DOCUMENT RESUME

ED 140 155 CG 011 433

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TITLE Felony Investigation Decision Model: An Analysis of Investigative Elements of Information.
INSTITUTION National Inst. of Law Enforcement and Criminal Justice (Dept. of Justice/LEAA), Washington, D.C.
PUB DATE Feb 77
GRANT 75-NI-99-0021
NOTE 261p.; Due to small size of print in original document, tables, figures, and Appendix C may reproduce poorly
AVAILABLE FROM Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (Stock Number 027-000-00467-9, $3.00)

EDRS PRICE MF-$0.83 HC-$14.05 Plus Postage.
DESCRIPTORS *Computer Oriented Programs; *Crime; Criminology; *Law Enforcement; *Models; Police; *Police Action; Rape; Research; *Violence

ABSTRACT

The primary goal of research performed in Oakland, California was decision models for four felony classes--robbery, assault, with a deadly weapon, car theft, and rape--to determine cases having sufficient probability of clearance to warrant intensive investigation. A secondary objective, determination of personal-appearance and crime-event descriptors contributing to offender ID and case solution by investigators, led to consideration of the value of computers in the investigative function. Only for robbery it was found feasible to construct a decision model. Primary case-solution factors, e.g., victim knowledge of offender, statistically dominated other, random factors. The findings showed that, unless offender ID was made by responding officers, case solution at the detective level was minimal. Therefore, it was concluded that patrol and investigative functions cannot be viewed as completely separate. Documentation of relevant crime scene information by patrol heavily influences case solution by investigators. The findings reinforced the importance of a national issue: habitual offenders. Analyses of the felony case sample drawn showed 80-88% of the suspects had prior offenses. Confronted by similar experience many police agencies have turned to computer-based M.O.-type investigative systems to assist in tracking and models for four felony classes--robbery, assault with a deadly weapon, car theft, and identifying known offenders. (Author)

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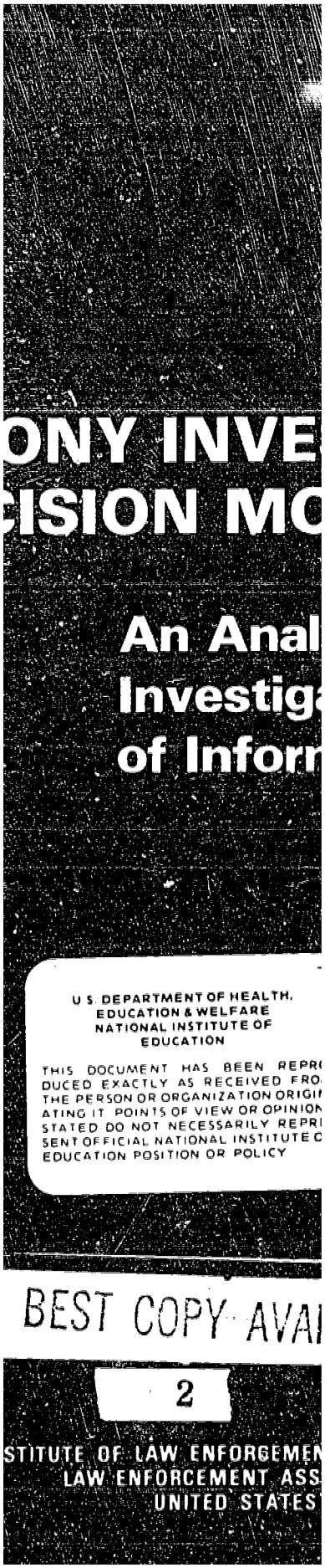

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UNITED STATES

FELONY INVESTIGATION DECISION MODEL:

An Analysis of Investigative Elements of Information

By

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This project was supported by Grant No. 75-NI-99-0021 awarded by the Law Enforcement Assistance Administration, U.S. Department of Justice, under the Omnibus Crime Control and Safe Streets Act of 1968, as amended. Points of view or opinions stated in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice (or of the host agency in which the research was performed).

FEBRUARY 1977

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The primary goal of research performed in Oakland was decision models for four felony classes--robbery, assault with a deadly weapon, car theft, and rape--to determine cases having sufficient probability of clearance to warrant intensive investigation. A secondary objective, determination of personal-appearance and crime-event descriptors contributing to offender ID and case solution by investigators, led to consideration of the value of computers in the investigative function.

