	4
Moderately dissatisfied	0	2	0	4	11	7	0	2
Very dissatisfied	1	5	0	30	22	50	41	14
Not reported	0	0	0	0	0	0	22	2
N	(76)	(61)	(42)	(27)	(9)	(28)	(27)	(270)

$$r = .527 \quad (p < .001)$$

$$r^2 = .278$$

^aColumn totals may not equal 100 percent because of rounding.

Table 39

RELATIONSHIP BETWEEN CITIZEN SATISFACTION WITH RESPONSE TIME AND RESPONSE TIME^a
1973 COMMUNITY SURVEY

Response Time Satisfaction	Response Time (in Minutes)						Not Reported	Total
	Up to 5	6-10	11-15	16-20	21-25	26 +		
Very satisfied	85%	68%	52%	36%	0%	21%	15%	54%
Moderately satisfied	12	18	19	9	0	18	2	13
Slightly satisfied	2	8	5	18	0	0	8	6
Slightly dissatisfied	0	0	14	23	60	15	2	6
Moderately dissatisfied	0	4	7	0	0	3	4	3
Very dissatisfied	1	1	2	14	40	39	38	13
Not reported	0	0	0	0	0	3	32	6
N	(87)	(73)	(42)	(22)	(5)	(35)	(51)	(315)

$$r = .499$$

$$r^2 = .202 \quad (p < .001)$$

^aColumn totals may not equal 100 percent because of rounding.

The data indicate that, although more than 70 percent of all people surveyed were satisfied with response time, there is a statistically significant inverse relationship between satisfaction with response time and response time.

Difference Between Observed and Expected Response Time

Data were available from the Encounter Survey and the two Community Surveys to determine the difference between observed and expected response time. Respondents in the Encounter Survey were asked, "Compared to how long you expected, how fast did you feel they [the police] arrived?" Response categories ranged from "much faster than expected" (coded 1) to "much slower than expected" (coded 6). Citizen respondents to the Community Surveys were asked both how soon (in minutes) they expected the police to arrive and when the police did arrive; citizens' expectations were subtracted from observed response time to obtain a difference score.

Tables 40 through 42 show the relationship between citizen satisfaction with response time and the difference between observed and expected response time.

Table 40

RELATIONSHIP BETWEEN CITIZEN SATISFACTION WITH RESPONSE TIME AND THE
DIFFERENCE BETWEEN OBSERVED AND EXPECTED RESPONSE TIME^a

ENCOUNTER SURVEY

Response Time Satisfaction	Response Time Difference							Total
	Much Faster than Expected	Somewhat Faster than Expected	Slightly Faster than Expected	Slightly Slower than Expected	Somewhat Slower than Expected	Much Slower than Expected	Not Reported	
Very satisfied	98%	52%	55%	13%	0%	0%	35%	56%
Moderately satisfied	0	40	9	40	11	0	0	13
Slightly satisfied	2	8	32	27	22	0	5	12
Slightly dissatisfied	0	0	5	13	44	17	0	5
Moderately dissatisfied	0	0	0	7	11	0	0	1
Very dissatisfied	0	0	0	0	0	83	0	3
Not reported	0	0	0	0	11	0	60	9
N	(49)	(25)	(22)	(15)	(9)	(6)	(20)	(146)

$$r = .744$$

$$r^2 = .599 \quad (p < .001)$$

^aColumn totals may not equal 100 percent because of rounding.

Table 41

RELATIONSHIP BETWEEN CITIZEN SATISFACTION WITH RESPONSE TIME AND THE
DIFFERENCE BETWEEN OBSERVED AND EXPECTED RESPONSE TIME^a

1972 COMMUNITY SURVEY

Response Time Satisfaction	Observed Minus Expected Response Time (in Minutes)								Total
	-55 to -11	-10 to -6	-5 to -1	0	1 to 5	6 to 10	11 to 50	Not Reported	
Very satisfied	100%	92%	92%	84%	50%	32%	3%	47%	62%
Moderately satisfied	0	8	8	7	21	21	10	15	12
Slightly satisfied	0	0	0	1	18	17	7	0	4
Slightly dissatisfied	0	0	0	5	4	21	0	5	4
Moderately dissatisfied	0	0	0	0	4	0	10	2	2
Very dissatisfied	0	0	0	3	4	16	69	22	14
Not reported	0	0	0	0	0	0	0	10	2
N	(8)	(26)	(26)	(74)	(28)	(19)	(29)	(60)	(270)

$$r = .576$$

$$r^2 = .332 \quad (p < .001)$$

^aColumn totals may not equal 100 percent because of rounding.

