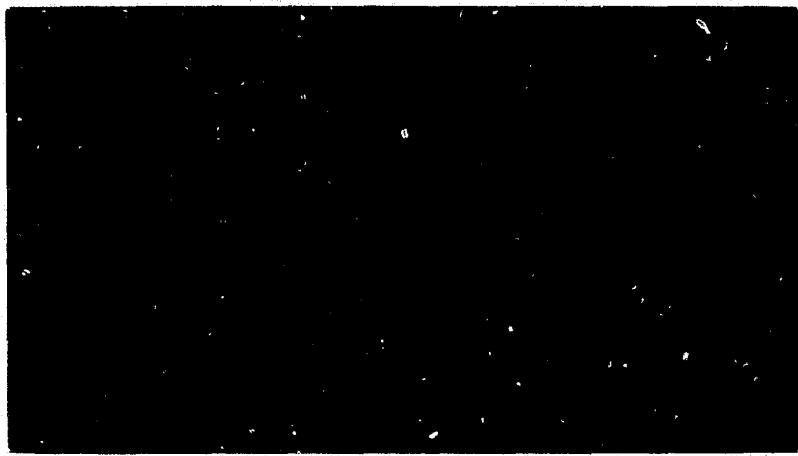


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INTRODUCTION AND METHODOLOGY TO THE
STUDY OF POLICE ASSAULTS IN THE
SOUTH CENTRAL UNITED STATES

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June, 1974

One Dollar

PREFACE

In 1972, the University of Oklahoma was awarded a grant to study the problem of assaults directed against members of the law enforcement community in the south central United States. Upon completion of the 20 month study, 11 documents were prepared which treat the aspect of violence against law enforcement officers from several different perspectives ranging from a theoretical discussion of violence to an analysis of the assault incident to a treatment of the offenders' perceptions of the assault episode.

Members of the Police Assaults Study staff who contributed papers to this research series are: Professor Samuel G. Chapman, Project Director; Charles D. Hale, Assistant Project Director; Professor C. Kenneth Meyer, Director of Research; Cheryl G. Swanson, Patton N. Morrison and Joe S. Cecil, Research Associates; Wesley Wilson and James L. Regens, Research Assistants. Other valuable contributions to this series were made by Dr. Daniel Kieselhorst and Dr. Denise Heller who acted as special consultants to this project. These authors have varied backgrounds in the academic fields of criminology, police science, political science, philosophy, public administration, psychology and sociology. In addition, several members of the staff had extensive experience as law enforcement officers.

This report provides the reader with an introduction to the Police Assaults Study as well as the methodology utilized in the various study components.

The reports which grew out of the Police Assaults Study project are being published in the Criminal Justice Policy and Administration Research Series, by the Bureau of Government Research, and may be purchased for a nominal charge.

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2. A Descriptive Profile of the Assault Incident
3. Perceptions of the Police Organization: A Sociometric Analysis
4. A Microanalysis of Assaults on Police in Austin, Texas
5. An Analysis of Assaults on Municipal Police Officers in 46 South Central Cities
6. Alternative Methods for the Psychological Testing of Police Officers
7. Personal Characteristics of Assaulted and Non-Assaulted Officers
8. An Analysis of Officer Characteristics and Police Assaults Among Selected South Central Cities
9. An Analysis of Police Assailants in Albuquerque, New Mexico
10. A Question of Height Revisited: Assaults on Police
11. An Analysis of Police Fatalities in Oklahoma: 1948-1973

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INTRODUCTION

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Project Director**

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**Ms. Cheryl Swanson
Research Associate**

INTRODUCTION

Nationally, the incidence of assaults on police has grown steadily during the past 13 years.¹ The FBI statistics on police assaults show that the number of police officers killed during the period 1960-1972 has increased from 28 slain in 1960 to 112 in 1972, with an average of 69 deaths for each of the 13 years. During the same 13 year span, the total number of assaults against police officers ranged from a reported total of 9,621 assaults in 1960 to 37,523 assaults in 1972, averaging 26,564 assaults per year, as displayed in Table 1. The consistently large numbers of both fatal and non-fatal assaults have caused an increased awareness of and expressed concern about the occupational safety of law enforcement officers throughout the United States.

Obviously, some response must be made to this growing problem. It is unfortunate, though, that when confronted with the reality of such attacks, our instincts urge us to meet violence with violence. As natural and as warranted as this feeling may be, the history of human experience would suggest that a violent counter-offensive may entrap the police establishment in an ever-increasing spiral of violence leading only to more deaths and injuries as well as greater alienation from the community. A society characterized by fear and repression could be the result, and even the possibility of this result precludes taking the risk.

Even if we do not consider the violent counter-attack, we are attracted to brief, straightforward, and frequently simplistic answers to the problem of police assaults. But, as we have grown to realize through experience, complex problems are not resolved by simple solutions. Such solutions too often affect only the symptoms and not the underlying causes.

The sole alternative lies along the road of complexity, as an attempt is made to identify, analyze, and evaluate the relevant variables that have a bearing on the assault question. If the ultimate goal is the development of policies and techniques that will reduce the incidence of attacks against the police, our immediate objective must include a comprehensive awareness of the context in which such assaults occur.

Hence, such concepts as "police function," "violence," and "assault" will be set out in light of the needs and purposes of this study. The philosophical and psychological underpinnings of our culture, as they have contributed to the formation of present attitudes toward violence, will be reviewed. The values and practices of contemporary society which tend to sanction or increase recourse to violence will be explored. An analysis of the police function as it may currently encourage or invoke assaultive behavior will be provided.

TABLE 1

THE NUMBER OF ASSAULTS ON POLICE OFFICERS AND
 POLICE OFFICERS MURDERED, BY YEAR, AND ANNUAL
 PERCENTAGE CHANGE, OVER THE THIRTEEN YEAR SPAN 1960-1972

Year	Total Assualts	Rate Per 100 Officers	Percent Increase Over Year Previous	Assaults With Injury	Rate Per 100 Officers	Percent Increase Over Year Previous	Number of Police Officers Murdered	Percent Increase Over Year Previous
1960	9,621	6.3	--	NR*	NR	--	28	--
1961	13,190	8.3	37.1	NR	NR	--	37	32.1
1962	17,330	10.2	31.4	NR	NR	--	48	29.7
1963	16,793	11.0	(-3.1)	NR	NR	--	55	14.6
1964	18,001	9.9	7.2	7,738	4.3	--	57	3.6
1965	20,523	10.8	14.0	6,836	3.6	(-11.7)	53	(-7.0)
1966	23,851	12.2	16.2	9,113	4.6	33.3	57	7.5
1967	26,755	13.5	12.2	10,770	5.4	18.2	76	33.3
1968	33,604	15.8	25.6	14,072	6.6	30.7	64	(-15.8)
1969	35,202	16.9	4.8	11,949	5.7	(-15.1)	86	34.4
1970	43,171	18.7	22.6	15,165	6.6	26.9	100	16.3
1971	49,768	18.7	15.3	17,631	6.6	16.3	126	26.0
1972	37,523	15.1	(-24.6)	12,230	5.8	(-30.6)	112	(-11.0)
TOTAL	345,332			105,504			899	

Source: Federal Bureau of Investigation, Uniform Crime Reports (Washington, D.C.: U.S. Government Printing Office). Data were extracted from each Uniform Crime Report for the years set out above.