Only for robbery was it found feasible to construct a decision model. Primary case-solution factors, e.g., victim knowledge of offender, statistically dominated other, random factors. The findings showed that, unless offender ID was made by responding officers, case solution at the detective level was minimal. Therefore, it was concluded that patrol and investigative functions cannot be viewed as completely separate. Documentation of relevant crime scene information by patrol heavily influences case solution by investigators. The findings reinforced the importance of a national issue: habitual offenders. Analyses of the felony case sample drawn showed 80-88% of the suspects had prior offenses. Confronted by similar experience many police agencies have turned to computer-based M.O.-type investigative systems to assist in tracking and identifying known offenders. However, such systems have yet to demonstrate marked success.

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FOREWORD

For too long, the criminal investigation process has been cloaked in a mystique, and police administrators and researchers have neglected, largely, to address themselves to the development of new models of the investigative components of the service. It has been only during the last few years that we have begun to apply the scientific approach and to inquire concerning technological applications to a process that consumes an inordinate amount of our time and personnel resources.

Rather extensive research has been conducted in the Oakland Police Department in an effort to develop a new investigative model that would serve, among other things, to redefine the methodologies, goals, priorities, and objectives of the criminal investigation process. That research has made it abundantly clear that, to be effective, any new model must be structured around a workable investigative caseload and, to this end, strategies must be developed to identify and minimize the attention given to those offenses that have a low probability of successful clearance.

The work accomplished by the Stanford Research Institute staff during the conduct of the "Felony Investigation Decision Model" study has added significantly to our research efforts. Of great importance to us, the findings suggest that we must reevaluate our traditional thinking concerning the role of the patrol officer in the investigative process, and we must give very careful attention to our training and recording functions to ensure that maximum attention is given to those investigative elements of information that have been shown to be useful in the solution of crimes.

George T. Hart
Chief of Police
Oakland Police Department

PREFACE

Over the past decade cynicism has grown with regard to the ability of the police to solve crimes. It is fairly evident that court dockets are crowded, jails are filled, and probation and parole case loads far exceed the ability of corrections personnel to effectively handle the charged, incarcerated, or released felons. All these factors attest to the ability of law enforcement to arrest law violators on a vast scale. But the successive echelons of the criminal justice system have been unable to cope effectively with the intake population.

In undertaking the research reported here we were aware that the police are devoting considerable effort to dealing with repeat offenders; consequently, the research design took into consideration this problem. We were also concerned with the roles of patrol and investigators that influence crime reporting and crime investigation. Although we did not propose to address the causes of the high incidence of crimes in Oakland, the city in which we undertook the research, we recognized the need to maximize the efficiency of investigative resources in handling and solving these crimes. The purpose of the research was to ease the burden of individual investigators who receive a high volume of felony crime reports having a low probability of successful clearance. We deemed it important to find out the actual contribution of computerized data banks to cases that had been cleared.

Our approach was to minimize intuitive judgments on case handling by OPD officers at the patrol and follow-up investigative levels. In other words, we sought to allow massive statistical data "to speak for itself." However, there were many instances that necessitated frequent

contact with individual investigators and OPD management to interpret our observations and findings. Consequently, we greatly appreciate the support provided by Chief George Hart, Oakland Police Department (OPD), Deputy Chief John Ream, Bureau of Investigation, and Captain John Lothrop, Commander, Criminal Investigation Division (CID). We also extend our sincere appreciation for the time given to answering questions and providing information by many personnel in the CID, Patrol Division, Records and Communications Division, Youth Services Division, and Research and Development Section.

We are grateful to personnel of the Los Angeles, Kansas City (Missouri), Rochester (New York), New York City, and San Diego Police Departments, who provided insight into their respective approaches to the use of computer-based investigation systems and data collection and processing procedures.

We acknowledge the valuable individual contributions to the study made by the following SRI staff and consulting support personnel: Dr. O. S. Yu, consultant (systems analyst); Dr. P. L. Tuan (senior statistical and computer analyst); J. J. Guidici, consultant (Captain, OPD retired); B. E. Suta (senior operations analyst); J. G. Smyser (policy analyst); and R. Shane and R. N. Schwoegler (data coders, California State University, Hayward, Graduate School of Public Administration).

Finally, the principal investigator would like to honor the memory of Chief John Fabbri, Fremont, California Police Department, who inspired and supported not only this research but prior work undertaken to enhance the criminal investigation function.

