POLICE ENFORCEMENT PROCEDURES FOR UNSAFE DRIVING ACTIONS. VOLUME III: FIELD STUDIES

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December 1980

Prepared for
U.S. Department of Transportation
National Highway Traffic Safety Administration
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This volume is one of a three-volume final report. The other volumes are: *Volume I: Summary*, and *Volume II: A Review of the Literature*.

16. Abstract

This volume reports the results of contacts with police enforcement agencies to determine their procedures for enforcing certain unsafe driving actions (UDA). The volume is divided into two parts. In Part One, the results of a series of telephone contacts with thirty-one state, county, and municipal police agencies are described. Part Two presents detailed case studies for UDA enforcement procedures in Washtenaw County, Michigan; Cincinnati, Ohio; Tucson, Arizona; and California (Highway Patrol). The major focus of the procedural studies is the speeding UDA. Procedures for enforcing following too closely and driving left of center were also sought, but it was found that few agencies have specific procedures for enforcing those two UDAs.

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Principal Investigator

PREFACE

This volume is one of a three-volume final report prepared under a National Highway Traffic Safety Administration (NHTSA) contract (DOT-HS-8-01827) to identify and assess procedures used by the police to enforce certain unsafe driving actions (UDAs). The project was conducted by the Policy Analysis Division of The University of Michigan Highway Safety Research Institute.

This project was closely coordinated with another NHTSA-sponsored project of broader scope, entitled "Identification of General Deterrence Countermeasures for Unsafe Driving Actions" (DOT-HS-7-01797). An initial task supported by both contracts was to identify and rigorously define the specific UDAs that would be addressed by the two projects. NHTSA decided that three UDAs should be considered:

- speeding,
- following too closely, and
- driving left of center.

Because rigorous definitions of these three UDAs did not exist in the literature, a separate substudy was conducted under the general deterrence project to develop such definitions that would be operationally useful. The detailed results of the definitional study are described in a separate volume to be published as a part of the general deterrence final report. A synopsis of the definitions is provided in Volume I of the final report for the police enforcement project.

Thus, the police enforcement project was concerned with the speeding, following-too-closely, and driving-left-of-center UDAs. Specific areas of activity included conducting a literature search to identify and describe relevant police procedures, documenting (through a series of telephone contacts with police agencies) current police procedures, and conducting field studies to describe and assess selected procedures in more detail.

The results of the first areas of activity are presented in Volume II of this final report, entitled "A Review of the Literature."

The present volume contains the results of the last two areas of activity. It is presented in two parts. Part One summarizes the documentation, through telephone contacts, of current police enforcement procedures. Part Two contains detailed case studies of procedures in four enforcement agencies representing a wide range of jurisdictional, organizational, and procedural attributes. Information for developing the case studies was collected by project staff in visits to the case-study sites: Washtenaw County, Michigan; Cincinnati, Ohio; Tucson, Arizona; and California (the California Highway Patrol).

The telephone contacts sought information on all three of the subject UDAs, but found that few agencies had formal procedures for enforcing following too closely or driving left of center. The definitional study also indicated that the speed UDA represented a much larger crash risk than the other two. It was therefore decided (with NHTSA's concurrence) that the case studies be limited to the speed UDA. Thus, the reader should bear in mind that Part One of the field studies sought information on all three UDAs, but Part Two was concerned only with the speeding UDA.

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PART I

CURRENT POLICE PRACTICES FOR ENFORCING SPEEDING, FOLLOWING TOO CLOSELY, AND DRIVING LEFT OF CENTER IN SELECTED JURISDICTIONS

CHAPTER ONE
INTRODUCTION

This part of Volume III summarizes the results of a substudy to document, through telephone contacts, current police enforcement procedures for speeding, following too closely (FTC), and driving left of center (DLOC). The specific objectives of these telephone contacts were:

- to determine the extent to which enforcement practices that were identified in the literature are currently being used by police agencies;
- to identify any additional practices, used by agencies, that have not been described in the literature; and
- to determine the general nature of the case studies of selected agencies.

SCOPE, APPROACH, AND LIMITATIONS

This substudy provides information about the use of various patrol configurations, measuring devices, and deployment procedures as well as the general policies that are reflected in agencies' selection of procedures. It also considers the outcomes (i.e., stops, citations, and convictions) of police enforcement procedures as well as the external influences that help determine agencies' choice or use of procedures. General areas of inquiry that were addressed by the telephone contacts reported here include:

- What were the general characteristics of the selected agencies and the jurisdictions they patrolled?
- What efforts were undertaken to make drivers aware of police presence?
- How did agencies deploy their vehicles and officers?
- What kinds of patrol vehicles were used?

- Were specific or on-view procedures used to reduce the incidence of speeding, FTC, and DLOC?
- What surveillance and measurement methods were used?
- What stopping, citation, and warning practices did agencies follow?
- What environmental, budgetary, political, or other factors affected agencies' use of enforcement procedures?

The substudy reported here has several limitations that should be noted. First, the telephone contacts were exploratory in nature and were intended to provide a broad overview of the range of current procedures as a basis for more detailed study later in the project. Because of the informal way that the information was gathered, the results should not be interpreted as a final, definitive statement of procedures. Second, while an understanding of the range of procedures was sought, no attempt was made to obtain a statistically representative sample. Thus, a finding reported here that a given percentage of agencies contacted engaged in a particular procedure should not be interpreted to mean that the same percentage of agencies nationwide use that procedure. Also, because of the wide range of topics covered in the telephone conversations, only a limited amount of information could be obtained about each topic. Thus, only a top-level description of the procedures was sought.

A third limitation is that only one individual was contacted at each agency. While attempts were made to identify contacts who were knowledgeable about their agencies' procedures, the lack of corroborating accounts or first-hand observations by project staff make it impossible to determine the validity of the data. Also, some of the data sought were quantitative and not readily available from agency records (e.g., percent of observed violators who were stopped). The data obtained in these instances were the subjective estimates of the contacts and are thus of unknown validity.

ORGANIZATION OF PART ONE

The remainder of Part One is organized into three chapters. Chapter Two sets out the study approach that was followed; in particular, it describes how the police agencies were selected for contacts and what kind of information was sought. Chapter Three reports the findings of those contacts, including descriptions of the jurisdictions served by the agencies, descriptions of the enforcement procedures, the procedures they used, outcomes of those procedures, and factors aiding or inhibiting their use. Chapter Four discusses the findings of this study and sets out the principal conclusions suggested by those findings.

CHAPTER TWO
METHOD

This chapter describes the method used to acquire descriptions of traffic enforcement practices from selected police enforcement agencies. The following topics are discussed:

- selection of patrol agencies to be contacted,
- information sought from the selected agencies,
- procedures for contacting agency personnel, and
- limitations of the method.

SELECTION OF PATROL AGENCIES

Thirteen state and eighteen local (county or municipal) patrol agencies were contacted and asked to describe their enforcement procedures. Since the purpose of this phase of the police enforcement study was to document and describe a wide range of traffic-enforcement procedures, efforts were made to select state, county, and local agencies that use a variety of traffic enforcement techniques.

To obtain this information, directors of the National Highway Traffic Safety Administration (NHTSA) regional offices were asked to identify state patrol agencies that used a wide variety of enforcement activities. Information obtained from the NHTSA telephone contacts was supplemented by a study reported by Darwick (see Volume II of this report for a discussion of this study). Darwick identified ten states using either a wide range of procedures or one or more innovative procedures to enforce the 55 mph national maximum speed limit (NMSL).

In all, thirteen state-level agencies were selected. Agencies from six states originally described by Darwick were identified; these were Arizona, California, Colorado, Maryland, Massachusetts, and New York. In addition, the following seven states were named by the NHTSA regional administrators: Michigan, Minnesota, Montana, Nebraska, New Jersey,

North Carolina, and Washington.

To select the local enforcement agencies for study, the NHTSA regional directors were asked to name states in which county and local agencies carried out large-scale programs for enforcing traffic laws. The Governor's Highway Safety Representative in each of those states was then contacted and asked to identify specific city and county agencies within their states. The Governor's Representatives identified 114 such enforcement agencies. From these, 57 were selected for further consideration. The 57 agencies were selected to represent a range of size, geographical location, type of organization, and general type of enforcement procedure.

The fifty-seven local agencies were then contacted by telephone and asked to describe their traffic enforcement procedures. From these, the eighteen local agencies representing the greatest variety of procedures were selected for a second, more detailed telephone contact. Seven county agencies were selected: Burleigh County, North Dakota; Erie County, New York; Henrico County, Virginia; Jefferson County, Kentucky; Knox County, Tennessee; Lane County, Oregon; and Pulaski County, Arkansas. The eleven municipal agencies selected were: Albuquerque, New Mexico; Baltimore, Maryland; Cincinnati, Ohio; Dallas, Texas; Denver, Colorado; Eugene, Oregon; Lincoln, Nebraska; Penn Hills, Pennsylvania; Seattle, Washington; Washington, D.C.; and Worcester, Massachusetts.

This selection of agencies was judgmental. No attempt was made to obtain a set of agencies that was statistically representative of police agencies nationwide. Rather, the primary basis for selection was the variety and innovativeness of enforcement procedures that an agency used. In addition, all of the agencies selected were reported to maintain a relatively high level of enforcement activity.

INFORMATION ITEMS

Two kinds of information were sought. First, representatives were asked to describe the procedures used by their agency to reduce the incidence of speeding, FTC, and DLOC violations. Areas of interest included the type of vehicles and measuring equipment used, methods of

deploying officers and equipment, and the degree to which agencies attempted to conceal their equipment. Factors that influenced the use of these enforcement procedures were also discussed. These included: physical and environmental influences; officers' and drivers' attitudes; political, budget, and legal constraints; possible impact of the current fuel shortage; and relationships between the enforcement agency and other elements (such as courts and prosecutors' offices) of the traffic law system.

The second type of information sought focused on general characteristics of the agency. This included information such as the agencies' structure, size, and budget.

HSRI staff who contacted patrol agencies were provided a guide outlining the principal discussion topics for their conversations with agency representatives. The outline for discussion is contained in Appendix A.

PROCEDURES FOR CONTACTING AGENCY PERSONNEL

Representatives from each of the thirty-one selected law enforcement agencies were contacted by telephone during May and June 1979. These individuals were, as stated above, identified either by the Governor's Highway Safety Representative for that state or through referrals within the selected agency.

HSRI staff introduced themselves, named the Governor's Representative (or NHTSA regional administrator) who recommended the contact, stated the purpose of the project, and described the kind of information sought.

Some of this information was not readily available to some agency representatives, for example, the current population of their jurisdiction, the current number of licensed drivers, the number of accidents that occurred in 1978, and the number of citations that the agency issued in 1978. The agency representatives were asked to provide this information by mail. One follow-up letter was sent to each agency regarding such items; no other follow-up procedures were used to obtain further information.

SUMMARY

The purpose of the telephone contacts with the police agency representatives was to obtain information about the procedures used by police agencies to reduce the incidence of speeding, FTC, and DLOC violations. Thirty-one state, county, and local jurisdictions were selected for discussion of enforcement procedures. Jurisdictions were selected to represent the range of current procedures as identified by the NHTSA regional administrators and Governor's Highway Safety Representatives. Representatives from each of the selected agencies were contacted by telephone to discuss their enforcement activity. These conversations dealt with two broad areas: the nature and use of specific enforcement procedures and factors affecting the use of those procedures; and the agencies' structure and organization. Some information could not readily be obtained by telephone; this was requested by mail.

CHAPTER THREE
RESULTS

INTRODUCTION

This chapter summarizes police agencies' responses in the telephone discussions dealing with their traffic enforcement procedures. We define an "enforcement procedure" as a sequence of tasks, performed by police personnel, to deter drivers from committing UDAs. Following the approach used in our literature review (Volume II of this report), we concentrate on the component subprocedures. These components are organized into two major categories that represent the two basic principles that underlie the operation of the traffic law system:

- special deterrence: the use of punishment to deter the punished parties from committing further UDAs, and
- general deterrence: the use of the fear of punishment to deter drivers from committing UDAs even if they are not caught and punished.

Special deterrence procedures require that drivers actually be caught committing a UDA. This requires surveillance, detection, stopping, and sanctioning or presanctioning activity by the police. Special-deterrence procedures tend to be **covert**, since their objective is to catch the law violators. General-deterrence procedures do not necessarily require these activities but often involve them in the course of creating a credible deterrent threat. General-deterrence procedures are often (but not always) **overt** to create the impression of police presence and a certainty of punishment for a law violation.

The remainder of this chapter describes the results of our telephone contacts with respect to these two categories of procedures and their component subprocedures. The descriptions are preceded by a discussion of the general characteristics of the jurisdiction contacted.

GENERAL CHARACTERISTICS OF THE AGENCIES AND THEIR PROCEDURES

The thirty-one police agencies contacted included eighteen state, seven county, and eleven municipal police agencies. These agencies were located in all geographical areas of the nation and patrolled all types of roads: urban, rural, limited-access, residential, and commercial. The populations of the thirty-one jurisdictions ranged from 40,714 for Burleigh County, North Dakota, to 19,969,175 for the state of California. A complete list of agencies contacted, together with the population of the jurisdiction served by each, appears in Table 3-1.

There was variation among the types of agencies with respect to the proportion of effort devoted to traffic enforcement. State-level agencies placed greater emphasis on traffic patrols. This result would be expected considering that nearly half of them were primarily responsible for traffic enforcement. This was not true in the case of the county sheriff's and municipal police departments, which have both criminal and traffic enforcement responsibilities. However, these local departments differed from one another with respect to the specialization of their traffic enforcement responsibilities. Most local agencies assigned some traffic enforcement responsibilities to specialized patrol units; a few assigned all traffic officers to such units. The size of efforts, in terms of sworn officers of the contacted agencies ranged from 16 to approximately 5,000. Departmental budgets, like the size of the departments, showed wide variation: The smallest reported budget among the agencies was $600,000, while the largest was $230 million. In terms of dollars per sworn officer, agency budgets ranged from $8,667 to $63,636. In general, state agencies reported higher per capita budgets than did local agencies. Agency manpower and budget data are set out in Table 3-2.

Patrol agencies reported they used a number of different methods—and often used two or more in combination--to select areas for assigning officers. The most frequently mentioned methods were computer models and "pin maps." Officers' judgment and citizens' complaints were also reported by agencies as means of selecting locations for enforcement.

TABLE 3-1

POLICE AGENCIES CONTACTED

AGENCY	POPULATION SERVED BY AGENCY[a]
State Agencies	
Arizona Department of Safety	1,775,399
California Highway Patrol	19,969,175
Colorado Highway Patrol	2,209,596
Maryland State Police	3,923,897
Massachusetts Department of Public Safety	5,689,170
Michigan State Police	8,881,826
Minnesota State Patrol	3,806,103
Montana Highway Patrol	694,409
Nebraska State Police	1,485,333
New Jersey State Police	7,171,112
New York State Police	18,241,584
North Carolina State Police	5,084,411
Washington State Patrol	3,413,244
County Agencies	
Burleigh County (North Dakota) Sheriff's Department	40,714
Erie County (New York Sheriff's) Department	1,113,491
Henrico County (Virginia) Division of Police	154,364
Jefferson County (Kentucky) Police Department	695,055
Knox County (Tennessee) Sheriff's Department	276,293
Lane County (Oregon) Sheriff's Department	215,401
Pulaski County (Arkansas) Sheriff's Department	287,189
City Agencies	
Albuquerque, New Mexico Police Department	243,751
Baltimore, Maryland Police Department	905,759
Cincinnati, Ohio Police Department	425,524
Dallas, Texas Police Department	844,401
Denver, Colorado Police Department	514,698
Eugene, Oregon Police Department	76,346
Lincoln, Nebraska Police Department	149,518
Penn Hills, Pennsylvania Police Department	62,886[b]
Seattle, Washington Police Department	530,831
Washington, D.C. Police Department	756,668
Worcester, Massachusetts Police Department	176,572

a. Source: U.S. Department of Commerce. 1973. 1970 Census of Population. Volume I: Characteristics of the population. Part 1: United States summary. Section 1. pp.122-70. Washington, D.C.: U.S. Government Printing Office.

b. 1970 Census figures not available for Penn Hills; reported figure is an estimate only. Source: Rand McNally & Company. 1974. 1974 commercial atlas and marketing guide. 105th ed. Chicago: Rand McNally & Company.

TABLE 3-2

REPORTED MANPOWER AND BUDGET DATA FOR POLICE AGENCIES CONTACTED

AGENCY	TOTAL BUDGET	NUMBER OF SWORN OFFICERS	BUDGET PER SWORN OFFICER
State Agencies			
Arizona[a]	$ 41,000,000	818	$ 50,122
California[a]	230,000,000	5,000	46,000
Colorado[a]	17,000,000	547	31,079
Maryland	30,000,000	1,600	18,750
Massachusetts	22,000,000	1,115	19,731
Michigan	100,000,000	2,130	46,948
Minnesota[a]	20,000,000	504	39,683
Montana[b]	14,000,000	220	63,636
Nebraska	13,000,000	400	32,500
New Jersey	46,000,000	1,830	25,137
New York	90,000,000	3,265	27,565
North Carolina[a]	35,000,000	1,135	30,837
Washington	N/A[c]	750	N/A[c]
County Agencies			
Burleigh County	600,000	16	37,500
Erie County	7,000,000	600	11,667
Henrico County	8,000,000	425	18,824
Jefferson County	14,900,000	471	31,635
Knox County	2,600,000	300	8,667
Lane County	N/A[c]	300	N/A[c]
Pulaski County	3,000,000	200	15,000
Municipal Agencies			
Albuquerque	N/A[c]	270	N/A[c]
Baltimore	N/A[c]	4,950	N/A[c]
Cincinnati	N/A[c]	950	N/A[c]
Dallas	60,000,000	2,000	30,000
Denver	N/A[c]	1,400	N/A[c]
Eugene	2,500,000	275	9,071
Lincoln	5,600,000	221	23,339
Penn Hills	2,000,000	63	31,746
Seattle	34,000,000	970	35,052
Washington, D.C.	N/A[c]	4,100	N/A[c]
Worchester, Mass.	N/A[c]	N/A[c]	N/A[c]

a. This agency is responsible for traffic enforcement only, but officers may make arrests for crimes committed in their presence.

b. This agency is solely responsible for traffic enforcement.

c. This information was not readily available to the agency representative contacted.

However, they were used to a much lesser extent.

Many agencies reported using multiple procedures against the speed UDA. All agencies reported that they used a secondary as well as a primary speed-enforcement procedure; however, agencies' secondary procedures accounted for considerably less patrol time than did their primary procedures. Similarly, some agencies reported using a third and even a fourth procedure against speeding; but these procedures accounted for very small portions of agencies' patrol time. All of the procedures reported for the speed UDA were for speed-too-fast; no agency had specific procedures for speed-too-slow.

PROCEDURAL COMPONENTS ASSOCIATED WITH GENERAL DETERRENCE

The components of general-deterrence procedures tend to fall into four major categories:

- intensity of enforcement,
- visibility of enforcement symbols,
- patterns and configurations of patrol, and
- type of patrol vehicle.

The procedural components of each of these categories as identified in the telephone conversations are discussed in this subsection.

Intensity of Enforcement

The intensity of enforcement is defined as the number of patrol units passed by a driver per mile of travel. Information regarding the actual intensity of enforcement in the jurisdictions selected could not be obtained, since complete data regarding the number of miles of roadway patrolled by the agencies were not available. However, some information was obtained regarding the agencies' efforts to increase the **perceived** intensity of enforcement. One technique for increasing drivers' perceptions of the intensity of enforcement is the use of public information and education campaigns. Generally, the agencies contacted did report making use of media coverage. Speed-enforcement activity received considerably more media coverage than activities directed against

FTC or DLOC offenders. Only a small minority of agencies reported that their FTC enforcement received an appreciable amount of publicity, and none of the agencies reported appreciable publicity for their DLOC enforcement.

Among the speed-enforcement procedures, the amount of media coverage tended to vary with the frequency with which agencies used the procedure. In the agencies' subjective judgment, a majority of the primary speed-enforcement procedures received "appreciable" media coverage; this compares with less than half of the secondary and tertiary procedures, and an even smaller proportion of the fourth speed-enforcement procedures. Levels of media coverage given the various enforcement procedures are set out in Table 3-3.

Another means of communication that has been used to publicize enforcement presence is citizen band (CB) radio. No agencies contacted reported using CB specifically to publicize police presence. However, some agency representatives did express the belief that when drivers communicated the presence of enforcement symbols via CB, those communications created a "halo" effect among drivers, especially with regard to slowing down to safer speeds.

Visibility of Enforcement Symbols

A large majority of police agencies reported that their speed, FTC, and DLOC enforcement procedures relied on conspicuous enforcement symbols rather than concealment or disguise. About seventy-five percent of the enforcement procedures reported by police agencies reflect an "overt" approach to speed enforcement. The proportion of "overt" procedures was even higher for the FTC and DLOC enforcement procedures (86% and 90%, respectively). A listing of approaches is shown in Table 3-4.

Table 3-5 presents the comparative breakdown in overt and covert approaches for agencies' primary procedures (i.e., the procedures most frequently used) for enforcing the three selected UDAs. As can be seen from the table, the proportion of primary approaches reflecting a preference for visible symbols is nearly identical to the proportions for

TABLE 3-3

LEVELS OF MEDIA COVERAGE
REPORTED FOR SELECTED
UDA ENFORCEMENT PROCEDURES

LEVEL OF MEDIA COVERAGE	UDA				
	Speed			FTC[a]	DLOC[b]
	Primary Procedure	Secondary Procedure	Third Procedure		
High	13	8	4	5	0
Medium	9	6	6	0	0
Low	5	11	6	11	11
None	4	6	9	15	20
TOTAL	31	31	25	31	31

a. Figures are number of agencies and are for primary procedures only. Only four agencies reported using a secondary FTC enforcement procedure: two reported a medium level of media coverage and two reported a low level of coverage.

b. Figures are number of agencies and are for primary procedures only. No agency reported using more than one DLOC enforcement procedure.

TABLE 3-4

NUMBER OF REPORTED OVERT AND COVERT
ENFORCEMENT APPROACHES AGAINST SELECTED UDAs

APPROACH	UDA		
	Speed	FTC	DLOC
Very Overt	3	0	0
Overt	71	30	28
Covert	14	2	1
Very Covert	12	3	2
TOTAL[a]	100	35	31

a. These totals are the total number of procedures reportedly used by thirty-one agencies.

TABLE 3-5

NUMBER OF REPORTED OVERT AND COVERT APPROACHES IN THE MOST FREQUENTLY USED ENFORCEMENT PROCEDURE AGAINST SELECTED UDAs

APPROACH	UDA		
	Speed	FTC	DLOC
Very Overt	3	0	0
Overt	20	26	28
Covert	3	2	2
Very Covert	5	3	1
TOTAL[a]	31	31	31

a. These totals reflect only one procedure, namely the primary (most frequently used) enforcement procedures used by the thirty-one agencies contacted.

the total number of approaches used by the agencies.

Our discussions made no attempt to identify specific steps taken by agencies to heighten the visibility of, or to conceal, police vehicles (such as placing them behind billboards or parking them in full view of traffic). However, some agencies mentioned that one response to the current fuel shortage was to order vehicles to be parked part of each hour in a location most visible to drivers.

Procedures for making enforcement symbols more visible also include plainly marking the patrol vehicle, and identifying its occupants as police officers. Use of marked patrol vehicles predominated over unmarked ones among the agencies contacted. The majority of agency representatives reported having fleets composed entirely of marked vehicles or having a majority marked. The frequencies with which agencies reportedly use marked and unmarked vehicles are set out in Table 3-6.

Patterns and Configurations of Patrol

The majority of agencies reported that they relied exclusively on "solo" patrol configurations in which a single officer both observes for and stops violators. A minority of the agencies relied exclusively on "team" configurations in which one officer observes for violators who subsequently are stopped by "catch" vehicles located downstream of the observer. Still other agencies used a mix of solo and team configurations as set out in Table 3-7.

Solo configurations especially predominated when "routine" (on-view) procedures (explained later in Chapter Three) were used to observe for violators. Team configurations were more frequent when aircraft or nontraditional patrol vehicles observed for violations and in agencies that used covert enforcement strategies.

Paralleling the reported predominance of solo patrol configurations is the reliance on one-officer patrols by a majority of patrol agencies. The frequency of multiple-officer patrols is greatest for the third-order speed procedures; note that a number of those procedures involve aircraft patrols and therefore consist of the aircraft, plus catch vehicles.

Single-officer patrols are especially predominant in FTC and DLOC

TABLE 3-6

REPORTED FREQUENCY OF MARKED AND UNMARKED VEHICLES
IN SPEED, FTC, AND DLOC ENFORCEMENT

REPORTED COMPOSITION OF FLEET	UDA			
	Speed	FTC	DLOC	ALL
Marked Vehicles Only	60	20	20	100
Majority of Vehicles Marked	32	11	10	53
Majority of Vehicles Unmarked	1	1	1	3
Unmarked Vehicles Only	7	3	0	10
TOTAL[a]	100	35	31	166

a. These totals are the total number of procedures reported by the thirty-one agencies contacted.

TABLE 3-7

REPORTED USE OF SOLO AND TEAM PATROL CONFIGURATIONS IN SPEED, FTC, AND DLOC ENFORCEMENT PROCEDURES

CONFIGURATION	UDA				
	SPEED			FTC[a]	DLOC[b]
	Primary Procedure	Second Procedure	Third Procedure		
Solo Only	19	23	15	29	31
Team Only	6	5	8	2	0
Solo and Team Combined	6	3	2	0	0
TOTAL	31	31	25	31	31

a. Figures are number of agencies using indicated primary procedures. Only four agencies reported using a second FTC enforcement procedure; all four used a solo configuration.

b. Figures are number of agencies using indicated primary procedures. No agencies reported using more than one DLOC enforcement procedure.

enforcement procedures. These are largely solo operations that rely on routine or on-view patrol. A listing of the number of officers used in enforcement procedures appears in Table 3-8.

Within the context of solo and team configurations, the literature has identified a number of methods in which patrol vehicles can be deployed. These include, for example, parking vehicles parallel or perpendicular to the roadway, in the same direction or in the opposite direction of the flow of traffic, in median strips or along road shoulders. Information at this level of detail was not sought in the telephone conversations but will be collected later during the field assessment activity.

Type of Patrol Vehicles

As expected, agencies reported that for their speed, FTC, and DLOC enforcement procedures, the automobile was by far the predominant patrol vehicle. Most agencies' fleets consisted of automobiles only, although some agencies used a mix of automobiles and motorcycles. A few agencies reported using "nontraditional" vehicles such as vans and sport cars to heighten the covert nature of certain enforcement procedures. For example, the Maryland State Police operates a "Bus and Truck" (BAT) patrol in which officers operating bus and truck vehicles report FTC violations by commercial traffic. Likewise, several agencies use aircraft--both fixed-wing and rotary-wing--to carry out selective enforcement as well as routine patrol operations. Because the number of aircraft in agency fleets is small (agencies that have aircraft typically reported having fewer than ten), aircraft procedures were used a comparatively small proportion of the time. As the literature previously indicated, traffic patrol by officers on foot was rarely reported by agencies contacted. A listing of the vehicle types used by agencies appears in Table 3-9.

PROCEDURAL COMPONENTS ASSOCIATED WITH SPECIAL DETERRENCE

As noted earlier, special deterrence requires surveillance, detection, stopping, and sanctioning drivers who have been identified by the police

TABLE 3-8

NUMBER OF OFFICERS REPORTEDLY ASSIGNED TO SPEED, FTC, AND DLOC ENFORCEMENT PROCEDURES

NUMBER OF OFFICERS	UDA				
	SPEED			FTC[a]	DLOC[b]
	Primary Procedure	Second Procedure	Third Procedure		
One	19	23	15	28	30
Two	7	5	2	1	1
Three or more	5	3	8	2	0
TOTAL	31	31	25	31	31

a. Figures are number of agencies assigning indicated number of officers to primary procedures. Only four agencies reported using a second FTC enforcement procedure; each used only one officer per procedure.

b. Figures are number of agencies assigning indicated number of officers to primary procedures. No agencies reported using more than one DLOC procedure.

TABLE 3-9

PATROL VEHICLES REPORTEDLY USED IN SPEED, FTC, AND DLOC ENFORCEMENT PROCEDURES[a]

COMPOSITION OF FLEET	UDA		
	Speed	FTC	DLOC
Automobiles Only	73	27	27
Motorcycles Only	3	0	0
Both Automobiles and Motorcycles	13	5	4
Automobiles with Foot Patrol	2	0	0
Aircraft	7	1	0
"Nontraditional" Vehicles	2	2	0
TOTAL	100	35	31

a. The numbers are the total number of enforcement procedures involving indicated vehicles reported by the thirty-one agencies contacted.

as traffic violators. Findings on procedural components used in performing these four functions are discussed in this section.

Surveillance and Detection

Surveillance procedures can be characterized as either "specific" or "routine." In specific procedures officers patrol an area for the express purpose of observing for a particular violation. In routine procedures an officer does not concentrate on a specific violation but does take action, if warranted, when violations are observed.

Each of the thirty-one patrol agencies that were contacted reported using at least one specific procedure to observe for and stop speed violators. Approximately two-thirds of the agencies used a secondary specific speed-enforcement procedure to observe for and stop speeders; however, these procedures were used very infrequently, usually less than ten percent of patrol time. A majority characterized their third procedures as "specific," the remainder as "routine." A handful of agencies reported fourth speed-enforcement procedures: most were routine; and all were rarely used.

In contrast to speed enforcement, only four agencies reported using specific procedures to observe for and stop FTC violators, and only one used a specific DLOC enforcement procedure.

The agencies contacted reported using a variety of measurement devices to detect law violators. Many agencies reported using two or more specific procedures to observe for and stop speeders, and those agencies frequently used different measurement devices in connection with each procedure. In contrast to speed enforcement, agencies reported they used a few specific procedures to observe for and stop FTC and DLOC offenders.

All but two of the police patrol agencies contacted used some form of radar device in connection with their primary procedure for measuring vehicle speeds. One of the two agencies, the California Highway Patrol, is prohibited by law from using stopwatches or VASCAR and has been denied funds to purchase radar units; therefore, it relies on expert judgment (primarily speedometer and odometer pacing) as its chief speed

measurement method. The other agency, the Penn Hills, Pennsylania Police Department, is prohibited by law from using radar; instead it uses stopwatches to measure speeds.

Radar measurement procedures have been divided into stationary and moving radar. Although all radars operate on the same technological principles, their use in stationary and moving modes raise operational considerations that are somewhat different from one another. Most state agencies reported using moving radar in their primary enforcement procedures, while the majority of local patrols used radar in the stationary mode.

Of those agencies that characterized their secondary procedures as "specific," all but one used radar to measure vehicle speeds; the exception reported using VASCAR. With respect to radar, a majority of agencies used stationary rather than moving radar. All of the patrol agencies that characterized their secondary procedure as "routine" used speedometer pacing to measure speed.

In all, fifteen agencies reported using specific, third speed-enforcement procedures. In nearly half of those procedures, speeds were measured from aircraft by officers using stopwatches. Stationary radar was the next most frequently used device, followed by VASCAR and moving radar. Of the agencies using routine procedures, all reported using speedometer pacing or expert judgment to measure vehicle speeds.

A minority of the agencies reported using a fourth speed-enforcement procedure. Of those agencies that did, most characterized them as routine and used speedometer pacing to measure speeds. Only four agencies reported using specific procedures: two used stopwatches to measure speeds; two used VASCAR. A listing of the measuring devices used in speed enforcement is presented in Table 3-10.

As discussed previously in this chapter, a large majority of agencies reported using only routine procedures to observe for and apprehend following-too-closely violators. Only four agencies characterized their FTC-enforcement procedures as "specific." Three of the agencies reporting specific procedures and all agencies reporting routine procedures used "expert judgment" to determine whether an FTC violation had

TABLE 3-10

SPEED-MEASUREMENT DEVICES REPORTEDLY USED BY PATROL AGENCIES[a]

MEASUREMENT DEVICE	SPEED PROCEDURES				
	Primary	Second	Third	Fourth	All
Stationary Radar[b]	17	11	4	0	32
Moving Radar	12	8	1	0	21
Stopwatch	1	0	7	2	10
VASCAR	0	1	3	2	6
Speedometer Pacing[c]	0	11	9	9	29
Expert Judgment[c]	1	0	1	0	2
TOTAL	31	31	25	13	100

a. Numbers are numbers of agencies using indicated measurement device in a given procedure.

b. "Stationary radar" includes hand-held as well as vehicle-mounted radar.

c. In one agency (California Highway Patrol) officers characterized their primary measurement procedure "expert judgment"; however, most such measurements involved speedometer pacing.

occurred. Uniform measurement criteria, however, were not used by all agencies. Most patrol agencies reported using a distance criterion that determined safe following distances in terms of car lengths (i.e., one car length following distance per ten mph). The remainder used the time or "two-second" criterion (i.e., the following vehicle is too close if it passes over the same point less than two seconds after the lead vehicle passes it).

Only one agency, the Henrico County Virginia Division of Police, used a measuring device to identify FTC violators. That device, the FTC Monitor, was used at three locations in the county (Traffic Safety Systems, Inc. 1971). The enforcement procedure used in conjunction with this device involved a solo patrol configuration: an officer stationed in a plainly marked vehicle a short distance downstream of the monitor observed for violations; violators identified by the device were either waved over or pursued.