*NR - Not reported by the Federal Bureau of Investigation in Uniform Crime Reports until 1964.

In addition to providing a theoretical foundation for the study of violence emanating from police-citizen interaction, an empirical analysis of assault incidents will be undertaken. Variables such as personal characteristics of police officers and their offenders will be examined. In addition, environmental and situational variables will be studied in light of assault frequency. Through a systematic analysis of the correlates of assaultive behavior, we hope to lay the groundwork for the identification and implementation of approaches and techniques that will countermand the conditions now leading to assaults against police and move us substantially along the path toward an order of peace in our cities.

Police Assaults as a Subject of National Concern

Until 1973, efforts addressed to cope with the problem of assaults on law enforcement officers have largely centered around legislative and executive action. At the national level measures were introduced in 1970 by Senators Williams (Senate Bill 4325), Schweiker (Senate Bill 4348), Eastland (Senate Bill 4359), and the late Senator Dodd (Senate Bill 4403) which contained various provisions designed to bring federal resources and sanctions to bear upon those who kill or assault police, or encourage, incite, promote, or aid such actions. The subcommittee of the U.S. Senate Committee of the Judiciary held hearings in 1970 and considered legislation proposed to reduce violence directed against police.² These Senate hearings served to further focus attention upon and systematically document the problem of assaults on police officers as did other efforts, including periodic reports released by the Police Weapons Center of the International Association of Chiefs of Police.

Perhaps the most publicized single response, other than the Senate Subcommittee hearings, was the White House conference of June 3, 1971 during which President Nixon and members of his administration met with law enforcement personnel from across the nation. The President, indicating his concern over the upswing in police killings, proposed that the federal government pay a lump sum of \$50,000 to the survivors of any police officer murdered in the line of duty.⁴ Furthermore, the President asserted that, "All resources of the Department of Justice and the FBI are pledged by this Administration to assist you in discharging your responsibilities."⁵

President Nixon's pledge provided that upon specific request of chiefs or agency heads, the Federal Bureau of Investigation would actively participate in the investigation of the killing of police officers by working jointly with local authorities. The President's letter of June 14, 1971 formally advised local and state law enforcement officials throughout the nation of his pledge to help stop fatal assaults on police.⁶

On September 9 and 10, 1971, several lawmen from across America met in the District of Columbia and participated in The Attorney General's 1971 Conference on Crime Reduction. A subcommittee on police casualties, chaired by District of Columbia Metropolitan Police Chief Jerry V. Wilson, announced its support for the President's proposal to pay survivors. The conference participants also recommended that public policy statements be made by government officials and political parties denouncing assaults on police.⁷ In spite of substantial lobbying, the Congress failed to pass the measure.

Review of the Literature

Despite the urgency of the assault problem, very little is known about assaults on police. The lack of a comprehensive set of data on the characteristics of police assaults prompted J. Shane Creamer and Gerald R. Robin to remark in an article appearing in a leading police journal:

While statistics and background information on fatal assaults is very limited, long range information on nonfatal police assaults is non-existent...Actually all that can be done at this point is to alert the police to certain characteristics of the assault problem. Too little information is available to begin to solve this difficult problem of assaults on police officers.⁸

The national statistical data provided each year by the Federal Bureau of Investigation are extracted from forms submitted by police agencies to the FBI or from state bureaus of criminal statistics. The form developed by the FBI to collect data on assaults during the period 1960-1971 was very basic in design and was limited to gathering the following type of information: (1) the number of full-time officers killed in the line of duty; (2) the total number of police assaulted; (3) the total number of injury and non-injury assaults; and (4) the type of weapon utilized in the assault event.⁹ Since January 1, 1972, the basic assault report was substantially revised and reflects a determined effort to assemble a more complete set of assault related information, such as the type of police activity the officer was engaged in and the type of officer assignment when the assault occurred. The "Law Enforcement Officers Killed or Assaulted" reporting form is shown in Figure 1.

The FBI assault statistics are pertinent to the study of police assaults in many ways. However, the FBI data are fundamental and limited in scope and do not adequately address the many questions pertaining to assaults which must be investigated in any thorough study of violence against law enforcement officers.

LAW ENFORCEMENT OFFICERS KILLED OR ASSAULTED

It is requested this report be completed and transmitted with monthly crime reports to: Director, Federal Bureau of Investigation, Uniform Crime Reports, Washington, D. C. 20535. This form should be used to report the number of your officers who were assaulted or killed in the line of duty during the month. Additional information concerning officers killed will be requested by a separate questionnaire.

Officers Assaulted (Do not include officers killed) - See other side for instructions.

Month and Year

Agency Identifier

Prepared by

"Pittier"

Agency

Santo

Chief, Sheriff, Commissioner, Superintendent

Owing to the many problems inherent to gathering data on police assaults, few empirical studies have been undertaken. Prior to 1973 several reports on assaults were written by law enforcement officials and published in news magazines. These reports were highly impressionistic and were generally based on day-to-day observations by a police officer or investigative writer and focused on specific operational aspects of the problem. However, they did not provide a systematic treatment of the many factors surrounding assault incidents.¹⁰

An entire issue of The Annals¹¹ was devoted to articles dealing with violence, most of which were concerned with the psychological and sociological aspects of violent behavior. Only one article out of 14 dealt with aggressive crimes, and the writer concluded that the paucity of statistics available precluded the identification of trends in this area.

Another type of literature which is relevant to the problem of assaults on police officers is information which was published at periodic intervals by the International Association of Chiefs of Police in Gaithersburg, Maryland, and is abstracted from data collected by the IACP's Police Weapons Center. This information was presented in the form of statistical and summary reports on various operational aspects of police injuries and deaths which arose from combat situations across the nation. The Police Weapons Center was funded in part for its first year (1970) through a U.S. Department of Justice Law Enforcement Assistance Administration grant. The purpose of the Police Weapons Center was to provide the information required by law enforcement agencies to formulate effective plans for the procurement and discriminate use of weapons systems, for the purpose of reducing the levels of violence associated with routine police operations and civil disorder.

Another IACP program, "Police Casualty Series," also funded by the U.S. Department of Justice, gathered data relating to assaults on police.¹² However, this data suffered from several limitations. First, the IACP-assembled data were taken from accounts reported in newspapers and public journals, posing problems of reliability. Second, the data are heavily weighted toward incidents where one or more police officers were injured or killed; incidents without police injuries/fatalities often receive little or no media coverage. This identifies a third factor, the unknown number of unreported assault cases. Fourth, although the data are broken down by region, there is no separation between urban and rural incidents, which may be an important factor in the assaults problem. Thus, for at least the above reasons, data gathered under the Police Casualty Series Program is of limited value in the construction of a valid and uniform data base.