SUMMARY

A. Objectives

The objectives of this research project grew out of an SRI study entitled "Enhancement of the Investigative Function."* The earlier study developed an insight into the roles of detectives and patrol in conducting burglary investigations. One aspect of the study that appeared to capture the attention of police management nationally was the development of a case follow-up decision model for burglary. It remained to be determined whether the burglary decision model could be usefully applied to car theft and to crimes against persons, where a direct confrontation occurs between victim and offender. Therefore, this project was undertaken to determine the feasibility of structuring case follow-up decision models for certain categories of such crimes. The Oakland Police Department (OPD) consented to be the host agency for the research effort.

In recent years the role of the detective has come under increasing scrutiny. Consequently, in designing this research project, we sought to maximize the efficiency of investigative resources by alternative means. The primary objective of the project was to ease the burden of investigators reviewing a high volume of felony crime reports that have a low probability of successful clearance. The secondary objective of the research was to determine the elements of information leading to offender identification and case solution by investigative personnel, together with the evaluation of computer-assisted investigation systems.

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*B. Greenberg et al., "Enhancement of the Investigative Function," Vols. I, III and IV, NTIS PB222-895/896/897, Stanford Research Institute, Menlo Park, California (1972-1973).

B. Overall Findings and Implications

For the felony categories considered in this study--robbery, rape, assault with a deadly weapon (ADW), and car theft, we could realistically construct a decision model only for robbery. Primary case-solution factors--victim knowing the offender in rape and ADW categories, and apprehension of car theft perpetrators being largely effected in an identified stolen car--are so powerful that they statistically dominate other, random elements leading to suspect ID. In fact, our analyses of the four felony categories showed that a large number of cases essentially "solve themselves." By the time a detective receives certain reports, only routine procedures need be followed to apprehend the suspect.

The decision model evolved for robbery reflects the finding that, unless relevant information had been obtained at the crime scene by the responding officer, if the offender had not been apprehended, the chances of the case being solved at the detective level were minimal. The data show that patrol was effecting the larger percentages of case clearances by arrest compared to the CID investigators. Also, except for car theft, such clearances were largely made in less than 8 hours. A conclusion drawn from this observation is that the roles of patrol and investigators cannot be viewed as completely separate and distinct functions. We view patrol as fulfilling not only a crime-suppressant role but also as performing an investigative function. How effectively the patrol officer documents the events of a crime to which he responds will have a definite impact on the case outcome when investigators attempt to pursue the case.

Many facts attest to the ability of law enforcement agencies to arrest law violators on a vast scale. It is evident that court dockets are crowded, jails are filled, and probation and parole case loads are excessive. But these successive echelons of the criminal justice system have been unable to deal effectively with the charged, incarcerated, or

released felons. Thus, this study reinforces the importance of what has now become a national high-priority issue: the finding of a large habitual offender population. In effect, the police are devoting considerable effort to dealing with repeat offenders--who may be more readily identifiable than first-time or transient offenders if police operations are geared to operate on this basis.

Our analyses revealed that, of the persons in our three-month sample of cases drawn who were either last charged or suspected of robbery, 81% had one or more prior offenses; for assault, 80% had prior offenses; for auto theft, 86% had prior offenses; and for rape, 88% had prior offenses.

Confronted with these facts, many police agencies have turned to computer-based investigative systems to assist in tracking and identifying known offenders. It appears, however, that computers have not demonstrated marked success in assisting police in solving modus operandi (M.O.) investigation problems.

On the basis of the information gleaned from the literature and the data generated by our research, we have concluded that the utility of EDP suspect/event-oriented systems is highly dependent on a massive data collection and compilation effort. However, the collection of finely detailed descriptors on personal appearance and events is not only expensive and time-consuming, but may actually be counterproductive.

We question the wisdom of burdening patrol officers with extensive precoded check-off forms, with which several police agencies have been experimenting. We further question whether victims are able to respond adequately to a long list of questions after having been subjected to the trauma of an assault or an armed robbery. The main objective of patrol--to ensure the safety of the victim and quickly ascertain what information can be derived to hasten the offender's apprehension--can

be thwarted by undue delay in running over a list of data that are likely to be useless.