All of the specific FTC-enforcement procedures reflected some degree of innovation. In addition to Henrico County's FTC Monitor, FTC procedures included: the Maryland BAT patrol (discussed earlier); an enforcement procedure similar to BAT in Knox County, Tennessee; and observations from helicopters in New Jersey.

Only one patrol agency reported using any specific procedure to observe for and stop persons driving left of center. That agency, the North Carolina Highway Patrol, stationed officers at high-violation roads (primarily in the mountainous areas of the state) and instructed them to observe for DLOC violators. All of the other patrol agencies enforced laws prohibiting DLOC in a routine or on-view manner. All agencies used simple observation to determine whether a DLOC violation was committed. As will be discussed later in this chapter, it is difficult to separate DLOC enforcement from more general efforts to observe for and stop drinking drivers: police often use left-of-center driving as a sign of driving while intoxicated.

Enforcement Outcomes (Stopping and Presanctioning/Sanctioning)

Although a large number of drivers exceed posted speed limits, enforcement action appears to be taken against relatively few such drivers. Aside from the obvious fact that limited numbers of officers can observe only a small percentage of violators, one of the most important factors affecting enforcement action is the use of official or unofficial speed "tolerances." All but one of the thirty-one agency representatives reported that such tolerances were used. Reported tolerances ranged from five to fifteen miles per hour with the most frequent response being five miles per hour. A listing of speed tolerances is set out in Table 3-11.

Police agencies were asked to estimate the proportion of observed speed violators who are stopped by the police. Most agency representatives estimated that officers took action "most of the time" (defined as at least seventy-five percent of the time) that a speeder was observed, and many estimated that action was taken as much as ninety percent of the time (see Table 3-12). In contrast, only about a third of the agencies reported that "all" or "most" FTC violators they observed (see Table 3-13) they stopped.

In considering the stopping citation, and conviction rates for following too closely, the agencies reported that FTC violators are often cited as a result of postcrash as well as on-view enforcement activity. Patrol agencies were asked to estimate how often FTC citations were issued after rear-end collisions. A wide variety of responses was obtained, which could indicate that agencies were not sure how their FTC citations were allocated between on-view and postcrash enforcement activity. Most agencies, though, estimated that postcrash enforcement accounted for at least half of the FTC citations they issued. These estimates are presented in Table 3-14.

Owing to the variations among agencies' postcrash enforcement policies, FTC stopping rates also showed wide variation. Approximately half the agencies estimated that they stopped the majority of FTC violators they observed.

Citation rates for drivers stopped for FTC also showed considerable variation; however, approximately two-thirds of the patrol agencies

TABLE 3-11

SPEED TOLERANCES REPORTEDLY USED BY PATROL AGENCIES[a]

SPEED TOLERANCE (MPH)	NUMBER OF AGENCIES USING	CUMULATIVE PERCENTAGE
0	1	3.2
5	13	45.2
7	3	54.8
9	2	61.3
10	10	93.6
14	1	96.8
15	1	100.0
TOTAL	31	---

a. The speed tolerances reported here are those used in connection with the primary enforcement procedure of each agency contacted.

TABLE 3-12

ESTIMATES OF STOPPING, WARNING, CITATION, AND CONVICTION RATES FOR SPEED ENFORCEMENT PROCEDURES[a]

ESTIMATED RATE	ENFORCEMENT OUTCOME				
	Traffic Stop	Verbal Warning[b]	Written Warning[b]	Citation[b]	Conviction[c]
Nearly All (76-100%)	19	0	0	17	23
Most (51-75%)	6	0	1	10	7
Half (50%)	1	1	2	3	0
Some (11-49%)	2	2	5	1	0
Few (1-10%)	1	15	9	0	0
Virtually None (0-1%)	0	11	12	0	0
TOTAL	29	29	29	31	30

a. Numbers shown are number of agencies having the indicated rate for a given outcome. The stopping rates are estimates for all speed violations observed by the agencies contacted. The warning, citation, and conviction rates reflect only those attributable to the agencies' primary enforcement procedures.

b. Written warning, verbal warning, and citation rates are estimates of the proportions of all drivers stopped.

c. Conviction rates are estimates of the proportions of all drivers cited.

TABLE 3-13

ESTIMATES OF STOPPING, CITATION, WARNING, AND CONVICTION RATES FOR PRIMARY FTC ENFORCEMENT PROCEDURES[a]

ESTIMATED RATE	ENFORCEMENT OUTCOME				
	Traffic Stop	Verbal Warning[b]	Written Warning[b]	Citation[b]	Conviction[c]
Nearly All	9	0	0	6	13
Most	1	0	0	5	10
Half	6	4	6	8	6
Some	4	3	5	1	1
Few	10	8	3	7	0
Virtually None	1	15	16	4	0
TOTAL	31	30	30	31	30

a. Numbers are numbers of agencies with an indicated rate for a given outcome.

b. Written warning, verbal warning, and citation rates are estimates of the proportions of all drivers stopped.

c. Conviction rates are estimates of the proportions of all drivers cited.

TABLE 3-14

ESTIMATES OF POSTCRASH CITATION RATES FOR FTC AND DLOC VIOLATIONS[a]

ESTIMATED POSTCRASH CITATION RATE	UDA	
	FTC	DLOC
Nearly All	7	3
Most	9	5
Half	3	3
Some	4	0
Few	1	5
Virtually None	7	12
TOTAL	31	28

a. Numbers are numbers of agencies with an indicated rate for a given UDA.

estimated that at least half of the drivers they stopped were also cited.

Estimated conviction rates for FTC were considerably higher than the FTC stopping or citation rates. Verbal reprimands were judged to be rare; written warnings were rarer still. Estimates of FTC stopping citation or warning, and conviction rates are set out in Table 3-14.

Driving left of center, as noted earlier, is a commonly used sign of driving while intoxicated (DWI). Asked to estimate how frequently they investigated DLOC violators for possible intoxication, most agency representatives judged that nearly all or most DLOC stops resulted in further investigation. It is not known how often initial stops for driving left of center led to DWI arrests rather than DLOC citations; this could have influenced the estimated DLOC citation and conviction rates. In addition, approximately one-third of the agency representatives estimated that a majority of their DLOC citations were issued after head-on traffic crashes (see Table 3-13).

Reported traffic stop rates were higher than those for FTC but still below those for speed. More than two-thirds of the agency representatives estimated that nearly all or most of the drivers they observed driving left of center were stopped by police officers.

DLOC citation rates also were estimated to be higher than those for FTC but below those for speed. Slightly more than half the patrol agencies judged that almost "all" or "most" of the drivers stopped for DLOC were cited. Estimated DLOC stopping and citation or warning rates are set out in Table 3-15.

FACTORS INFLUENCING ENFORCEMENT PROCEDURES

During the telephone conversations the agency representatives were asked to identify those factors, if any, that aided or impeded their use of speed, FTC, or DLOC enforcement procedures. The following topics are discussed in this subsection:

- legal constraints,
- budget constraints,
- attitudes of police officers, court personnel, and drivers

TABLE 3-15

ESTIMATES OF STOPPING, WARNING, AND CITATION RATES FOR PRIMARY DLOC ENFORCEMENT PROCEDURES[a]

ESTIMATED RATE	ENFORCEMENT OUTCOME			
	Traffic Stop	Written Warning[b]	Verbal Warning[b]	Citation[b]
Nearly All	14	0	1	4
Most	9	0	1	13
Half	4	2	1	6
Some	3	5	5	2
Few	1	6	11	6
Virtually None	0	16	12	0
TOTAL	31	31	29	31

a. Numbers are number of agencies having an indicated rate for a given outcome.

b. Written warning, verbal warning, and citation rates are estimates of the proportions of all drivers stopped.

toward enforcement procedures,

- physical and environmental factors aiding or impeding the use of procedures,
- the impact of the current fuel scarcity, and
- the effect of drivers' use of citizens band radio (CB) and radar detectors.

Legal Constraints

Two agencies—the California Highway Patrol (CHP) and the Penn Hills, Pennsylvania Police Department—reported that they do not use radar to measure vehicle speeds. The CHP reported its nonuse of radar was due to legislative refusal to appropriate funds to purchase the devices (which amounts to a legal constraint), and the Penn Hills police explained that state law prohibits police departments other than the Pennsylvania State Police from using radar to measure vehicle speeds.

Several patrol agencies either reported occasional judicial reluctance to convict drivers of speeding, or reported having had some difficulties in the past. In addition, several other agencies noted the difficulty of establishing FTC violations in court and reported that some judges were reluctant to convict a driver of FTC on the basis of an officer's testimony alone. A number of other agencies—as stated earlier—reported low FTC conviction rates.

In several jurisdictions, there existed legislation that less directly hampered enforcement of the 55 mph speed limit. For example, the Montana Highway Patrol reported that Montana did not have a daytime speed limit until the national maximum speed limit took effect in 1973. Even after the 55 mph limit was imposed, legislation was passed that fixed a maximum fine for speeding above 55 mph at five dollars. The imposition of a small fine on violators was viewed as detrimental to speed enforcement.

Budget Constraints

In addition to the budget data reported earlier in this chapter, agencies were also asked whether they believed their traffic budgets to be adequate. Nearly all of the thirty-one agencies characterized their traffic budgets as inadequate or very inadequate; only five considered them "adequate." Perceived inadequacy was greatest among the state agencies; only one reported that its traffic budget was "adequate."

Cost considerations also dictated the selection of procedures in some jurisdictions. Several agencies stated a preference for moving radar over stationary radar—or vice versa—owing to cost efficiency. A breakdown of agency responses appears in Table 3-16.

Attitudes Regarding Enforcement Procedures

Agency contacts were asked to assess the attitudes of police officers, judges, others in the traffic-law system, and the driving public toward the enforcement procedures used in traffic patrol activities. Most agencies reported attitudes only toward the speed enforcement procedures; this is so because few agencies used specific procedures to observe and stop FTC and DLOC violators. Thus, meaningful data could not be obtained regarding attitudes toward those procedures.

A substantial majority of patrol agencies reported that the officers themselves, courts, "community policymakers" (public officials and influential private citizens), and the general public for the most part had positive attitudes toward speed-enforcement procedures. Their attitudes toward speed-enforcement procedures are set out in Table 3-17.

Although patrol agencies reported favorable court attitudes toward their speed-enforcement procedures, they reported slightly poorer relations with the judges and prosecutors themselves. To improve their relations with court personnel, several patrol agencies reported they invited judges and prosecutors--on an informal basis--to personally observe their enforcement procedures or demonstrate speed-measurement equipment to them. Such meetings with court personnel were said to increase conviction rates.

Agency contacts were also asked about the effect the increased recent

TABLE 3-16

PERCEIVED ADEQUACY OF TRAFFIC BUDGETS[a]

PERCEIVED ADEQUACY	AGENCIES' RESPONSES		
	State Agencies	Local Agencies	All Agencies
Very Adequate	0	0	0
Adequate	1	4	5
Inadequate	9	8	17
Very Inadequate	3	6	9
TOTAL	13	18	31

a. Numbers are number of agencies reporting an indicated level of adequacy.

TABLE 3-17

PERCEIVED ATTITUDES OF TRAFFIC OFFICERS, COURTS, POLICYMAKERS, AND THE DRIVING PUBLIC TOWARD SPEED-ENFORCEMENT PROCEDURES[a]

PERCEIVED ATTITUDES	GROUP			
	Traffic Officers	Courts	Policy-Makers	Driving Public
Favorable	26	25	21	24
Neutral	5	5	9	5
Unfavorable	0	1	1	2
TOTAL	31	31	31	31

a. Numbers are number of agencies with indicated attitudes by a given group.

emphasis on the 55 mph speed limit has had on their overall patrol operations. About half the agencies that had appreciable amounts of limited-access highway mileage replied that emphasis on the national maximum speed limit diverted police from patrolling high-accident rural and secondary roads and from observing for and stopping drinking drivers. Most of the remaining agencies that patrolled 55 mph highways reported no detrimental effect from increased speed limit enforcement; several agencies even reported beneficial effects, including increased visibility and productivity of patrols and greater emphasis on traffic-law enforcement in general.

Physical and Environmental Factors

Patrol agencies were asked about the possible influence of various physical and environmental factors on their use of speed, FTC, and DLOC enforcement procedures, meaningful data could not be obtained regarding the latter two UDAs.

Several factors potentially influencing the use of enforcement procedures were included in the discussion guide (see Appendix A); respondents were asked to estimate the effect of each, ranging from "highly positive" to "highly negative."

The strongest negative influence on speed enforcement was said to be heavy traffic flow. When traffic was heavy, a number of patrol agencies refrained from pursuing violators because pursuit would create a greater crash risk than the UDA itself. In addition, several agencies reported that radar's usefulness was limited in heavy traffic; thus, speeders could not easily be identified.

A second negative influence was extreme weather conditions. Rain, snow, and poor visibility precluded aircraft patrols. Precipitation also restricted the use of radar in some jurisdictions. The Arizona Highway Patrol reported that extreme heat caused parked vehicles to overheat and hampered their use of stationary radar. At the other extreme, the Baltimore Police Department was forced to curtail motorcycle patrols on very cold days.

Another negative influence on speed-enforcement procedures was

certain types of road geometry. In a number of jurisdictions, barriers and ditches in the center of multilane divided highways impeded the use of moving radar since patrol vehicles could not "flip-flop" across them and pursue violators.

A final negative influence was adverse conditions associated with specific times of day: as noted above, darkness precluded aircraft patrols; in some jurisdictions, it made the use of radar more difficult. Rush hours produced heavy traffic which hampered radar measurement and pursuit of violators.

Fuel Scarcity

At the time the patrol agencies were contacted, the price and availability of gasoline were major public concerns; consequently, the agencies were asked what effect, if any, the scarcity of fuel would have on their speed, FTC, and DLOC enforcement procedures. With respect to speed enforcement procedures, approximately one-third of the agencies believed that the gasoline shortage would "definitely" or "somewhat" curtail them. On the other hand, most agencies stated that fuel considerations would have "very little" effect on speed-enforcement procedures.

Among the agencies that used moving radar as their primary speed-enforcement procedure, a majority believed that the fuel shortage would have a curtailing effect. On the other hand, nearly all of the agencies relying on stationary radar as their primary enforcement procedure believed fuel scarcity would have little or no effect. Agencies' responses concerning the perceived impact of fuel scarcity are set out in Table 3-18.

Among agencies that cited the fuel shortage as a constraint on their speed-enforcement activity, several mentioned the use of specific fuel-conservation measures. These included: shifting from moving to stationary radar; increasing the use of motorcycle patrols; requiring that patrol vehicles be parked at the roadside for fifteen minutes every hour (thus keeping the enforcement symbol visible to drivers); and reducing the use of aircraft patrols.

TABLE 3-18

PERCEIVED EFFECT OF FUEL SCARCITY ON THE USE OF SPEED-ENFORCEMENT PROCEDURES[a]

PERCEIVED EFFECT	RESPONSES		
	Agencies Using Moving Radar[b]	Agencies Using Stationary Radar[b]	All Agencies
Definitely will curtail	6	0	6
Will curtail somewhat	2	3	6
Will curtail very little	4	8	12
Will not curtail at all	0	6	7
TOTAL	12	17	31

a. Numbers are number of agencies believing fuel scarcity will have the indicated effect.

b. "Use of radar" applies here to primary enforcement procedure only.

Very few agencies reported using specific procedures to observe and apprehend FTC and DLOC violators; thus response rates to questions concerning the impact of fuel scarcity on FTC and DLOC enforcement procedures were low.

Use of Citizens Band Radio (CB) and Radar Detectors

Patrol agencies had a variety of reactions to drivers' use of CB and radar detectors. In general, agencies viewed CB as a slightly negative influence. Agencies characterizing the impact of these devices as "positive" pointed out such devices caused drivers to slow down to safer speeds; in the case of CB, the presence of an enforcement symbol widely broadcast by radio created a "halo effect" among all drivers. Agencies opposing the use of devices noted that radar detectors counteracted covert patrols and that both devices generally reduced the effectiveness of radar speed measurement.

SUMMARY

Representatives of the thirty-one police agencies were contacted regarding their traffic enforcement procedures and the factors influencing their selection and use. These agencies operated at the state, county, and local levels and varied widely in their size, organization, and traffic patrol duties.

Procedural components discussed by agency representatives included those commonly associated with both general and special deterrence of UDAs. A number of representatives said that their patrol activities, especially their speed-enforcement procedures, received appreciable media coverage. Most agencies reported a preference for placing their vehicles where they can be seen by drivers; furthermore, most patrol vehicles were reported to be clearly identifiable as such. The patrol configuration most often reported was the solo configuration, in which an officer both observes for and stops violators. Most representatives said their fleets consisted predominantly of automobiles; however, the use of motorcycles, aircraft and even "nontraditional" vehicles was also reported. The use of foot patrols was rarely mentioned.

Agency representatives uniformly reported that they specifically concentrated on observing for speeding violations; however, few agencies were said to observe specifically for FTC and DLOC. All patrol agencies mentioned they used one or more speed measurement devices. The most commonly reported device was radar. Pacing was the next most widely reported device, followed by stopwatches (usually operated from aircraft and VASCAR. One agency reported it used a monitoring device to identify FTC violators; all other agency representatives mentioned that their FTC and DLOC measuring method was expert judgment.

Nearly all agency representatives reported that their agencies granted drivers speed "tolerances," most commonly five miles per hour. Representatives judged that most drivers, once stopped by the police for speeding, were issued citations, and that few were given written or verbal warnings. Conviction rates for those cited for speeding were uniformly said to be high. Reported stopping rates for FTC showed wide variation, and they tended to be lower than those reported for speeding. Many representatives mentioned that most of the FTC citations were issued by their agencies after traffic crashes rather than on view. For DLOC, reported stopping rates were higher than those for FTC. Some DLOC citations, like FTC citations, were said to be issued after traffic crashes. Nearly all representatives reported that drivers stopped by the police for DLOC also were likely to be investigated for possible alcohol impairment.

Agency representatives cited a number of factors that influence their UDA enforcement practices. Reported legal constraints included restrictions on the use of radar and other devices, judical reluctance to accept officers' judgments, and light penalties for certain violations. Lack of funds was cited by most representatives as a constraining factor. About half of the agencies that patrolled significant limited-access highway mileage stated that increased 55-mph speed limit enforcement diverted offices from secondary road patrols and detection of impaired drivers, while half of the agencies were of the opinion that "55" either had no adverse effects or even improved officer productivity. A few agencies said they experienced poor relations with judges and prosecutors. A number of representatives reported physical and environmental factors

such as heavy traffic, darkness, poor weather, and barriers and ditches on roads as negative influences on surveillance and stopping of drivers. Concern over the cost and availability of fuel reportedly caused some agencies to alter their patrol procedures, such as shifting from moving to stationary radar or parking patrol vehicles for part of every hour. Many representatives reported that CB radio and radar detectors hindered their surveillance efforts, although some representatives characterized CB as a positive factor since it promoted safer driving.

CHAPTER FOUR
TELEPHONE CONTACT SUMMARY

Officials in thirty-one police agencies were contacted by telephone to identify current procedures for enforcing laws on speeding, following too closely (FTC), and driving left of center (DLOC). Information for designing further field studies to be conducted in this project also was sought. The contacts provided a better picture of police procedures for enforcing laws related to these three UDAs than existed previously. This is especially true for agencies operating at the county and municipal levels, where there was a void of information on such procedures.

The major finding of the contacts is that a few basic types of procedures are being used against the subject UDAs. These types are substantially the same as were described in our literature review, although some interesting variations not reported previously were identified. They involve the use of solo or team configurations of police vehicles (usually automobiles) that watch for violations in the course of routine patrol or during special enforcement efforts aimed specifically at the target violation. Overt surveillance generally is preferred, but covert methods are used sometimes to create perceived enforcement threats at times and places where actual threats do not exist.

We also found that the speed UDA is the only one of the three to which police devote any significant enforcement effort. This is also consistent with the literature review. Action was taken against FTC and DLOC violations most commonly in the course of routine surveillance activity or after the occurrence of a traffic crash. DLOC violations are often used as an indicator of drunk driving and may initiate a series of enforcement actions that are associated with drunk driving procedures.

We found no evidence that any of the jurisdictions contacted had selected their procedure as a result of a formal scientific evaluation of alternative procedures. The contacts revealed a lack of quantitative data

on the effects of the procedures. Also, few agencies had performance or activity data readily available.

Most of the information collected in the telephone contacts was at a fairly high level of aggregation. A detailed activity analysis of specific procedures was beyond the scope and intent of this initial investigation. Thus, subtle differences between procedures of the same general type were not detected. Also, the specific reasons why one procedure was preferred over another could not be ascertained from the contacts. These details were sought in other stages of the project, in particular, the case studies of selected jurisdictions.

PART II

CASE STUDIES

CHAPTER FIVE
INTRODUCTION
TO THE CASE STUDIES

The preparation of detailed case studies of selected police agencies is the third step in our documentation of current enforcement procedures. The earlier steps--a review of the literature, and telephone contacts with police agencies--identified existing enforcement procedures and how frequently they were used, as well as some major factors affecting their use. These case studies were conducted to develop this information in greater detail, particularly with respect to the factors that determine the relative effectiveness of specific procedures. Greater insight was sought concerning a number of questions, including reasons for selecting certain available procedures over others, levels of performance achieved through specific procedures, how police traffic resources are allocated among the various procedures, and the effect of such nonpolice influence as courts and legislatures on police performance. The primary purpose of these case studies is to describe as broad a range of speed-enforcement procedures as possible. The procedures described here are not necessarily "ideal" procedures, nor are they necessarily those most widely used by police agencies nationwide.

These case studies were prepared by project staff who visited each of the four agencies between September 1979 and March 1980. Four police enforcement "systems"--each consisting of the police agency itself, the judiciary, and the driver-licensing authority--were selected for study. These were chosen to represent a wide range of attributes, including type of agency type of roads and traffic, adjudication procedures, and speed measurement devices and procedures. (Attributes are listed in Table 5-1.) Key actors within each of the systems were contacted in the field and interviewed. In addition, background information about each of the

TABLE 5-1

ATTRIBUTES OF POLICE AGENCIES SELECTED FOR CASE STUDIES

TYPE OF AGENCY:
- Highway Patrol (statewide)
- Sheriff's Department (county)
- Police Department (municipal)

AGENCY RESPONSIBILITIES:
- Traffic offenses only
- Traffic and all criminal offenses

TYPES OF ROADS PATROLLED:
- Interstate highways and freeways
- Rural secondary roads
- Urban boulevards
- Residential and business district streets

PATROL VEHICLES USED:
- Automobiles (marked and semi-marked)
- Motorcycles
- Aircraft (fixed- and rotary-wing)

SPEED MEASURING DEVICES USED:
- Moving radar
- Stationary radar
- Stopwatches
- Pacing (speedometer and odometer)
- Visual observation (expert judgment)

METHODS OF DEPLOYING OFFICERS:
- Computer accident analysis
- Experimental model
- Manual accident analysis
- Supervisors' judgment and experience
- Individual officers' experience

CONCEALMENT OF PATROL:
- Fully marked, visible vehicles
- Semi-marked visible vehicles
- Marked or semi-marked, concealed vehicles

ENFORCEMENT (sanctioning and presanctioning) OUTCOMES:
- Citations
- Written warnings
- Verbal warnings

MODE OF ADJUDICATION:
- Traditional criminal procedure
- Modified criminal procedure (pleas heard by court referees)
- Administrative adjudication

jurisdictions was obtained from agency sources as well as from general reference materials. In the case of Cincinnati, California, and Tucson, requests for information were sent to agency officials in advance of our visit to conserve time in the field. These data appear in Appendix B. The organization of the case studies reflects our conception of speed enforcement as an element of a systemwide activity of the larger Traffic Law System. Consequently each case study presents, in order, each of the processes involved in speed enforcement: deployment of officers; surveillance of traffic and detection of law violators; pursuit and apprehension of violators; and presanctioning action by enforcement elements. The significant interfacing activities of adjudication and sanctioning elements are also described.

Accompanying the descriptions of each system's enforcement activity are background materials describing each jurisdiction and police agency, and describing the legal environment in which each enforcement system operates. Also included are quantitative measures of enforcement activity; quantitative data were gathered and developed whenever they were reasonably available to the project staff. The primary purpose of these is to illustrate the nature and extent of the various enforcement practices and to support the descriptive materials. They are not offered as the product of a rigorous evaluation of the impact on traffic safety that any specific procedure or combination of procedures might have. Quantitative data are presented in tabular and worksheet form in Appendix B.

For the Washtenaw County case study, project staff contacted the following: Undersheriff Curtis F. Orsinger, who coordinated meetings with other Department personnel and who provided general information concerning the Department's organization and duties; Lieutenant Ronald J. Schebil, who described the duties of road patrol deputies and who provided samples of traffic citations for study; Lieutenant Bruce A. Sokolove, who provided budget data; Sergeant Carl Rinna, who discussed in detail the organization, duties, and enforcement procedures of the Secondary Road Patrol (SRP); Sergeant Chester Reese, who described the functions of the Traffic Division; and Deputies Anderson Brown and Richard Hayward of the

SRP, with whom staff members rode as observers to view enforcement procedures firsthand. Staff also contacted the Honorable Karl Fink, 14th District Court judge, and Mrs. Margaret Heiser, who administers the 14th District Court's civil division, to obtain information about the adjudication and sanctioning of violators. Quantitative caseload estimates were supplied by Mrs. Heiser.

For the Cincinnati case study our chief contact was Lieutenant James E. Combs of the Department's Traffic Division, who detailed the Department's overall operations and, in particular, its Selective Enforcement Patrol (SEP) and other traffic-enforcement practices. Captain Howard Espelage of District One arranged our contacts with personnel in that district, including Specialist David Holloway and Officer Steven Eggers, who described both general police and traffic-enforcement procedures. Mrs. Lucille Yarborough of the Department's Bureau of Records arranged for project staff to examine a sample of citations. Mr. Paul Gorman, City Prosecutor for Cincinnati, and Mr. Frank Prouty, Assistant City Prosecutor, detailed adjudication, sanctioning, and recordkeeping practices.

For the Tucson case study our chief contact was Lieutenant Kenneth K. Krieger of the Department's Traffic Section. Lieutenant Krieger described the Department's computer analysis of traffic crashes and the selective-enforcement program that is based on that analysis; he also detailed the Department's specific traffic-enforcement procedures. Others contacted during the site visit to Tucson included Sergeant J.W. Harris and Officer Randy Deeming of Team One, who described line patrol operations; Officer Carlos Marquez of the Traffic Team, who described traffic-enforcement procedures, the use of radar, and the training of radar operators; and the Honorable Thomas D. Welch, Chief Magistrate of the City Court of Tucson, who discussed adjudication and sanctioning practices.

The site visit to the California Highway Patrol was coordinated by Deputy Chief James E. Smith, Commander of the Planning and Analysis Division. Deputy Chief Smith, together with Assistant Chiefs Conrad Menzel and Charles Hiquera of the Planning and Analysis Division, detailed

statewide organization, duties, and procedures of the Highway Patrol, and provided an extensive overview of policies and procedures related to speed enforcement. Project staff also visitied the South Sacramento area command to gain greater insight into the deployment and supervision of officers, speed-measuring techniques, and apprehension and pursuit of violators. Those contacted at the South Sacramento command included Lieutenant Richard N. Tatti, Executive Officer; Lieutenant Bob L. Mitchell, Field Operations Officer; and Gardner K. Curtright, Public Affairs Officer.

CHAPTER SIX
CASE STUDY
WASHTENAW COUNTY, MICHIGAN

BACKGROUND

Washtenaw County, Michigan, is located in the southeastern region of the state's lower peninsula. It has an area of 711 square miles and an estimated population (as of 1975) of 247,242. Its county seat and largest city is Ann Arbor, which has an estimated population (1975) of 103,542. The next largest city in Washtenaw County is Ypsilanti, with an estimated population (1975) of 26,745. The remainder of Washtenaw County's population resides in three other incorporated cities, three incorporated villages, and twenty townships. About three-fifths of the county's estimated 1975 population lives in the incorporated cities and villages.

The eastern part of Washtenaw County is considered part of the Detroit metropolitan area and much of this region is essentially urban in character. Interstate 94, which crosses the county, is a major commuter route as well as an important highway connecting Detroit with Chicago and other points west. Other controlled-access highways serving the county are US-23 (a north-south highway that carries a considerable amount of recreational as well as commercial traffic) and M-14 (an east-west highway that bypasses Ann Arbor and Ypsilanti, and connects the Detroit area with points west). Other trunk lines and numbered state highways are US-12 (east-west) and M-17 (an east-west urban boulevard connecting Ann Arbor and Ypsilanti).

As of 1977 (as of this writing 1978 or 1979 figures were not available from the Michigan Department of State [DOS]) Washtenaw County had a total of 177,332 registered vehicles (including 132,734 passenger cars) and by DOS estimates, approximately 170,000 licensed drivers. In 1977 (as of this writing final 1978 or 1979 figures were not available) a total of 9,827 traffic crashes occurred in the county. Of that total, 6,237 (about

two-thirds of the total) occurred on roads other than interstate highways and state routes. In 1977 there were 60 fatal crashes in which 69 persons died, 2,915 personal-injury crashes in which 4,226 were injured, and 6,582 property-damage crashes.

Besides the through traffic using the controlled-access freeways, other unusual traffic within the county is caused, for example, by those attending football games and other university events, commuters (especially industrial plant workers), shopping center patrons, and persons using lakes and other recreational areas. As might be expected in a northern region, snow and ice are frequent during the winter.

GENERAL DESCRIPTION OF THE WASHTENAW COUNTY SHERIFF'S DEPARTMENT

Duties and Organization

The Washtenaw County Sheriff's Department is one of a number of law enforcement agencies serving the county. Others include the Michigan State Police, the Ann Arbor and Ypsilanti Police Departments, and several other city and village police departments.

The Sheriff's Department has general power to enforce the laws of the state of Michigan as well as those of municipalities located within the county. However, under an agreement with city and village police agencies, the Department does not normally patrol within the county's incorporated areas unless requested to do so by that city or village. Nevertheless, if a sheriff's deputy on patrol happens to be traveling through a city or village (e.g., when returning to headquarters) and witnesses an apparent law violation, (s)he will take action. In addition, the Sheriff's Department has also agreed with the Michigan State Police not to regularly patrol interstate or state (U.S. or "M" numbered) highways, which the state police have the primary responsibility for patrolling. As is the case in incorporated areas, a deputy who witnesses a violation while traveling on a numbered highway will take action against the violator. Of all the speeding citations issued by the department, an estimated fifteen percent or more involve offenses committed on

numbered highways. The Department's responsibility essentially extends to roads maintained by the Washtenaw County Road Commission. According to its June 1979 figures, the Commission maintained 1,462 miles of roads. These roads have posted speed limits ranging from 25 to 55 mph. Few of these limits were higher than 55 mph prior to enactment of the national maximum speed limit.

County budget documents show that the Sheriff's Department operated on a fiscal 1979 budget of $8.1 million, some $3.6 million of which are spent on road patrol operations. About $2.4 million, or two-thirds of the road patrol's funding, came from the county's general fund. The department received slightly less than one million dollars from several of the county's townships, chiefly Ypsilanti Township, which contracted for additional police protection. The remaining funds, some $180,000, were provided by the state of Michigan and earmarked for the department's Secondary Road Patrol (SRP), which is described in more detail below.

Sheriff's Department headquarters are located at the Washtenaw County Service Center, between Ann Arbor and Ypsilanti, in the eastern part of the county. Most deputies are based at, and operate out of, the Service Center; however, patrol deputies also operate out of several other locations. There are, in addition to the main (Service Center) station, three substations: one in Northfield Township, near the county's eastern boundary; one in Ypsilanti Township, near the county's eastern boundary; and one in the village of Dexter, in the county's north central region. These substation locations correspond to the Department's geographical division of the county—east, central, and west, respectively. Most of the county's residents live in the eastern and central districts, and most requests for services originate from there; the western district consists of more than half the area of Washtenaw County but it is sparsely populated.

The Sheriff's Department is headed by the sheriff who is elected to a four-year term. The sheriff, in turn, is required by law to appoint an undersheriff and deputy sheriffs. At present, the department is essentially organized as follows:

- There are two commanders, one each for law enforcement and corrections (county jail).

- Within the law-enforcement division are the patrol and detective divisions. The patrol division is headed by a lieutenant, who makes decisions regarding the assignment of manpower (i.e., how many deputies and which ones) to various substations within the county. Beneath him are eleven sergeants.

- Nine of the patrol sergeants are assigned among the Department's four substations; they are responsible for supervising day-to-day patrol operations, including the assignment of deputies to specific duties or locations within their districts.

- One sergeant, who supervises the motor pool, also supervises the Department's traffic division. The present traffic division, following the creation of the SRP, consists of deputies who patrol in townships that have contracted and paid for additional police services. While much of their services involve traffic, they also perform criminal investigation and preventive patrol.

- One sergeant supervises the Department's Secondary Road Patrol, which now has primary responsibility for traffic enforcement. He is given wide discretion concerning the assignment of deputies, who operate throughout the county.

During 1979, the Sheriff's Department had an average of 160 sworn officers and 100 civilian employees. An average of about 100 of the officers were assigned to the law enforcement division and the remainder to corrections, communications, and administration. About one-fifth of the law enforcement division personnel are detectives; the remaining deputies are assigned to road patrol and perform the Department's general patrol functions. According to the Department's personnel rosters, its patrol strength consisted of one lieutenant, eleven sergeants, 58 road patrol deputies, 12 traffic division deputies, and seven Secondary Road Patrol deputies; thus, the Department's maximum patrol strength was 77 deputies. Deputies on road patrol provide 24-hour, countywide coverage and work in preassigned geographical districts. On the other hand, traffic division and SRP deputies primarily work day and evening shifts, and SRP shifts may vary in time and location. Allowing for distribution of deputies among shifts, as well as for days off, holidays, and vacation and

sick time, the Department's patrol strength averages 13 deputies working on the day shift, 19 working evenings, and 12 working nights.