Two studies completed in the mid and late 1960's represent a more

sophisticated research approach. The first investigated behavioral patterns in police-citizen contacts and focused on the nature and number of these contacts.¹³ However, the usefulness of the results in considering assaults was limited by the fact that the study only included data on police-citizen contacts which were free of conflict. The second study, by Grant and Toch, attempted to formulate a typology of violence through a socio-psychological perspective in two special settings. It was useful as a foundation to the Police Assaults Study.¹⁴ The primary objective of the Grant and Toch study was to identify recurring patterns of violence. Its second objective was to define the world of various kinds of habitually violent persons, to analyze the settings in which violence tends to occur, and to investigate the nature of the relationship between types of violent persons and types of violent incidents. Grant and Toch used content analysis of 444 police descriptions of assaults on themselves, then interviewed as many of the assailants and policemen as they could conveniently locate. A "peer interview" method was used in which the interviewer of a convicted assailant was himself a former violent felon.

The results of the study showed that most of the assaults followed a sequence of events. The most common sequence (found in 40 percent of the incidents examined) consisted of a police officer issuing orders or instructions to a person, the person expressing his contempt for the officer, and the officer pressing his demand. The final precipitating act found the officer placing his hands on the person after concluding that verbal injunctions were ineffective. Violence then ensued.¹⁵ The second most frequent sequence (found in 27 percent of the incidents) was one in which violence was already manifest as the police officer entered the scene. The assault on the officer occurred when he attempted to restrain the violent person(s).

The authors concluded that violent behavior can be dealt with as a sequential component of interpersonal games or themes, and that present enforcement procedures do not recognize this aspect of violence and are thus apt to increase the probability of violence rather than reduce it. They suggested that many assailants use violent behavior to manipulate the controlling authority into doing something that would be of benefit to the assailants. In such cases, the authority's reaction, which focuses on the violent act itself and not on the motivation for the act, is easily predicted. It is this reaction which is the goal of the violent act. In such cases, police officers are unknowing contributors to violence directed against themselves by reacting in a predictable manner.

Although valuable, the Grant and Toch study was confined to a single geographic area in northern California and probed a relatively small number of cases. Therefore, its results seem too limited to be used as the basis for proposing remedial programs.

A later study by Toch delved further into the psychology of violent men but did not concentrate on the problem of assaults on police.¹⁶

Another useful study was that of Professor Allen P. Bristow, who in a study of 110 officers injured by an assailant's gunfire, discovered that more officers are shot subsequent to an initial contact, e.g., during interrogation, citation, or while requesting a radio record check, than in making the initial contact with a suspect.¹⁷

Still another study of value dealt with the nature of police fatalities among officers in California over an 11-year span. It reported that of the 85 California peace officers slain on duty from 1960 through 1970, 39 percent were alone as opposed to 41 percent who had one partner and an additional 20 percent who were with two or more officers.¹⁸

The United States Senate was responsible for assembling some of the most relevant literature about assaults on police officers occurring during the 1960's. Two Senate subcommittee hearings on the issue in 1970 produced published transcripts of testimony. First, from July 15 through August 6, 1970 the Senate's Permanent Subcommittee on Investigations of the Committee on Government Operations held public hearings on riots, civil and criminal disorders. Part of the hearings included testimony by police and other public officials about assaults on police.¹⁹ Next, the Senate's Subcommittee to Investigate the Administration of the Internal Security Act and Other Internal Security Laws, a sub-unit of the Committee on the Judiciary, held public hearings on assaults on law enforcement officers from October 6 through 9, 1970.²⁰ The October hearings were intended to provide information and make recommendations concerning: (1) federal legislative proposals concerning the killing of police officers or firemen; (2) making assaults on state officers a federal offense; (3) applying criminal sanctions for urban terrorism; and (4) development of additional recommendations concerning the control and use of explosives. The five volumes which stemmed from these two Senate subcommittee hearings include abundant general information, but are deficient in addressing and analyzing the central issue of assaults against law enforcement officers.

This is a summary of the available literature through 1972 when the Police Assaults Study was initiated at the University of Oklahoma. Clearly the assault issue had not been subjected to a deliberate, adequate and systematic analysis of a broadly based nature.

Scope of the Research

The mounting numbers of officers assaulted and killed, the concern manifested at the national political level, the paucity of

meaningful literature on assaultive behavior make an incontrovertible case for conducting research to help identify and explain the assault phenomenon.

Definition of Assault

To insure uniformity in data collection it was necessary to provide a common and generally accepted definition of what constitutes an assault on a police officer. Therefore, an assault is operationally defined in this research as "any overt physical act that the officer perceives or has reason to believe was intended to cause him harm." An examination of assault incidents reported reveals that the majority of cases involved some form of physical contact between the officer and suspect. There were several cases, however, in which assaults were of a highly anonymous nature, e.g., snipings, ambushes, and the propelling of objects. Since the acts were clearly motivated with the intent to inflict bodily harm to an officer, even though the suspect in most cases was not identified, these events were included within the assault population under study. Finally, there were a small number of cases where the interaction between the suspect and officer was characterized solely by verbal abuse or mere threat of assault. These few cases were classified as constituting an assault since they clearly fall within the parameter of the assault's theoretical definition.

Research Objectives

This research attempted to answer several questions associated with a number of variables hypothesized to be related to police assaults. Since the empirical research was principally exploratory in nature, it was not designed to confirm or reject any existing theory of violence against police officers. However, some existing literature did provide an initial focus by suggesting that the assault problem might be analyzed by looking at the following four sets of variables: (1) situational and environmental; (2) actor; (3) process; and (4) triggering mechanisms.

The Situational and Environmental Variables:

- °What are the specific locales in which assaults take place?
- °In what kind of jurisdiction (municipal, county, state) are the assaulted officers employed?
- °What community social, economic and demographic characteristics are associated with assaultive behavior?

The Actor Variables:

- "What are the characteristics of the officers who get assaulted?
- "What are the characteristics of the alleged police offender?

The Process Variables:

- "What kinds of police functions and activities are most frequently associated with assaults?

The Triggering Mechanisms:

- "Which kinds of verbal and physical behavior are demonstrated by either the officer(s) or offender(s) that contribute in escalating a police-citizen interaction into a violent encounter?

To fulfill these objectives, the Police Assaults Study focused on six work products. The first work product, which is more comprehensive in design, develops a theoretical framework for the analysis of the nature and causes of violence directed against police officers. The remaining five work products,²¹ which are more specifically oriented, include the following:

1. The development of socio-psychological profiles for assaulted police officers and police offenders.
2. A description of the environmental and situational factors which contribute to assaultive behavior.
3. The identification of common triggering mechanisms which may be related to the assault episode.
4. An analysis of the management and supervisory milieu within selected police organizations relative to police assaults.
5. Examination of the processes of police selection and police training within selected police agencies to discern ways in which assaults may be significantly reduced or prevented.