Table 42

RELATIONSHIP BETWEEN CITIZEN SATISFACTION WITH RESPONSE TIME AND THE
DIFFERENCE BETWEEN OBSERVED AND EXPECTED RESPONSE TIME^a

1973 COMMUNITY SURVEY

Response Time Satisfaction	Observed Minus Expected Response Time (in Minutes)							Not Reported	Total
	-30 to -11	-10 to -6	-5 to -1	0	1 to 5	6 to 10	11 to 45		
Very satisfied	100%	95%	84%	76%	48%	10%	3%	35%	54%
Moderately satisfied	0	5	12	21	23	5	19	5	13
Slightly satisfied	0	0	5	4	10	10	19	10	6
Slightly dissatisfied	0	0	0	0	4	50	3	4	6
Moderately dissatisfied	0	0	0	0	10	15	0	2	3
Very dissatisfied	0	0	0	0	6	10	52	25	13
Not reported	0	0	0	0	0	0	3	20	6
N	(8)	(20)	(43)	(78)	(31)	(20)	(31)	(84)	(315)

$$r = .532 \quad (p < .001)$$

$$r^2 = .283$$

^aColumn totals may not equal 100 percent because of rounding.

The mean observed response time was approximately 13 minutes in both the 1972 and 1973 Community Surveys, while the mean expected response times were approximately 12 and 11 minutes, respectively. This finding indicates that, on the average, officers did not fall far short of citizens' response time expectations.

The data further reveal that the difference between observed and expected response time was significantly correlated with the level of satisfaction with response time. Citizens were more satisfied with response time if the police arrived faster than they expected. In the Encounter Survey, the correlation between the fulfillment of response time expectations and satisfaction with response time accounted for 60 percent of the variance of the dependent variable. Correlations in the 1972 and 1973 Community Surveys were not as high as for the Encounter Survey, but were statistically significant. The difference between observed and expected response time accounted for more than 25 percent of the variance in satisfaction with response time.

APPENDIX D: DATA ANALYSIS TECHNIQUES

Evaluators computed Pearson product-moment correlation coefficients to determine the magnitude of linear relationships among variables. Stepwise multiple regression techniques were then applied to determine which independent variables explained the greatest amount of variance in the dependent variable. This technique first identifies the predictor variable that accounts for the largest amount of the variance in the dependent variable, after controlling for all other predictor variables. Next, the variable that explains the second-greatest amount of variance is identified. This process continues until all predictor variables have been entered into the regression equation. Because there is no theoretical or empirical basis for determining the order in which variables should be entered in a prediction equation, such a stepwise procedure is the most appropriate. Draper and Smith, in Applied Regression Analysis state that, under these circumstances, stepwise regression is " . . . the best of the variable selection procedures. . . ." ^{36/}

Multiple regression analysis provides several useful statistics. The multiple correlation coefficient (R) is a measure of the strength of the linear relationship between the dependent variable and all predictor variables examined. The coefficient of determination (R^2) is the square of the multiple correlation coefficient and gives the percentage of the total variance of the dependent variable accounted for by all the predictor variables currently in the regression equation. The change in the coefficient of determination measures the amount of variance accounted for by the newly added predictor variable, after controlling for the previously entered predictor variables. If the level of change is not statistically significant, the entered variable is regarded as a poor predictor of the dependent variable. All values significant at the .05 level or below are considered "statistically significant."

The regression coefficient indicates the relationship between each predictor variable and the dependent variable in nonstandardized units, holding the effects of all other predictor variables constant. If the regression coefficient is not significantly different from zero, there is no linear relationship between the predictor and the dependent variable.

³⁶N., R. Draper and H. Smith, Applied Regression Analysis, New York: John Wiley and Sons, Inc., 1966, p. 172. For an explanation of the theory of stepwise regression analysis, see pages 163-96.

The standardized regression coefficient represents the relationship between each predictor variable and the dependent variable in standardized units.

The partial correlation coefficient provides the correlation between a predictor variable and the dependent variable, holding the effects of all other variables in the equation constant.

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