The Department's patrol fleet currently consists of 44 vehicles, which includes those used by SRP and traffic section deputies. There are no unmarked patrol vehicles, but some are "semimarked," that is, they have the departmental emblem and either have no top lights, or are painted all black instead of black and white. Semimarked vehicles are now used primarily by sergeants, and current plans are to phase them out in favor of fully marked vehicles. Road patrol vehicles are generally used for two shifts per day, every day of the year. Thus, given a 50,000-mile lifespan (vehicles are sold at that point), a vehicle used in the eastern part of the county lasts an average of 18 months, while one used farther west lasts only about 12 months. The patrol fleet also includes four motorcycles; three are used in traffic enforcement, and one is used primarily for ceremonial occasions such as parades. The Department also has one helicopter.

The Department uses a total of 23 radar units, and borrows two other units from a township that has contracted for additional deputies. All but two of these are K-55 units produced by MPH Industries; the others are Kustom Signal products. Most of the K-55 devices are less than two years old. (The Department "mothballed" five CMI speedguns because of repair costs and downtime.) One advantage of the K-55 is that a Department mechanic can perform basic repairs on them. Planned equipment purchases include four hand-held units. With a few exceptions, radar units remain in the same patrol vehicle; only four are assigned to substations and shared by deputies assigned there.

Road Patrol

Most deputies who perform line functions are part of the department's road patrol, which is charged with carrying out the full range of police functions--both traffic and nontraffic. The duties of deputies on road patrol vary with the region to which they are assigned; in the urbanized eastern townships greater emphasis is placed on responding to criminal complaints, investigating suspected crimes, and conducting preventive

patrols of neighborhoods. For example, Department sources estimate that a deputy assigned to Ypsilanti Township (located in the eastern part of the county) might spend 80 percent of the available patrol time on criminal matters, leaving only 20 percent of patrol time to his or her discretion. In the western townships, however, deputies receive fewer calls and must patrol a much larger territory; there, a typical deputy may find that an estimated 80 percent of the patrol time is "discretionary," that is, not spent on service runs or preventive patrol. Discretionary time is important because it is then during which a deputy can enforce traffic laws.

With respect to traffic, the Department conducts no formal public information and education (PI&E) programs. However, the Department does participate in a number of public information and education activities related to traffic safety. Department personnel have prepared a number of public-service messages for WAAM, 5000-watt AM radio station that serves Washtenaw County. Their message is safe driving in general, rather than threats of enforcement action. On occasion, deputies will visit local schools, colleges, and social and fraternal organizations, and give talks about safety-related issues. The Department distributes a magazine-type "Safety Guide," which is sponsored by the Michigan Sheriffs Association. It contains suggestions for safe and economical driving, as well as home protection and crime prevention.

Traffic Section

Prior to instituting the SRP, the Sheriff's Department assigned selective traffic enforcement duties to its traffic division. The Department retains a Traffic Section consisting of twelve deputies. While these deputies' duties include traffic enforcement and accident investigation, their duties are in fact more similar to those of road patrol deputies than those of the SRP. Traffic section deputies do not regularly perform selective traffic enforcement; this task has, for the most part, been given over the SRP.

The Traffic Section operates only in those townships that have contracted with the Department for additional police services. Ypsilanti

Township, the largest contractor, has no police force of its own; it has therefore contracted for six traffic section deputies in addition to the regular Sheriff's Department patrols (both road patrol and SRP deputies) assigned there. The other six deputies patrol in six other townships having contracts with the Department. The traffic section sergeant has primary responsibility for scheduling and assigning deputies, although the Department's road patrol sergeant for the district including that township may also assist him.

Secondary Road Patrol (SRP)

The Washtenaw County Secondary Road Patrol (SRP) was created by a 1978 Michigan statute that authorized state appropriations to county sheriff's departments throughout the state for the purpose of secondary road patrol and traffic accident prevention. The SRP's stated purposes parallel those that appear in the statute: observing for, stopping, and citing for hazardous traffic violators; responding to and investigating motor vehicle crashes; providing emergency assistance along secondary roads; conducting selective motor vehicle inspection programs; and conducting safety program demonstrations. The SRP began in January 1979 when seven new deputies were sworn in and trained. Regular patrols began in March 1979. The seven newly-created positions are permanent, and it is anticipated that SRP activities will be continued indefinitely. The Department recently shifted several SRP deputies to road patrol to give broader enforcement experience, and replacing them with deputies drawn from road patrol.

For fiscal 1980 the Department received a grant of $180,000 for SRP operations. Those funds were used to pay salaries of the seven deputies, and to purchase and maintain equipment for patrol. The SRP currently has nine patrol vehicles: six marked automobiles and three "semimarked" automobiles (which have the departmental emblems and emergency lights). SRP vehicles are, with minor differences, the same as those used by the road patrol. However, because SRP vehicles are used for only one shift per day--as opposed to as many as three in the road patrol--one Department source estimated they have an expected useful life of three

to four years, which is at least twice that of road patrol vehicles. Each SRP vehicle is equipped with a radar unit that can be operated in either the moving or the stationary mode.

TRAFFIC ENFORCEMENT

Top-level functions relating to traffic enforcement include allocation and deployment of officers, observation, apprehension, and enforcement action. Within the Washtenaw County Sheriff's Department some differences exist among the general (road) patrol, the Traffic Section, and the Secondary Road Patrol (SRP), regarding the way these functions are performed. Because the SRP is the Department's specialized traffic unit, and because it accounts for about half of all the Department's traffic enforcement activity, SRP functions are discussed in greater detail. General patrol activity, when it differs from that of the SRP, is then described.

Deployment

SRP. The primary mission of the SRP is to reduce the frequency and severity of traffic crashes, by enforcing traffic laws and carrying out related activities. This contrasts sharply with the road patrol deputies' responsibilities, which center around crime prevention and investigation. Thus, even though "SRP deputies are officers first," and will respond to emergency calls, they receive comparatively few such calls in the course of their normal duties.

Aside from their respective responsibilities, another difference between SRP and road patrol deputies involves the flexibility with which SRP operates. The SRP operates out of the Department's Service Center headquarters, but SRP operations can be conducted anywhere in the county. The sergeant who supervises the SRP is given considerable discretion by his supervisor, the patrol lieutenant, concerning assignment of manpower. The SRP sergeant has adopted flexible shifts (as opposed to the fixed ones worked by other patrol deputies), the main benefit of which is that SRP deputies can more easily be assigned to work when they are most needed.

The SRP sergeant normally assigns three deputies to work the day shift and four to work evenings. Because of days off and sick and vacation time, not all of the SRP deputies are available for duty on a given shift. Shifts last eight hours; day shifts typically begin at 7:00 a.m. or 8:00 a.m., while evening shifts start at 6:00 p.m. or 7:00 p.m., depending on the time of the year. A sample of SRP logs for August-September 1979 showed that about 40 percent of the shifts began between 6:00 and 9:00 a.m. SRP logs also showed that day shifts begin earlier and evening shifts begin later during the summer. Because traffic on secondary roads is relatively light after 1:00 a.m., night shifts are seldom assigned, except when deputies are assigned to enforce drunk-driving laws. According to one sample of SRP logs, SRP deputies' shifts averaged 8.6 hours. However, during the period covered by the logs, some deputies worked ten-hour shifts in connection with a schoolbus-enforcement effort. Thus the average shift lasts slightly more then 8 hours. SRP downtime averaged 1.17 hours per shift.

The SRP supervisor does not maintain a regular overtime schedule for deputies, although on occasion--such as when an officer receives an emergency call near the end of the shift—overtime is authorized. When a deputy's shift falls on a "hot" night, that is, one with frequent or severe traffic violations, the supervisor may permit a deputy to work overtime on a compensatory basis—one hour's overtime earns the deputy one and one-half hours' free time to be taken later.

Patrol locations—as well as shifts—are selected by the SRP sergeant, on the basis of his personal judgment, suggestions of other Department personnel, computerized and pin-map analyses of accident locations, weather conditions, reports from public employees and private citizens, and such special functions as concerts, fairs, and festivals.

Geographically, there are three types of SRP assignments. By far, the most common assignment consists of one or more townships within which the officer may, on the basis of personal experience, select certain "hot" (high-violation) locations. The next most frequent assignment is a specific location, which involves most--or even all—SRP vehicles. About once a week (more often in the summer) the entire force is assigned to a

particular shift and location for some special effort. For example, during the opening week of the 1979-1980 school year, SRP deputies were assigned to follow school buses on their routes and to observe for drivers illegally passing stopped buses. More commonly, specific-location assignments are "blitzes" directed at speeders in high-violation areas; intense observation and enforcement activity is directed at an area for several days. Speed blitzes reportedly produce a reduction in violations, which may last from three to four weeks. In the final type of assignment, officers "freelance" about the county and select patrol locations where they believe they will be most effective. Freelancing is comparatively rare; it is relied on when only one or two deputies are available for patrol during a given shift, and it allows deputies to concentrate on areas they know to be "hot."

In general, the speed violator population within Washtenaw County varies by time of day and by location. The most widespread and persistent speeding reportedly occurs in the early morning hours. These violators (who typically are on their way to work, usually at one of the industrial plants in the eastern part of the county) are reportedly the least deterred from speeding by police activity. Speeding is also quite frequent during the afternoon commuting hours. Currently, the SRP is concentrating its speed-enforcement efforts on these times of the day. On the other hand, one Department contact stated that "violent" or excessive speeding tends to occur after 9:00 p.m. when traffic volume is generally the lightest. In general, roads having low traffic volumes and long straightaways are most often used by excessive speeders who, it is believed, perceive a low probability of observation and apprehension; it was offered that patrol activity directed at these roads and drivers produces stronger and more long-lasting deterrent effects. SRP patrols, unlike general road patrols, are exempt from the Department's "doubling up" policy. That policy, which is incorporated into the deputies' labor contract, requires two-deputy patrols during the evening and night shifts unless deputy agrees to patrol alone. The SRP, however, occasionally assigns two-deputy patrols.

In contrast to the SRP's flexible, countywide activity, the road patrol

deputies are assigned to shifts and locations. The general patrol is divided geographically into three platoons responsible for patrolling the eastern, central, and western districts of Washtenaw County, and also into three eight-hour shifts: day (8:00 a.m. to 4:00 p.m.), evening (4:00 p.m. to 12:00 midnight), and night (12:00 midnight to 8:00 a.m.). The patrol lieutenant decides how many deputies are to be assigned to each respective location, district, and shift. Deputies, once assigned, report for duty at the substation located within their district and under normal circumstances they patrol only in that district. General patrol assignments within the district are made by the sergeant in charge; with respect to traffic, deployment is determined primarily by citizen complaints and the presence of high accident locations. The frequency of violations is also used as a deployment criterion, but to a lesser extent.

Traffic Section. Traffic section deputies work shifts that overlap those of the regular road patrol and supplement road patrol coverage; thus, typical working hours are 6:00 a.m. to 2:00 p.m., and 2:00 p.m. to 10:00 p.m. Ypsilanti Township receives seven-day coverage: two deputies work the morning shifts, two work the evening shift every day. The remaining contract townships receive five-day coverage, one deputy typically being assigned to each shift. Like road patrol deputies, those assigned to the traffic secton operate out of substations in or near contact townships. Deployment is based on citizen complaints and high-accident locations, plus the deputy's own experience and judgment.

Deputies assigned to the traffic section average one hour of downtime per shift. Much of the remaining time is spent answering criminal complaints; the remainder is available for traffic enforcement. Availability for traffic enforcement depends on geography. However, because road patrol deputies handle more criminal complaints in Ypsilanti Township, Traffic Section deputies reportedly have more time--an estimated four hours per shift—for traffic enforcement. Elsewhere in the county, traffic section deputies answer more criminal complaints and thus have about two to three hours available for selective traffic enforcement. One Department contact characterized a traffic section vehicle as

"visible" and "available" to take action against traffic offenders for most of its nondowntime hours, except when on an emergency run or while investigating a crime or traffic crash.

All vehicles driven by traffic section deputies are equipped with radar units. Deputies primarily stress speed enforcement; about 80 percent of their moving violation citations were for speeding. According to one Department contact they keep their radar units on whenever their vehicles are moving, and occasionally measure speeds while in the stationary mode. On the infrequent occasions when deputies patrol intersections, they will emphasize such offenses as stop-sign and lane-usage violations. Traffic section deputies do not specifically observe for drunk drivers; this is done by the SRP.

Surveillance and Detection

SRP. The amount of time during which a deputy is free to observe traffic violations is first of all limited by the amount of discretionary time that is available; discretionary time is that part of patrol time that remains after downtime, attending to criminal matters, performing other nontraffic functions. A deputy may choose to spend discretionary time on activities other than traffic enforcement, such as carrying out additional surveillance in populated areas where crime is a serious problem.

Because the SRP was established for the express purpose of providing traffic services, its deputies have considerably more time available for traffic enforcement than do road patrol deputies. Of the seven hours (excluding downtime) an SRP deputy has available for patrol, no more than ten percent is taken up with nontraffic matters, such as serving as "backups" to other deputies on call, or answering emergency calls themselves. SRP logs examined by project staff revealed that five hours per shift were devoted to "selective (traffic) enforcement." This is most frequent during afternoon hours when there tends to be fewer road patrol vehicles than desired. While SRP deputies emphasize observation for specific traffic violations, chiefly speeding and vehicle equipment defects (e.g., headlights out), not all activity dealing with traffic can be classified as "enforcement."

Responding to and investigating traffic crashes occupies an estimated ten to fifteen percent of an SRP deputy's patrol time, and motorist-assistance calls require about two or three percent. Other nonenforcement traffic functions of the SRP include operating vehicle checklanes to determine compliance with state vehicle equipment laws, and rendering emergency assistance in times of poor weather. In times of snow, ice, or heavy fog, SRP vehicles are assigned to a "first response deployment," that is, they are assigned to fixed locations throughout the county to reduce their response time to crashes or other emergencies.

Speeding is the offense most commonly cited by the SRP. In a sample of citations issued by the Department during January 1980, fifty-six percent involved speeding. In another sample of court files involving civil infractions, seventy-three percent involved speed. According to logs examined by HSRI staff, the average SRP officer averaged 5.4 traffic violation stops per shift, 2.8 of them—or slightly more than half—for speeding.

Once SRP deputies arrive at the location to which they are assigned they select roads for moving patrol (or locations to take stationary radar measurements), based on their experience and judgment. As stated earlier, the SRP supervisor occasionally assigns the entire patrol to one specific task or location.

All SRP patrol vehicles are equipped with radar units. Owing to the presence of radar, combined with SRP's specific traffic assignments and the prevalance of speeding on county roads, SRP deputies concentrate on observing for speeders. Other moving violations and vehicle equipment defects are observed for on an on-view basis.

The most common method of observing for speeding violations is by **radar.** Patrol vehicles are equipped with the K-55 model. The unit (control panel and receiver) is mounted on the dashboard of a patrol vehicle, and it can be operated in the stationary or the moving mode. SRP radar units are not transferred from vehicle to vehicle, and only a handful of road patrol units are shared.

Sheriff's Department deputies currently rely on several procedures to calibrate their radar units and ensure that they are functioning properly.

Before each shift the units are calibrated externally, using two tuning forks as well as (on occasion) calibrated patrol vehicle speedometers. In addition, radar units have an internal "calibration" feature that is also checked. If the radar device is shown by the calibrations to be accurate, it will be used on patrol during that shift. In addition, to qualify to use radar, deputies attend eight-hour training sessions conducted by a manufacturer's representative. (Nearly all of the Department's radar units are manufactured by MPH industries.) Those who successfully complete a proficiency test are given certificates by the manufacturer's representative (this certificate is reportedly required by state law). Rookies also receive additional radar training as part of ther general on-the-job training, which generally involves going on patrol with an experienced deputy. Because radar operation is only one of a variety of police skills involved in on-the-job training it is difficult to determine how many hours of on-the-job training a rookie may actually receive before (s)he uses a device to observe for and detect speeders.

In the Secondary Road Patrol deputies also attend monthly meetings at which they discuss radar-related problems and experiences. In addition, because all seven SRP deputies were hired without prior experience they were initially instructed to operate their radar units but not issue any citations until they became more skilled at using the unit. In any event, all deputies are instructed not to issue any speeding citations based on a "suspicious" measurement, such as an improbably high or rapidly changing speed reading.

Department contacts cited a number of factors—other than the unit's operating condition—that affect their use of radar speed measurements. Weather is one such influence: hot weather results in heavier traffic and more violators, while rain or snow holds down both traffic volume and speeds.

While driving during the shift, the deputy periodically checks the radar unit's patrol vehicle speed against the speed indicated on the patrol vehicle speedometer to ensure that it is operational.

Throughout the shift, SRP deputies keep their radar units activated; most of them prefer to rely on the digital display and many reportedly

rely on its audio signal as well. The use of the unit's automatic alarm, which alerts the deputy to violations whether or not (s)he viewed them, is discouraged. Sheriff's Department policy and local judges' rulings stress that a deputy visually observe both the offending vehicle and the unit's digital speed reading, rather than rely on the warning system. "Pounding"—a series of digital readouts showing the same high speed-is believed most reliable, and is preferred by the Department.

Approximately eighty percent of all radar speed measurements are taken in the moving mode; the remainder are stationary-mode measurements. The principal advantages of moving-mode radar include its ability to monitor greater volumes of traffic, the element of surprise (drivers cannot see the radar antenna within the vehicle until it is too late to slow down), and deputies' preference to stay moving rather than remain parked; for those reasons it is preferred by most deputies. In the past year, however, stationary-mode radar measurements have become more common in light of the Department's fuel-conservation efforts. Present Department policy encourages deputies taking radar measurements to spend at least twenty-five percent of that time in the stationary mode. The chief advantages of stationary-mode measurements are fuel efficiency and the supposedly greater "halo effect" on passing traffic created by a visible enforcement symbol. Radar measurements in the moving mode are taken in the course of routine patrol activity. The normal procedure is to monitor oncoming traffic although moving radar can be used to measure the speed of traffic traveling in the same direction as the patrol car.

Deputies taking **stationary**-mode measurements normally take steps to conceal themselves from passing traffic, usually by parking in a side road or driveway. It is believed, though, that the greater range of modern radar equipment has made concealment somewhat less important. The preferred measurement procedure involves parking the patrol vehicle parallel to the road, facing in the same direction as the closest lane of traffic. It is usually easier to monitor speeds of oncoming vehicles, because a deputy can obtain a measurement before the subject has passed by, and (s)he has more time to pursue. On the average, a deputy taking

stationary-mode measurements will remain in one location for one to one and one-half hours if the location is "hot," but less than thirty minutes if there are few violators.

Deputies are reportedly reluctant to stop a vehicle in poor weather (rain, snow, or bitter cold), because a traffic stop means leaving the patrol vehicle. Open, level highways that afford no cover for a parked vehicle are not suitable for stationary radar; on the other hand, crowded urban boulevards that do not permit easy turnaround are not suitable for moving radar. Of course, it is pointless to take radar measurements on roads where there is little or no traffic, especially if other locations are more heavily traveled. In general, radar units can operate at any hour of the day or night; it was offered that radar is somewhat more effective at night since patrol vehicles are better concealed from drivers' view during darkness.

Speedometer pacing is used in the rare instances when radar is not available to measure speeds--that is, when the unit is not functioning properly or when it has not "warmed up." Because SRP deputies all have and use radar, they use pacing only on the rare occasions when their units are not functioning properly. This is not the case with the road patrol, since some deputies do not use radar. In pacing, patrol vehicle speedometers are used to make speed measurements. The officers learns from experience how to pace. There is no prescribed distance over which an officer must measure a suspect's speed. The preferred technique is for the deputy to position oneself from five to eight car lengths behind the suspect's vehicle and hold that distance constant while obtaining a speedometer reading. However, measurements obtained through pacing have several major deficiencies. First, unless they are externally calibrated (i.e., against radar measurements of the vehicle's speed) and shown to be accurate they might not be admitted as evidence in speed-infraction cases. Second, since Sheriff's Department vehicles are marked, speeding drivers often are able to see them (especially during daylight hours) and slow down before the pacing officer can get a good reading. Third, speedometer pacing cannot measure speeds of oncoming vehicles. Finally, pacing is subject to human error. To minimize the risk

of a judge rejecting a speed measurement obtained by pacing, deputies charge violators with a speed somewhat below the speed actually measured.

In both citation samples examined by HSRI staff, cases in which the violator's speed had been determined by pacing were extremely rare: in one example, pacing was noted in fewer than one percent; in the other, less than five percent involved pacing.

Because Sheriff's Department vehicles are marked, they are visible to drivers when measuring speeds in either mode; they are also recognizable when deputies carry out other police activities. It is Department policy to emphasize visibility not only to remind drivers of their presence, but to assure residents that their neighborhoods are being protected. The SRP supervisor also made a distinction between "visibility" and "active visibility": the latter implies a deterrent "message" conveyed by a visible patrol vehicle in the act of enforcement with flashing blue lights. SRP deputies are instructed to use their lights as much as possible, and they are advised that stopping a violator to give a warning is as effective a message as stopping a driver to issue a citation.

The number of miles covered by an SRP deputy depends on the size and remoteness of the area to which the (s)he is assigned, the number of driver contacts that are made, and the amount of time spent operating radar in the stationary mode. According to SRP logs examined by staff, as well as contacts within the department, it is estimated that an SRP deputy covers from 75 to 100 miles per shift in the eastern townships, from 100 to 150 miles farther west, and about 100 miles per shift countywide.

It is the Department's general policy that patrol vehicles are to be visible whenever possible. Deputies are encouraged to write up their paperwork while parked in a conspicuous location; in addition, they commonly spend their discretionary time patrolling the county's principal secondary roads. (One obvious exception involves stationary-mode radar, which requires concealment of the patrol vehicle.)

Road Patrol. Road patrol deputies' observation practices differ in several ways from those of the SRP. First of all, road patrol deputies have less discretionary time than do SRP officers. Second, not all

discretionary time is devoted to traffic. One Department contact estimated that in the eastern part of Washtenaw County only one-quarter of this discretionary time is devoted to traffic enforcement, since most time is devoted to preventive patrols and property checks. (In the western townships there is more discretionary time and there are fewer crime-prevention duties.) Third, road patrol deputies are more likely to enforce traffic laws on an "on-view" than a selective basis—for example, taking action against an offender seen while returning to the substation after answering a call. Finally, what traffic offenses a road patrol deputy emphasizes depends on whether (s)he has and uses radar. Not all road patrol deputies are trained to operate radar; one source estimated that slightly more than half the road patrol used radar, and a sample of logs showed an equal division between radar and nonradar vehicles. Individuals having radar make regular use of it, and most of their moving traffic citations are for speeding. The remaining deputies prefer not to operate radar, have not received the requisite training, or lack the confidence in their own radar expertise to testify in court; thus, when they measure speed, they rely on speedometer pacing. Deputies who patrol without radar units reportedly write a comparatively large proportion—one-third to one-half--of their traffic citations for moving violations other than speeding.

Apprehension

Both the SRP and the road patrol use similar apprehension procedures. A deputy detecting a driver exceeding the speed limit must first decide whether to pursue and apprehend the violator. The Sheriff's Department has an official but unpublicized tolerance of 15 mph. A number of reasons were offered by Department contacts for this policy: enforcement efforts should be directed at dangerous violators; speed limits are so frequently violated; many drivers have speedometers that do not give true readings; and drivers who are stopped for a clearcut violation are less likely to contest the citations they receive. Deputies will stop some drivers for speeding within that tolerance, but normally will not cite unless the driver exceeds the speed limit by at least 15 mph. Individual

deputies have discretion regarding the 15-mph tolerance, and they may cite for speeds within the tolerance when circumstances make them unusually dangerous (e.g., violations in school zones or on gravel roads, or speeding accompanied by defective equipment on the vehicle). The great majority of citations examined by project staff involved more than 15 miles per hour above the limit. Violators' measured speed averaged 16 to 18 miles above the posted limits.

There is no stated policy regarding pursuit, so the decision whether to pursue a fleeing driver is left to the deputy's determination of whether pursuit would cause too great a risk of a crash. A deputy who decides to stop a speeder, and concludes (s)he can safety pursue, "locks in" the speed readout on the radar unit, turns around if necessary (the violator usually is moving in the opposite direction), activates the blue flashers, and pursues the violator.

Before the vehicle is pulled over and stopped, the deputy radios its registration (license plate) number and a description of its occupants to headquarters, which queries state law-enforcement data systems to determine if the vehicle is stolen. The deputy then parks the patrol vehicle behind, and slightly to the left of, the violator's vehicle. (This gives additional protection against being struck by passing traffic.) The deputy is instructed to approach from the driver's side from where (s)he can observe the occupants and the vehicle's interior. Violators will, on occasion, leave their vehicles and approach the patrol vehicle in which the case the deputy must—in the interests of safety--direct the violator back to his or her own vehicle.

When a deputy believes the circumstances surrounding the stop are dangerous (s)he may order the driver out of the vehicle. Otherwise, the deputy asks the driver to hand over the license, registration, and proof of insurance then returns to the patrol vehicle and radios the driver's name and license number to headquarters to determine if any arrest warrants are outstanding.

Presanctioning

Several Department contacts stated that while it is general policy that a deputy should decide, at the time of the stop, whether to cite or warn a violator, this is not always the case. It was estimated that 75 to 80 percent of all speeding stops (including an even higher percentage among those made by SRP deputies equipped with radar) result in the issuance of citations; however, a deputy may warn if there are extenuating circumstances. Deputies warn at least half of all the drivers they stop for equipment violations, but they are more likely to issue citations in certain instances (such as poor driver attitude, or excessive speed in addition to the defect).

In the case of speed violators, available data showed that about 80 percent of the speeders contacted by SRP deputies, and about 88 percent of those contacted by road patrol deputies, were cited; the remainder were verbally warned. Equipment citations are dismissed, however, if the driver is able to prove that (s)he made the necessary repairs within ten days. In an estimated 15 to 20 percent of all traffic stops, the deputy discovers facts warranting further action.

Most such cases involve an outstanding traffic warrant (failure to answer a citation or pay a fine), although drunk or reckless driving arrests, and arrests for possession of weapons, drugs, or open liquor containers, are also common.

Deputies who make speeding stops based on radar measurements commonly charge violators with driving at a lower speed than the one at which they were clocked. This, however, is discretionary, and a deputy may consider the magnitude of the speed violation, and other aggravating factors such as the driver's attitude or equipment defects on the vehicle. One reason why deputies "take a few miles off" the clocked speed is the frequency of speedometer errors in passenger cars; another is the local judges' distaste for drivers receiving violations points for speeds only slightly above a given cutoff level (e.g., 41 mph in a 30 mph zone). In general, nearly all drivers receive the benefit of being charged with a lower speed than their clocked speed. In two citation samples, consisting of approximately 200 citations, the average reduction from measured to charged speed was 4 to 6 mph.

Sheriff's Department policy stresses courtesy to drivers who are stopped for traffic violations; the deputy is expected to "sell" citations to violators, that is, by politely explaining to the driver how (s)he violated the law and why the violation was dangerous. Nonetheless, one Department contact stated that perhaps one-third of stopped drivers argue to the deputy that they were not speeding, or that their high speed was somehow excusable.

Stops for speeding and other minor moving violations reportedly take about ten to fifteen minutes to complete; this time includes the time spent determining whether there is an outstanding warrant for the driver's arrest, writing the citation, presenting and explaining it to the driver, and making appropriate entries in the daily log. In the case of a speeding stop, the driver is usually given an opportunity to view the radar reading showing the speed. Few drivers ask to see the reading; nonetheless local judges apparently insist that deputies offer to make readouts available. Some judges have reportedly dismissed citations when no such offer is made or when a violator asks to drive the vehicle past the radar again to verify for speedometer error, and the request is refused.

Depending on road and weather conditions, and the volume of traffic, SRP deputies average between eight and twenty contacts per shift; according to SRP logs, about half of these are classified as "traffic stops." Nearly three-quarters of traffic stops are for speed, while most of the remainder involve defective equipment. Although the SRP consists of only seven deputies, because of its specialized traffic responsibilities it accounts for about half of 1,500 citations issued montly by the Department.

For the Department as a whole, about two-thirds of its traffic citations are issued for hazardous moving violations. According to a limited sample of traffic citations (i.e., about 200 citations submitted by deputies to the Department's clerical staff during December 1979 and January 1980), about four out of five hazardous-violation citations are for speeding. Drunk driving arrests are infrequent; and a typical deputy will make only about one or two per month. Most speeding citations examined by project staff—between 50 and 60 percent--are issued during the day shift, and about one-third result from evening shift activity.

Fewer than ten percent of the Department's speeding citations are written during the night shift, although more than one-fifth of all the Saturday and Sunday citations examined were issued between midnight and 8:00 a.m. More than two-thirds of the Department's citations examined by project staff were issued on roads with posted speed limits of 30 to 45 mph; slightly more than one in ten were issued on limited-access highways formerly posted at 70 mph.

LAW GENERATION, ADJUDICATION, AND SANCTIONING

The preceding section described the functions carried out by the Sheriff's Department itself. However, the Department enforces laws enacted by the Michigan legislature, and its activities are restricted by other legislative provisions. In addition, responsibility for adjudicating cases lies with the Michigan courts, and sanctioning is done by both the courts and the driver-licensing authority, the Michigan Department of State.

Law Generation

Several Michigan laws define and deal with speeding. The Basic Speed Law generally prohibits speeds that are greater or less than what is reasonable and proper, as well as speeds that will not permit the driver to stop within the assured, clear distance ahead. Another law permits the posting of prima facie speed limits on highways, subject to the 55 mph national maximum speed limit, which is absolute. Under another law, in residential areas where no limit is posted, the prima facie maximum speed limit is 25 mph. Violation of any of the state speed laws--or municipal ordinances patterned after them—is a civil infraction, adjudication of which takes place in the district courts.

In one group of about 180 citations examined by project staff at the 14th District Court it was found that most of the Department's citations (about 65 percent) were issued under local ordinances rather than state law. One reason is that townships without their own police forces have contracted and paid for additional Sheriff's Department protection. As a result, there exists an agreement between the Sheriff's Department and

these townships: deputies will charge violators under local traffic ordinances rather than state law, with the result that a portion of the fine revenue from ordinance-violation cases is returned to the townships. Except for the disposition of fines, adjudication and sanctioning is the same when an ordinance rather than state law is violated. On the average, fines and costs in the sampled speeding citations averaged $34.61.

Effective August 1, 1979, Michigan "decriminalized" speeding and other minor traffic violations, reclassifying them from misdemeanors to "civil infractions." The maximum penalty for a civil infraction is now a $100 civil fine (plus from $5 to $100 costs). A person may not be confined to jail except in cases of civil contempt resulting from an intentional refusal to pay civil fines and costs. (Under prior law, persons convicted of misdemeanor traffic violations could be punished by up to 90 days imprisonment and as well as fines of up to $100.)

Drivers found "responsible" (the term replaces "guilty" now that a decriminalized procedure is in effect) for a speeding infraction are also assessed violation points by the Michigan Department of State (DOS).

Neither Michigan statutes or appellate court decisions impose specific restrictions on the use of radar or other speed-measuring methods. Recent appellate court decisions have held that Michigan law prohibits the use of radar detectors. One other statute deserves mention: the Michigan "fleeing and eluding" law provides that unless a police vehicle is at least partially marked, a driver who flees from it cannot be prosecuted for that offense.

Although speeding and other minor traffic violations are no longer crimes, police procedures for dealing with traffic violators are essentially the same as they were before the law change. Violators are stopped at the roadside, detained briefly for a license and registration check, and issued a citation or warning or taken into custody when appropriate.

Adjudication. In Michigan speeding cases are initially brought in trial courts of limited jurisdiction called district courts, and most are finally adjudicated at that level. District courts are authorized to decide minor criminal and civil cases. Under the new traffic law, traffic offenses are civil infractions and continue to be heard in district courts; the law now

provides for an informal hearing procedure (described below) as well as a formal procedure that resembles a misdemeanor trial.

Under Michigan law, the court that has jurisdiction over the cited driver is the district court whose territorial jurisdiction includes the place where the civil infraction allegedly occurred. In Washtenaw County, there are two district courts: the 15th District Court, which adjudicates offenses occurring within the City of Ann Arbor, and the 14th District Court, which has territorial jurisdiction over offenses committed elsewhere in the county. The 14th District Court has four district judges, each of whom is responsible for cases that occur in a specific region of the county. One region consists of Ypsilanti Township, another includes four other eastern townshps, and a third consists of the western townships and villages. The fourth region is the City of Ypsilanti, which is not normally patrolled by the Department. Therefore, nearly all speeding citations issued by Sheriff's Department deputies are adjudicated before three of the four 14th District judges.