The master research plan utilized in completing the six work products is presented in Table 2. Table 2 arrays the work products by both study components and by the research methods and strategies employed. The various study components outlined in the master research plan are presented in this report. The data generated from these various study components constitute an empirical data base from which police operational techniques, procedures, training and equipment may be developed. These

TABLE 2
MASTER RESEARCH PLAN FOR FULFILLING WORK PRODUCTS BY
RESEARCH AND DATA COLLECTION METHODS AND CORRESPONDING STUDY COMPONENTS*

Theoretical Framework (Search of the Literature)	Research Methods								Aggregate Analysis Macro ↓	Analysis Micro ↓
	Survey Research				STUDY COMPONENTS					
POLICE ASSAULTS STUDY WORK PRODUCTS	Search and Review of the Literature on Violence	Total Municipal Police Assaults Reported from 37 Police Agencies in the South Central U.S. (1973 Data Base)	Police Assaults Reported from the New Mexico State Police, Louisiana State Police and Oklahoma Highway Patrol (1973 Data Base)	Sociological-Psychological Characteristics of Police Officers and Offenders (1973 Data Base)	Study of the Individual Police Officers Personal Characteristics (1973 Data Base)	Survey of Officers Perception of Police Organization in which They Function in Three Selected Cities and a Profile of Assaulted and Non-Assaulted Officers for Selected Cities (1973 Data Base)	Analysis of Assaults on Municipal Police Officers in 46 South Central U.S. Cities (1970-1972 Data Base)	Assaults on Police in Austin, Texas (1970-1972 Data Base)		
COMPREHENSIVE THE NATURE AND CAUSES OF VIOLENCE AS RELATED TO POLICE ASSAULTS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
SPECIFIC SOCIOLOGICAL-PSYCHOLOGICAL PROFILE OF ASSAULTED LAW ENFORCEMENT OFFICERS AND POLICE ASSAILANTS	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO
ENVIRONMENTAL AND SITUATIONAL FACTORS RELATED TO ASSAULT INCIDENTS	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
TRIGGERING MECHANISMS RELATED TO ASSAULT INCIDENTS	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO
MANAGEMENT AND SUPERVISORY TOOLS AND TECHNIQUES RELATED TO ASSAULT INCIDENTS	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO
POLICE SELECTION AND TRAINING RELATED TO ASSAULTS	NO	YES	YES	NO	YES	YES	NO	NO	NO	NO

*This master plan indicates with a "yes" or a "no" which work products were satisfied using a particular method of research and included in one or several of the various study components. For instance, "Triggering Mechanisms Related to Assaults" were treated in a greater or less extent in each of the research methods and study components (yes), except in the instances when the case study and aggregate analysis methods were utilized (no).

developments could hopefully enhance the personal safety of law enforcement personnel.

FOOTNOTES

¹Although the total number of reported assaults for the time from 1960-1972 indicates an upward trend, a decrease in police assaults over the previous year was evidenced during 1963 (-3.1 percent) and 1972 (-24.6 percent) respectively. For a more detailed assault distribution, see Federal Bureau of Investigation, Uniform Crime Reports, Washington, D.C.: U.S. Government Printing Office, 1960-1972.

²United States, Congress, Senate, Committee of the Judiciary, Assaults on Police Officers Hearings before the Subcommittee to Investigate the Administration of the Internal Security Laws, on S. 1941, 92nd Congress, October 6 through 9, 1970. Senator James Eastland (D., Miss.), Chairman of the Subcommittee, opened the October 6-9 hearings:

These vicious attacks on officers, the murder and maiming of lawmen, are assaults of the most dangerous nature upon the structure of law and order which support civilized society...

At the October 8th hearing, Senator Strom Thurmond (R., S. Car.) expressed his opinion on the issue:

Without policemen, the people have no safety, without law enforcement officers we have an uncivilized society.

³Police Casualty Series, Police Weapons Center, Management and Research Division, International Association of Chiefs of Police, 1970-71.

⁴The proposal to provide \$50,000 to survivors of police officers murdered in the line of duty attracted support from several quarters. Then Deputy Attorney General Richard G. Kliendienst testified before a Senate Judiciary subcommittee in late September, 1971. He asserted that it was important to amend the Omnibus Crime Control and Safe Streets Act of 1968 to enable the Law Enforcement Assistance Administration (LEAA) to make payments from funds appropriated for that purpose. The lump sum payment would be in addition to any other state or local benefits due the survivors. See "Deputy Attorney General Testifies in Support of Bill to Aid Survivors of Slain Policemen," LEAA Newsletter, 2 (November, 1971), p. 12.

⁵"President Nixon Pledges Full Support to Stop Police Killings," The FBI Law Enforcement Bulletin, 40 (August, 1971), p. 16.

⁶Ibid., p. 17.

⁷"Remarks of the Workshop Moderators," The Attorney General's Conference on Crime Reduction, 1971, (September 9 and 10, 1971), transcript, 17 pp. mimeo.

⁸ J. Shane Creamer and Gerald D. Robin, "Assaults on Police," Police, 12 (March-April, 1968), pp. 82-87.

⁹ Specifically, the FBI form asked for the following information:

OFFICERS KILLED: Number of full-time law enforcement officers belonging to your organization who were killed in the line of duty during the year _____.

OFFICERS ASSAULTED: Number of full-time law enforcement officers belonging to your organization who were assaulted in the line of duty during the year by use of the following weapons:

	<u>Injury</u>	<u>No Injury</u>
a. Firearm.....	_____	_____
b. Knife or cutting instrument.....	_____	_____
c. Other dangerous weapon.....	_____	_____
d. Hands, fists, feet, etc.....	_____	_____
TOTAL.....	_____	_____

¹⁰ Examples of these kinds of publications include: Thomas J. Reddin, "Non-Lethal Weapons -- Curse or Cure?" The Police Chief, 34 (December, 1967), pp. 60-63. Also see: Henry A. Fitzgibbon, "The Sniper Menace," The Police Chief, 34 (November, 1967), pp. 40-42; and J. Edgar Hoover, "Police 'Brutality' -- Fact or Fiction?" U.S. News and World Report (September 6, 1965), pp. 37-39; Louise Cook, "Tempo Quickening in Assaults Against Policemen in U.S.," Pacific Stars and Stripes, (September 21, 1970), p. 11, column 1-4; and Katherine Hatch, "Eight Troopers Killed on Duty," The Daily Oklahoman, (February 19, 1971), p. 7, columns 4-8.

¹¹ "Patterns of Violence," The Annals of the American Academy of Political and Social Science, Thorsten Sellin, Editor, 364 (March, 1966).

¹² Police Casualty Series, Police Weapons Center, Management and Research Division, International Association of Chiefs of Police, 1970-71.

¹³ Donald J. Black and Albert J. Reiss, Jr., "Patterns of Behavior in Police and Citizen Transactions," Studies of Crime and Law Enforcement in Major Metropolitan Areas, 11, Ann Arbor: The University of Michigan, 1966, pp. 11-13.

¹⁴ J. Douglas Grant and Hans Toch, A Typology of Violence According to Purpose, Sacramento: Institute for the Study of Crime and Delinquency, January, 1968.