The results of the research we undertook have, in effect, posed at least three crucial questions that police investigators and planning and funding agencies should consider in their quest for investigative aids:

- What elements of information can police investigators realistically expect to obtain regarding a crime event and the personal characteristics of the offender?
- What are the best procedures for establishing and preserving a logically structured data base that can recall the information that will materially aid the investigator in solving a given crime?
- Is it realistic to expect that the classical concept of M.O. can be developed for automated data processing systems to enable recognition of a distinctive crime commission pattern exhibited by a given offender?

We suggest that these questions and other investigative issues raised from the research findings, e.g., the relationship of patrol and investigators, can best be addressed in the context of a workshop involving LEAA and leading law enforcement agencies concerned with the interrelationship between investigative and patrol operations and with the contribution that computer technology can make toward controlling the criminal population.

Too frequently, a research report gathers dust on a recipient's bookshelf. But by considering important, or at least controversial, findings in a workshop, participating agencies might find more reason to become part of the creative policy and decision-making processes that can impact on the nation's growing crime rate.

C. Investigation Decision Models: Robbery and Burglary

The analytic methodology used for constructing an investigation decision model for robbery was followed for each of the other felony categories. However, the nature of the other three felonies, and the manner by which such cases are solved by the OPD, precluded the development of additional decision models. We describe in detail the analytic process for robbery leading to the development of the model. Observations on case handling and conclusions short of a decision model, however, are summarized for all the categories.

Computer subprograms were used that systematically narrowed the large number of variables analyzed to those showing a significant level of occurrence in felony case clearances. The professional detective might construe this narrowing process as eliminating from consideration pieces of information that might prove to be valuable in solving a case. While we concede that this is a distinct possibility for random cases, there is a larger issue that needs to be addressed concerning the general procedures that are effective in handling the high volume of crimes. This issue centers on the types of information categories, e.g., facial features, and the numbers of "permanent" and variable time-sensitive descriptors that may be critical to identify a suspect and that should be captured in a preliminary report of investigation.

Since we recognized that the same kinds of information would appear in both the cleared and the uncleared cases, the statistical technique used was to cluster the various data elements contained in both types of cases and to weight them in accordance with their degree of association with the cleared cases.

The four subcategories of robbery considered were combined (armed, strong-arm, theft from person, and purse snatch) so as to construct the robbery investigation decision model by using linear discriminant analysis.

This procedure strengthened the discrimination power of the data category elements to enable the construction of a model with a high predictive probability that a case taken at random could be correctly classified as cleared or uncleared. The analysis produced a numerical value for each piece of information contained in a case report. This value shows the relative contribution of that piece of information to case clearance as compared to all the other pieces of information.

The reader must keep in mind that the decision rule, shown in Table S-1, is based on the OPD's operational practices affecting case handling (e.g., whether the reporting officers recorded all useful information) and consequently affecting the manner by which cases are cleared. Other police departments may not have similar policies, procedures, and capabilities. Usage of the decision model must thus be carefully considered in light of a specific agency's operational procedures. It can be seen that our decision model contains a number of items of information that result from the preliminary case enrichment procedures routinely performed by the Crime Analysis Section (CAS) of the OPD Criminal Investigation Division (CID). This implies that the case disposition screening process should take place at some time after certain basic investigative procedures, e.g., license number checks, have been pursued. Thus, the important consideration is that this model should be considered in a dynamic mode; i.e., the weighted elements should be checked throughout the investigating phase of the case. Should a suspect then not be identified, the case can be realistically set aside as being unsolvable.

Of the cases in the sample, 90% were correctly classified as cleared or uncleared by the classification function derived from the discriminant analysis. This is reflected by the relative scaling in the decision model. Further analysis indicated that the 10% misclassification was not as serious as might first appear. Most of the cleared cases that the

Table S-1

ROBBERY INVESTIGATION DECISION MODEL

Information Element	Weighting Factor
Suspect named	10*
Suspect known	10*
Suspect previously seen	10*
Evidence technician used	10
Places suspect frequented named	10*
Physical evidence	
Each item matched	6.1
Vehicle registration	
Query information available	1.5
Vehicle stolen	3.0
Useful information returned	4.5
Vehicle registered to suspect	6.0
Offender movement description	
On foot	0
Vehicle (not car)	0.6
Car	1.2
Car color given	1.8
Car description given	2.4
Car license given	3.0
Weapon used	1.6

INSTRUCTIONS

(1) Circle the weighting factor for each information element that is present in the incident report.

(2) Total the circled factors.