Adjudication

Adjudication of a civil infraction begins when a police officer issues a citation to the driver, and files a copy of the citation with the court. The citation contains the charges against the driver; thus, in speeding cases it must show the applicable speed limit as well as the speed at which the driver allegedly traveled. The citation contains a space on which the officer enters a hearing date; a hearing is scheduled on that date if the driver later chooses to request one. Citations are sometimes referred to as an "appearance tickets" because the cited driver must "appear" (respond) by a specified date. Michigan law does not fix a time within which the driver must appear, but does require the driver to be given a reasonable time to do so. In the 14th District a "reasonable time" is typcially interpreted to mean at least ten days after the citation was issued; the great majority of those citations examined by project staff provided between ten and twenty days between the alleged violation and the scheduled hearing date. (Nonresident drivers have the option of requesting an immediate hearing, if one can be arranged, to determine

responsibility.)

An average of about 3,000 traffic citations per month are filed in the 14th District Court, and an estimated sixty percent or more of these citations are for speeding. Not all of this countywide citation total results from Sheriff's Department activity. In one sample of citations, about two-fifths were issued by the Sheriff's Department, about two-fifths by the Michigan State Police, and the remainder by local police departments.

A driver who receives a citation has three options: to "admit responsibility," which is equivalent to pleading guilty; to "admit responsibility with explanation," that is, give reasons why the conduct should be excused or why the penalties should be mitigated; or to "deny responsibility," which is equivalent to a not-guilty plea. The great majority of cited drivers choose to admit responsibility. One explanation offered for drivers' reluctance to contest traffic citations is that they regard them only as a financial inconvenience; only when a driver faces license suspension or increased auto insurance premiums does (s)he usually consider the matter important and worth contesting. A resident driver who admits responsibility--with or without explanation—may do so in one of three ways: in person, by representation (appearance by legal counsel), or by mail (sending a check for the fine and costs).

In the 14th District a number of drivers have mailed explanations to the court. In the case of one judge, explanations are first reviewed by a member of the court staff to determine which ones state a legal justification to the traffic violation that was charged, and final dispositions are then made by the judge. The violator is then informed by mail of the judge's disposition and the fines and costs (if any) that are due. An estimated ten to fifteen percent of all cited drivers in the 14th District admit responsibility with explanation. Typical explanations for speeding include: the driver did not realize that (s)he was speeding; (s)he was rushing to the hospital in response to an emergency call (this explanation is frequently given by medical personnel); the speedometer was defective; oversize tires affected the speedometer reading; and the driver suffered a personal health emergency. Some explanations, even

though they do not legally excuse the violation, might still be considered in mitigation of the offense. Specifically, the judge may in appropriate cases reduce the number of miles per hour by which the driver exceeded the limit; this may reduce the resulting fine and assessment of violation points. It is believed that many drivers offer explanations in hopes of obtaining a "discount" on their fine or assessment of points.

A driver who denies responsibility may request either a formal or an informal hearing. Hearings may be requested by mail or by telephone. Since August 1979, the number of contested cases has reportedly averaged about 120-160 per month in the 14th District; one member of the court staff reported that fewer than twenty citations have resulted in demands for a formal hearing. Hearings, especially formal ones, may be even rarer than the court employees' estimates would indicate: in a sample of speed-infraction files examined by HSRI staff, fewer than three percent resulted in informal hearings, and none in formal hearings.

A formal hearing is required to be heard before a district judge and to be conducted according to the rules and procedures that govern misdemeanor trials (with one exception: jury trial is not provided for). In a formal hearing--as opposed to an informal one—involving speeding, "foundation testimony" establishing the validity and accuracy of radar must be offered. In such hearings, 14th District judges appear to consider the accuracy of radar measurements on a case-by-case basis, depending on the evidence before them. Judges reportedly tend to give valid radar measurements greater weight, as evidence, than readings obtained from pacing. An informal hearing may be requested by a driver who denies responsibility or who wishes to offer an explanation. Informal hearings may be held before a district court magistrate, a court officer who is not required to be an attorney. In the 14th District a magistrate was not authorized and funded by the county board of commissioners until February 1980, in the meantime, all traffic cases were heard and decided by district judges. Informal hearings are not necessarily bound by rules of procedure and evidence that govern trials, so long as "substantial justice" is done. Another feature of the informal hearing is that attorneys may not appear on behalf of either side.

A driver may appeal an adverse decision of a formal hearing to the next higher court (the circuit court), which reviews the hearing on the record rather than tries it. Adverse decisions of informal hearings may be appealed within the district court in which case a new, formal hearing is held before a different district judge. So far, very few appeals have been requested by the drivers.

It was reported that in the 14th District the absence of a prosecuting attorney in informal hearings has not made it any more difficult to prove that the driver committed a speeding violation, since proving the elements of a speeding case are considered rather straightforward. In addition, 14th District judges' interpretation of the new procedure is that the citing police officer does not have to prove the underlying validity of the radar speed measurements (in practice this proof is quite routinized) unless the driver specifically makes the validity of radar an issue.

Recently, doubts have arisen on the part of some judges—including a few within Washtenaw County--about the accuracy of radar speed measurements. Moving-mode radar, which is the primary speed-measuring method used by the Department, has produced the most judicial skepticism. The so-called Miami radar decision, well-publicized in the popular literature, cited a number of possible errors, including overestimations of target vehicle speeds due to a number of causes including: "cosine error" resulting from taking measurements at an angle; "ghost" readings caused by fans, air conditioners, or stationary objects; and the possibility that units might be measuring the speed of a vehicle other than the one nearest the observer. So far, judicial doubts about radar have not seriously restricted the Department's use of devices, although some citations based on moving radar measurements, taken in the county's western townships, reportedly have been dismissed by the district judge sitting there. The Department and other local law-enforcement agencies recently have attempted to persuade judges that radar is generally reliable in either mode, and that errors that do occur can be dealt with by a trained operator.

In the 14th District, judges tend to hear contested traffic cases on the average of twice a week; about four cases are heard per session. In

addition, some judges report that they schedule evening and Saturday hearings for drivers who work during the day. On the average, an informal hearing requires five to ten minutes, a formal hearing approximately twenty. The average period between issuing a citation and holding a hearing on it is approximately two to three weeks; however, if a formal hearing is held and if the attorney for the other side requests more time, the hearing date will be delayed.

In civil-infraction hearings the burden of proving the driver responsible remains with the prosecution (as was the case with misdemeanors); however, under the civil-infraction procedure only a "preponderance" (majority) of the evidence is required, as opposed to the proof beyond a reasonable doubt that was formerly required. One judge observed that the relaxed standard of proof has had an impact on some close cases: some drivers who would have been found not guilty of a violation when it was a misdemeanor are found responsible for the same violation now that it is an infraction. Aside from the relaxed burden of proof, another practical effect of decriminalization is that the Fifth Amendment privilege against self-incrimination does not apply to infraction hearings. Thus, a judge can now focus on the driver's behavior by asking the driver questions. The informal hearing procedure also permits the judge to avoid the time-consuming ritual of an officer presenting an entire case. This is especially helpful when the driver's true reason for having requested a hearing was only to offer an explanation for his or her conduct, and not to contest the validity of the citation itself.

Another effect of decriminalization involves the large number of drivers who ignore citations or who fail to appear at hearings. Under the current procedure an automatic "default judgment" may be taken against a driver who fails to respond to the citation or to attend a scheduled hearing. Not only can court personnel close a default-judgment case against the nonappearing driver, but existing civil procedures (i.e., garnishment of wages) are available to collect the unpaid judgment. In addition--as was the case under the prior law--a driver who fails to answer a citation receives an automatic license suspension from the Department of State (not a court) until the outstanding fines and costs

are paid. Data gathered by the 14th District Court staff show that a significant portion--perhaps one-third--of traffic citations issued since August 1979 have resulted in defaults (in the case of nonresidents, forfeitures of bond). Owing to understaffing, the 14th District Court has experienced a severe backlog in processing default cases; as of December 1979 the court staff reported that there were about 1,350 outstanding traffic citations. Moreover, one court employee reported that default judgments are, in practice, very difficult to collect: the amount of money involved does not justify the time and expense required to start garnishment proceedings against nonpaying drivers.

Nearly all citations—approximately 99 percent—resulted in a finding of responsibility or in a default judgment. It was estimated that the great majority of contested cases result in a finding that the driver was responsible, but that an estimated one-fourth to one-third of all contested speeding hearings result in finding that the driver is not responsible. In a substantial percentage of these latter cases, the citing officer failed to appear at the hearing. One judge reported that cases were extremely uncommon in which judges found the driver responsible, but reduced the violator's charged speed.

One district judge stated that, in general, the reclassification of traffic offenses from "misdemeanors" to "civil infractions" has streamlined the processing of traffic cases. Even though the civil infraction procedure has resulted in more paperwork for courts and police officers than the prior misdemeanor procedure, it has expedited adjudication of citations and has permitted fairer adjudication.

Examination of a citation sample revealed that from the date of the infraction until the final disposition of the case, an average of 18.7 days elapsed. For cases in which the driver offered an explanation the average was 25.4 days, and cases involving hearings required an average of 28.2 days to close. It should be pointed out that many citations were never answered by the driver, which resulted in a default judgment. Because the 14th District Court separates open and closed civil-infraction cases, it was not possible to determine what percent of all speeding cases ultimately resulted in defaults.

Sanctioning

Drivers found responsible for a traffic infraction--with or without explanation—are subject to court-imposed sanctions (civil fines and court costs) as well as administrative sanctions (violation points).

State law does not provide a uniform fine and cost schedule in traffic infraction cases; that is left to the discretion of judges, subject to the maximum penalties allowed by law. By administrative order the 14th District judges have adopted a schedule for speed violations: a $30 minimum for any speed violation; $45 for speeding 11 to 15 mph above the posted limit; an additional $3 per mile for speeding 16 to 24 mph above the limit; and thereafter an additional $5 per mile. In a sample of speed-infraction cases, the average total fines and costs paid by drivers found responsible was $34.61. It is anticipated that the state court administrator will soon publish guidelines for traffic fines and costs but these will not be binding on courts and they are not expected to alter the 14th District current fine schedule. In October and November 1979 court staff estimated the traffic fine revenue received by the 14th District Court at $23,500 per month, approximately 60 percent of which was attributable to speeding citations.

The 14th District's fine schedule is currently based on the offense but not the driver's past traffic record. However, the 14th District Court plans to obtain a computer terminal linking it to the state's Law Enforcement Information Network (LEIN), at which time driver records will be more available to judges and multiple offenders can be treated differently from those without prior traffic violations. In addition to fines and costs, the consequences of being found responsible for a speeding infraction include the assessment of violation points. Once a driver is found responsible by a court an abstract of that finding is forwarded by the court to the DOS, which assesses violation points against the driver. Although the 14th District Court currently experiences some delay in reporting final dispositions to DOS, it is expected that the administrative backlogs causing these delays will be reduced in the future.

Under Michigan law, drivers found responsible for exceeding the

maximum speed limit by 15 or more miles per hour are assessed four violation points. Those exceeding the limit by ten to 14 mph receive three points, and those exceeding the limit by fewer than 10 mph (or violating the Basic Speed Law) receive two points. There is, however, one exception. On highways where previous limits were reduced to 55 mph to comply with the national maximum speed limit, no points are assessed for "energy speeds." These are defined by law as speeds above 55 but below 60 mph. A driver who accumulates nine violation points may be summoned to appear for a driving interview conducted by a Michigan Department of State (DOS) driver examiner. A driver who accumulates 12 points within two years is subject to license suspension proceedings.

SUMMARY

The Washtenaw County Sheriff's Department is responsible for general law enforcement, principally outside the county's incorporated areas and away from the county's principal trunk highways. Therefore, the Department's traffic-enforcement responsibilities are carried out on secondary roads in rural areas of the county, and involve relatively little 55 mph enforcement.

Most of the Department's selective traffic enforcement is carried out by a small (7 deputies), specialized unit known as the Secondary Road Patrol (SRP). The SRP was established by state law and is supported by state government grants; its functions are almost entirely traffic-related (enforcement, accident response, motorist assistance, and the like). The Department's remaining traffic enforcement is done by Traffic Division personnel, who are hired by some townships on a contract basis, and by general road-patrol deputies on an on-view basis.

Speeding is the traffic violation most emphasized by the SRP, although drunk driving and vehicle equipment violations are also of special interest. Observation for speeders is done in moving, fully marked patrol automobiles. The moving mode is preferred because more miles of road can be covered in that way, and because the deputies generally prefer to remain moving while on duty. Marked vhicles are required by state law,

and because patrol visibility is a major goal of the Department. Team procedures to observe for speeders are very infrequent; in the SRP, nearly all patrols are single-officer rather than "doubled up."

Radar is by far the preferred speed measuring device in Washtenaw County. All SRP deputies have radar units in their patrol vehicles, and these are kept in constant use throughout their shifts. Elsewhere within the Department about half the deputies use radar while on duty; those that do not place a very low priority on speed enforcement and make few stops for that offense. Most radar measurements, especially those by road patrol deputies, are taken while in the moving mode; the low traffic density and lack of center dividers on most secondary roads in the county permit easy turnaround and pursuit.

The SRP's selective enforcement strategy focuses generally on identified high-accident and high-violation areas, and on daytime and evening speeders, especially those who speed during the morning and evening commuting hours. In addition, some Traffic Division deputies target high-accident and high-violation areas for special speed emphasis.

High patrol visibility is stressed by the SRP supervisor, and his deputies are instructed to convey to the public the message that they are "out there enforcing the law." Deputies are also encouraged to "sell" their citations to the public and to consider them as tools to promote safer driving. For a number of reasons, the Department has adopted an unofficial 15 mph tolerance; this helps direct attention to the most unsafe speeders. Many deputies reduce the speed measured by radar--this is crucial to determining the number of violation points to be assessed—to increase public acceptance of their enforcement practices.

In general, the Department's speed-enforcement program has been well received by local judges, although one of them has publicly expressed doubts concerning the reliability of moving radar measurements. With respect to adjudication and sanctioning in speeding cases, Michigan in August 1979 adopted a "decriminalized" procedure for minor traffic offenses. However, this law change has had little impact on the Department's enforcement procedures. Conviction and failure-to-appear rates have not changed markedly, although some drivers have used one

feature of the new procedure to offer explanations in mitigation of their driving behavior.

In conclusion, the following principal observations can be made with respect to speed enforcement in Washtenaw County:

- Most of the roads patrolled by the Sheriff's Department are rural secondary roads, although a limited amount of 55 mph enforcement is carried out.
- Selective traffic enforcement is carried out countywide by a specialized, state-funded unit within the Department.
- Speeding is regarded as a priority traffic violation and speed enforcement is stressed.
- The primary speed-measurement procedure is moving radar.
- Nearly all speed enforcement involves the solo configuration.
- In general active visibility--"advertising" to drivers that officers are present--is stressed by the Department, although no formal PI&E campaigns are carried out.

CHAPTER SEVEN
CASE STUDY
CINCINNATI, OHIO

BACKGROUND

Cincinnati, Ohio, is located on the Ohio River in the southwestern part of the state. It is the third largest city in Ohio, with an area of 72 square miles, a population (1970 census) of 453,000 and a metropolitan area (Standard Metropolitan Statistical Area, 1970 census) populationof 1.11 million. These figures are somewhat dated; the city of Cincinnati itself has steadily lost residents during the past decade, while the population of surrounding area has increased. Cincinnati is the county seat for Hamilton County (1970 census population 923,000). It is served by two principal interstate highways: Interstate 71 (I-71), which connects the city with Cleveland and Columbus to the north, and Louisville to the south; and Interstate 75 (I-75), a major north-south highway that connects the Great Lakes area with Atlanta and Florida. In all, there are 27 miles of Interstate highways, plus five miles of controlled-access state highwav (Ohio 562) linking I-71 and I-75. There are 82 miles of other primary highway, including U.S. 50 and U.S. 52, which run east and west along the river, U.S. 22 (Montgomery Road), U.S. 27 (Colerain Road), U.S. 42 (Reading Road), U.S. 127 (Central Parkway), and Ohio 4 (Paddock Road) which run north and south through the city.

According to estimates supplied HSRI by the Cincinnati Police Department, there currently are 600,000 licensed drivers and 620,000 registered vehicles in Hamilton County. Data compiled by the Police Department show that there occurred in Cincinati in 1979 a total of 28,085 crashes, in which 78 persons (19 of them pedestrians) were killed and 6,567 injured. Although the overall crash figures were similar to those of recent years, the fatality count was significantly higher than during 1975-78, when

an average of 50 to 54 persons were killed. Police sources attributed much of this increase to an increase in the number of intoxicated travelers--both drivers and pedestrians.

The Cincinnati Police Department reports that it patrols 1,045 miles of highways. These include 32 miles of limited-access highway, 82 miles of primary (U.S. or Ohio numbered) highway, and 931 miles of city streets. Less than one percent of Cincinnati's roads have a posted speed limit of 55 mph; these are sections of Interstate highways that carry heavy volumes of commuter, commercial, and through traffic. It should be noted that much of the Interstate system within Cincinnati has a posted speed limit of 50, rather than 55, mph. Cincinnati's traffic patterns are expected to change markedly during the coming year, when completion of a bypass route around the city will divert much of the city's downtown through traffic away from I-75.

GENERAL DESCRIPTION OF THE CINCINNATI POLICE DEPARTMENT

Duties and Organization

The Cincinnati Police Department has general power to enforce Ohio state law as well as Cincinnati's municipal code. In theory, its authority to enforce traffic laws in the city is shared with two other police agencies, the Ohio State Highway Patrol and the Hamilton County Sheriff's Department. However, it was pointed out by Department officials that neither state nor county officers normally patrol within Cincinnati's corporate limits; one contact stated that in terms of traffic-law enforcement, the Cincinnati Police account for "about 99.9 percent" of all such activity.

According to data it supplied to HSRI, the Cincinnati Police Department's fiscal year 1980 budget is $25.74 million, excluding fringe benefits paid to Department employees. In addition to state and local government appropriations, the Department received $3.18 million in federal revenue-sharing funds, $302 thousand in Law Enforcement Assistance

Administration (LEAA) grants and appropriations, and a $285 thousand grant (fiscal 1979 figure) from the Ohio Department of Highway Safety for its Selective Enforcement Program (SEP) operations, which are described below. Of the Department's fiscal 1980 budget, $19.96 million—or 77.5%—is devoted to patrol operations (officers' salaries, vehicle purchase and upkeep, etc.), and $5.78 million—or 22.5%—to administration, support, and overhead.

The Cincinnati Police Department is headed by the Chief, beneath whom are the Administrative Assistant and the Executive Officer. The Department is divided into five bureaus: Operations, Program Management; Services; Organized Crime; and Inspectional Services. The Operations Bureau encompasses the Traffic and Criminal-Investigation Sections, and the Department's five police districts. The bureaus and the Traffic Section are administered centrally; however, most "police work" is actually supervised, directed, and carried out at the district level. The Traffic Section typifies the Department's decentralization philosophy. The section itself has only a small staff (one lieutenant, one sergeant, one specialist, three patrol officers, and support staff); actual traffic-enforcement operations, both regular and SEP, are performed by line officers assigned to the districts, to which they are responsible.

The Police Records Section, within the Services Bureau, is responsible for the processing of traffic citations issued by members of the Department. It maintains copies of citations, and compiles statistical information regarding the Department's enforcement activity.

According to figures submitted to HSRI, the Department has 368 vehicles, including 160 marked and four semimarked vehicles (i.e., without light bars or plain-colored) used for routine patrol. The Department encourages visibility and conspicuity of patrol, but does not conduct any formal public information and education campaigns to publicize its enforcement activities. The Department's fleet also includes 181 unmarked or "camouflaged" vehicles (most of which are used by supervisors and undercover officers), and 23 motorcycles, which are principally used in the central business district. The Department's vehicles are assigned to

districts for general use; no vehicles are specifically earmarked for traffic-enforcement use. The Department states that is currently owns 18 radar units (11 MR-7 units manufactured by Kustom Signals, and 7 K-55 units manufactured by MPH Industries). These can be used in either the stationary or the moving mode. The department has no VASCAR units or stopwatches.

General Patrol

There are five police districts within Cincinnati; each of them is self-contained and is ultimately responsible for all law enforcement in that district. The first district encompasses the downtown and innercity area. District II (Erie Avenue) includes the less densely populated eastern part of the city. The third district (Warsaw Avenue) covers the Southwestern part of Cincinnati, including a large section of the riverfront. District IV (Reading Road) encompasses the city's northeast region, and District V (Ludlow Avenue) the northwest region. Each of the districts is headed by a captain, whose lieutenants have general supervisory responsibility over each of the "reliefs" (shifts). The Department reported that it presently consists of 717 line officers, 222 other sworn officers, and 159 civilian personnel.

The Department's complement of sworn officers is down from a high of approximately 1,100 because a shortage of funds resulted in the layoff of a number of officers as well as suspension of the recruitment of new officers for several years. However, the laid-off officers have been recalled and a new recruit class has been formed.

Personnel are not equally distributed among the five districts; rather, the number of sworn officers ranges from a low of 96 in the Second District to a high of 186 in the First District. Although each district has separate responsibility for the deployment of officers, reliefs are eight hours long in all districts, and they are typically scheduled as follows: 7:00 a.m. to 3:00 p.m.; 3:00 p.m. to 11:00 p.m.; and 11:00 p.m. to 7:00 a.m. As is discussed later, special-duty reliefs (such as for traffic enforcement) overlap those of the patrol officers. Each relief is subdivided into a

number of "beats" covering a part of the district. Some inner-city beats and beats involving work after 8:00 p.m. are doubled up; the latter are required, by Department policy, to be doubled up.

Traffic Section

Aside from the districts themselves (each of which is responsible for enforcing traffic laws), two other entities of interest are the Traffic Section and the Selective Enforcement Patrol (SEP), contained within the Traffic Section. As already stated, the primary functions of the Traffic Section are administrative in nature. For example, all reports of traffic crashes compiled and forwarded by district officers are forwarded to the Traffic Section, which analyzes them and generates statistical data (such as monthly reports of accident totals and trends, and pin maps showing fatal crash locations).

Traffic Section personnel conduct classes in the operation of radar and breath test devices, which are part of the regular police academy curriculum; they also maintain these devices in proper working order. Traffic Section personnel also inspect and license busses and taxicabs. Most importantly, however, the Traffic Section administers and coordinates SEP activity. The section monitors compliance with the terms of the SEP grant, keeps statistical data on SEP activity, and sets general enforcement priorities (including determining how many officers are needed, what offenses and geographical areas require attention, and during what hours enforcement operations are to take place).

SEP operations are described in detail below: in sum, those who actually enforce traffic laws under this program are district officers; those who administer the program are Traffic Section personnel.

Selective Enforcement Patrol (SEP)

The SEP is primarily a state-funded traffic enforcement patrol operating under the supervision of the Traffic Section. Since its beginning in December of 1979 the SEP operated for alternate two-week periods. There are two shifts operating every day of the week during each two-

week period. A day shift operates from 1:00 p.m. to 9:00 p.m. and a night shift operates from 9:00 p.m. to 5:00 a.m. There are six patrol cars deployed on each shift to six high-traffic-accident locations throughout the city.

Thus, during the period that the SEP is operating, there are a total of twelve SEP patrols per day. The six locations were identified at the beginning of the SEP program in December through analysis of traffic accident data compiled by the Cincinnati Police Department. To evaluate the effect of SEP patrol activity on traffic accidents, the six locations are kept constant during the period of the original funding. Accident rates for weeks when SEP is operating are compared to those when SEP is not operating. One of the locations is a portion of an interstate highway running through the city and the other five are busy city streets. SEP officers are instructed to stay on or near their assigned location during their shift.

All SEP patrols are conducted by single officers in marked automobiles. SEP officers are recruited primarily on a voluntary overtime basis from each district, although several officers who are permanently assigned to the Traffic Section also participate in the SEP patrol. There is no limit to the number of SEP patrols for which an officer may volunteer, but the requirement that SEP patrol duty be in addition to a regular work week tends to limit the number of shifts any single officer may do.

TRAFFIC ENFORCEMENT

Traffic enforcement is conducted within the Cincinnati Police Department by general patrol officers in each of the five districts and by the members of the Selective Enforcement Patrol (SEP). Because traffic enforcement emphases and tactics vary between the two, the SEP and the general patrol are described separately.

Deployment

SEP. As indicated before, SEP officers are recruited from line officers

in each of the five districts. Because each district conducts and supervises its own traffic enforcement the Traffic Section essentially performs administrative functions only. However, the Traffic Section does take a somewhat more active role with respect to the SEP: It chooses the Selective-enforcement locations and also monitors overall compliance with state guidelines for SEP.

Because the SEP was established for the express purpose of providing traffic services, almost all of an SEP officer's shift is devoted to traffic enforcement. The supervisor of the SEP estimates that officers spend an average of seven out of the eight hours of the shift enforcing traffic laws or providing motorist assistance. The other hour is downtime, taken up with briefings, lunch, and routine administrative duties. The dispatchers in the Communications Section within each district are instructed not to assign any police runs to SEP officers on patrol, except in an emergency when no other manpower is available. An officer assigned to SEP duty is instructed to tell the dispatcher (s)he is on SEP patrol and not available for other duties.

General Patrol (District I). As stated previously, the Cincinnati Police Department is decentralized, consisting of five districts that are largely responsible for their own enforcement practices. As a result, enforcement practices in each District may vary. Speed enforcement procedures used in District I are described because this district encompasses the downtown area of Cincinnati and therefore reflects the procedures and problems associated with enforcement of speeding by any large city police department. When practices differ in the city's other four districts, they will be noted. Again, SEP operations are conducted by district patrol officers on overtime duty; thus many procedures described in the material dealing with the SEP are identical to those used by general patrol officers. Only general patrol procedures that differ from SEP procedures are discussed in detail.

District I, as is the case in the other four districts in the Cincinnati Police Department, operates on the relief system for assignment of

officers. There are three primary reliefs (shifts) with the following hours seven days a week:

- lst relief - 7:00 a.m. to 3:00 p.m.
- 2nd relief - 3:00 p.m. to 11:00 p.m.
- 3rd relief - 11:00 p.m. to 7:00 a.m.

There are also two overlapping shifts, one running from 12:00 p.m. to 8:00 p.m. and the other from 8:00 p.m. to 4:00 a.m., to provide added coverage during hours of peak demand. The typical patrol strength on these shifts is as follows:

- 7:00 a.m. to 3:00 p.m. - 10 vehicles
- 12:00 p.m. to 8:00 p.m. - 1-2 vehicles
- 3:00 p.m. to 11:00 p.m. - 14 vehicles
- 8:00 p.m. to 4:00 a.m. - 2-3 vehicles
- 11:00 p.m. to 7:00 a.m. - 10 vehicles

District I also has a Special Operations Unit consisting of two officers in two single-officer vehicles, assigned exclusively to traffic enforcement and accident investigation. Both special-operations vehicles are radar-equipped.

All officers on the regular and overlap reliefs have the same responsibilities. They are assigned to any one of eleven beats within the District and are free to engage in whatever patrol activity they believe necessary within their assigned beat, when they are not assigned to radio calls. Special Operations officers may patrol anywhere within the district to enforce traffic laws and investigate accidents. Although District I operates single-officer patrols during the day, because District I contains some high crime areas, officers in seven of the eleven beats double up between 8:00 p.m. and 7:00 a.m.

Observation of Traffic

SEP. The specific traffic offenses that a SEP officer stresses during a shift varies with the shift, the time of day, the availability of a radar unit, and the location patrolled. During the day shift, an SEP officer observes for a wide variety of traffic offenses, including pedestrian and

right-of-way violations as well as speeding. During the night shift, enforcement of drunk driving laws is stressed in addition to the other traffic laws. During both shifts SEP officers are instructed to provide assistance to motorists when needed; the SEP commander estimated that over one thousand motorists per year are assisted by SEP.

Typically, only two of the six SEP patrol vehicles on any shift are equipped with radar. According to the SEP commander, officers in the vehicles equipped with radar concentrate almost all of their time (probably 90% or greater) on speed enforcement. The other four officers, who must rely on pacing to measure speed, generally spend very little of their time observing for speeders, and instead concentrate on other traffic violations (including pedestrian violations). However, on some occasions, particularly when on expressway patrol, a SEP officer without radar may spend sixty percent of the time pacing speeders. The SEP commander believes that limiting the number of cars with radar is effective for overall traffic enforcement because officers with radar tend to devote all of their time to speed enforcement to the exclusion of other traffic offenses that may be equally or even more serious.

While enforcement of speed laws is a major concern for the entire period of both shifts, there are particular times of the day when speeding is more likely to occur; thus, speed enforcement is stressed at these times. According to the SEP commander, the incidence of speeding is highest between midmorning and midafternoon. "Severe" speeding (20 or more miles per hour above the limit) is most likely to occur in the early morning hours, primarily because many of these speeders are under the influence of alcohol, or because they perceive that no police are present to enforce the speed laws. Speed enforcement is least likely to occur during the early morning and late afternoon rush hours because the density of traffic makes it difficult for drivers to exceed the speed limit.

The Cincinnati police department has never emphasized national maximum speed limit enforcement because--as stated earlier--there are so few 55 mph roads within the city. Emphasis is placed on speed enforcement in general, without regard to particular speed zones.

Surveillance and Detection

Despite the scarcity of radar units, most speed violators are observed by radar measurement; in fact approximately eighty to eighty-five percent of all speed citations result from radar. The Department has both MR-7 and K-55 units. There is no preference for either model; rather the selection depends on what type is available. Radar units are mounted on the dashboard of the vehicle and are transferred from vehicle to vehicle. As stated earlier, both types of radar can be operated in the stationary or moving mode. At the beginning and end of each shift each radar unit is calibrated with its internal calibration system and with two tuning forks. When the radar is used in the stationary mode it also must be calibrated at each location both internally and with two tuning forks. The department advises, but does not require, SEP officers to recalibrate their radar after every citation is issued and while in the moving mode to periodically monitor the patrol vehicle speed readout with the vehicle speedometer. Some SEP officers at least attempt to verify devices this frequently. Maintenance requirements for either radar are reported to be minimal and usually result from the process of moving the radar from vehicle to vehicle. In the past, when MR-7 units were mounted on the outside of the vehicle, their cones would crack when struck by the patrol vehicle's door. Consequently, cones are now placed inside the car. While Department contacts believe that a cone mounted on the outside is more visible to drivers and therefore more of a deterrent to speeders, the added deterrence was not believed to be worth the extra maintenance expense.

According to the SEP supervisor, eighty to ninety percent of his patrol's radar measurements are taken in the **moving** mode. He points out that moving radar is more compatible with the other duties of patrol and allows an officer to monitor the speeds of a greater number of vehicles. It is also believed that a moving vehicle is seen by a greater number of drivers, thereby enhancing the driver's sense of police presence. The chief disadvantage of moving radar that was cited is the increased use of fuel when the vehicle is constantly moving.

When radar is used in the moving mode, oncoming traffic is usually monitored, although traffic traveling in the same direction as the patrol vehicle may be monitored on occasion. Moving radar is not used by patrol vehicles on expressways because they are divided and there are few places to turn around if an oncoming speeder is observed.

Stationary radar is used primarily by SEP patrol vehicles on the expressways. It is the policy of the Cincinnati Police Department not to conceal patrol vehicles taking stationary radar measurements; the emphasis is on visibility to the public rather than production of speed citations. The number of locations at which a SEP officer running stationary radar might stop is left to the officer's discretion. (S)he may spend anywhere from fifteen minutes to two hours at a location, depending on the flow of traffic and how many speeders are observed there. When stationary radar is used, the patrol vehicle is usually positioned perpendicular to the flow of traffic. Traffic is monitored in both directions, except on expressways where only traffic in the same side of the road as the patrol vehicle is monitored.

At the present time, only 78 of the approximately 700 line officers in the Cincinnati Police Department are radar-trained. They are the only officers who are permitted to operate radar. Radar training includes two hours of classroom instruction given by the staff of the Traffic Section. A member of the staff then rides patrol with each trainee until (s)he is satisfied that the trainee is operating the radar correctly. Recently, an advanced radar training course was given to all radar operators; this consisted of four hours of classroom instruction and two hours of supervised radar patrol. All radar trained officers had to complete the advanced training to continue operating radar on patrol. How officers are selected to be radar trained depends on the particular district, but common criteria include interest in traffic enforcement and a good work record.

Speedometer pacing is used by officers operating SEP patrol vehicles that are not equipped with radar. As stated previously, officers who must rely on pacing to monitor speeders are more likely to concentrate on other violations. Every SEP patrol vehicle is equipped with a speed clock

attached to the dashboard and calibrated to read the same speed as the vehicle's speedometer. These speedometers are calibrated monthly. When pacing a vehicle the officer usually positions the patrol vehicle behind and to the right of the speeder until the two vehicles are travelling at the same speed; this positioning is believed to be least conspicuous to the driver. There is no required distance that the patrol vehicle must stay behind the speeder. It is department policy that a vehicle must be paced for a minimum of two-tenths of a mile. After pacing for at least this distance the officer "locks in" the reading on the speed clock by pushing a button (without looking at the clock); at the same time (s)he takes his or her foot off the accelerator, so the reading on the speed clock is likely to be slightly lower than the vehicle's actual speed. The SEP commander reports that pacing is not an easy skill to develop and takes practice. Staff of the traffic section work with officers identified as having trouble with pacing to increase their skills.

The amount of mileage that a SEP officer travels during a shift depends on the location patrolled and the availability of radar. As a general rule, SEP officers assigned to expressway locations without radar will travel the greatest distances, sometimes as much as 200 miles during a shift. Officers with radar patrolling on expressways will probably travel the smallest distances, approximately 70 miles per shift, because their radar measurements are taken in the stationary mode. SEP officers patrolling city streets travel approximately 70 to 100 miles per shift, with officers without radar likely to travel slightly more than those with radar.