¹⁵ This phenomenon is amply described in: Julius Fast, Body Language, New York: Pocket Books, 1970, pp. 9-52. Also see: Robert Audrey, The Territorial Imperative, New York: Atheneum, 1966.

¹⁶Hans Toch, Violent Men -- An Inquiry into the Psychology of Violence, Chicago: Aldine, 1969, p. 285.

¹⁷Allen P. Bristow, "Police Officer Shootings: A Tactical Evaluation," The Journal of Criminal Law, Criminology and Police Science, 54 (March-April, 1963), pp. 93-95.

¹⁸Willard H. Hutchins, California State Department of Justice, Bureau of Criminal Statistics, "Criminal Homicides of California Peace Officers, 1960-1970," an address given in Los Angeles on March 5, 1971 before the California Homicide Investigators' Conference.

¹⁹U.S. Congress, Senate, Committee on Government Operations, Riots, Civil and Criminal Disorders Hearings before the Permanent Subcommittee on Investigations, 92nd Congress, July 31 and August 4, 5 and 6, 1970.

²⁰U.S. Congress, Senate, Committee of the Judiciary, Assaults on Police Officers Hearings before the Subcommittee to Investigate the Administration of the Internal Security Laws, on s. 1941, 92nd Congress, October 6 through 9, 1970.

²¹In addition to the five specific work products outlined, the Police Assaults Study was initially charged with researching two additional substantive areas: (1) to analyze those personal defense systems, weapons, and techniques related to the handling of conflict situations and to make recommendations for the improvement of existing training programs; and (2) to provide for an analysis of the legal and regulatory codes that set forth directives which govern police-citizen interactions and to make recommendations concerning their improvement.

These two work products are not contained in this report. Owing to a variety of methodological problems, accompanied by funding constraints, the magnitude of research and technical skills needed for conducting an empirical investigation into these areas, and based upon outside professional evaluation and recommendation, a modification was requested and subsequently authorized by the Law Enforcement Assistance Administration on January 18, 1974.

RESEARCH METHODS

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RESEARCH METHODS

Introduction

This chapter presents a general overview of the research methods, designs and instruments utilized in the study of assaults directed against municipal and state police officers in the south central region of the United States. It also provides a brief description of several data collection procedures and statistical procedures employed in the analysis of project data.

This discussion is intentionally brief since the data collection procedures, data processing and analysis techniques, questionnaire construction and design, master coding formats, and other data set characteristics are comprehensively treated in a companion project volume, the Operations Research Manual.¹ In addition, a synopsis of the major methodological procedures and data analysis techniques are presented in each of the study components included subsequently in this project final report, Perspectives of Police Assaults in the South Central United States.

Research Design and Methods

Over the course of the Police Assaults Study, six principal research designs have been employed. These include: (1) the construction of a theoretical perspective on violence against police officers; (2) the development of a profile of the assault incident for municipal and state police agencies; (3) an identification of the personal characteristics of assaulted and non-assaulted police officers; (4) a sociometric analysis of selected police organizations; (5) a description of alternative methods for the psychological testing of police officers; and (6) an analysis of the relationship between community environmental characteristics and police assaults. The research methods used to analyze the several assault dimensions outlined above are briefly discussed below.

A. A Theoretical Perspective on Violence Against Law Enforcement Personnel

The theoretical perspective on violence against police was the product of an exhaustive search and review of the literature on violence.² To develop a theoretical framework by which assaults against police could be more comprehensively understood, it was necessary to examine the sociological, psychological, religious, political and economic attributes associated with violence in general. The theoretical perspective on violence which emerged from this research was based on and supported by the observation

of some of the most reputable experts and students of violent behavior, such as Plato, Mills, Sorel, Freud, Maslow, Sibley, Baldwin, Fanin, and many others.

B. Profile of the Assault Incident

In the study and analysis of the assault incident four general assault dimensions were identified. These dimensions provide a profile of the assaulted officer, a profile of the police assailant, a description of the assault environment and an analysis of the dynamics surrounding the assault incident.

To obtain data corresponding to these assault dimensions, survey research methods were employed.³ The principal assault reporting instrument was the Physical Contact Summary (PCS) form. Assaulted police officers in participating study cities were requested to complete the PCS form. To insure uniformity in assault reporting the following operational definition of an assault was set out for officers in each participating agency: "Any overt physical act that the officer perceives or has reason to believe was intended to cause him harm."⁴

The PCS is comprised of seven principal sections. The type of questions contained in the PCS form are basically reflective of the stimulus-response paradigm⁵ so widely employed in the behavioral sciences. Most of the questions, however, are of the stimulus-structured (SS) and response-structured (RS) variety, although a wide latitude was permitted for stimulus-free (SF) and response-free (RF) questions in Parts IV and VII of the Physical Contact Summary.

1. Instructions and Expression of Appreciation

Instructions printed on the cover of the Physical Contact Summary form are designed to clarify the questionnaire format for the responding officer and to insure, as much as possible, uniform recording and reporting of assault information. The cover also contains a note of appreciation to the respondent for participating in the Police Assaults Study research project.

2. Agency Identification

The information obtained by this section allows statistical control for: (1) type of law enforcement agency reporting assault information; (2) population of the city in which the assault took place; and (3) the state from which the assault data originates during the period of data collection (January 1 through December 31, 1973).

3. Officer Data

This section contains questions regarding law enforcement background, length of service, height, rank, duty status, duty assignment, race, the presence of other officers at the time of the assault, and other relevant information about the assaulted officer.

4. Suspect Data

This section solicits information not only about the physical and social characteristics of the suspected assailant but also includes questions concerning the suspect's being under the influence of alcohol or drugs at the time of the incident.

5. Assault Data

This section gathers data on the general environmental and behavioral setting of the assault event by means of four descriptive categories:

- a. Time-Space Properties: These questions solicit information concerning the date, day, time and location of the assault event.
- b. Officer and Suspect Activity: These questions deal with the principal actors' activity prior to the assault event.
- c. Triggering Mechanisms: These questions attempt to specify the exact physical acts and spoken words occurring immediately prior to the assault.
- d. Violence Dimension: These questions concern the type of weapons employed and the level of violence manifested during the assault event.

6. Officer and Suspect Injuries

This section elicits information concerning the nature, location and level of injury suffered by the actors engaged in the assault event.

7. Training Background of Officer

This section is designed to allow an assessment of the training background of the assaulted officer. It contains questions related to the type of training received during various time frames (prior six months, prior 12 months, and more than 12 months). The type of training received ranges from "basic recruit" to "police community relations."