General Patrol. Patrol officers on both the regular and overlapping shifts spend an estimated twenty percent of their time on traffic enforcement. This estimate represents an average amount of time because traffic enforcement is typically performed when other duties, such as criminal investigation or responding to radio calls, are not being conducted. Of the estimated twenty percent of shift time spent on traffic enforcement, the proportion devoted to speed enforcement varies with the availability of radar. Officers with radar spend almost all of their traffic

enforcement time enforcing speeding, while those without radar concentrate on other traffic violations, and probably spend no more than a quarter of their traffic-enforcement time on speeding. It is estimated that the Special Operations officers spend about one half of their time on traffic enforcement, and the other half on accident investigation. Both Special Operations officers are permanently assigned radar; therefore, almost all of their traffic enforcement time is spent on speed enforcement. It was stressed by District I personnel that speeding is not as frequent as elsewhere in Cincinnati because of the heaviness of traffic and traffic control devices downtown. The primary locations in District I where speeding occurs are the expressways; consequently, most observation for speed violations is concentrated there. In the other districts, where suburban roads experience a more serious speeding problem, the emphasis on speed enforcement is likely to be greater.

Officers working the regular and overlapping shifts are estimated to be on the road, visible to the public, for about sixty percent of their shift. The time that they are not on the road includes downtime (estimated to be one hour per shift), answering complaints, and performing routine administrative duties. Because Special Operations officers are assigned exclusively to traffic, they are estimated to be visible about eighty percent of the time. The department encourages all officers to do as much paperwork as possible on the road so that they can remain visible to the public.

District I has three radar units available for use by its patrol personnel. All are MR-7 models, which are capable of being operated in the moving or stationary mode. Two of these are permanently assigned to the Special Operations Unit for its two patrol vehicles; the other one is available for use on each relief and is usually in constant use. Only patrol officers trained as radar operators are allowed to use the unit during their shift. If more than one officer wants to use the radar during the same relief, those officers decide among themselves how the radar is to be divided among them.

Unlike the other districts and the SEP, almost all radar measurements

in District I are done in the Stationary mode. This is true for Special Operations as well as the regular patrol officers. The reason for this is that most speed enforcement in District I takes place on the expressways, where the difficulty in turning around precludes the use of moving radar. Patrol personnel in District I estimate that only ten percent of their radar time is spent in the moving mode.

The stationary-mode measurements, described earlier, are essentially similar to those used by District I patrol officers. When there is very little enforcement activity, two patrol officers form a team to run stationary radar. The patrol vehicles are stationed next to each other; the officer with a radar unit measures speeds and the other operates the "chase" vehicle. When the officer in the radar vehicle observes a speeder, (s)he radios the officer in the chase vehicle who pursues the violator. This procedure is not used often, and usually only late at night when little else is happening. In District I, this procedure is never used during the day and evening shifts because officers have so many other duties.

It was reported that District II uses a team procedure on a permanent basis during the daytime. Two single-officer patrol vehicles operate during the week as a team; one has a radar unit; the other, without a radar unit, is stationed about 100 yards down the road. The officer taking radar measurements identifies speeders and radios their identity to the other officer, who pursues the violator and issues the citation.

The moving-radar and speedometer-pacing procedures used by patrol officers in District I are the same as the ones described in the previous section on the SEP.

The number of miles traveled by District I patrol officers depends on whether they have radar. The Special Operations officers and the regular patrol officers with radar are estimated to travel twenty-five to thirty-five miles per shift. It is estimated that officers without radar travel at least twice that amount. Officers with radar travel fewer miles than officers without radar because they are stationary for a significant portion of the shift running radar. This would not be the case in the other districts, where radar is used primarily in the moving mode; in fact, officers with

radar units might travel more miles than those without units.

Apprehension

SEP. An officer who observes a driver exceeding the speed limit, either by radar or pacing, must decide whether to pursue and apprehend the violator. The Cincinnati Police Department has an official but unpublicized tolerance of 10 mph. The tolerance is used because speed violations are so frequently below the 10 mph tolerance, and because such a limit allows for any inaccuracies in the driver's speedometer. Some officers occasionally use slightly higher tolerances; on the other hand, the tolerance might not be followed at all if weather or road conditions make any speeding exceptionally dangerous.

When the SEP officer decides to stop a speeder and concludes (s)he can safely pursue, (s)he "locks in" the speed reading (on either the radar or the speed clock) and pursues the violator. Once the officer gets close to the vehicle and is in an area where a safe stop can be made, (s)he motions the driver over to the right side of the road by turning on the vehicle's flashers. In the relatively rare instances when the flashers do not attract the driver's attention, the siren is used. However, the siren is to be used only when absolutely necessary, because of its tendency to startle the violators as well as other nearby drivers.

Once the driver has pulled over to the side of the road the officer positions the patrol vehicle directly behind the driver's car. If there is very little room on the side of the road, the officer will position the patrol vehicle slightly to the left of the violator's vehicle. The officer then approaches the vehicle. It is left to the officer's discretion whether the driver is allowed to remain inside the vehicle or is asked to step outside. In the latter case, the driver is requested to stand to the right of both vehicles, completely out of the roadway. The officer then asks for the violator's license and registration, and explains the purpose of the stop—including the posted speed limit and the speed at which the driver was clocked. (If radar was used and the driver has any questions about it,

the officer will answer the questions; the officer has discretion whether to allow the driver to view the radar reading.) After obtaining the license and registration, the officer returns to the patrol vehicle, and may radio in the violator's name and license number to determine whether there are any outstanding warrants. When the officer has reason to suspect the driver, (s)he will radio in any information about the stop **before** approaching the vehicle; otherwise (s)he will not do so.

General Patrol. The procedures used by general patrol officers in District I to pursue and apprehend speeders are the same as the SEP procedures. General patrol officers indicated they were willing to follow a higher tolerance for vehicles whose speeds they measured by pacing. Their reason for the higher tolerance--typically 12 or 13 mph--was the concern that the pacing was not as accurate as radar, and therefore the driver deserved more of a "break."

Presanctioning

SEP. Once the officer has obtained all available information about the driver (s)he decides whether to issue a citation (commonly referred to in Cincinnati as a "tag"). The SEP commander reported that with respect to speed violators, almost every stop results in citation. In the rare instance that a warning is given, it is given verbally. It is department policy not to issue written warnings for speed violations. Occasionally, the officer will discover facts warranting further action beyond the speed citation. This is most often the case when the license check results in the identification of outstanding criminal or traffic warrants. Less frequently the officer may stop a driver for speeding and detect evidence of another offense such as intoxication or drug possession. In all of these instances the officer arrests the driver.

It is department policy that all speeding citations be written at the speed at which the driver was clocked. Officially officers have no discretion regarding the reduction, on the citation, of the number of miles

over the speed limit at which the driver was travelling. Nor is there any advantage to the driver in reducing the charged speed, except when the number of miles over the limit makes a court appearance mandatory. When issuing the citation, the officer sets a date on the citation by which time the driver must either pay the citation or appear in court. This date is typically eleven to fourteen days from the date of the stop. The officer also must determine whether the citation requires a court appearance and, if so, make the appropriate notation on the tag. Speeding violations in school zones or in excess of 20 mph, as well as multiple violations within a year, require a court appearance. The officer then presents the ticket to the driver, who signs it. The whole citation process--from the initial stop to the time it is signed by the driver--is estimated to take ten to fifteen minutes. At the end of the shift, the officer turns in all citations written during the shift to the sergeant on duty at district headquarters. The citation is checked for errors by the sergeant; one copy of each is forwarded to the Police Records Section for processing. Another copy of each is forwarded to the court.

The citation procedures used by SEP officers are the same ones used by general patrol officers in District I.

While no "quotas" exist, general patrol officers must meet "acceptable levels of performance" in traffic enforcement. An officer who consistently falls below the acceptable standard is encouraged to concentrate more on traffic enforcement.

Rough estimates of the number of traffic citations written by **all officers** during each relief are as follows:

- 7:00 a.m. to 3:00 p.m. - 10-12 moving violations
- 3:00 p.m. to 11:00 p.m. - 17-18 moving violations
- 11:00 p.m. to 7:00 a.m. - 12-15 moving violations

If an officer has radar, almost all of the moving traffic violation tags will be for speeding; on the other hand, officers who must rely on pacing issue only an estimated ten percent of their moving traffic citations for speeding.

LAW GENERATION, ADJUDICATION, AND SANCTIONING

Law Generation

Provisions of both state and municipal law define speeding and deal with the adjudication and sanctioning of speed violators. With respect to speed limits, Cincinnati has adopted an ordinance that is virtually identical to the state statute, and the Cincinnati police charge speeders under the ordinance rather than state law. In addition to the Basic Speed Law (which prohibits speed greater or less than is reasonable and proper under the conditions), the Cincinnati ordinance imposes the following prima facie limits (unless different limits have been posted): 15 mph on alleys; 20 mph in school zones when children are present; 50 mph on controlled-access highways without paved shoulders (55 mph if there are shoulders); and 50 mph on state routes (U.S. or Ohio outside "urban districts"). The prima facie limit is 35 mph on state routes or through highways outside "business districts"; and 25 mph elsewhere in the city. Because the city of Cincinnati receives more fine revenue from ordinance prosecutions than from state-law prosecutions, all speeders are cited under the city ordinance.

Speeding violations are treated as criminal in nature under both Ohio state law and the Cincinnati Municipal Code. All violations of the city's speeding ordinance are classified as "misdemeanors." The maximum penalties for a first conviction within one year include a $50 fine plus costs; maximum sanctions for a second or subsequent conviction within one year include confinement to jail for up to 10 days as well as a $100 fine. The city ordinance is thus similar to state provisions in its classification of speeding offenses. State law classifies most speeding violations as "minor misdemeanors," punishable by fines but not by confinement to jail, **provided** the violator has not been convicted within the past year. If he has, then the speeding violation is classified as a misdemeanor of the fourth or the third degree, which is punishable by a jail sentence as well as a fine.

In addition to the distinction between first and multiple offenders, the

state law and city ordinance both recognize a distinction between offenses that require a court appearance and those that can be answered without appearing. All multiple offenders (i.e., convicted within the past year) must appear in court; in addition, any driver who exceeds a posted speed limit by more than 20 mph (by 15 mph in a school zone) must appear. Ohio criminal procedure governs the arrest and adjudication of speeding violators. Both the statute and ordinance permit officers to make arrests based on team measurement procedures: an officer may arrest a speeder on the basis of a radio message received from another officer who took the actual speed measurement and identified the violator.

Whether the arresting officer must take the driver into custody, cite the driver instead, or exercise his or her discretion in that regard, is determined by state law. When making an arrest for a "minor misdemeanor" (i.e., the driver has no recorded convictions within the past year) an officer is normally required to cite the driver rather than take him or her into custody. On the other hand, drivers arrested for fourth-degree misdemeanors as well as more serious traffic offenses (which includes all drivers wth recorded convictions within a past year) may be taken into custody. Whether a driver has a previous conviction is determined by examining the official driving record, which is kept by the Ohio Bureau of Motor Vehicles (BMV). However, the BMV check is not always made on drivers stopped for traffic violations. Thus many multiple offenders avoid being identified as such. Moreover, one contact in the city prosecutor's office remarked that some police officers who discover from the BMV that a driver has a previous conviction nonetheless treat the driver as a first offender.

An officer who arrests a driver for a traffic offense may require that bond be posted to secure a court appearance. According to the city prosecutor, the typical bond required from Hamilton County residents is $10, while up to $100 may be required of nonresidents. Ohio residents without bond may surrender their driver's license as security in lieu of bond.

In traffic cases, the charging document is the Ohio Uniform Traffic Tag

(O.U.T.T.), commonly referred to as a "tag." Entries made on the tag inform the driver of the particulars of the offense that is charged, and whether a court appearance is required. Cincinnati police officers also give cited drivers who need not appear in court a set of printed "payout instructions" informing them to pay fines in person or by mail. After giving the driver a copy of the tag, the officer delivers one copy to the court, and another to the district, which forwards it to the Bureau of Records. On every tag a court appearance date is entered by the officer, in case an appearance is necessary or is requested by the driver.

Adjudication and Sanctioning

In Cincinnati, traffic cases are adjudicated in the Hamilton County Municipal Court, a trial court of record whose jurisdiction is limited to misdemeanors and minor civil matters. There are three ways in which a speeding case can be adjudicated: "paying out" the tag (in person or by mail); pleading guilty or no contest (in effect a guilty plea) before a referee of the court; and contesting the case at trial.

As stated earlier, only certain tags (first offenses other than exceeding posted speed limits by 15 mph in a school zone or 20 mph elsewhere) may be paid out. Ohio law allows courts to establish fine schedules for paying out minor misdemeanor citations that do not require the drivers to appear in court. Thus, in the Hamilton County Municipal Court the standard penalties for speeding offenses are a $20 fine plus $3 costs; the arrested driver is informed of this in the payout instructions at the time of arrest or citation. If the driver fails to pay out within 168 hours (one week) not only does the $20 fine double (making the total payout $43), but a court appearance date (that which appears on the tag) is also scheduled for that driver.

Overall the city prosecutor estimated that of all closed cases, eighty to ninety percent of all cited speeders paid out, and the remainder appeared in court. He offered two reasons for the high payout rate: first, the court's payout window is open on a twenty-four-hour basis; and second, as mentioned below, many multiple offenders pay out to avoid appearing

before a judge or referee. As pointed out earlier, some prior offenders are not identified or treated as such by the arresting police officer. Still other prior offenders pay out their tags and violate both the law and the instructions given them at the time of arrest. Court personnel, who do not have access to drivers' traffic records, are unable to identify drivers with convictions and therefore accept payments from those not entitled to pay out. One reason why drivers avoid the required court appearance is that a judge or traffic referee could impose license suspensions or restrictions on drivers with bad traffic records who appear before them. Cases in which a court appearance is required, the nonappearance cases in which the driver chooses to contest the citation rather than payout, are initially heard before one of the Hamilton County Municipal Court's three referees, who rotate among traffic and nontraffic cases. The referee is an attorney who has authority to accept guilty and no contest pleas, to assess fines and costs against drivers who admit guilt, and (in appropriate cases) to suspend or restrict driving privileges. Referees may suspend a license for as long as two years, although most suspensions that are imposed reportedly range from thirty to ninety days. Referees also may impose driving restrictions (such as driving to and from work only) in lieu of suspension. In practice, few suspensions or restrictions are imposed by referees; moreover, the possibility of arbitrary sanctioning is slight because judges must review referees' decisions and approve them. Nevertheless, the threat of license suspension or restriction reportedly discourages many drivers who have the option of appearing or paying out from appearing before the refreee rather than admitting guilt and paying out the fine. This is so even though drivers who appear before the referee frequently receive smaller fines, especially if they offer a plausible explanation of their driving behavior.

When a driver is required to appear in court, (s)he first appears before the referee for arraignment and plea: the charges are read, and the driver is asked to plead. When a driver pleads not guilty before the traffic referee the case is assigned to a municipal judge and set for trial. A driver who pleads guilty or no contest is permitted to offer an

explanation in mitigation of the offense. Traffic referees normally follow a fixed schedule for levying fines and costs. For example, the standard sanctions are a fifteen dollar fine plus thirteen dollar cost for speeds fifteen or fewer miles per hour; a graduated fine schedule exists for more serious excess speeds. Referees may, however, consider the driver's traffic record as an aggravating factor, and suspend or restrict driving privileges, or may suspend fines and costs when mitigating circumstances are present.

A driver who fails to appear before the referee on the initial appearance date is issued a supplemental summons, in effect allowing a "second chance" to appear two to three weeks later. If the driver fails to appear a second time a "capias" (arrest warrant) is issued, and the case itself is kept open until the matter is resolved (usually, when the driver pays the outstanding fines and costs).

There are two precedures by which a speeding case can be contested at a court trial: first, to plead not guilty before the referee; and second, to plead guilty or no contest before the referee and, if the outcome is unfavorable, to appeal the referee's decision to the municipal court, where it is retried. Trials of speeding cases are assigned on a random basis to the Hamilton County Municipal Court's ten judges. Because speeding is a misdemeanor, two laws governing criminal procedure affect speeding trials. First of all, when an offense is punishable by jail time or by a fine of $100 or more, Ohio law gives the defendant the right to jury trial. As a practical matter, jail sentences are extremely uncommon; in fact, the Cincinnati city prosecutor was unable to recall any speeder receiving a jail sentence during his six years in office.

A second legal restriction is the Ohio speedy-trial statute, which requires minor misdemeanor cases to be tried within thirty days after the case is filed with the court, unless the defendant waives the right to a trial within the time limit. The city prosecutor stated, however, that neither provision has seriously hampered speeding prosecutions in Cincinnati. On court day, each judge—who is assigned cases on a random basis--will average one to two contested speeding cases. All cases are prosecuted by the Hamilton County Municipal Prosecutor's office; on the

other hand, only an estimated one in ten speeding defendants are represented by an attorney. The average length of a speeding trial is reportedly five to ten minutes. The Hamilton County Municipal Prosecutor's office estimated that greater than ninety percent of all speeding defendants are found guilty as charged. Dismissals caused by the arresting officer's failure to appear are very rare. Even more infrequent are reductions in charged speed caused by plea bargaining in speeding cases (the plea bargain would involve reduction in the charged speed in return for a guilty plea).

According to the city prosecutor, the validity of radar is not an issue in speeding trials. In fact, foundation testimony (including the operator's qualifications and experience, and the use of proper calibration procedures) relating to the validity and accuracy of radar readings is not offered by the prosecution or demanded by the judge unless the defendant either is represented by an attorney or raises radar as an issue. Most drivers, though, contest speeding citations on more general grounds: they believe they were not driving as fast as they were charged.

Unlike paid-out citations, there is no fixed fine and costs schedule for contested cases. Generally, speeders convicted in court are fined ten dollars to fifteen dollars, plus costs, although drivers who exceed the posted limit by a large amount will be fined considerably higher sums by judges.

A driver convicted in the municipal court has the right to appeal the conviction to the Ohio Court of Appeals; however, according to the prosecutor, appeals involving traffic offenses are very rare.

Ohio law requires courts to report traffic convictions to the Bureau of Motor Vehicles (BMV), the driver-licensing authority. In Cincinnati, the clerk of the Hamilton County Municipal Court is responsible for reporting convictions to BMV.

The BMV uses a point system to identify habitual and repeat traffic violators, and it has the power to initiate revocation or suspension proceedings in court. Speeding offenses are reported by courts to the BMV result in the assessment of two penalty points. A driver who accumulates

twelve points within two years can be declared a "repeat violator" subject to a six-month suspension, and a driver who receives twenty-four points within ten years can be declared an "habitual violator" subject to a five-year suspension. Drivers with six or more points are given the opportunity to take a remedial driving course and have two violation points forgiven.

Repeat and habitual violator cases are filed in the appropriate county or municipal court by the BMV and argued by the county prosecutor. The number of points is prima facie evidence of repeat or habitual offender status, and the final decision whether the driver is such an offender is made by the court.

The BMV's sanctioning powers are in addition to those of judges and traffic referees; when both the court and BMV impose licensing sanctions the court-ordered ones take effect first, followed by the administrative sanctions.

The prosecutor's office expressed some dissatisfaction with the BMV's recordkeeping practices, which sometimes result in incomplete traffic records and long delays between the time a driver is convicted and the time the conviction apears on the official traffic record.

SUMMARY

The Cincinnati Police Department is responsible for all law enforcement within the city. It carries out traffic enforcement primarily on urban boulevards, in the central business district, and in residential neighborhoods, as well as on a limited number of miles of freeways. Because of Cincinnati's population density, a wide variety of traffic violations other than speed are believed responsible for traffic crashes; these include drunk driving, right-of-way and intersection violations, improper lane usage on expressways, and pedestrian violations.

Department operations are decentralized; most police work is administered at one of the five districts. Although the Department's Traffic Section coordinates selective traffic enforcement citywide, officers who do the enforcement are assigned and supervised by district personnel. Most selective traffic enforcement is carried out by the state-funded

Selective Enforcement Patrol (SEP), although some enforcement duties are also assigned to Special Operations personnel in the districts. Traffic enforcement is also conducted, primarily on an on-view basis, by the other line officers.

The SEP is responsible for traffic enforcement in six high-accident locations identified by Traffic Section analysts. Operations are carried out on a carefully controlled basis to permit later evaluation of the effectiveness of SEP. One officer--who works on an overtime basis--is assigned to each of the SEP locations for an evening shift and a night shift. While the entire range of traffic violations is observed for, although speed receives comparatively greater emphasis during the day shift and drunk driving is SEP's first priority at night.

While speed enforcement is given a high priority by the Cincinnati Police Department (for speed is the leading cause of traffic fatalities in Ohio), it is not overemphasized to the point of impeding other traffic enforcement. Citywide, citations for speed account for about one-third of all traffic citations that the Department issues. Also reflecting the policy against overemphasis of speed enforcement is the low number of available radar units: only eighteen are maintained for the use of more than seven hundred sworn officers. Nevertheless, most--perhaps more than four-fifths--of all speed citations result from radar speed measurements.

The Department's radar units are capable of being used in either the stationary or the moving mode. Because moving radar is compatible with the officer's other duties, and because it allows greater coverage of traffic, it is preferred by officers and accounts for the bulk of radar measurements. Stationary radar is most frequently used on freeways which, being divided, do not permit the monitoring or pursuit of oncoming traffic. Speedometer pacing is used primarily on the freeways where it is possible to maintain a pace for the required distance. Even though most patrol vehicles are equipped with speed clocks, pacing requires a great deal of training and is therefore not done on a regular basis by all officers.

Visibility of patrol is emphasized by the Department; vehicles are required by state law to be marked, and departmental policy encourages

stationing vehicles in conspicuous locations and discourages attempts to "hide" them.

Nearly all speed enforcement is done in the solo configuration, although at least one district maintains a regular team configuration in selected high-violation areas. Although line officers "double up" at night, the SEP always deploys single-officer patrols to the selected areas.

Ohio law provides for decriminalized adjudication of most minor traffic offenses, including speeding. Because all speeding convictions are punishable by the same number of violation points, and because most fall under the city's uniform fine schedule, officers rarely reduce measured speeds when citing violators. Courts appear to support the Department's speed-enforcement efforts: the conviction rate is high in contested cases, and most drivers pay out their fines and plead guilty. However, heavy court workload and poor recordkeeping by the state driver-licensing authority have been cited as problems.

In conclusion, the following principal observations can be made with respect to speed enforcement in Cincinnati:

- most of the roads patrolled by the Cincinnati Police Department are urban boulevards, business districts, and residential areas;
- the Department is responsible for a limited amount of freeway mileage, only part of which is zoned 55 mph;
- nearly all Department operations--including traffic enforcement--are decentralized and are directed out of the five district headquarters;
- selective traffic enforcement is carried out by a specialized, state-funded unit whose personnel work on an overtime basis;
- speeding, while considered an enforcement priority, is not emphasized to the point of impeding efforts directed at intersection, right-of-way, and improper lane change violations;
- radar is deemphasized because it is believed to direct attention away from offenses other than speed; when radar is used, measurements are taken primarily in the moving

mode, except on expressways;

- visibility and conspicuity of patrol are encouraged, but there are no formal PI&E efforts to publicize enforcement operations;

- most speed enforcement takes place in the solo configuration; and

- a controlled experiment, intended to evaluate the effectiveness of the Department's selective traffic enforcement program, is now in progress.

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CHAPTER EIGHT
CASE STUDY
TUCSON, ARIZONA

BACKGROUND

Tucson, Arizona is located in the southern part of the state, about 120 miles southeast of Phoenix, the state capital. It has an area of approximately 100 square miles and an estimated population (1980) of 325,000 (compared to the 1970 census figure of 262,993). Tucson is the county seat of Pima County. It is served by two major Interstate highways: I-19, which connects Tucson with Nogales and the U.S.A.-Mexico border to the south; and I-10, an east-west route connecting Tucson with Phoenix and El Paso, Texas. Interstate highways, however, are not patrolled by the Tucson Police Department. There are 18 miles of numbered highway (including U.S. 93, which is also the I-10 business loop and Arizona 95) within the Tucson city limits; because these are not freeways they are patrolled by the Departmnt. The remaining 1,202 miles of roads within the city are urban boulevards and streets.

According to figures supplied HSRI by the Department, there occurred in Tucson in 1979 a total of 12,115 traffic crashes. This total included 52 fatal crashes in which 54 persons died, and 3,973 personal-injury crashes in which 5,954 persons were injured.

I-10 and I-19 run primarily north and south through the Tucson area; bypassing the city's central business district. Thus there are no east-west controlled-access roads in the city, a condition that produces traffic congestion and resulting safety problems on Tucson's principal east-west streets during commuting hours. Other unusual traffic is created by the annual influx of winter tourists and by the University of Arizona campus; consequently, Tucson's traffic contains a rather large proportion of nonresident drivers. Although Department contacts did not directly

identify the speed violator population, they did state that most traffic crashes in Tucson occur between 10:00 a.m. and 6:00 p.m., and that average speeds likely are highest during those hours. "Violent" or excessive speeding was believed most likely to occur in the hours close to and after midnight. One motorcycle officer characterized the morning hours and lunchtime as the periods when speeding is most frequent.

GENERAL DESCRIPTION OF THE TUCSON POLICE DEPARTMENT

Duties and Organization

The Tucson Police Department has general power to enforce Arizona state law as well as Tucson's city code. With respect to traffic-law enforcement, the Department does not regularly patrol the interstate highways. This task is left to officers of the Department of Public Safety (Arizona Highway Patrol) and the Pima County Sheriff's Department, although city officers do take action there on an on-view basis. Other police agencies may take action within the Tucson city limits but, by agreement, they do not normally work there.

According to the data it supplied HSRI, the Tucson Police Department's budget for fiscal 1980 is $20.7 million. The entire budget was provided by city appropriations, except for a $233 thousand grant by the Arizona Office of Highway Safety Planning to establish a DWI squad, and $207 thousand in Law Enforcement Assistance Administration (L.E.A.A.) grants for video training and fire investigation. Of the Department's current budget about 55% ($10.84 million) is devoted to "administration, command, support staff, and overhead."

The Tucson Police Department is headed by a chief. It is divided into two bureaus, the administrative and line bureaus, each of which is headed by a major. The line bureau, in turn, is divided into three divisions--Detective, Uniformed Patrol, and Operational Support--each of which is headed by a captain. The Traffic Enforcement Tactical Operations, and Communications Teams are contained within the Operational Support Division. The uniformed patrol division consists of four general-patrol

teams (each of them responsible for patrolling a designated geographical area of the city), plus the tactical-operations and the traffic-enforcement teams. Each team in the uniformed patrol is headed by a lieutenant, known as the team commander, and is divided into squads headed by sergeants.

The Department reports that it currently has 568 sworn officers. Of this total 271 are characterized as "deployable patrol officers," and the remainder are administrative and support personnel and detectives. Deployable patrol officers include those assigned to each of the 4 general-patrol teams (ranging from 49 line officers in Team 3 to 64 in Team 2); the special-services team, consisting of 30 officers; and the traffic team, whose strength averages between 27 and 31 officers.

During the current fiscal year $251,000 was allocated to the purchase of patrol vehicles. The Tucson Police Department now has 275 automobiles, including 138 marked, twelve semi-marked (i.e., without light bars or plain-colored), 107 unmarked, and 40 "camouflaged" automobiles. Only the marked automobiles--which are painted white and gold and equipped with light bars--are used in traffic-law enforcement: not only does the Arizona "fleeing and eluding" statute (described below) in effect require marked vehicles for traffic enforcement, but the Department's general policy is to emphasize patrol visibility. While there is no departmentwide "doubling-up" policy in Tucson, two-officer patrols are regularly dispatched to some areas of the city late at night and on weekends. In addition, when officers perceive a threat to their safety that justifies doubling up, they are authorized to do so. In addition to its automobiles, the Department's fleet includes 40 motorcycles (described below) and 4 rotary-wing aircraft. The aircraft, however, are not used specifically to enforce traffic laws.

The Tucson Police Department currently has eighteen radar units, all of which are hand-held speedguns. Fourteen of them, all of which can be used in the stationary mode only, are HR-8 models manufactured by Kustom Signals; the other speedguns are manufactured by CMI Industries. Nine of the guns are permanently assigned to traffic enforcement team personnel, two guns are distributed to each of the four uniformed-patrol

teams, and one is retained by the uniformed patrol as a spare unit. Officers are issued speedguns on a "first-come, first served" basis. Radar units are constantly in demand, especially among officers who reportedly wish to increase the number of contacts they make. The Department also has five stopwatches. These are used to measure speeds in school zones and in a handful of other areas where the posted speed is low and the officer on patrol does not have access to a speedgun. Stopwatch measurements are comparatively rare in Tucson; it was estimated that only a few percent of all speeding citations (averaging about one citation per week) are based on these time-distance calculations. Next to radar, speedometer pacing is the most frequent means of measuring vehicle speeds; in perhaps forty percent of all citations (that is, about 80% of the nonradar citations) the offender's speed is measured by pacing. Speed determinations based on visual observation alone are permitted in Arizona, but Department contacts noted that this procedure is used only by experienced officers, and that few citations are based on visual observation lone.

The Department currently has sixty-seven citizens-band (CB) radios, most of which were donated by citizens, as well as six mobile units and two base stations provided by the governor's highway safety office. Any officer who holds a valid FCC license may volunteer to carry a CB radio. Although some units are permanently mounted in patrol vheicles, most Department radios can be moved from vehicle to vehicle. CB-equipped officers normally monitor channel 9; they may, if they choose, broadcast messages as well as listen to driver's conversations. The Department attempts to distribute its radios to ensure, whenever possible, adequate coverage of the city at all times. It is believed by Department contacts that CB radio has deterred speeding, owing to broadcasts of police presence; on the other hand, CB radio reports have also enabled speeders to escape detection by avoiding heavily patrolled areas of the city.

It should be pointed out that Tucson has begun to implement the team-policing concept: on the basis of studies concerning the breakdown of time spent on patrol, enforcement goals have been set for each team.

Uniformed Patrol Division

Officers assigned to the uniformed patrol division are charged with the full range of law-enforcement responsibilities. These officers' duties include traffic-law enforcement; the number of contacts attributable to traffic during September 1979 ranged from 3.3 per shift in Team 1 to 4.9 in Team 3. Compared to all contacts made by uniformed officers, the proportion of traffic contacts during September 1979 ranged from about 28% in Team 1 to about 41% in Team 4.

Most of the Tucson Police Department's speed-enforcement activity (about 70% of the contacts during September 1979) is carried out by the uniformed patrol. Nearly all the rest is conducted by the traffic division, which is discussed in the following section. Because the detective division and tactical-operations teams carry out little or no traffic enforcement they are not discussed further.

As stated earlier, the uniformed patrol division consists of four teams, each of which patrols a specific region ("team area") of Tucson. Each team consists of eight squads (Team 2 consists of 9), each headed by a sergeant and typically consisting of seven to eight officers. Squads are responsible for patrolling the entire team area during their shifts. All members of a squad work identical shifts and days, and it is a general policy that no more than one officer per squad may schedule the same day off. The eight squads' days and hours of work are staggered so that around-the-clock protection is afforded while peak activity periods receive the greatest coverage--sometimes three squads at once. Squads are geographically divided into from five to seven beats, and officers normally are assigned to the same beat each shift.

Officers are assigned to beats by the sergeant in charge of their squads; how specific the sergeant's directions are varies from team to team, and from squad to squad. Officers have discretion regarding where to patrol within the beat, but they are expected to remain within their beat, unless called out on an emergency.

Most uniformed patrol officers work out of the Department's main

(downtown) station; Team 4 operates out of its own substation, and one of the squads that make up Team 2 (known as "Adam-1") is self-contained and operates out of a storefront. Only Team 4 and the "Adam-1" squad carry out both general-patrol and detective activities; the remaining teams perform only line or general-patrol functions.

The Traffic Enforcement Team

Tucson's traffic enforcement team has been in operation since 1953, when it was created by a city code provision. Its primary functions are traffic-law enforcement and traffic crash investigation as well as providing computer analyses of traffic crashes and coordinating the Department's CB radio program. The traffic-enforcement team, which ranges in patrol strength from twenty-seven to thirty-one officers, is headed by a lieutenant. It also consists of three motorcycle sergeants, and an average of twenty-five motorcycle officers. The traffic team has thirty-seven motorcycles and three three-wheeled vehicles. Many of the motorcycles, and one of the three-wheeled vehicles, are used as spare vehicles. It is believed by Department contacts that motorcycles are not only highly visible (and thus deter would-be traffic offenders), but are also cheaper to maintain. Because of their high-visibility policy, the Department has adopted a "take-home vehicle" policy for motorcycles. Department personnel reported that they did not conduct any formal public information and education programs to further publicize their enforcement efforts.

The traffic team is divided into four squads. The first squad consists of two officers who ride three-wheeled vehicles and enforce parking ordinances. In that squad there are also four traffic investigators who follow up on all traffic crashes (especially fatal and hit-and-run crashes) that occur in the city, and who conduct traffic training at the police academy. Each of the team's remaining three squads consists of a sergeant and eight officers. Hours of duty emphasize maximum patrol during the afternoon. One squad works from 8:00 a.m. to 4:00 p.m. Mondays through Fridays, one works 10:00 a.m. to 6:00 p.m. Tuesdays through Saturdays, and one works 11:00 a.m. to 7:00 p.m. Tuesdays through

Saturdays. Normally no traffic patrols are assigned to work Sundays, since that day of the week accounts for the smallest number of traffic crashes. Although the traffic officers currently work on a fixed schedule, they will on occasion be deployed to work special problems such as drag races at night on certain avenues. In the average traffic officer's shift, approximately one hour is "downtime," and about one and one-half is spent investigating accidents; during the remaining five and one-half hours the officer is available for traffic enforcement. Traffic officers are not normally assigned to regular police calls, except during emergencies.