The PCS form was constructed after the staff had completed a comprehensive review of the literature in the field of assaultive behavior and had drawn on consultants' knowledge in survey research. This procedure was used for a variety of methodological considerations:

1. To insure that the language used in the schedule would be precise, that it would enhance communication, and that it would be useful for general quantitative measurement purposes.⁶
2. To minimize the problems of measurement specification in terms of time, place, and individualized items.
3. To standardize the measurement devices as much as possible for purposes of comparison, precision, and control of attributes, properties, and circumstances surrounding the assault event.⁷
4. To enhance the accuracy and control function of the questionnaire to insure as much "truth, validity, and confidence" as possible in the information transmitted on the questionnaire.⁸
5. To better understand the symbolic environment of the respondent and his organizational milieu.⁹
6. To guard against making errors of ambiguity, misunderstanding, and intentional or unintentional loading of the stimulus-response items.¹⁰
7. To survey the scientific literature encompassing the fields of assaultive, conflictive, aggressive, and stressful behavior to insure more complete familiarization with the subject matter under study.¹¹

After satisfying the standard tenets of modern survey research methodology related to questionnaire construction, the PCS form was pre-tested during February, March and April, 1973 in 38 urban and rural police agencies throughout Oklahoma, including the Oklahoma Highway Patrol. The pre-test design solicited 1971 assault data. In all, 331 Physical Contact Summaries were completed by the 38 participating agencies and sent to the Police Assaults Study research staff.

These returned questionnaires were then analyzed for incomplete or missing information, loaded questions, double-ended questions, adequacy of the time allowed for questionnaire completion, discernment of multiple response items, level of vocabulary familiarity, and the need for additional questions to solicit a more complete description of the assault event. This pre-test and accompanying preliminary statistical analysis rendered a sizable

benefit in terms of long-range questionnaire applicability and uniformity in:

1. Sharpening the theoretical definitions.
2. Refinement of the various operational definitions and subsequent item construction. This resulted in modifying some of the questions used in the pre-test agencies and the addition of other questions which were either inadvertently omitted or not properly conceptualized.
3. Redevelopment of questionnaire deployment strategies which were more harmonious with the assault reporting procedures of all-purpose governmental police units (municipal, county and state) and law enforcement agencies in other political subdivisions (towns, villages, and hamlets).
4. Development of multiple-response information storage and retrieval systems.¹²
5. Incorporation of specialized computational packages to adequately treat missing data.¹³
6. Expansion of the scope of confidentiality and anonymity consistent with the advice and recommendations of a legal consultant and social research expert.¹⁴

Subsequent to the development, construction and pre-testing of the Physical Contact Summary form, the refined instrument was administered by research team associates to all assaulted officers from 37 municipal police departments in Oklahoma, New Mexico, Arkansas, Louisiana and Texas and from three state agencies in Louisiana, New Mexico and Oklahoma during the data collection period which extended from January 1, 1973 through December 31, 1973.

The selection of police agencies for participation in this area of research was based on their willingness to cooperate in the study. Owing to the exigencies of police work, the law enforcement community is often hesitant to participate in research which closely examines the activities and operations of their respective departments. Therefore, it was necessary to obtain data on an availability basis. While this method of selection has some drawbacks, it is nevertheless recognized as a legitimate methodological approach. For example, in their discussion of sampling methods, Mueller et. al. note that:

Although fully aware of the limitations of nonrandom sampling, sooner or later the experienced social scientist will realize that some form of it is the only alternative to abandoning the inquiry...Therefore, it would

be pendants to deny the uses of available opportunities, even though they do not yield ideal data.¹⁵

The principal techniques utilized in the analysis of data obtained from the PCS forms were descriptive, including percentages, means, standard deviations, and frequency distribution.¹⁶ In addition, the municipal, county and state agencies were kept conceptually distinct for purposes of assault analysis.

C. Profile of the Personal Characteristics of Assaulted and Non-Assaulted Officers

This research was designed to provide for a comparison of the personal characteristics which differentiate assaulted officers from non-assaulted officers. To facilitate this comparison, data were collected on each police officer within participating municipal and state agencies for six categories. These categories consist of demographic data, educational data, professional data, employment history, physical data and assault data.

The principal research instruments used to acquire personal information were the Personal Data Inventory (PDI) and the Police Agency Personnel Profile (PAPP). These questionnaires were distributed to 13 south central municipal police agencies and one state police agency. The PDI forms were completed for all officers by a project field representative upon a search of the individual officer's personnel files. The Police Agency Personnel Profiles were completed by the individual officers under the direct supervision of the agency representative.

The municipal departments were selected relative to their rank order on the Index of Proneness to be Assaulted (IPA).¹⁷ The IPA was developed by determining the ratio of total assaults to each 10,000 inhabitants for 46 south central cities, and then rank ordering the cities from low assault to high assault ratios. The agencies participating in this phase of the research ranked at either the low, middle or high end of the ranking spectrum. The ranking of the 46 cities is listed in Table 1.

Although the rank position of the municipalities on the IPA was a major criterion utilized for agency selection, these choices were largely conditioned by the willingness of the agency to cooperate in subsequent research with the project staff. The state agency was selected in order to discern if there are any major differences between the assaulted and non-assaulted officers by type of agency. However, the two agency types (municipal and state) remained conceptually distinct throughout the analysis.

In the analysis of the personal characteristics of police officers,

TABLE 1

INDEX OF PRONENESS TO BE ASSAULTED FOR 46 SOUTH CENTRAL CITIES
BY RATIO OF TOTAL ASSAULTS TO 10,000 POPULATION

<u>Rank</u>	<u>City</u>	<u>Assaults per 10,000 Population</u>	<u>Rank</u>	<u>City</u>	<u>Assaults per 10,000 Population</u>
1	Fort Worth	.3	24	Garland	2.2
2	*North Little Rock	.3	25	Irving	2.3
3	*Lake Charles	.5	26	Lubbock	2.5
4	*Abilene	.6	27	*Lawton	2.6
5	Midland	.7	28	**Oklahoma City	2.7
6	*Norman	.8	29	San Antonio	3.0
7	Odessa	.9	30	Mesquite	3.1
8	Corpus Christi	.9	31	Beaumont	3.1
9	Wichita Falls	1.0	32	Midwest City	3.3
10	Longview	1.1	33	Fort Smith	3.5
11	*Monroe	1.1	34	Pasadena	3.5
12	Victoria	1.2	35	**Tulsa	3.6
13	Tyler	1.2	36	Shreveport	3.6
14	Arlington	1.2	37	Grand Prairie	3.9
15	Port Arthur	1.2	38	Little Rock	4.1
16	Brownsville	1.3	39	San Angelo	4.2
17	Laredo	1.4	40	*Bossier City	4.6
18	Waco	1.5	41	*Amarillo	4.7
19	El Paso	1.6	42	*Galveston	4.9
20	Baytown	1.8	43	New Orleans	5.7
21	Dallas	1.9	44	Houston	5.8
22	*Pine Bluff	2.1	45	Baton Rouge	6.7
23	*Austin	2.2	46	Albuquerque	12.5

*Police jurisdictions which submitted the Personal Data Inventory.