TRAFFIC ENFORCEMENT

Traffic enforcement is conducted within the Tucson Police Department by uniformed patrol officers in each of the four teams and by the members of the traffic enforcement team. Because traffic enforcement tactics vary between the general patrol and the traffic team, both are discussed below.

Development

Traffic Enforcement Team. As described previously, the traffic enforcement team is funded out of the general budget of the Tucson Police Department. All members of the team ride single-officer motorcycles and are deployed almost exclusively for traffic enforcement (these officers are commonly referred to among Department personnel as "solo motor officers"). There are twenty-five solo motor officers, consisting of three squads of eight officers each, plus one officer assigned to the "Adam-1" squad. The three squads are deployed in a series of overlapping shifts, described earlier, to concentrate coverage on the afternoon hours. By deploying the solo motor officers at these times, coverage is provided for the times when the traffic is heaviest and most accidents occur. Officers are not scheduled to work Sundays because the frequency of traffic accidents is lowest on that day. Occasionally, solo motor officers are deployed at hours other than their regular shifts to deal

with a specific problem; for example, several officers were recently deployed in the evening hours to a road that reportedly had problems with drag racing. Any such deployment, however, is only for a short period of time, after which the officers return to their normal shift schedule.

The Tucson Police Department relies to a great extent on computer identification of high-accident locations as the basis for deploying its patrol officers. All traffic accident reports are computer coded by Department staff; crash location, time of day, day of week, and other descriptive information are entered into the Department computer. Once a week a "concentration map" is produced showing the locations where all of Tucson's accidents occurred during the previous 28 days. These areas of concentration are analyzed and specific problem areas are identified. On a weekly basis motor officers are alerted by the squad sergeants to the specific problem areas within their beats. From one to three motor officers may be assigned to a particular location, depending on the nature and severity of tthe problem and the availability of manpower. Officers can be deployed to any area of the city, although squad sergeants generally attempt to keep them in areas of the city with which they are most familiar. Typically, most motor officers are assigned to the part of the city patrolled by Team III, in the central section of the city, because both the density of traffic and the number of accidents are highest there.

A motor officer, assigned to a beat that contains one or more problem areas, patrols the beat at the same time as the uniformed patrol officer assigned there; however; his primary assignment is traffic-law violations. To guide the motor officer in enforcement, he is given a computer printout containing detailed information for each of the collisions in the problem area occurring within the last four weeks. The information includes:

- time of day;
- day of week;
- actual locations by street and address;
- whether collisions were "intersection" or "nonintersection"

type crashes;

- number of persons injured; and
- a summary of the reported causes of the collision, if the same cause is common to two or more collisions

To a lesser extent, the squad sergeants also consider their own experience regarding high traffic violation areas and citizen complaints in deploying the motor officers. Motor officers are expected, in the course of their traffic-enforcement activity, to pay special attention to times of the day and specific locations identified by the computer analysis.

Uniformed Patrol. Many of the same procedures described in the previous section on the traffic enforcement team are also used by uniformed patrol officers. Only uniformed patrol procedures that differ from traffic enforcement team procedures are discussed in datail.

The uniformed patrol is divided into four teams, with each team responsible for a geographic location in the city. Each team has eight squads, usually containing seven uniformed patrol officers each. (Team II has an extra squad, known as the "Adam-l" Team.) The eight squads in each team are deployed in a series of overlapping shifts to provide continuous coverage. The shift schedule of Team I is typical of these overlapping shift hours:

- Squad I - 6:00 a.m. to 2:00 p.m.
- Squad II - 7:00 a.m. to 3:00 p.m.
- Squad III - 8:00 a.m. to 4:00 p.m.
- Squad IV - 10:00 a.m. to 6:00 p.m.
- Squad V - 3:00 p.m. to 11:00 p.m.
- Squad VI - 4:00 p.m. to 12:00 a.m.
- Squad VII - 10:00 p.m. to 6:00 a.m.
- Squad VIII - 11:00 p.m. to 7:00 a.m.

All officers within a squad work together, with the overlap in coverage provided by the overlap in squad times. With this procedure, there are usually two squads on duty at any one time with a maximum of three on

duty during peak periods. It is Department personnel policy to have only one officer at a time from each squad on vacation or leave.

Uniformed patrol officers are primarily deployed in single-officer, fully marked, patrol vehicles. Two-officer units are deployed only in special circumstances and late at night in certain "dangerous" locations in the city. Each squad provides coverage for each beat within its team. In Team I, for example, there are six beats. Each squad sergeant assigns an officer to each beat within the team so that each beat has continuous coverage by one or more officers at all times during the day. In addition, as mentioned previously, if a high number of traffic accidents are identified as occurring within a beat, one or more motor officers also may be deployed there to deal with traffic. Assignment to a particular beat is based on seniority, officer preference, and a subjective judgment by the squad sergeant as to how the officer will relate to the people living within the beat.

All uniformed patrol officers are given computer printouts of the traffic accidents occurring within their beat. These printouts contain the same information as those given to the motor officers. Unless specifically instructed to do so, the uniformed officers are not required to concentrate on the printouts in deploying themselves within a beat, but they are expected to use the information as a guide to the type of traffic enforcement that is needed in the area. Uniformed officers have a great deal of discretion within their beat, but an officer is usually not permitted to leave the beat unless dispatched elsewhere.

Surveillance and Detection

The traffic enforcement team's primary functions are traffic enforcement and accident investigation. Therefore, motor officers are not assigned to other calls unless it is absolutely necessary to do so. Motor officers will also take action against suspected criminals, but only on an on-view basis. Out of an eight-hour shift, it is estimated that a typical motor officer is available for traffic enforcement for five and one-half hours, and performs accident investigation for one and one-half hours. The

other hour is taken up with breaks, briefings, routine administrative duties, and nontraffic duties.

The particular traffic offenses that a motor officer stresses vary during the shift. A major determinant is the type of violation reported by the computer printout to be the primary cause of accidents at his assigned location. During the hours that previous accidents have occurred, the officer is expectd to concentrate enforcement efforts on the identified violation. Officials of the Traffic Enforcement Team report that while speeding is often the primary cause of crashes at many locations, right-of-way violations are the largest single cause of accidents citywide. A motor officer is free to concentrate on any traffic offenses during the remainder of the available traffic enforcement time.

The amount of time that an officer spends enforcing speeding laws depends on the availability of radar and whether the officer chooses to be stationary or moving during patrol. An officer who has a speedgun is likely to concentrate almost all the traffic enforcement time on speeding, while one without radar is more likely to spend time enforcing speeding only when on moving patrol. One motor officer reported that without a radar unit he is more likely to observe for, and be in a position to pursue, a speeder if he is moving in the flow of traffic. Still, the amount of time that a motor officer, moving or stationary, without radar spends on speed enforcement is estimated to be no more than one-third of all traffic enforcement time.

The Tucson Police Department places very little emphasis on national maximum speed limit (NMSL) violations because it is not responsible for patrolling the city's interstate highways. Last year, for example, only six citations were issued by the Tuscon Police Department for violating the 55 mph limit.

About half of all speed observations are made with **radar.** As mentioned earlier, all radars used by the Tucson Police Department are stationary mode speedguns, either the CMI-6 or the Kustom HR8. There is no preference for either model; rather, the selection depends on the availability at the time of the shift. Three radar guns are assigned to

each of the three motorcycle squads. They are in use during almost every shift unless mechanically inoperable. Each gun is assigned to a pair of motor officers who decide between themselves how the radar will be used during the shift.

The radar is calibrated at the beginning and end of each shift with the internal calibration device and a 50 mph tuning fork. Motor officers carry the tuning fork with them on patrol, and they are encouraged to calibrate the radar after each radar-based stop. Maintenance requirements for the radar are reported to be minimal.

As mentioned earlier, all radar measurements are made in the **stationary** mode. A motor officer will normally use the radar at no more than three locations per shift, and typically only one location. (S)he will spend anywhere from one to two hours at a location, depending on the number of violators he observes, but will stay at a location for a minimum of fifteen minutes if there is "no action." Motor officers do not attempt to hide their motorcycles when using radar, and traffic from both directions is monitored with stationary radar.

About half of the traffic team's observations are made through **team** configurations. Typically, a pair of officers will work a location; one officer operates the radar; when a violator is observed (s)he alerts the other officer, who pursues and stops the driver and writes the citation. While the second officer is issuing the citation, the first officer continues to run the radar until another violator is observed, at which time (s)he stows the radar in the saddlebag and personally pursues the driver. This procedure is used primarily when two motor officers are assigned to adjoining locations, or when speeding is identified as the primary cause of accidents in their assigned locations. Occasionally, when an area is identified as having a serious speeding problem, four- or five-officer teams are assigned to the location, with one officer taking radar measurements and the others pursuing and citing violators.

The other half of the team's radar observations are done in the **solo** configuration with a single officer responsible for observing for, pursuing, and citing speed violators. The Department strongly encourages all speed

citations based on radar to be verified either by a separate visual estimation or by a pace of the violators speed.

All officers certified by the Department are permitted to operate radar on patrol. All motor officers are certified. There are about 340 officers currently certified to operate the Kustom HR-8 radars and about 420 certified on the CMI speedguns. Training in radar use leading to certification is done by Field Training Officers, who themselves are trained by several of the motor officers. The training consists of basic principles of radar, the operation of the units, and court testimony for speed citations based on radar. This training typically lasts one hour, with about one-third of the time devoted to classroom instruction and two-thirds of the time spent on practice using the units.

As pointed out earlier, the traffic team has nine radar units at its disposal. Each squad is issued three guns per shift. The sergeant in charge of each squad is responsible for issuing the guns to his officers. Those officers who have radar guns either work together with other traffic officers to patrol high-violation or high-accident locations, or work high-violations locations (referred to as "duck ponds") alone. In Tucson speed is not stressed to the exclusion of other offenses; in fact, computer analysis of crashes at high-accident locations reveal right-of-way violations, as well as alcohol involvement and "other improper driving," to be at least as significant as speed in terms of causing crashes. Citation data confirm the Department's deemphasis of speed: fewer than one-quarter of all traffic citations are issued for speed violations.

Officers without speedguns tend to devote as much time to traffic enforcement as their radar-equipped counterparts; but, as might be expected, those without speedguns emphasize traffic violations other than speed. Officers with radar frequently work "duck ponds." In general, though, "duck pond" enforcement is not encouraged by Department officials, for it ignores the more important causes of traffic crashes. However, visible radar enforcement, directed at flagrant violators, earns popular support for the Department and helps create deterrence.

Speedometer pacing is the primary procedure used by officers without

radar to observe for speeding violations. Typically, a motor officer will be moving in traffic as part of routine patrol when (s)he observes a speed violation. To pace the vehicle, the officer attempts to stay in the driver's "blind spot," and about 60 to 100 feet behind the driver, although this is not always possible, particularly in dense traffic. The officer adjusts his speed until (s)he is traveling at the same speed as the suspected violator; at that point (s)he notes the speed on the speedometer. It is recommended by the Department that the officer maintain a clock (pace) for about 200 yards. Procedures used for pacing on a motorcycle are no different from those for pacing an automobile; in fact, it was reported that pacing on a motorcycle was more effective because it was easier for the motorcycle to remain in a driver's blind spot. Training in pacing is given at the police academy and during the field training program after the officer leaves the academy. It is not a specific part of the curriculum but rather part of an instruction unit devoted to traffic enforcement in general; thus contacts in the Department were unable to estimate the amount of time devoted to pacing.

A small amount of speed measurements are made by **stopwatch** and by **visual observation. Stopwatches** are used occasionally in school zones to enforce speed. An officer using a stopwatch first measures off a known distance in the school zone and then measures speeds of vehicles as they pass through the distance. The officer has a conversion table of times and corresponding speeds and uses that to determine the vehicle's speed. Motor officers rarely use a stopwatch because radar is usaully made available to them if they want to enforce speed in school zones. **Visual observation,** with no other determination of speed, is used very rarely, and then only by experienced officers who do not have the opportunity to pace or use their radar. The ability to visually estimate speed is developed from repeated practice at estimating speeds and verifying them with either radar or a pace. As a result, many officers are not confident of their ability to visually estimate speeds and do not use this method.

On the avarage, a motor officer travels an estimated forty-six miles per shift. This low figure is attributable to highly urbanized patrol

locations, frequent traffic stops, and the use of stationary radar. A motor officer without radar is likely to travel somewhat more because (s)he is likely to be moving for more of his shift rather than measuring speeds in the stationary mode.

Uniformed Patrol. Uniformed patrol officers are responsible for a wide range of activities. During a typcial shift, in addition to traffic enforcement, a uniformed officer will be involved in criminal investigations, routine patrol, administrative duties at the stationhouse, court appearances, and a wide range of other activities associated with "line" police duty. In an eight-hour shift, it is estimated by contacts assigned to Team I that they are available for traffic enforcement about thirty-five percent of the time (about 3 hours) during night shifts. This estimate includes the time that they actually spend on traffic enforcement plus the time they spend on routine patrol when they are able to take on-view action for traffic violations. The percentage is much lower at night because of the greater demand for the officers' time for criminal investigations and follow-ups. Team I officers also estimate that they are visible to the driving public during about fifty percent (4 hours) of their shift. During some of this time they may be unable to take action against a traffic violator, but they are visible and thus passing drivers are aware of police presence. A uniformed patrol officer travels and estimated seventy-five miles per shift.

An estimated one-third of shift time available for traffic enforcement is spent on speed enforcement. This percentage will vary depending on the makeup of the beat. Areas with a great deal of stop-and-go traffic generally require that less time be spent on speed enforcement than areas where drivers can keep moving for longer periods of time.

Each team is assigned two radar guns, which are shared among the certified operators within each team. There is no formal rotation for use of the radar; it is divided among the squads, depending on the officers' interest in using it. For example, one uniformed officer estimates he uses the radar unit two or three times per month. Occasionally, the radar unit

will be assigned by a squad sergeant to a particular problem, but uniformed officers are normally free to use it as they wish. The procedures used by uniformed officers in operating the radar are the same as those used by the motor officers. Uniformed officers are probably not as likely to use radar in a team configuration, owing to the necessity of staying within their own beats. A uniformed officer with radar will probably spend most of the available traffic enforcement time observing for speeders.

Uniformed officers without radar use pacing as their primary method for speed enforcement. There is very little difference between pacing with an automobile and pacing with a motorcycle (described earlier), except that it is believed to be easier to remain inconspicuous to the driver while on a motorcycle. An officer without radar spends an estimated one-third of the traffic enforcement time on speed. Uniformed officers occasionally use stopwatches in school zones and very rarely enforce speed laws based on a visual observation only.

Apprehension

Traffic Team. Once a motor officer detects a speeder by whatever method, (s)he must decide to pursue and apprehend the driver. Offficers usually observe the following guidelines in deciding whether to stop speed violators:

- under 10 mph above the limit--the driver will not be stopped unless unusual circumstances (such as weather) make the driver's speed unusually dangerous.
- 10-15 mph above the limit--the driver will be stopped but likely will be given a warning
- over 15 mph above the limit--the driver will be stopped and is likely to be cited for speeding.

Application of this unofficial tolerance is left to the individual officers. Some officers indicated that they were more likely to stop and cite drivers measured 10 to 15 mph above the limit based on a pace rather than radar,

because if they tried to use only a 10 mph tolerance using radar they could not possibly keep up with all the violators. Most officers also reported that they are more likely to follow a higher tolerance in the rare instances that they make a visual observation of speed.

If a motor officer decides to stop a speeder and concludes (s)he can safely pursue, (s)he typically turns on the the flashing lights and pulls into the left tire track of the driver so that (s)he is fully visible in the rear view mirror. If the driver fails to pull over the officer may sound the horn several times to get the driver's attention. On some occasions, in heavy traffic, the officer may pull up to the side of the car and motion the driver to the side of the road, using a hand signal. The officer attempts to pull the driver over to the shoulder of the road or to a side street if one is available. At night, the officer looks for a well-lighted area. Only when the officer suspects that the stop may be dangerous does (s)he radio in the vehicle's license plate number and the location of the stop.

Once the driver has been pulled over at the side of the road, the officer positions the motorcycle about twenty-five feet behind the driver and at about a forty-five degree angle. The officer normally approaches the violator's vehicle on the driver's side. It is a matter of officer preference whether to allow the driver to remain in the car. Some officers indicated that it made no difference to them whether the driver stays in or gets out of his car; however, most said that they required the driver to get out of the car if they suspected anything about the car or its occupants. A driver who is asked to leave the vehicle is requested to stand on the curb to the right of the vehicle. The officer first asks the driver for the driver's license and them explains why (s)he was stopped; in speeding stops the officer tells the posted limit and the speed at which (s)he was traveling. If radar was used and the driver has any questions about it, the officer answers the questions and may allow the driver to view the radar reading. After the officer has the driver's license, (s)he may return to the motorcycle and radio in the driver's license number; however, in practice, this is done only when the officer suspects that

something is out of the ordinary. If the driver's license is queried, a check for local warrants is always made and usaully a check of the statewide criminal information network is made as well.

Uniformed Patrol. Once a uniformed officer detects a speeder, the decision whether to stop the driver is guided by the same criteria as in the case of a motor officer. Uniformed officers generally follow the same tolerance as the motor officers. Before pulling a driver over, a uniformed officer attempts to position the vehicle as close as possible to the driver before turning on his or her lights; if this does not attract the driver's attention, the officer then uses a short blast of the horn or siren. All uniformed patrol officers radio in the vehicle's license plate number and the location of the top before pulling the driver over. Uniformed officers are able to do this becuase the number of traffic stops they make per shift is not so high that their queries would overload the communication's section. In contrast, motor officers make so many traffic stops (sometimes as many as 40 per shift) that it is not possible for them to query every license plate number and report the location of each stop. When pulling a driver over, the officer positions the patrol car to the left of the driver's vehicle to protect the officer from oncoming traffic when approaching the driver. Uniformed officers, like motor officers, only query the driver's license number for a warrant check in situations when they suspect the driver.

Presanctioning

Traffic Team. Once the officer has obtained all the information believed to be necessary for the stop (s)he carries out the decision to issue a citation or a warning. Officers are given wide latitude in their decision to cite or warn. More than half of all stops for speeding by the Tucson Police result in written warnings. Verbal warnings are almost never given, since the written warning is evidence of the officer's productivity. The decision to cite or warn may be based on the previously stated guidelines,

or it may be a subjective decision by the officer that a warning is sufficient to correct a particular driver's behavior. On rare occasions, a stop of speeding may result in the driver's arrest for other violations such as outstanding warrants, drug possession, or drunk driving. With respect to outstanding warrants, this rarely happens because the motor officer rarely requests any information about the driver.

There is no department policy requiring officers to write the citation at the clocked speed. Most officers round the cited speed down to the next lower multiple of 5 mph. Some officers indicated that if the speed observation were made by radar they would cite at the clocked speed. There is a great deal of variance where the citation is written. Some officers prefer to write it at the side of the driver's vehicle, while others prefer to stand back by their motorcycle while keeping the driver's vehicle in view. After writing the citation, the officer then presents it to the driver. The entire procedure is estimated to take about ten minutes. At the end of the shift, the officer turns in the originals and the enforcement copies of all citations at the station.

Motor officers make a large number of traffic stops during a typical shift, primarily because so much of their shift is devoted to traffic enforcement. One officer estimates that a motor officer with a radar will make twenty-five to thirty-five stops per eight-hour shift, with about ninety-five percent of the stops for speeding. An officer without radar may make twenty to twenty-five stops with less than fifty percent of them for speeding.

The Department uses number of driver contacts as one factor in judging the productivity of its officers. As a result, it is believed that many officers are reported to use the radar as a "crutch" to increase the number of contacts they make.

Uniformed Patrol. The citation procedures used by uniformed officers are the same ones used by the motor officers. While no quotas exist, driver contacts are monitored to ensure that each officer keeps active during his shift. Officers in Team I typically make six to seven driver

contacts per shift, two or three of which will be for speed violations. Typically one out of four of the speed contacts result in a citation, while the other three result in written warnings. An officer who uses radar is likely to make more driver contacts, and most will involve speed.

LAW GENERATION, ADJUDICATION, AND SANCTIONING

Law Generation

The Tucson Police Department charges nearly all speeding violators with violations of Arizona state law. Fewer than one-half of one percent of all speeders are cited under the Tucson city code; these, for the most part, are drivers detected speeding in city parks. Arizona law provides for a Basic Speed Law, a 55 mph statewide maximum limit, a 25 mph limit in business and residential districts, and a 15 mph limit in school zones. The city of Tucson, as other local authorities in the state, may alter these limits, provided an engineering and traffic investigation is made and the changed limit is approved by the Arizona Department of Transportation.

Arizona law classifies all speeding violations as misdemeanors; arrest and adjudication procedures are governed by the Arizona rules of criminal procedure. Maximum penalties for speeding depend on how many traffic convictions the convicted driver has had during the preceding year. If there are no convictionss the maximum penalties are a $100 fine and 10 days' imprisonment; if there is one prior conviction the maxima are $200 and 20 days, respectively; thereafter, the maximum penalties are $300 and six months. Arizona law does not expressly require police officers to use marked vehicles while enforcing traffic laws; however, under the Arizona "fleeing and eluding" law a fleeing driver can be convicted only if the patrol vehicle were clearly marked as such. There are no restrictions on police use of radar or any other speed measurements. The use of radar detectors is not prohibited in Arizona.

Adjudication

Speeding prosecutions are begun by issuing a citation and filing it with the appropriate court which, in Tucson, is the City Court. The Arizona Traffic Ticket and Complaint is used throughout the state as the charging document in traffic cases. There are 3 copies of the ticket: the original, which serves as the complaint and is filed with the court; the "defendant copy," which serves as a notice to the driver to appear in court; and the "enforcement copy," which is retained by the issuing police department. In Tucson the prosecutor's office is issued copies of contested citations only. The citing officer is responsible for selecting an "appearance date" and entering it on the traffic citation. In the case of a uniform (line) patrol officer, the date is set 7 to 10 days after the citation date; in the case of a motorcycle (traffic) officer, about 3 weeks after the citation. (A driver who is taken into custody is given the right to appear within 24 hours.) In 1979 a total of 11,109 speeding citations were issued by the Tucson Police Department. Citation policies are substantially the same whether or not the violator is an Arizona resident. However, City Court judges will, if possible, accommodate a nonresident violator who requests an immediate appearance.

Tucson police officers also give cited drivers a card (printed in English and Spanish) containing plea and payout instructions. If the violation does not require a court appearance, the cited driver may check the "no contest" box (there is no "guilty" box) on the card and mail in the card plus the appropriate sum listed for that offense. (Technically, the mailed-in sum is the bond that is forfeited, whereupon the case is closed.) In Tucson, the cited driver also has the option to plead not guilty by mail, following which (s)he is notified of the court date. Most drivers who close their cases do so by mail. In some cases, including those in which the charged speed is more than 30 mph above the posted limit, the driver must appear in court; (s)he has no option to pay or plead by mail. The driver also may pay out in person, again by pleading no contest and paying out the bond which is forfeited and the case closed. Most drivers (an estimated 85 to 90%) who close their cases do so through one of the

payout procedures. Drivers who plead "not guilty" by mail are assigned a trial date by return mail; those who plead in person are assigned trial dates at the time they plead.

A driver who chooses to contest the citation has three options. The driver can: mail in the bond and plead not guilty; post bond in person and plead not guilty; or appear in person, plead not guilty, and ask to be released on his or her own recognizance (that is, on an oral promise to appear). An estimated forty percent of the drivers who contest their citations do so by mail, approximately thirty percent by posting bond, and about thirty percent by release on recognizance. Trials are generally scheduled for thirty to forty-five days after the not-guilty plea is entered.

Drivers who do not wish to contest the issue of guilt but who desire to offer explanations or simply "blow off steam," are directed to appear at "traffic arraignment," which is held at 8:30 a.m. on days when court is in session. Very few drivers cited for speeding--perhaps no more than five to ten per week--request arraignments; at the arraignment most of them plead guilty or no contest and at that time make their explanation to the judge.

Drivers who plead not guilty rarely (perhaps no more than 15% of the time) fail to appear, most likely because drivers who are motivated enough to contest the charge in the first place are also motivated to appear at the trial. When a driver who is released on recognizance fails to appear for a scheduled trial the case is left open and an arrest warrant or show-cause order is issued. In the case of a driver who posts bond and fails to appear, the bond is usually forfeited and the case closed (one exception involves charges of driving at very high rates of speed). Among all cited drivers, an estimated ten to twenty percent fail to either plead or pay out. A driver who fails either to plead or pay out the citation by the appearance date set by the citing officer is issued a computer-printed card notifying the driver of the nonappearance and giving an additional ten days to appear. If the driver fails to answer this second notice, an arrest warrant is printed within five days and is forwarded to a city judge for signature.

Trials of contested citations are held in the Tucson City Court. They are prosecuted by the city prosecutor; because speeding is a misdemeanor, guilt must be proved beyond a reasonable doubt. Although traffic offenses carry possible jail sentences, convicted speeders are rarely sentenced to jail. If a case arises in which a jail sentence is possible and the violator lacks funds for an attorney, then under the Constitution, an attorney must be appointed by the court. In the majority of speeding cases tried in Tucson, the violator's speed is determined by radar. In radar cases the prosecution presents, as required foundation testimony, the officer's qualifications to operate radar, the radar unit's proper working order, and the use of proper radar operation procedures. While it is reported that only one City Court judge has doubts about the validity of radar in general, the court's other judges also prefer--but do not require--the officer's independent estimate of the violator's speed in addition to the radar speed measurement. When speed is measured by pacing, judges do not require foundation testimony other than that the office's speedometer is properly certified. When a speeding citation is based on the officer's estimate of the driver's speed, some judges are reluctant to accept estimates as sufficient evidence of guilt; consequently, the judges prefer that estimated speeds be considerably higher than the posted limits in force.

A typical speeding trial held in the City Court lasts an average of twenty minutes. According to data supplied by the court, more than ninety percent of contested speeding cases result either in verdicts of guilty as charged, or guilty verdicts with a reduction in the fine.

Few speeding cases are dismissed on account of the citing officer's failure to appear. The Tucson Police Department reportedly has a strict policy against nonappearance by officers, and motorcycle officers who view themselves primarily as "traffic officers" are especially conscientious with respect to their court appearances.

Sanctioning

The court's scheduled fines for speeding convictions parallel the bond schedules for traffic citations. Fines range from eighteen dollars for drivers travelling ten or fewer miles above the limit, to sixty-seven dollars for speeds of twenty-six to thirty miles above. When the charged speed is more than thirty miles above the limit, or when the speeding violation occurs in a school zone, the fine is determined by the court and tends to be higher than the highest scheduled fine. In traffic cases, eighty-five percent of fine revenue is retained by the city of Tucson, while the remainder is allocated to statewide programs to train prosecuting attorneys and police officers. City Court judges generally do not have the offender's driving record available at the time of sentencing; it is estimated that records are available in fewer than two percent of all cases, and these records note local traffic convictions only.

Under Arizona law, traffic convictions are required to be reported within ten days by courts to the Department of Motor Vehicles (DMV). In practice, more than ten days elapse before reporting, so that the appeal period may expire and the disposition become final. Traffic convictions in Tucson City Court are appealable, on the record, to the Pima County Superior Court; according to the City Court's Chief Magistrate (judge), "a fair number" of speeding convictions are appealed, but convictions are generally upheld on appeal. It was also reported that the number of appeals has declined since state law was amended to permit city courts to try cases on the record.

SUMMARY

The Tucson Police Department has general law-enforcement powers within the city. Its traffic-enforcement responsibilities do not include the Interstate highways; thus their enforcement efforts are directed against violations on urban boulevards in the downtown business district, and in residential areas, and do not include the 55 mph limit. Because Tucson's traffic is urban in character, traffic violations other then speed--chiefly drunk driving and right-of-way violations--are the principal targets of

enforcement action. The Department's policy towards radar reflects the fact that violations other than speed are major contributors to traffic crashes; the Department has only eighteen radar units for a sworn officer complement of more than five hundred. Radar is considered to have limited effectiveness and its indiscriminate use is believed to impair overall traffic enforcement by directing attention to speed while ignoring other, more hazardous driving behavior.

Central to Tucson's traffic-enforcement program is selective enforcement directed at locations and times of the day identified by a computerized analysis of traffic crash reports. Most selective enforcement is carried out by members of the traffic team, whose duties almost exclusively relate to traffic. Although the traffic team is small (about 5% of Tucson's sworn officers) it accounts for nearly a third of the Department's traffic contacts. All traffic team officers ride motorcycles, and most of their enforcement is directed at and around the central city area. They work overlapping shifts Monday through Saturday, and place the greatest emphasis on the afternoon and early evening hours when crashes are most frequent. The average traffic officer is very productive, averaging between fifteen and twenty traffic contacts per eight-hour shift. Traffic enforcement conducted by the uniformed (line) patrol is primarily on-view in nature, although line officers equipped with radar units will--when time permits--specifically observe for speeders.

Fewer than one-quarter of the Department's traffic citations involve speeding. That offense is stressed only in areas where it has been identified as a chief cause of traffic crashes, and sometimes in locations where officers' experience and citizens' complaints point to a speeding problem. Radar accounts for slightly more than half of the Department's speed measurements. Because all of the Department's radar units are hand-held speedguns, all radar speed enforcement is done in the stationary mode. Most of the nonradar speed measurements are taken by speedometer pacing. Pacing is compatible with officers' (especially line officers') other duties. Traffic team officers report that pacing with a motorcycle is more effective because the motorcycle is less conspicuous

when moving in traffic. Stopwatches are occasionally used in school zones and in other locations with a low posted speed limit. State law permits convictions based on visual observations alone; this procedure is used only when it is not possible to measure speed by any other means.

Most speed enforcement is carried out in the solo configuration except for team radar enforcement conducted by the traffic officers. About half of those measurements--usually those in areas where speed is identified as a problem--are carried out by two- or multiple-officer teams.

The Department's enforcement policy generally emphasizes accident prevention and general deterrence rather than making a large number of speeding arrests. Patrol vehicles are conspicuously marked as such. An unofficial but widely followed speed tolerance of 15 mph exists. Written warnings for speeding are more frequent than citations, and the warnings are believed to be effective in correcting drivers' behavior.

Traditional criminal procedures are used to arrest speed violators and to adjudicate speeding cases. Jail sentences are extremely rare, however, and cited speeders have the option of paying by mail. Radar speed measurements are generally accepted by local judges, although they prefer corroboration by visual observation or pacing. Estimates based on visual observation alone are accepted, provided the officer can demonstrate sufficent experience using the procedure, and the violator's estimated speed was greatly in excess of the limit. In contested speeding cases, most defendants are found guilty.

In conclusion, the following principal observations can be made with respect to speed enforcement in Tucson:

- roads patrolled by the Tucson Police Department are urban boulevards, business districts, and residential areas, and include no 55 mph highways;
- traffic enforcement priorities are determined by computerized analysis of traffic crashes, and selective enforcement is carried out by the traffic team;
- visible enforcement symbols are stressed; however, the Department does not further publicize its enforcement activity by conducting formal PI&E campaigns;

- speed is given a very low priority because other driving violations are found to be more important contributors to accidents;

- radar is deemphasized, but it is used; speed measurements are always taken in the stationary mode;

- speedometer pacing is used almost as often as radar to measure speeds;

- stopwatches are used to measure speeds in school zones and other low-speed zones;

- visual speed determinations are permitted by law and are given some degree of acceptance by courts;

- all members of the traffic-enforcement team use motorcycles for patrol; and

- written warnings to speeders--which are believed to be effective--are more frequent than citations.

CHAPTER NINE

CASE STUDY
STATE OF CALIFORNIA
(HIGHWAY PATROL)

BACKGROUND

California has the highest number of inhabitants (estimated in 1978 to be 22.27 million), licensed drivers (reported by the Department of Motor Vehicles [DMV] to be 15.02 million as of 1978), and registered vehicles (estimated in 1978 by the DMV to be 16.06 million) of any state. It has an area of 158,693 square miles, which includes extensive urban and rural areas as well as every type of climate and terrain. According to data reported by the California Highway Patrol (CHP) there were, at the end of 1977, a total of 134,264 miles of roads of all types in California.

In 1978 there occurred in California a total of 551,328 traffic crashes. Of that total there were 4,712 fatal crashes in which 5,296 persons were killed, and 211,156 personal-injury crashes in which 312,620 were injured. Crashes and casualties, as in the case of traffic volumes, are heavily concentrated on freeways and primary state highways.

The roads patrolled by the CHP include 2,268 miles of Interstate highways. The principal north-south Interstate route is I-5, which runs the entire length of California; major east-west Interstates include I-80 in the north, and I-10, I-15, and I-40 in the south. The CHP also patrols all 2,414 miles of California's non-Interstate freeway system, most of which is concentrated in the Los Angeles and San Francisco metropolitan areas. The Patrol reports that 9,627 miles of primary (U.S. or state numbered) highways and 83,793 miles of secondary roads are currently under its jurisdiction. Not all of California's roads, however, are patrolled by the Highway Patrol: CHP's jurisdiction extends only to freeways and to roads outside incorporated municipalities. An estimated 65% of the roads under CHP jurisdiction have posted speed limits of 55 mph. However, as the

Patrol's citation statistics imply, the great bulk of its enforcement activity is conducted on controlled-access and primary highways; consequently, more than 90% of its speeding citations are for exceeding the 55 mph limit.

GENERAL DESCRIPTION OF THE CALIFORNIA HIGHWAY PATROL

During the site visit to the California Highway Patrol, contacts there repeatedly stated that it was not possible to generalize about CHP operations statewide, nor was there a "typical command area" that would fully reflect the CHP's statewide operations. As a result, the general description of the Patrol is necessarily somewhat vague. Project staff did visit one of the CHP's area commands, located in South Sacramento, to gain greater insight into the details of CHP speed-enforcement and other precedures. Where the description of South Sacramento's procedures add to or differ from the statewide descriptions, they are also included.

Duties and Organization

The California Highway Patrol is responsible for traffic-law enforcement and promoting safe travel on the state's highways. CHP officers perform little criminal investigation (one exception involves organized vehicle-theft rings), nor do they enforce general criminal laws except on an on-view basis (such as when an officer discovers contraband in a vehicle or is alerted to a fleeing felon). Criminal law-enforcement on a regular basis is left to county sheriffs' and municipal police departments.

The California Highway Patrol reported that its fiscal 1980 budget totalled $275.2 million, of which all but $3.55 million was provided by state appropriations. The latter sum represents federal appropriations to CHP, and includes $1.65 million in grants from NHTSA. Approximately one-sixth of the Patrol's budget ($40.5 million) was spent on "administration, command, support staff, and overhead." The current budget also earmarks $6.67 million for the purchase of new patrol vehicles. CHP contacts discussed the possible impact of two budgetary factors: the increased price of fuel; "and Proposition 13," the 1978 voter-enacted limit on local taxation. So far neither development has forced CHP to reduce

its strength nor has the Patrol been forced to reduce its overtime pay, although it has been unable to expand. Since the purpose of Proposition 13 was to reduce local taxes, California's state government has been affected only insofar as it diverted its accumulated surplus to localities to compensate for their loss of revenue, and has reduced its expenditure to conserve funds. With respect to fuel, the CHP built its own bulk fuel facilities after the 1973-74 oil embargo to guard against future shortages, and has allowed for increased fuel costs in each of its budgets since then.

The Patrol reports that its fleet currently consists of 1,928 automobiles, 207 motorcycles, 4 fixed-wing aircraft, and 6 rotary-wing aircraft. In accordance with state law, all patrol vehicles are marked; most automobiles are painted in the Patrol's traditional black-and-white, and all bear conspicuous CHP decals on either side. A large proportion of the Patrol's vehicles (in South Sacramento, it was about 50%) are equipped with light bars. Most of these vehicles are assigned to urban areas where patrol visibility is important. Because light-bar-equipped vehicles are so easily recognized they are disliked by officers assigned to speed enforcement; these vehicles are, in general, used somewhat less often and are driven fewer miles.

The CHP recently purchased approximately 900 citizens-band (CB) radios and, at the same time, conducted an internal study of their effectiveness. That study's general conclusion was that the radios are of relatively little value in reducing response time to crashes and suspected impaired drivers; thus no more CB purchases are planned. At present about 800 CHP vehicles (roughly half the entire force) are CB-equipped; this figure includes radios owned by individual officers. CB use is more frequent in sparsely populated areas. Radios may be used to monitor conversations but not to entrap violators; nor are they used by officers to "advertise" the presence of patrols.

The CHP motorcycle contingent is the largest of any statewide police agency. Motorcycle patrols are deployed primarily in urban areas, especially around Los Angeles and San Francisco, where traffic congestion inhibits the use of automobiles. Motorcycles are rarely used elsewhere in

the state, since they are considered by the CHP to be more expensive to operate than conventional automobiles. Although motorcycle officers issue speeding citations, they issue comparatively fewer than the Patrol as a whole, especially for exceeding the 55 mph limit.

The Patrol's fixed-wing aircraft are used primarily to detect traffic violators and drivers in need of assistance, while the rotary-wing units are used for such nonenforcement tasks as searches, rescues, and evacuations of injured persons. Unlike all other state police and highway patrol agencies, the CHP uses no radar units in enforcement. However, CHP radars are used to calibrate speedometers and to monitor traffic speeds. Although the Patrol is not expressly forbidden by law to measure speeds by radar, the state legislature has consistently refused to appropriate the Patrol any funds to purchase radar units and, in addition, has indicated that it would strongly disapprove of the CHP using radar. Moreover, the CHP has no stopwatches or VASCAR units since California's "speed trap" law expressly prohibits any police agency from using time-distance measurements as evidence of speed. The outlook is not considered favorable for CHP use of radar in the immediate future; although bills are introduced each year to appropriate funds to the Patrol to purchase radar, they are not considered likely to pass. CHP officials believe that the introduction of radar would produce a sharp immediate decrease in speeding violations, but that decrease would be temporary and would dissipate as the public became familiar with the CHP's radar measurement techniques.

The Patrol is headed by an appointed Commissioner, who in turn appoints a Deputy Commissioner and two Assistant Commissioners, one of them responsible for field operations, the other for staff and support services. CHP field operations are divided into eight divisions. Each field division covers a different region of the state, and is commanded by a Deputy Chief. Each division is in turn subdivided into ten to seventeen smaller regions, known as areas. There are, in all, ninety-five CHP area commands. Area commanders in the larger commands hold the rank of captain; beneath the commanders are up to four lieutenants responsible for

supervising the sergeants who, in turn, direct the command's day-to-day patrol operations. Smaller commands are headed by a lieutenant who is assisted by special duty officers.

Each command area is further subdivided into beats. The length of a beat depends on the traffic volume and frequency of crashes there. Normally an officer assigned to a beat has the authority to patrol anywhere within it, but is expected to focus on the more frequent and severe traffic problems found there.

Project staff visited one of CHP's area commands, located in South Sacramento. That command serves an area estimated to cover 700 square miles, with a total population of approximately 363,000. The area's major CHP-patrolled highways include I-5 (north-south), U.S. 50, (east-west), and California 99 (north-south). The south Sacramento area also includes numerous unnumbered roads that carry high volumes of traffic through unincorporated areas. In all there are 153 miles of numbered highways and 1,960 miles of unnumbered county roads within the command area.

The South Sacramento command is headed by an area commander who holds the rank of captain. He is assisted by two lieutenants, an executive officer and a field-operations officer. Beneath the field-operations officer are six sergeants, two of whom are responsible for each of the command's three shifts. The command has a total of sixty-two sworn officers, forty-eight of whom are field (line) officers.

Public Information and Education

The Highway Patrol conducts extensive publicity efforts to promote safe driving, and these are intended to complement its law-enforcement activities. The Patrol maintains a public affairs office that is responsible for statewide publicity campaigns and informing the area commands about CHP programs. Each of the eight CHP divisions, and each area command, also has an office of public affairs responsible for publicizing the Patrol's activity in that area.

Statewide publicity campaigns tend to focus on a specific safety issue each month. In recent years several monthly campaigns per year have

focused on 55 mph compliance. Statewide campaigns are publicized by a variety of means, including the mass media, billboards, and appearances by individuals from state, division, and area CHP speakers' bureaus. Most publicity campaigns stress safe driving in general but some incorporate the threat of enforcement in their safety messages.

TRAFFIC ENFORCEMENT

Overview

Although the California Highway Patrol is responsible for enforcing the full range of traffic laws, speeding is considered a major factor contributing to traffic crashes. Speed enforcement is stressed by the Patrol's official policy; however, speeding is not enforced to the exclusion of all other traffic offenses. CHP contacts stated they regarded drunk driving as an extremely serious problem; moreover, they pointed out that there are circumstances--such as rush-hour traffic on metropolitan freeways—that require attention to violations other than speed, such as failure to yield the right-of-way. It is impossible to make a statewide generalization, since California is such a large and diverse jurisdiction; nonetheless, speeding is considered a priority enforcement target by most CHP area commands. The Patrol's 1978 citation figures bear this out: of the 2.47 million traffic citations issued by the CHP that year, speeding was the largest single category: 1.13 million or about 46% of the total. The CHP also issued approximately 1.96 million verbal warnings for traffic offenses, made about 12,000 felony arrests, and made about 1.52 million motorist assists.

In terms of geography, the Patrol's traffic-enforcement authority is almost exclusive outside incorporated cities, for under state law county sheriffs have no legal authority to conduct traffic patrols. (There are 2 exceptions: the Los Angeles County Sheriff is allowed to contract with cities there for traffic enforcement in unincorporated areas; and sheriffs anywhere in the state may arrest drunk drivers.)

In addition to state law, CHP officers have authority to enforce

municipal and county ordinances. It is the Patrol's policy to cite a driver for the state law (Vehicle Code) violation when a traffic offense is prohibited both by the Code and by a local ordinance. Thus, speeders are always charged under the appropriate Vehicle Code provision.

As stated before, the great majority of CHP speed citations, perhaps ninety percent, are issued for exceeding the 55 mph limit. The Patrol issues more speed citations than any other police agency in the nation; in fact, the CHP accounts for better than one-tenth of all such citations. This is so even though the Patrol is not allowed to use radar to measure speeds, nor does it run such "high-visibility" speed enforcement programs as Maryland's "Operation Yellowjacket." CHP contacts expressed the view that their agency has been unfairly accused of laxity with respect to 55 mph enforcement; moreover, they insisted that California cannot be compared with other states, especially eastern ones.

CHP contacts estimated that urban freeways carry forty percent of all traffic on CHP-patrolled roads, freeways outside incorporated areas carry twenty-five percent, and primary highways account for another fifteen percent. As a result, freeways and primary highways receive regular patrol coverage; the other roads, except for the heavily traveled arteries in unincorporated suburbs, are patrolled on an on-call basis.

Deployment

The CHP reported that its current statewide strength consists of 4,738 sworn officers (of which 3,192 are line officers) and 1,233 civilian employees. Because the CHP is a traffic-enforcement agency, all of its line officers are assigned to traffic-enforcement duties. Given the Highway Patrol's current strength, the largest number of vehicles that can be deployed at one time is about 900 (from 3:00 p.m. to 11:00 p.m.); at other times of the day the Patrol's field strength ranges from a low of 300 to 400 (between 3:00 a.m. and 6:00 a.m.) to a high of about 600 to 700 vehicles (between 6:00 a.m. and 3:00 p.m.). The CHP has a "doubling-up" policy that calls for two-officer patrols after 10:00 p.m. Area commanders may adopt a doubling-up policy for shifts beginning prior to

10:00 p.m.; they typically will do so only in dangerous locations within their area. This policy does not apply to resident posts. These posts—which are found mainly in remote areas—are officers' residences. Resident officers, when not working a regular shift, can be reached at home in the event of an emergency. By definition, they are one-officer patrols.

The average CHP officer is able to devote the bulk of an eight-hour shift to on-the-road enforcement. Because the CHP provides for eight and one-half-hour shifts, including one-half hour for lunch, downtime is low. It is estimated that less than one hour per shift is devoted to administrative duties, briefings, and paperwork. During most of the remaining seven hours the officer is visible to traffic. (In the South Sacramento area command, officers are estimated to be visible for 5 hours per shift.) The typical officer is, for about four hours per shift, on random traffic patrol and is available for any traffic-related assignment, including speed enforcement. On the other hand, time devoted **exclusively** to speed enforcement is reportedly low, ranging from five to ten minutes per shift on county roads to about forty minutes per shift on freeways outside incorporated areas.

CHP officers are deployed according to two principal criteria: traffic volume; and crash frequency and location. On occasions CHP area commands will also deploy officers in response to specific citizen complaints, such as drag racing on a regular basis in the same location. Selective traffic enforcement is not carried out on a stateside basis; this is a matter left to the area commands, which have first-hand knowledge of traffic problems. Area commands, using data supplied them by CHP's planning and analysis section, decide when and where to deploy officers and what offenses to stress. Deployment patterns vary greatly from area command to area command, and even among the beats within a command.

Each area command determines what its officers' shift hours will be; however, typical shifts in most command areas are: 5:45 a.m. to 2:15 p.m.; 1:45 p.m. to 10:14 p.m.; and 9:45 p.m. to 6:15 a.m. Many commands also deploy one or two additional shifts that overlap the regularly scheduled ones, primarily to observe for and detect drunk drivers or to

provide additional patrol coverage during periods of peak activity. Some command areas, especially small ones that cover large geographic areas, might choose to deploy no night shift. Some command areas contain "resident posts."

In South Sacramento, the day shift runs from 6:15 a.m. to 2:45 p.m. Normal strength on that shift averages ten single-officer units. The evening shift runs from 1:45 p.m. to 10:15 p.m., and averages twelve single-officer units. The night shift runs from 10:00 p.m. to 6:30 a.m.; it averages three two-officer units on weekdays, four on weekends. Because the CHP requires its officers to work eight and one-half hour shifts, there is some overlap among the shifts. However, unlike many other area commands, the South Sacramento command seldom deploys additional overlapping shifts to observe for drunk drivers. The area commander and his staff believe that DWI enforcement by the three regular shifts is most efficient and is more cost-effective than deploying an extra shift on a regular basis.

In South Sacramento, officers are deployed on the basis of traffic density and crash locations, as determined by CHP data printouts and officers' judgment. If citizens constantly complain about violations occurring in a particular location (such as a school zone), officers may be deployed there. Deployment patterns are reviewed 4 times a year by the field operations officer. Once a month the sergeants reschedule their officers to particular shifts and beats, and they are also responsible for day-to-day deployment. Sergeants can vary an officer's monthly schedule at any time, if it is necessary to do so. Normally each beat is patrolled by an officer for 1 month at which time (s)he is assigned to a different one. In all, the South Sacramento area consists of 17 beats. Each beat typically consists of a section of a major highway, called a "major beat," which is patrolled around the clock, and includes nearby nonprimary highways called "minor beats," which are patrolled on an on-call basis. Beats range in length from one and one-half miles (a section of freeway passing through downtown Sacramento) to upwards of 20 miles in the more rural regions of the area. A beat contains no more major highway mileage

than an officer can cover during peak hours. All beats are patrolled by officers in automobiles, since the South Sacramento command has no motorcycles. On the average, an officer assigned to a freeway beat averages 125 to 210 miles per shift; one assigned to a surface-street beat covers an average of 70 to 110 miles per shift.

Contacts within the South Sacramento area command characterize speeding as the leading cause of crashes within the area, followed by alcohol- and drug-impaired driving, and right-of-way violations. The amount of time per shift that each officer spends specifically observing for speed violators varies from officer to officer; the proportion is somewhat greater on freeways than on county roads. It was noted, however, that all officers are conscious of speeding--even when they are not specifically observing for it--because it is considered the command area's leading cause of traffic crashes. Most speeding citations issued in South Sacramento charge the driver with violating the 55 mph speed limit.

Some area commands reportedly deploy "teams" to observe specifically for speeders at certain locations or times of the day. Whether such teams are used depends on the command's enforcement strategy; there is no statewide program placing speed-enforcement teams on California's highways. These local speed-enforcement teams should be distinguished from the team radar procedures described in the literature, which involve observation and "catch" vehicles. With the exception of aircraft patrols, CHP officers rarely if ever use a configuration in which one officer measures speed and other, downstream officers pursue and cite violators. Rather, a CHP "speed team" is a group of officers who, by common understanding within an area command, are assigned to observe for speeders during that shift. On occasion, one officer will radio ahead to another unit if the first officer is unable to pursue and cite. However, these two-officer arrests are not the result of any team configuration per se.

The South Sacramento command formerly operated such a speed-enforcement unit; however, because of manpower limitations its patrols have since been suspended. Currently emphasis is given to high-speed and

high-accident locations, but specializd units are no longer assigned to enforce speed laws per se.

Surveillance and Detection

The CHP is unique among state-level traffic-enforcement agencies in that it does not use any electronic or mechanical speed-measuring devices. A statute, pased in the 1920s to combat the abuse of speed-enforcement practice by local governments desirous of raising revenues, prohibits time-distance speed measurements. In addition, public opinion demands that the CHP "play by the rules" and avoid covert or deceptive enforcement techniques. The California legislature has responded to these demands by refusing to fund CHP purchases of radar and by prohibiting the use of unmarked vehicles in traffic-law enforcement. CHP policy reinforces state law and also prohibits the hiding of vehicles.

Officers observe for speeders primarily on an on-view basis, either while randomly patrolling a beat or while parked at the roadside observing traffic in general. CHP officers rarely remain stationary: they are encouraged to remain moving while on duty; when it becomes necessary to stop (for example, to complete paperwork) the officer is encouraged to do so in full view of passing traffic. This is believed to deter violations because, as stated before, all CHP vehicles are conspicuously marked as such. In general a patrol vehicle is likely to be parked on more occasions--due to motorist assists and traffic crashes--in metropolitan than in rural areas. Normally the patrol vehicle is parked on the right-hand side and parallel to the road, facing in the same direction as the flow of traffic. In rural areas where this is posible, officers frequently park their vehicles perpendicular to the highway.

Because the CHP has no radar equpiment, and is also prohibited from using stopwatches or VASCAR to measure speed, two principal measurement procedures are used instead: **visual observation** and **pacing.** What measurement method is used depends on terrain, time of dav, and road and traffic conditions.

Visual observation is, operationally, the simplest of all measurement

methods. It involves judging whether a vehicle is traveling over the speed limit and, on the basis of the officer's experience and observation of other traffic, estimating its speed. California law permits speeding convictions based on estimated speeds, and estimates of experienced police officers are generally accepted by courts in speeding trials.

Visual observation alone is not the preferred method of measuring speeds; rather, this technique is used when a pacing is impossible, such as when traffic is heavy, or when the officer has no immediate access to the highway. Visual observation is also used to corroborate speeds determined by pacing. Testimony in court, based on speed estimation alone, is required to be more elaborate than testimony based on pacing. For example, the officer who makes an estimate must judge the violator's speed in relation to that of other traffic (i.e., "it passed 6 other vehicles at a high rate of speed").

Many--but not all--CHP officers are trained in speed estimation as part of their field training at the area command. Typically one officer trains another by driving a vehicle at various predetermined speeds past the location where the other is observing, asks the other officer for an estimate, and gives his or her true speed. In time, and with practice, officers gain considerable expertise in estimating speeds, for example, by becoming aware of the distorting effects that traffic flow and vehicle types (such as sports cars) have on perceptions of speed. However, even experienced officers will make errors of several mph in their estimates; to account for this, officers are instructed to reduce their speed estimates to the next lower multiple of 5 mph.

The chief speed-enforcement procedure is **pacing**, which is supported by visual speed determination whenever possible. An estimated ninety-five percent of all speed citations written in the South Sacramento command area are based on pacing; the remainder (violations involving speeds that are "so outrageously high" that the officer could not accurately clock the speed) are based on visual determination alone. One area command contact expressed the opinion that pacing is dangerous because the officer must exceed the speed limit to make an accurate speed determination.

Speedometer pacing is the predominant measurement procedure (used an estimated 90% of the time in South Sacramento), although in the less densely populated southern part of the area, odometer pacing (defined below) is frequently used. Sources believed that an officer must become very adept at the odometer pacing procedure before (s)he can use it consistently.

Although officers are trained in pacing at the CHP Academy, it is believed that the "real" speed-enforcement training is given at the area command by the FTO (field training officer) and is supplemented by discussions about speed enforcement among the area command's officers. Training of a new officer by an FTO is normally completed in thirty working days; a small minority, of new officers (some 10% to 15%), however, require supplementary field training beyond the 30-day minimum.

Pacing necessarily begins with the visual observation of a vehicle, and a determination that it is exceeding the speed limit. If traffic and road conditions permit, the officer attempts to fall in behind the suspected violator to determine more accurately the suspect's speed. Depending on traffic density and terrain, an officer will select either of two forms of pacing: **speedometer pacing** or **odometer pacing.**

In **speedometer pacing** the officer typically begins the pacing procedure in a lane different from that of the violator, so that the patrol vehicle is positioned in the driver's "blind spot." If it is not possible to position oneself in the "blind spot," the officer selects another location behind the suspect's vehicle, where (s)he cannot easily be seen. In any event, the officer adjusts the patrol car's speed so that the distance between vehicles remains constant, and notes the offending vehicle's speed. There is no specified minimum distance over which the officer remains a constant following distance; an officer typically will pace over a course between one-quarter and on-half mile. Once the officer is satisfied that his or her speedometer reading accurately reflects the speed of both vehicles, and that a speeding violation has occurred, (s)he will pursue the driver and take action.

CHP speedometers are required to be calibrated at least once every

ninety days or twenty-thousand miles, whichever occurs first. Although they are not required to do so, some officers independently compare the vehicle's actual speed against the speedometer reading at the beginning of each shift. The CHP is issued guidelines relating to speed tolerances, and they provide the following: if the violator's speed is 1 to 4 mph above the limit the officer **may** make a stop; if the speed is 10 or more mph above, the officer **shall** stop and **should** cite. This policy is reflected in the distribution of clocked speeds among violators cited for exceeding the 55 mph. It was reported that more than three-fifths of the clocked speeds are between 65 and 70 mph, and that another thirty percent are between 60 and 65 mph. Citations for speeds between 56 and 60 mph are reportedly very rare, giving drivers the impression that the CHP has some form of official tolerance.

Odometer pacing is used to measure speeds on roads where the traffic volume is relatively low, the terrain is flat, and the road contains many landmarks, such as overpasses. This method permits the officer to remain far behind (and out of the sight of) the suspected violator but still determine his or her speed more accurately than by visual observation alone. Essential to a successful odometer pace are frequent landmarks. In odometer pacing an officer observes a suspected speeder and then falls in behind, remaining about two- to three-tenths of a mile to the rear. After selecting a speed (s)he believes is equal to that of the suspect, (for example, 65 mph), the officer selects a landmark and, using the odometer, determines how far (s)he is behind the suspect's vehicle. The officer--still maintaining his or her speed--then selects a second landmark and again determines how far behind (s)he is. If the second difference is larger, the suspect is "pulling" (traveling faster than) the officer. At that point the officer may either pursue and take action, or increase the patrol car's speed to obtain a higher and more accurate measurement. In odometer pacing CHP officers typically cite at the highest speed maintained during the pace. In both forms of pacing some officers might reduce the charged speed to "sell" the citation to a driver; however, there is no official CHP policy regarding speed reductions beyond the tolerances and the allowance

for speedometer error already mentioned. Contacts in the south Sacramento command state that when pacing is used, charged speeds are usually rounded to the next lower 5 mph increment (reductions thus average 2 to 3 mph); speeds determined by visual observation are reduced by somewhat larger amounts, perhaps 5 mph or more. In both cases the reductions are made to compensate for possible inaccuracies in the measurement procedure.

Most pacing is done by officers in automobiles, but some is done in motorcycles as well. In sparsely populated areas of California, speeds are sometimes measured by **aircraft pacing.** The CHP currently has 6 fixed-wing aircraft that are capable of flying at comparatively low speeds (typically a ground speed of 65 mph). Roads on which vehicles are paced by aircraft (typically high-violation interstate highways in "wide-open" rural areas) are marked every mile. Commonly a CHP aircraft patrol will operate from an altitude of 500 to 700 feet. Once a suspected speeder is observed from the air the pilot (who is a sworn officer) determines the aircraft's ground speed using a stopwatch, and determines whether the suspect vehicle is "pulling." Officers in aircraft use stopwatches only to determine the airplane's ground speed, **not** to measure vehicle speeds directly. The use of watches in this procedure has been challenged as a "speed trap" but CHP sources state that only one state court--a trial court, not an appellate court—that has considered the legality of aircraft pacing has so far characterized it as a time-distance measurement prohibited as a "speed trap." When an aircraft pilot (who normally is the only person aboard) determines that a vehicle is speeding (s)he will radio a description of the violator to a ground unit, which will then pursue the offender. The number of "catch" vehicles working with an airplane varies from 1 to as many as 12 or 13. On occasion no catch vehicles are assigned to work with an airplane; instead, reports of violators are radioed to vehicles on regular patrol in the area. If an officer in a catch vehicle is able to make an independent observation and determination of the offender's speed, the latter determination provides the basis for citation and later testimony in court; otherwise the citation and subsequent

prosecution will be based on the pilot's original speed determination.

A typical aircraft patrol operates for four to five hours at any one time. On many days there are two separate air patrol shifts. Although most airborne patrols are deployed in the daytime, nighttime patrols are also possible and some are deployed after dark. In most CHP air patrol areas weather conditions are such that airplanes can be flown on most days of the year. While fixed-wing aircraft usually patrol for the express purpose of speed enforcement, the CHP also operates general-purpose air patrols that will observe for speeders on an on-view basis only. CHP contacts report that they conduct publicity campaigns in connection with their aircraft speed-enforcement patrols; this is believed to create a deterrent threat even when no aircraft are aloft.

The South Sacramento area command uses both fixed- and rotary-wing aircraft. The craft are owned by the Division and are rotated among the area commands; typically the commands that request aircraft are likely to be issued them. South Sacramento is preparing a program in which fixed-wing aircraft will be used weekly. These will be used on the wide-open beats on I-5 and California 99, in the southern part of the area, where ground patrol vehicles are too easily seen by violators. In the south Sacramento area, aircraft normally fly at an altitude of two thousand feet. Aircraft pilots identify speeders, leaving the actual pursuit and apprehension to catch vehicles, whose drivers obtain an independent speed observation and take action on that basis. Contacts in the South Sacramento command believed that at least three catch vehicles are necessary to support an aircraft speed-enforcement procedure; otherwise the ground units would be overburdened by violators identified from the air. Fixed-wing aircraft are preferred for daytime duty, while the rotary-wing unit is used for night as well as daytime duty. In the South Sacramento area, aircraft are typically used for two three-hour periods per shift.

Apprehension

Once an officer has determined the violator's speed and decided to take action, (s)he activates the amber flashers and increases the patrol vehicle's speed to get close enough to attract the violator's attention. Once the officer is close enough (typically directly behind the violator) (s)he activates the red flashing lights. Officers are instructed not to use their sirens unless absolutely necessary, especially on crowded freeways, since sirens greatly increase the risk of a crash. If the red flashers do not get the driver's attention, the officer may sound several short blasts on the horn or use a loud-speaker. (The latter is also useful in directing a violator to the right-hand side of the road.)

The preferred locations for a violation stop are: off a freeway entirely, if possible; on the right-hand shoulder of the highway; or, if there is no shoulder, at the safest possible location off the right-hand side. For their own safety, officers are encouraged to stop vehicles in well-lighted areas.

In a typical traffic stop the patrol vehicle is positioned directly behind the violator's vehicle, about one-third of a car width to the left. If the officer has a suspicion about the vehicle or the occupants, (s)he will, before approaching it, radio its registration tag (license plate) number to the communications personnel. This practice is not generally followed, since the Patrol's communications system cannot handle such a volume of calls.

In the interests of safety, the Patrol encourages its officers to approach stopped vehicles from the right (passenger) side. Once (s)he approaches the vehicle, the officer is encouraged first to inform the driver why (s)he has been stopped, and then ask for the driver's license. In speeding stops, the officer will then explain what was the posted speed and what was the violator's clocked or estimated speed. It is left to the officer's discretion whether to allow the violator to remain in the vehicle or request that (s)he step out of it. In most cases the driver is allowed to remain seated; if the driver is asked to leave, (s)he is directed to stand to the right of the stopped vehicles. Most officers prefer to take the

driver's license, return to the outside of the patrol vehicle, and write the citation there. In poor weather the officer usually writes the citation inside his or her patrol vehicle. Once the officer completes the citation, (s)he keeps one copy and returns one to the driver. Other copies are delivered to the appropriate court and to the area command. On the average a traffic stop requires ten to fifteen minutes to complete.

Officers are issued general guidelines with respect to stopping, citing, and warning speeders. In an average eight-hour shift, a CHP officer is estimated to issue two to five speed citations and give one verbal warning for speed. These figures compare with an overall average of four to ten citations for all traffic offenses. (No written warnings are issued for speed.) Warnings are usually issued when the violator's speed is not grossly excessive (less than 10 mph above the limit), or an a "close" case when the officer did not obtain a reliable speed measurement.

The South Sacramento area command's pursuit and apprehension are similar to the statewide procedures. Registration tag and driver's licenses checks are made only when an officer suspects that a driver or passenger might be wanted. Officers in South Sacramento approach stopped vehicles from the passenger's side on limited-access highways, but prefer to approach the vehicle from the driver's side elsewhere within the command area. At least one contact expressed a preference for writing citations in full view of the driver so that (s)he can observe the driver constantly. A violation stop for speeding reportedly requires five to ten minutes to complete.

LAW GENERATION, ADJUDICATION, AND SANCTIONING

Law Generation

As stated earlier the Highway Patrol charges speed violators under state law (California Vehicle Code) provisions. The Vehicle Code sets out the following prima facie statewide speed limits: the Basic Speed Law, a 55 mph statewide maximum; 25 mph in business or residence districts (except on state highways); and 15 mph on alleys, at railroad crossings, and

at blind, uncontrolled intersections. These limits may be altered provided the California Department of Transportation approves.

As already mentioned, California is one of a handful of states that prohibit, as "speed traps," time-distance speed measurements such as VASCAR or stopwatches. The state "speed-trap" law also prohibits posted speed limits that are "unreasonable," that is, limits that are neither justified by a recent traffic or engineering survey nor posted on a local street or road. Police radar is not prohibited, and many local police departments make extensive use of it. However, as stated earlier, legislative action in effect prohibits the CHP from using radar. Radar detectors are not prohibited by law. The Vehicle Code specifically requires police officers assigned to traffic-enforcement duty to use distinctively marked vehicles and to wear full, distinctive uniforms. The use of "arrest quotas" by police departments is prohibited by law. Speeding violations are normally classified as infractions punishable by a fine only, but a **third** traffic offense within one year can, at the discretion of the prosecutor, be charged as a misdemeanor. CHP contacts report that multiple-offense speeding prosecutions are very rare; police officers do not normally attempt to determine a speed violator's past record at the time and place of the citation, and prosecutors will charge a speeder with a misdemeanor only if it is known that an extensive record of prior convictions exists. Under the Vehicle Code the maximum penalties for an infraction are a $50 fine for a first offense, and $100 fine for a second infraction within one year, and a $250 fine for a third or subsequent offense within one year. Misdemeanors carry maximum penalties of 6 months' imprisonment **and** a $500 fine. The court may also require a driver convicted of any traffic offense (misdemeanor or infraction) to attend traffic school or to take a driver-instruction course.

The rules governing misdemeanor arrests also apply to the apprehension of those committing traffic infractions, including speeders. The citation issued the driver serves as the complaint in court; copies are retained by the officer, the area command, and the driver. In most cases the speeder is cited and released on "written promise to appear." Most speed violators

are permitted to pay out their citations, either in person or by mail. Each court sets its own criteria stating which speed offenders must appear in court; in most courts persons exceeding 80 mph typically are required to appear.

Adjudication

Every court is responsible for setting its own appearance dates for speed violators, provided the appearance date is schduled no less than eleven nor more than forty-five days after the offense. Nonresidents of California are also normally released after giving a written promise to appear, even though the arresting officer has the option to take him or her to court. Persons without valid driver's licenses frequently are taken from the site of the offense to the appropriate court, where bail is posted. Unlike many other jurisdictions, California does not permit police agencies to accept bail. Each court is responsible for fixing its own bail schedule; California courts do not accept drivers' licenses in lieu of money bail. In the event of bail forfeiture courts have the option to keep the case open, but most courts treat the forfeiture as a payment of the fine.

Of all traffic citations, those for speeding above the posted limit are among the least contested. CHP contacts estimated that ninety-five percent of all cited speeders pay out, usually by mailing in the fine. The remaining five percent post bail and request a trial date. Of those who request trials, about sixty percent do so to plead guilty but offer an explanation or complain about the arresting officer's behavior; the remaining forty percent plead not guilty. Drivers who fail to answer citations are issued with arrest warrants. Failures to answer citations are very rare, because the California Department of Motor Vehicles (DMV) refuses to renew licenses of, or reregister vehicles owned by, persons with outstanding traffic warrants.

When a trial is requested the elapsed time from the request until the trial date varies from court to court; it ranges from several days to several weeks. In some courts the county or city prosecutor is responsible for presenting the state's case; more frequently, however, this is done by

the arresting officer. Proof of guilt beyond a reasonable doubt is required, and jury trial is not permitted in speed-infraction trials. Typical elements of the officer's testimony include: his or her traffic-enforcement experience; the time and location of the violation; how and where (s)he observed the speeding vehicle; the posted speed limit; the officer's determination of the violator's speed; and the reasons for that determination. The officer's qualifications (that is, his or her expertise in judging vehicle speeds), are not presented unless they are made an issue.

The average speeding trial is estimated to last up to half an hour. The great majority of speeding trials result in verdicts of guilty. In isolated cases, some convicted drivers receive reductions in their charged speeds; this is usually done only if the reduction would enable the driver to avoid a jail sentence. Dismissals caused by the officer's failure to appear are rare; they usually occur only when the officer is required to appear in connection with a more serious offense, such as drunk driving. Appeals of speeding convictions are extremely rare.

Sanctioning

Fine schedules are set by courts and vary throughout the state. Most courts draw no distinction between first and multiple offenders in fining speeders. Jail sentences are extremely rare, although sentences to traffic safety school are reported to be comparatively frequent. Courts are required to report convictions to the DMV, which enters it on the driver's traffic record. The DMV uses a point system to identify negligent operators and habitual offenders. In most cases four speeding convictions within one year (6 within 2 years or 8 within 3 years) raise the presumption that a driver is a negligent operator whose driving privileges may be revoked, suspended, or restricted. Traffic convictions may be appealed on the record to the superior court for that county.