**Police jurisdictions which submitted the Police Agency Personnel Profile.

descriptive statistics were commonly employed. In addition, Pearson's product moment correlations were utilized to assess the relationships which exist between the independent variables and the frequency of officer assaults.¹⁸

D. A Sociometric Analysis of Selected Police Organizations

This study was designed to assess the individual officer's perception of the formal and informal characteristics of the organization of which he is a member. The analysis focused on the aggregate perceptions of the police officers surveyed. The Hemphill's Index of Group Dimensions questionnaire¹⁹ was distributed to all commissioned officers of three selected agencies to determine the organizational perceptions of assaulted and non-assaulted officers.

The agencies surveyed were selected on the basis of several important considerations. First, Lake Charles, Abilene and Galveston were chosen as research sites due to their rankings on the IPA (two agencies indexed low and one agency indexed high). Second, these agencies expressed a desire to cooperate in this aspect of the research since they had participated in the other research components of the study. The Hemphill Index is a standardized self-administered questionnaire which was distributed to all police officers in the three surveyed jurisdictions by an agency representative of the Police Assaults Study.

The data generated from this questionnaire were evaluated through the medium of descriptive statistics, utilizing comparison of means and frequency distributions.

E. Description of the Sociological and Psychological Characteristics of Assaulted Police Officers and Police Offenders

The socio-psychological research conducted during Phase I was oriented toward gathering data on the personality characteristics of law enforcement officers in several south central police jurisdictions.

A psychological test battery was administered to 147 officers. The test battery consisted of the California F-scale, the Taylor Manifest Anxiety Scale, the California Personality Inventory, the 16 PF, and the D-scale. No attempt is made in this section to describe the various tests which were administered, or what they were designed to measure since the component entitled, "Alternative Methods for the Psychological Testing of Police Officers," provides a comprehensive treatment of these tests. In addition, this essay presents a comprehensive review of the psychological

and sociological literature addressed to police personality testing, and a discussion of the various methodological designs and strategies employed for agency and respondent selection. Also included in this essay is a discussion of the methods utilized for test administration and scoring, test item reduction, as well as a statistical treatment and analysis of the collected data.

In addition to assessing the social and psychological characteristics of assaulted and non-assaulted police officers, a police offender study was conducted in Albuquerque, New Mexico. The primary objective of this research was to make a scientific inquiry into the interpersonal dynamics and circumstances surrounding the assault event. Therefore, during the five month period from August through December, 1973, this phase of the study focused principally on the sociological and psychological attributes of persons in Albuquerque charged with an assault against a municipal police officer, and the general circumstances related to the assault occurrence. The primary instruments utilized in acquiring offender data were an in-depth interview with the alleged offender, a police assailant questionnaire, and a presentence report. Comparison of means and univariate distributions were utilized in the analysis.

F. An Analysis of the Relationships Between Community Environmental Characteristics and Police Assaults

The final component of this report includes two studies which were designed to analyze the relationships between the environmental characteristics of communities and assault frequency. One of the studies which is macro in nature examines the social, economic and demographic characteristics as well as the level of police activity and selected police organizational characteristics among 46 south central U.S. cities in relationship to their corresponding assault levels.²⁰ The other study, micro in nature, utilizes a similar set of variables to examine assaults within one municipality.

The 46 cities studied represent nearly 90 percent of all the municipalities with a population of 40,000 or above in the states of Arkansas, Louisiana, New Mexico, Oklahoma and Texas. Although there were 52 cities which met the population requirement for inclusion in this study, six agencies did not keep assault related statistics and therefore were eliminated from consideration.

The city of Austin, Texas was singled out for in-depth analysis since its police reporting districts coincide with the census enumeration tracts. In addition, Austin ranked at the medium point on the Index of Proneness to be Assaulted. Both the micro and macro studies discussed above utilized multivariate analysis techniques on their respective aggregate data sets.²¹ Specifically, multiple-linear (step-wise) regression procedures were

employed in an attempt to explain variation in assaults on police officers. The micro study in Austin also utilized causal modeling techniques to investigate the possibilities of inferring sequential and directional relationships among the selected variables.

Confidentiality and Anonymity of Data

The questions of anonymity, confidentiality, and accessibility to project data were of primary concern to police agency representatives as well as officer participants during Phase I. Some of the following precautions have been utilized to address these extremely important questions. First, participants were identified by separate identification numbers in both the agency from which the data originated and in the project data files. The project staff and police administrations (excluding the designated agency representative) were not privileged to the identity of police respondents. Second, on the receipt of all assault information reported from participating agencies, the data was placed on computer tapes for security in storage and for easy project retrieval. Third, once the data was placed on magnetic tapes it could be "scrambled" to assure greater confidentiality and provide a greater assurance against the data being utilized by non-authorized persons. In addition, the scrambled data set is still readily accessible to project programmers, but it is essentially impossible to reconstruct the original data set without access to the program utilized for scrambling. Fourth, the data was stored at project headquarters and also in a tape library. This measure was taken to provide an additional precautionary device against unforeseen events, such as damage by fire.

The project data security consultants are satisfied that the project took every measure to maintain the confidentiality, anonymity and security of the data. Judge J. David Rambo, a principle data security consultant to the project, concluded that "...recent federal enactments...coupled with the excellent staff design and direction, provides a complete shield for confidentiality of data collected and prevents (the) staff from being able to disclose any information." The letter from which the above quotation was taken and an opinion from the U.S. Justice Department General Counsel are provided in Appendix 18 of the Operations Research Manual.²³

FOOTNOTES

¹ Samuel G. Chapman, C. Kenneth Meyer, Charles D. Hale, Cheryl G. Swanson and Patton N. Morrison, Operations Research Manual, The University of Oklahoma, Norman, Oklahoma, June 28, 1974, 256 pp.

² For an interesting discussion of literature review as a research technique, see Fred N. Kerlinger, Foundations of Behavioral Research, New York: Holt, Rinehart and Winston, 1964, pp. 539-544.

³ For a discussion of the use and techniques of survey research methods, see C.A. Moser, Survey Methods in Social Investigation, London: Heineman, 1961; Charles H. Backstrom and Gerald D. Hursh, Survey Research, Evanston: Northwestern University Press, 1963; and Herbert Hyman, Survey Design and Analysis, New York: Free Press, 1955.

⁴ Samuel G. Chapman, Project Plan and Supporting Data to Investigate Assaults on Policemen, Norman, Oklahoma: University of Oklahoma, January, 1973.

⁵ Oliver E. Benson, Political Science Laboratory, Columbus, Ohio: Charles E. Merrill, 1969, pp.14-31; Delbert C. Miller, Handbook of Research Design and Social Measurement, New York: David McKay, 1970, pp. 76-83. These sources were particularly helpful in designing questions for field use.

⁶ See Gideon Sjoberg and Roger Nett, A Methodology for Social Research, New York: Harper and Row, 1968, pp. 199-202; also, Stanley L. Payne, The Art of Asking Questions, Princeton: Princeton University Press, 1951.

⁷ Kerlinger, op. cit., p. 310.