SUMMARY

The California Highway Patrol (CHP) is exclusively a traffic-enforcement agency, although Patrol officers may take action against

criminal offenders on an on-view basis. The Patrol is the largest traffic-enforcement agency in the United States, and is responsible for patrolling a wide variety of climate and terrain.

Because California is such a large and diverse state it is difficult to generalize about either the Patrol's traffic enforcement priorities or about its procedures directed against speeding. Throughout the state, speeding--along with drunk driving--is considered one of the chief causes of accidents and is given considerable emphasis. Nearly half of the CHP's traffic citations, about 1.1 million, are issued for speeding. Particular attention is paid to the 55 mph violation, because most speeders on CHP-patrolled highways fall into that category. Speeding is considered an especially serious problem in the unincorporated areas of California; it is comparatively less serious in metropolitan areas where high-speed travel is difficult during commuting hours and where violations such as failure to yield cause a large number of crashes. In general, traffic violations are most frequent in the afternoon and evening hours, and the largest contingent of officers is deployed during those hours.

Selective traffic enforcement is not conducted on a statewide basis, although many CHP area commands deploy officers to high-accident or high-violation areas identified by headquarters staff. In some area commands where speeding is a major problem, speed-enforcement "teams"--groups of officers whose primary responsibility is to observe for speeders--are deployed. More generally, area commands tend to concentrate their officers on freeways where traffic volume is highest.

California state law requires that patrol vehicles be conspicuously marked. State law is reinforced by Department policy encouraging visibility of patrol. This approach is believed to be the most effective, and it is also consistent with public opinion requiring that the Patrol "play by the rules." The CHP prefers not to conduct high-visibility campaigns centered around innovative or intensive enforcement, such as Maryland's "Operation Yellowjacket." This is because of the Patrol's opinion that the latter campaign produces only temporary reductions in violations, and because legal constraints limit the range of available procedures. State

law prohibits the use of stopwatches and VASCAR and in effect forbids the Patrol from using radar to measure speed. The Patrol does rely heavily on public-information campaigns that carry a strong safety-oriented message, which complements its enforcement efforts. 55-mph compliance is frequently publicized by the Patrol's campaigns.

Given the legal constraints on its enforcement practices, the Patrol relies on pacing procedures and on visual observation (expert judgment) to determine vehicle speeds. Speedometer pacing, the most frequently used procedure, occurs statewide; Patrol officers receive intensive training in this procedure. In sparsely populated areas and on flat terrain where an officer conducting a speedometer pace would be too conspicuous, odometer pacing is used instead. Odometer pacing, however, requires more time and fuel than speedometer pacing. In remote areas of California, aircraft are used to pace vehicles. Although pilots use stopwatches to verify the airplane's own ground speed, the procedure has been found legally acceptable. Finally, in dense traffic, where pacing is impractical or where it would create a hazard to other traffic, officers rely on visual observation to determine vehicle speeds. Although most courts accept these determinations as reliable, they insist that the officer who offers a judgment as testimony establish his or her experience with the procedure. Nearly all of the CHP's enforcement procedures are carried out in the solo configuration, except for aircraft pacing which requires one or more ground ("catch") vehicles to pursue and stop violators identified from the air. (Ground units are encouraged to make independent observations of the violators' speed.) Throughout the state, two-officer patrols are required at night, and some area commands serving high-crime areas also "double up" during evening shifts. In urban areas, many area commands use motorcycles on patrol, for they are more maneuverable than automobiles in dense traffic.

Highway Patrol guidelines require officers to stop drivers traveling ten or more miles above the speed limit; when a driver who travels fewer than ten miles above the limit is stopped, the tendency is to verbally warn rather than cite the violator. Reductions of measured speeds are

infrequent, since all speed violations earn the driver the same number of violation points.

California law in effect provides for decriminalized procedure for the adjudication of speeding cases. Owing to the large number of individual courts in the state, it is not possible to generalize regarding court procedures; however, conviction rates tend to be high across the state, and contested cases are infrequent.

In conclusion, the following principal observations can be made with respect to speed enforcement by the California Highway Patrol (CHP):

- most of the highways patrolled by the CHP are freeways, rural primary highways, and rural secondary roads;
- speed enforcement is stressed statewide, especially outside metropolitan areas, and 55-mph enforcement is a statewide priority;
- selective traffic enforcement is not carried out statewide, but at the local (area command) level in many areas;
- all traffic enforcement is expected to be conducted in an open manner and according to citizens' standards of "fair play";
- the CHP conducts extensive publicity efforts to complement its enforcement activities, and maintains state- and local-level PI&E offices;
- because radar speed measurements are prohibited by legislative action, the CHP's primary measurement techniques are speedometer, odometer, and aircraft pacing;
- speed determinations based on an officer's expert judgment are permitted by law and are accepted by most courts;
- the predominant configuration is solo, although team configurations are required to carry out aircraft pacing procedures; and
- motorcycles are used extensively in metropolitan areas.

CHAPTER TEN
CASE STUDIES SUMMARY

Case studies of police procedures for enforcing speeding laws were conducted in Washtenaw County, Michigan; Cincinnati, Ohio; Tucson, Arizona; and the state of California (Highway Patrol). It was found that the police in these jurisdictions use, for the most part, "traditional" procedures for enforcing speeding laws; however, some interesting variations were noted. For example, the California Highway Patrol, which is forbidden by the legislature to use radar, instead relies on pacing (ground and air) as well as visual observation, to measure vehicle speeds. In Tucson where the weather is warm and dry throughout the year, motorcycle patrols account for most traffic enforcement, and stationary radar (hand-held speedguns) and pacing, occasionally supplemented by stopwatch measurements and visual observation, is used instead of moving radar to measure speeds. In addition, Tucson uses computerized analyses of high-accident locations in deciding where and when to deploy traffic-enforcement units.

The extent to which radar is used was found to vary widely among the four jurisdictions. The Washtenaw County Sheriff's Department, which patrols rural secondary roads, makes heavy use of moving radar, and some use of stationary radar, in conducting a selective traffic-enforcement program that stresses speeding. On the other hand, both the Tucson and Cincinnati Police Departments issue few radar units to officers, a practice that apparently recognizes that other traffic violations (e.g., right-of-way violations) are also important contributors to traffic crashes in those cities.

All four departments rely for the most part on overt enforcement techniques involving plainly marked patrol vehicles. Of the four, only the California Highway Patrol conducts formal PI&E efforts and maintains full-time, public-affairs offices. Nearly all observations of speeders take place

in the solo rather than the team configuration. Procedures for the apprehension of violators were similar in all four jurisdictions, as were the procedures for adjudicating traffic citations. Police sanctioning and presanctioning activity did vary, though: the Tucson Police Department relies rather heavily on written warnings; and the California Highway Patrol also issue a large number of warnings; on the other hand, the Washtenaw County Sheriff's Department issue citations in nearly every speeding stop.

APPENDIX A

AREAS OF DISCUSSION FOR TELEPHONE CONTACTS WITH PATROL AGENCIES

APPENDIX A

AREAS OF DISCUSSION FOR TELEPHONE CONTACTS WITH PATROL AGENCIES

I. BACKGROUND

A. Driving Environment

(1) Population of Jurisdiction

(2) Number of Licensed Drivers

(3) Traffic Volume

(4) Character of Roads Patrolled

(a) number of miles of roadway
(b) type of roads patrolled (including unusual roadways)

(5) Accident History--number, type, and location

B. Agency Organization and Structure

(1) Size of Agency (number of personnel)

(2) Budget

(a) total agency budget
(b) traffic-enforcement budget

(3) Extent of Police Traffic Function

(a) existence of traffic division (local agencies only)
(b) size of traffic-enforcement force
(c) extent of criminal and other nontraffic duties (state agencies only)

(4) Manner of Selecting Enforcement Sites and Allocating Manpower

II. ENFORCEMENT PROCEDURES

A. Speeding

(1) Description of Procedure (including characterization as "specific" or routine")

(2) Measurement Method or Device

(3) Frequency of Use

(4) Reason for Selection

(5) Overt or Covert Approach (including use of marked or unmarked vehicles)

(6) Solo or Team Configuration (if team configuration, number of officers involved)

(7) Type of Vehicle Used

(8) Level of Media Coverage

B. Following Too Closely (FTC)

(1) Description of Procedure

(2) Measurement Method or Device

(3) Frequency of Use

(4) Reason for Selection

(5) Overt or Covert Approach

(6) Solo or Team Configuration

(7) Type of Vehicles Used

(8) Level of Media Coverage

C. Driving Left of Center (DLOC)

(1) Description of Procedure

(2) Measurement Method or Device

(3) Frequency of Use

(4) Reason for Selection

(5) Overt or Covert Approach

(6) Solo or Team Configuration

(7) Type of Vehicles Used

(8) Level of Media Coverage

III. OUTCOMES

A. Apprehension Rates

B. Citation Policy and Rate

(1) Citation Frequency

(2) Written Warning Frequency

(3) Verbal Warning Frequency

C. Conviction Rate

IV. FACTORS AFFECTING USE OF PROCEDURES

A. Environmental Factors

(1) Climate and Weather

(2) Road Geometry

(3) Time of Day

(4) Traffic Flow

B. Drivers' Use of Citizens Band Radio (CB) and Radar Detectors

C. Relations With Other Elements of the Traffic Law System

(1) Other Members of Patrol Agency

(2) Judges

(3) Prosecutors

D. Relations With the Public

(1) Community Policymakers

(2) Driving Public

E. Legal Factors

F. Perceived Seriousness of Speeding, FTC, and DLOC

G. Other Factors

(1) Officer Morale (including officers' attitudes toward procedures)

(2) Training and Education of Officers

(3) Perceived Adequacy of Traffic Budget

APPENDIX B

QUANTITATIVE MEASURES OF ENFORCEMENT ACTIVITY

APPENDIX B
QUANTITATIVE MEASURES OF ENFORCEMENT ACTIVITY

The materials in this Appendix compare selected quantitative measure of enforcement activity for police agencies in the four jurisdictions that were visited. Whenever possible, the data reported in Table B-1 were obtained directly from such sources as police logbooks, samples of citations, or census figures. If data were not directly available from records, then police and court contacts were asked to supply their best estimates. Parentheses are used in Table B-1 to denote figures derived from estimates. Horizontal lines in that table indicate that quantitative data were not available in that jurisdiction. The data reported in Tables B-2 through B-4 were supplied by contacts in police agencies who completed the worksheets sent them by HSRI. The designation "UNK" on the worksheet means that the requested information was not readily available to the police contacts. The designation "N/A" means that the question did not apply to that agency (e.g., a breakdown of the California Highway Patrol's radar equipment).

Note that much of the quantitative data in this Appendix represent estimates, rather than precise measurements of enforcement activity; they are offered as indicators of the level of activity rather than of the effectiveness of enforcement programs.

TABLE B-1

SUMMARY DATA FOR THE FOUR CASE-STUDY JURISDICTIONS

	WASHTENAW COUNTY		CINCINNATI		CALIFORNIA	TUCSON	
	ROAD PATROL	SRP	GENERAL PATROL	SEP		UNIFORMED PATROL	TRAFFIC
DRIVING ENVIRONMENT							
POPULATION	250,000		404,000-452,524		22,297,000	325,500	
LICENSED DRIVERS	177,332		(284,100)		15,020,000	--	
REGISTERED VEHICLES	170,000		(293,500)		16,058,370	357,931	
MILES OF ROADS - TOTAL	1,462		1,045		98,101	1,220	
LIMITED-ACCESS	0[a]		32		4,682	0	
PRIMARY	0[a]		82		9,627	18	
SECONDARY	1,462		0		83,793	0	
URBAN	0		931		0	1,202	
ACCIDENTS	9,827		28,085		551,328	12,115	
FATALITIES	69		78		5,296	54	
INJURIES	4,226		6,567		312,620	5,954	
BUDGET, MANPOWER, AND EQUIPMENT							
BUDGET (THOUSANDS)	$3,600	$180	$2,574+	$285	$275,244	$20,066	
PATROL STRENGTH							
SWORN OFFICERS	(160)	8	939		4,738	527-541	27-31
LINE OFFICERS	56	7	717		3,192	241-246	(25-30)
EQUIPMENT							
PATROL VEHICLES	37	7	160+		2,145	275	
RADAR UNITS	18	7	18		0	18	
% RADAR EQUIPPED	50	100	--	33-40	0	--	
ENFORCEMENT							
PATROL ACTIVITY (MEAN)							
SHIFTS PER DAY	15	4.3	--	9.7	(1,800-2,000)	124.5	13.5
SHIFT LENGTH (HOURS)[b]	8.4	8.6	(8+)	(8+)	8.5	(8+)	(8+)
MILES TRAVELED	117.9	98.2	52	104.6	120	63	46
ENFORCEMENT ACTIVITY (MEAN PER 8 HOUR SHIFT)							
LOG ENTRIES[c]	10.9	(11)	--	--	(7+)	10.8-12.2	17.9
TRAFFIC STOPS	1.8	5.4	--	6.9	7	3.3-4.9	16.5
SPEEDING STOPS	.29	2.8	--	2.92	2-5	--	--
SPEEDING CITATIONS	.24	2.1	--	2.86	1	--	--
TRAFFIC ACTIVITY (HRS)	1.00	4.98	--	--	8.0+	--	--
VIOLATOR POPULATION (MEAN)							
POSTED SPEED	38.9-44.7		36.5		--	31.9	
EXCESS OVER LIMIT	16.1-17.6		15.3		--	--	
REDUCTION IN CHARGED SPEED	4.4-6.3		0		negl.	negl.	
% NMSL VIOLATIONS	15-27.7		8.1		94.4	negl.	
TOLERANCE (MPH)	15		10		5-10	10-15	
SPEED MEASURING DEVICE USED (PERCENT)							
RADAR	94.6-99.3		86.7	83.7	0	42.0-58.3	
PACING	0.7-5.4		13.3	16.3	(95)	41.7-58.0	
OTHER	0		0	0	(5)	negl.	

TABLE B-1 (CONTINUED)

SUMMARY DATA FOR THE FOUR CASE-STUDY JURISDICTIONS

	WASHTENAW COUNTY		CINCINNATI		CALIFORNIA	TUCSON	
	ROAD PATROL	SRP	GENERAL PATROL	SEP		UNIFORMED PATROL	TRAFFIC
NUMBER OF CITATIONS (MONTHLY AVERAGE)							
ALL TRAFFIC	(1,500)	(750)	--	--	--	6,905	
MOVING VIOLATIONS	(1,000)	(600)	--	858	--	5,776	
SPEEDING (ALL)	(800)	(550)	--	391	86,511	926	
SPEEDING (NMSL)	--	--	209		81,680	<1	
% OF TRAFFIC OFFENSES INVOLVING SPEED	55.8-72.8		34.1	31.3-47.8	--	13.4-24.6	
ADJUDICATION AND SANCTIONING							
OUTCOMES (PERCENT OF CITATIONS ANSWERED)							
CITATIONS PAID OUT	93.5		(95.0)		--[d]	83.8	
CITATIONS CONTESTED:							
GUILTY	2.2[e]		[f]		--[d]	7.4[f]	
NOT GUILTY	0.0[e]		[f]		--[d]	0.7[f]	
DISMISSED	0.5[e]		[f]		--[d]	4.5[f]	
CITATIONS NOT CONTESTED BUT EXPLAINED	3.8		--		--	--	
STATE LAW CASES	64.1		0.0		100.0	99.7	
LOCAL LAW CASES	35.9		100.0		0.0	0.3	
MEAN FINES & COSTS	$35		$32		--	$35+	

a. The Washtenaw County Sheriff's Department normally patrols secondary roads only, but deputies will take action against violators observed anywhere in the county.

b. All departments normally work eight-hour shifts. In the California Highway Patrol, the 30-minute lunch period is not paid time.

c. Log entries include any police calls, whether related to traffic or criminal enforcement or not.

d. Because of the great variety of local courts in California, no statewide figures could be obtained.

e. In terms of contested cases, 81 percent resulted in dispositions of guilty, 19 percent in dismissals.

f. In terms of contested cases, 95-98 percent resulted in dispositions of guilty, 2-5 percent in dispositions of not guilty, and less than 0.5 percent in dismissals.

g. In terms of contested cases, 58.7 percent resulted in dispositions of guilty, 5.6 percent in dispositions of not guilty, and 35.7 percent in dismissals.

TABLE B-2

WORKSHEETS FOR TUCSON, ARIZONA, POLICE DEPARTMENT

QUESTIONS RELATING TO YOUR OPERATING ENVIRONMENT:

As of January 1, 1980 (or the most recent date for which information is available):

What is the estimated population of your jurisdiction?	325,500
How many vehicles are registered in your jurisdiction?	357,931
How many licensed drivers are there in your jurisdiction?	UNK

Of the highways that your agency patrols, approximately how many miles of them are:

Controlled access (interstate)?	0 miles
Controlled access (noninterstate)?	0 miles
Primary (U.S. and state numbered) highways, other than controlled-access?	18 miles
Secondary roads?	0 miles
City streets?	1202 miles

Approximately how many percent of the roads you patrol are posted at 55 mph? 0 percent

QUESTIONS RELATING TO YOUR AGENCY

PART ONE: MANPOWER AND WORKLOAD

As of January 1, 1980 (or the most recent date for which information is available):

How many persons are employed by you? 769

How many sworn officers do you have? 568

How many of your sworn officers are line (patrol) officers? (Only deployable patrol officers) 271

How many of your patrol officers are assigned exclusively or primarily to enforce traffic laws? 27-31

In the past year (January 1 - December 31, 1979):

Approximately how many hours did the average line officer work? 1768 hours

Approximately how many hours did the average line officer devote to traffic enforcement? 184.17 hours

In a typical shift of an average line officer:

How many miles does he cover? 63 hours

How many hours does he spend actually patrolling highways? UNK

How many driver contacts (i.e., traffic citations and traffic warnings) does he make? 5

PART TWO: EQUIPMENT

As of January 1, 1980 (or the most recent date for which information is available):

How many patrol vehicles does your agency have? 275

Of those vehicles, how many of them are:

Marked automobiles? 138

Semi-marked automobiles? 12

Unmarked automobiles? 107

"Camouflaged" automobiles (i.e., sports cars, vans, etc. that are not traditional police vehicles)? 28

Motorcycles? 40

How many fixed-wing aircraft does your agency have? 0

How many helicopters does your agency have? 4

Of your patrol vehicles, how many of the following are used by your agency exclusively or primarily for traffic enforcement?

Marked automobiles?	0
Semi-marked automobiles?	0
Unmarked automobiles?	0
Camouflaged automobiles?	0
Motorcycles?	40
Fixed-wing aircraft?	0
Helicopters?	0

Please list, by manufacturer, model, and date of purchase, each type of radar device your agency uses:

Number of devices	Manufacturer	Model	Date Purchased
11	CMI	6	Dec. 24, 1974
14	Kustom	HR8	May 12, 1978

How many of the following speed measuring devices does your agency have?

VASCAR?	0
Stopwatches?	5

PART THREE: QUESTIONS RELATING TO BUDGET

For the most recent fiscal year (fill in dates: July, 1979 to June, 1980) what was your agency's total budget? $20,066,109.00

How much of your budget was provided for by governmental **appropriations**? $ City of Tucson $20,066,109.00

If more than one level of government appropriated funds to your agency, please break them down below:

Governmental Unit	Amount of Appropriation
N/A	$ N/A

Please list below the **grants** your agency received from governmental units during the past year:

Purpose of Grant	Granting Agency	Amount
Police Video Training	LEAA	$ 54,400.00
DWI Squad	Highway Safety	$233,146.00
Fire Investigation Unit	LEAA	$152,400.00
	TOTAL	$439,946.00

Please list below any other governmental contributions to your agency (e.g., contracts for police services):

Mutual Aid Pact covers services by other police agencies

Please list any nongovernmental contributions to your agency (e.g., funds from private foundations, revenue from licenses or permits):

Refundable amounts: Pilot Club-Citizen Action Group
Police Athletic League

For the most recent fiscal year, how did your agency allocate funds among:

Administration, command, support staff, and overhead?	$10,840,619
General patrol operation (officers' salaries, vehicle purchase and upkeep, fuel, etc.)?	$9,225,490
Special traffic-enforcement operations (salaries, vehicle purchase and upkeep, fuel, etc.)?	$ 562,689 (2 year project)

During the most recent fiscal year, how much did your agency spend for:

Purchase of patrol vehicles?	$251,570.00
Purchase of radar units?	$ 0
Purchase of other speed-measuring equipment?	$ 0

What is the current salary range for:

Officers assigned to general patrol duties?	$1204.00 to $1619.00 per month
Officers assigned exclusively or primarily to traffic enforcement?	$1265.00 to $1701.00 per month

If your agency has a specialized traffic patrol (e.g., "55" team, strike force, STEP team, etc.):

For how much was it funded during the past fiscal year?	$233,146
What is the duration of its funding?	12-19-79 to 9-30-81

How many percent of the funds were used in the past year for:

Salaries and overhead?	50%
Purchase of equipment?	44%

What conditions have been placed on the use of these funds?

Guideline Manual - Arizona State Justice Planning Agency

QUESTIONS RELATING TO SPEED ENFORCEMENT

PART ONE: YOUR AGENCY'S GENERAL PATROL OPERATIONS

During 1979 (or the most recent twelve-month period for which data are available), how many of the following actions did your general patrol officers take:

(A. For violations of the 55-mph speed limit)	
Number of drivers stopped?	UNK
Number of citations issued?	6
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK
(B. For violations of posted speeds other than the 55-mph limit)	
Number of drivers stopped?	UNK
Number of citations issued? (Radar 4066)	9741
Number of written warnings issued? (Radar 4896)	UNK
Number of verbal warnings given?	UNK
(C. For basic speed law violations, speed too fast for conditions, speed too slow, etc.)	
Number of drivers stopped?	UNK
Number of citations issued?	3926
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK

PART TWO: YOUR AGENCY'S SPECIALIZED TRAFFIC OPERATIONS

During 1979 (or the most recent twelve-month period for which data are available), how many of the following actions did your traffic patrol officers take:

(A. For violations of the 55-mph speed limit)

Number of drivers stopped?	UNK
Number of citations issued?	UNK
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK

(B. For violations of posted speeds other than the 55-mph limit)

Number of drivers stopped?	UNK
Number of citations issued? Radar 1396; total unknown	
Number of written warnings issued? Radar 1498; total unknown	
Number of verbal warnings given?	UNK

(C. For basic speed law violations, speed too fast for conditions, speed too slow, etc.)

Number of drivers stopped?	UNK
Number of citations issued?	UNK
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK

TABLE B-3

WORKSHEETS FOR CINCINNATI, OHIO, POLICE DEPARTMENT

QUESTIONS RELATING TO YOUR OPERATING ENVIRONMENT:

As of January 1, 1980 (or the most recent date for which information is available):

What is the estimated population of your jurisdiction?	428,671+
How many vehicles are registered in your jurisdiction?	619,835+
How many licensed drivers are there in your jurisdiction?	600,000+

Of the highways that your agency patrols, approximately how many miles of them are:

Controlled access (interstate)?	26.95 miles
Controlled access (noninterstate)?	5 miles
Primary (U.S. and state numbered) highways, other than controlled-access?	82.43 miles
Secondary roads?	931.25 miles
City streets?	1045.63 miles

Approximately how many percent of the roads you patrol are posted at 55 mph? .0306 percent

QUESTIONS RELATING TO YOUR AGENCY

PART ONE: MANPOWER AND WORKLOAD

As of January 1, 1980 (or the most recent date for which information is available):

How many persons are employed by you?	1098
How many sworn officers do you have?	939
How many of your sworn officers are line (patrol) officers?	717
How many of your patrol officers are assigned exclusively or primarily to enforce traffic laws?	0

In the past year (January 1 - December 31, 1979):

Approximately how many hours did the average line officer work?	1716 hours
Approximately how many hours did the average line officer devote to traffic enforcement?	UNK

In a typical shift of an average line officer:

How many miles does he cover?	52 miles
How many hours does he spend actually patrolling highways?	UNK
How many driver contacts (i.e., traffic citations and traffic warnings) does he make?	UNK

PART TWO: EQUIPMENT

As of January 1, 1980 (or the most recent date for which information is available):

How many patrol vehicles does your agency have?	368
Of those vehicles, how many of them are:	
Marked automobiles?	160
Semi-marked automobiles?	4
Unmarked automobiles?	139
"Camouflaged" automobiles (i.e., sports cars, vans, etc. that are not traditional police vehicles)?	42
Motorcycles?	23

How many fixed-wing aircraft does your agency have? 0

How many helicopters does your agency have? 0

Of your patrol vehicles, how many of the following are used by your agency exclusively or primarily for traffic enforcement?

Marked automobiles?	0
Semi-marked automobiles?	0
Unmarked automobiles?	0
Camouflaged automobiles?	0
Motorcycles?	0
Fixed-wing aircraft?	0
Helicopters?	0

Please list, by manufacturer, model, and date of purchase, each type of radar device your agency uses:

Number of devices	Manufacturer	Model	Date Purchased
7	MPH	K-55	UNK
11	KUSTOM	MR-7	UNK

How many of the following speed measuring devices does your agency have?

VASCAR?	0
Stopwatches?	0

PART THREE: QUESTIONS RELATING TO BUDGET

For the most recent fiscal year (fill in dates: 1980) what was your agency's total budget? $25,744,930.00 (without fringe)

How much of your budget was provided for by governmental **appropriations**? $3,424,170

If more than one level of government appropriated funds to your agency, please break them down below:

Governmental Unit	Amount of Appropriation
Federal Revenue Sharing	$3,178,100
Public Service Employee	$ 191,500
LEAA	$ 54,420

Please list below the **grants** your agency received from governmental units during the past year:

Purpose of Grant	Granting Agency	Amount
Robbery Apprehension	LEAA	$76,000
Major Offender	LEAA	$127,684
Regional Police Academy	LEAA	$44,333

Please list below any other governmental contributions to your agency (e.g., contracts for police services):

Please list any nongovernmental contributions to your agency (e.g., funds from private foundations, revenue from licenses or permits):

NONE

For the most recent fiscal year, how did your agency allocate funds among:

Administration, command, support staff, and overhead?	$	UNK
General patrol operation (officers' salaries, vehicle purchase and upkeep, fuel, etc.)?	$	UNK
Special traffic-enforcement operations (salaries, vehicle purchase and upkeep, fuel, etc.)?	$	UNK

During the most recent fiscal year, how much did your agency spend for:

Purchase of patrol vehicles?	$	UNK
Purchase of radar units?	$	UNK
Purchase of other speed-measuring equipment?	$	UNK

What is the current salary range for:

Officers assigned to general patrol duties?	$14,462 to $16,153
Officers assigned exclusively or primarily to traffic enforcement?	$14,462 to $16,153

If your agency has a specialized traffic patrol (e.g., "55" team, strike force, STEP team, etc.):

For how much was it funded during the past fiscal year? $285,304.93

What is the duration of its funding? December 5, 1978 to September 30, 1979

How many percent of the funds were used in the past year for:

Salaries and overhead?	UNK
Purchase of equipment?	UNK

What conditions have been placed on the use of these funds?

Must stay within Proposal Guidelines and maintain 30% soft match

QUESTIONS RELATING TO SPEED ENFORCEMENT

PART ONE: YOUR AGENCY'S GENERAL PATROL OPERATIONS

During 1979 (or the most recent twelve-month period for which data are available), how many of the following actions did your general patrol officers take:

(A. For violations of the 55-mph speed limit)	
Number of drivers stopped?	UNK
Number of citations issued?	UNK
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK
(B. For violations of posted speeds other than the 55-mph limit)	
Number of drivers stopped?	UNK
Number of citations issued?	29,914
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK
(C. For basic speed law violations, speed too fast for conditions, speed too slow, etc.)	
Number of drivers stopped?	UNK
Number of citations issued?	UNK
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK

TABLE B-4

WORKSHEETS FOR THE CALIFORNIA HIGHWAY PATROL

QUESTIONS RELATING TO YOUR OPERATING ENVIRONMENT:

As of January 1, 1980 (or the most recent date for which information is available):

What is the estimated population of your jurisdiction?	22,297,000
How many vehicles are registered in your jurisdiction?	16,058,370
How many licensed drivers are there in your jurisdiction?	15,020,000

Of the highways that your agency patrols, approximately how many miles of them are:

Controlled access (interstate)?	2,267.8 miles
Controlled access (noninterstate)?	2,413.7 miles
Primary (U.S. and state numbered) highways, other than controlled-access?	9,627.0 miles
Secondary roads?	83,792.6 miles
City streets?	0 miles

Approximately how many percent of the roads you patrol are posted at 55 mph? 65 percent

QUESTIONS RELATING TO YOUR AGENCY

PART ONE: MANPOWER AND WORKLOAD

As of January 1, 1980 (or the most recent date for which information is available):

How many persons are employed by you?	5,971
How many sworn officers do you have?	4,738
How many of your sworn officers are line (patrol) officers?	3,192
How many of your patrol officers are assigned exclusively or primarily to enforce traffic laws?	3,192

In the past year (January 1 - December 31, 1979):

Approximately how many hours did the average line officer work?	1,904 hours
(This includes 115 hrs.overtime) average shift	8.5 hours
Approximately how many hours did the average line officer devote to traffic enforcement?	1,904 hours

In a typical shift of an average line officer:

How many miles does he cover?	120 miles
How many hours does he spend actually patrolling highways?	8 hours
How many driver contacts (i.e., traffic citations and traffic warnings) does he make?	4-10

PART TWO: EQUIPMENT

As of January 1, 1980 (or the most recent date for which information is available):

How many patrol vehicles does your agency have?	1,928
Of those vehicles, how many of them are:	
Marked automobiles?	1,928
Semi-marked automobiles?	0
Unmarked automobiles?	0
"Camouflaged" automobiles (i.e., sports cars, vans, etc. that are not traditional police vehicles)?	0

Motorcycles?	207
How many fixed-wing aircraft does your agency have?	4
How many helicopters does your agency have?	6

Of your patrol vehicles, how many of the following are used by your agency exclusively or primarily for traffic enforcement?

Marked automobiles?	1,928
Semi-marked automobiles?	0
Unmarked automobiles?	0
Camouflaged automobiles?	0
Motorcycles?	207
Fixed-wing aircraft?	4
Helicopters?	6

Please list, by manufacturer, model, and date of purchase, each type of radar device your agency uses:

Number of devices	Manufacturer	Model	Date Purchased
N/A			

How many of the following speed measuring devices does your agency have?

VASCAR?	0
Stopwatches?	0

PART THREE: QUESTIONS RELATING TO BUDGET

For the most recent fiscal year (fill in dates: 1979/1980) what was your agency's total budget? $275,244,274

How much of your budget was provided for by governmental **appropriations**? $275,244,274

If more than one level of government appropriated funds to your agency, please break them down below:

Governmental Unit	Amount of Appropriation
Federal	$ 3,553,153
State	$271,691,121

Please list below the **grants** your agency received from governmental units during the past year:

Purpose of Grant	Granting Agency	Amount
DUI Dec. 1979	DOT - HHTSA	$426,128
M.R.E.	DOT - NHTSA	$900,296
Uninc. Community O.T.	DOT - NHTSA	$310,135
Transportation Systems	DOT - FHWA	$438,244
Management Violation Rate Mobile Digital Radio	LEAA	$70,000

Please list below any other governmental contributions to your agency (e.g., contracts for police services):

N/A

Please list any nongovernmental contributions to your agency (e.g., funds from private foundations, revenue from licenses or permits):

N/A

For the most recent fiscal year, how did your agency allocate funds among:

Administration, command, support staff, and overhead?	$ 40,548,928
General patrol operation (officers' salaries, vehicle purchase and upkeep, fuel, etc.)?	$250,888,829
Special traffic-enforcement operations (salaries, vehicle purchase and upkeep, fuel, etc.)?	$ 26,610,445

During the most recent fiscal year, how much did your agency spend for:

Purchase of patrol vehicles?	$ 6,667,410
Purchase of radar units?	$ 0
Purchase of other speed-measuring equipment?	$ 0

What is the current salary range for:

Officers assigned to general patrol duties?	$1,659 to $1,896 per month
Officers assigned exclusively or primarily to traffic enforcement?	$1,659 to $1,896 per month

If your agency has a specialized traffic patrol (e.g., "55" team, strike force, STEP team, etc.):

For how much was it funded during the past fiscal year?	$ N/A
What is the duration of its funding?	N/A

How many percent of the funds were used in the past year for:

Salaries and overhead?	N/A
Purchase of equipment?	N/A

What conditions have been placed on the use of these funds?

QUESTIONS RELATING TO SPEED ENFORCEMENT

PART ONE: YOUR AGENCY'S GENERAL PATROL OPERATIONS

During 1979 (or the most recent twelve-month period for which data are available), how many of the following actions did your general patrol officers take:

(A. For violations of the 55-mph speed limit)	
Number of drivers stopped?	1,228,925
Number of citations issued?	980,157
Number of written warnings issued?	N/A
Number of verbal warnings given?	248,768
(B. For violations of posted speeds other than the 55-mph limit)	
Number of drivers stopped?	UNK
Number of citations issued?	UNK
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK
(C. For basic speed law violations, speed too fast for conditions, speed too slow, etc.)	
Number of drivers stopped?	UNK
Number of citations issued?	UNK
Number of written warnings issued?	UNK
Number of verbal warnings given?	UNK