⁸ For a more detailed treatment of these first four variables, refer to C.W. Churchman, "Why Measure?" in Betty J. Franklin and Harold J. Osborne, Research Methods: Issues and Insights, Belmont, California: Wadsworth, 1971, pp. 129-139. Also see Paul F. Lazarsfeld and Morris Rosenberg, The Language of Social Research, New York: The Free Press, 1955, Sections I and VI. In addition, see Thelma F. Batten, Reasoning and Research, Boston: Little, Brown, 1971, a publication which presents some interesting conclusions on research planning and design in pp. 81-135.

⁹ Sjoberg and Nett, op. cit., p. 198.

¹⁰ Benson, op. cit., pp. 204-205, provides an excellent treatment of the common mistakes which emerge in questionnaire formulation. Also see Julian L. Simon, Basic Research Methods in Social Sciences, New York: Random House, 1969, pp. 100-108 for a sample of the problems which face the social scientist who has chosen to work with questionnaires.

¹¹ A good case for understanding as much of the real social world as possible, as well as knowing the theoretical and philosophical limitations of empirical methodology before commencing operational research activities, is made by Herbert Blumer, "Methodological Principles of Empirical Science," Sociological Methods, ed. by Norman K. Denzin, Chicago: Aldine, 1970, pp. 20-39.

¹² Inter-University Consortium for Political Research, The Institute for Social Research, The University of Michigan, Ann Arbor, OSIRIS II, Software Package, January, 1971.

¹³ Ibid.

¹⁴ Robert F. Boruch, "Problems in Research Utilization: Use of Social Experiments, Experimental Results and Auxiliary Data In Experiments," Annals of the New York Academy of Sciences, 218 (June 22, 1973), pp. 56-77; for a brief examination of different models which might be used to assure anonymity of response and minimize accidental or deliberate disclosure of identifiable records, see Robert F. Boruch, "Assuring Confidentiality of Responses in Social Research: A Note on Strategies," American Sociologist, 6 (November, 1971), pp. 308-311. See also, Paul Nejeski and Lindsey Miller Leiman, "A Researcher-Subject Testimonial Privilege: What to Do Before the Subpoena Arrives," Wisconsin Law Review, 4 (1973), pp. 1085-1148.

¹⁵ John H. Mueller, Karl F. Schuessler, and Herbert L. Costner, Statistical Reasoning in Sociology, Boston: Houghton Mifflin, 1970, pp. 350-351.

¹⁶ Chapman, Meyer, Hale, Swanson, and Morrison, Operations Research Manual, op. cit., Section IV, "Information Storage, Data Processing, and Data Analysis Techniques," for a discussion of the descriptive and multivariate statistics utilized throughout the Final Report.

¹⁷ Ibid., see Section V, "Assault Indices," for a discussion of the characteristics which comprise the assault indices.

¹⁸ For discussion of descriptive and inductive statistics, refer to Hubert M. Blalock, Social Statistics, New York: McGraw-Hill, 1960, pp. 33-74, 144-147. Also see Sidney Siegel, Non-parametric Statistics for the Behavioral Sciences, New York: McGraw-Hill, 1956; Richard Runyan and Audrey Haber, Fundamentals

of Behavioral Statistics, Reading, Massachusetts: Addison-Wesley, 1967; N.M. Downie and R.W. Heath, Basic Statistical Methods, New York: Harper and Row, 1970; R.J. Senter, Analysis of Data, Alenview, Illinois: Scott, Foresman, 1969; John Neter and William Wasserman, Fundamental Statistics for Business and Economics, Boston: Allyn and Bacon, 1966; Dennis J. Palumbo, Statistics in Political and Behavioral Science, New York: Appleton-Century Crofts, 1969; Henry L. Alder and Edward B. Rossier, Introduction to Probability and Statistics, San Francisco: W.H. Freeman, 1972; Freeman F. Elzey, A Programmed Introduction to Statistics, Belmont, California: Brooks-Cole, 1971; and Kenneth R. Hammond, James E. Householder, and N. John Castellan, Jr., Introduction to the Statistical Method, New York: Alfred A. Knopf, 1970.

¹⁹ Miller, op. cit., pp. 200-212.

²⁰ Demographic statistics for the regional cities were extracted from the U.S. Department of Commerce, Bureau of the Census, Census of Population: 1970, General Population Characteristics, Final Report pc (1)-B38, Oklahoma, Washington, D.C.: U.S. Government Printing Office, 1971. U.S. Department of Commerce, Bureau of the Census, Census of Population: 1970, General Population Characteristics, Final Report pc (1)-B45, Texas, Washington, D.C.: U.S. Government Printing Office, 1971; U.S. Department of Commerce, Bureau of the Census, Census of Population: 1970, General Population Characteristics, Final Report pc (1)-B4, Arkansas, Washington, D.C.: U.S. Government Printing Office, 1971; U.S. Department of Commerce, Bureau of the Census, Census of Population: 1970, General Population Characteristics, Final Report pc (1)-B33, New Mexico, Washington, D.C.: U.S. Government Printing Office, 1971; U.S. Department of Commerce, Bureau of the Census, Census of Population: 1970, General Population Characteristics, Final Report pc (1)-B20, Louisiana, Washington, D.C.: U.S. Government Printing Office, 1971.

Additional demographic data was extracted from the U.S. Department of Commerce, Bureau of the Census, Census of Population: 1970, Social and Economic Characteristics, for the states of Louisiana, Oklahoma, Texas, New Mexico and Arkansas. For some variables, data was obtained from the U.S. Department of Commerce, Bureau of the Census, County and City Data Book, 1972, Washington, D.C.: U.S. Government Printing Office, 1973.

²¹ For an elucidation of some of the multivariate techniques see David A. Aaker, Multivariate Analysis in Marketing: Theory and Application, Belmont, California: Wadsworth, 1971, pp. 1-56; Allen L. Edwards, Experimental Design in Psychological Research, New York: Holt, Rinehart and Winston, 1968, pp. 350-359; Woodrow W. Wyatt and Charles M. Bridges, Jr., Statistics for the Behavioral Sciences, Boston: D.C. Heath, 1967, pp. 172-192; and Hubert M.

Blalock, Social Statistics, New York: McGraw-Hill, 1960, pp. 273-358. Also see Robert B. Miller, Statistical Concepts and Application -- a Nonmathematical Explanation, Chicago: Science Research Associates, 1968, pp. 79-100 for an introduction to the notion of covariation, correlation and regression concepts.

²²Hubert M. Blalock, Causal Inferences in Nonexperimental Research, Chapel Hill: University of North Carolina Press, 1964. For an application of causal modeling see David R. Morgan and Cheryl Swanson, "Correlates of Selected Police Policies in Large U.S. Cities," paper presented at the Annual Meeting of the Midwest Political Science Association, Chicago, Illinois, April 25-27, 1974. Also see Thomas R. Dye and Newman Pollack, "Path Analysis Models in Policy Research," Policy Studies Journal, 2 (Winter, 1973), pp. 123-130; David R. Heise, "Problems in Path Analysis," in Edgar Borgatta, ed., Sociological Methodology, San Francisco: Jossey Boss, 1969, pp. 38-73.

²³Chapman, et. al., Operations Research Manual, op. cit., Appendix 18, "Confidentiality and Security of Data."