(3) If the sum is less than 10, suspend the case; otherwise, follow up the case.

(4) Weighting factors do not accumulate; i.e., if both the auto license and color are given, the total is 3.0 not 4.8.

*These values as calculated actually exceed the threshold of 10. The values provided here are conceptually simpler and make no difference in the classification of groups.

decision model had predicted would remain uncleared were cleared without OPD investigation. In only two cases, investigation by OPD detectives ultimately led to the identification of a suspect despite the small amount of information initially available in the reports.

For comparison, Table 3-2 shows the burglary case disposition decision rule developed in a prior SRI research project. Attention is

Table S-2

BURGLARY CASE DISPOSITION DECISION RULE

Information Element	Weighting Factor
Estimated range of time of occurrence	
Less than 1 hour	5
1 to 12 hours	1
12 to 24 hours	0.3
More than 24 hours	0
Witness's report of offense	7
On-view report of offense	1
Usable fingerprints	7
Suspect information developed -- description or name	9
Vehicle description	0.1
Other	0
Total score	

INSTRUCTIONS

(1) Circle the weighting factor for each information element that is present in the incident report.

(2) Total the circled factors.

(3) If the sum is less than or equal to 10, suspend the case; otherwise, follow up the case.

From: B. Greenberg et al., op. cit., Vols. I and IV.

drawn to the similarity of the variables in the two rules and their relative weights in contributing to case clearances. For both models, the witness viewing or victim involved in the crime provides the most useful information leading to case clearance. But for the robbery cases, apart from the naming of the suspect, which is also a dominant element in burglary case clearance, vehicle information is the next-most-important information element leading to suspect ID.

The predictive accuracy of the burglary model was found to vary widely among the agencies whose cases were analyzed. The explanation for the wide variation is simply that the various agencies involved had inconsistent policies governing the criteria by which a burglary case was cleared. Consequently, the robbery model developed on the basis of the OPD's policies must be carefully considered by other agencies who may desire to apply it. Clearance criteria will affect an agency's effective use of the model as a screening tool.

D. Offender Characteristics

We tracked the criminal histories of suspects identified in the sample of felony crimes analyzed. It is clear that the OPD is processing a large recidivist criminal population. Table S-3 illustrates past charged criminal offenses classified into 17 categories. This table was developed to examine the hypothesis that repeat offenders in the four felony categories would show different patterns of past offenses.

Persons whose most recent offenses were ADWs had high past incidence of burglary, theft, other assault, narcotics and dangerous drugs, vehicle law violations, and other offenses.

Table S-3

OFFENDERS' PRIOR CRIMINAL HISTORIES

Prior Offense Classification	Most Recent Offense Category			
	ADW	Robbery	Car Theft	Rape
No prior	19.8%	18.7%	14.2%	12.5%
Strong-arm robbery	12.1	14.9	12.4	12.5
Armed robbery	2.8	10.5	5.3	12.5
Felony assault	21.4	13.4	14.8	18.8
Burglary	28.6	46.3	47.3	56.3
Auto theft	14.3	22.4	40.8	25.0
Homicide, willful	2.8	1.5	1.8	0.0
Forcible rape	2.2	2.2	4.7	12.5
Attempted rape	0.6	2.2	0.0	6.3
Theft, person	0.6	3.7	1.2	6.3
Theft, purse snatch	1.7	3.0	4.1	6.3
Theft, shoplifting	11.0	9.7	21.3	12.5
Theft, other	28.6	38.1	47.9	31.3
Narcotics and drugs	22.5	29.9	29.6	43.8
Stolen property	7.1	9.0	21.3	12.5
Vehicle laws violation	32.4	23.1	32.0	43.8
Other	64.3	58.2	70.4	75.0
Other, not indicated	2.8	11.2	0.6	0.0

*Each category shows the percentage of offenders who had previously been charged with each of the 17 offenses.

Persons whose most recent offense was robbery showed high past incidence of burglary, car theft, theft other, narcotics and dangerous drugs, vehicle law violations, and other crimes.

Persons whose most recent past offense was car theft had the highest percentage of past car theft, shoplifting, theft other, and possession of stolen property. They also had high past incidence levels of burglary, narcotics and dangerous drugs, vehicle law violations, and other crimes.

Persons whose most recent past offense was rape had the highest percentage of past burglary, rape, narcotics and dangerous drugs, vehicle law violation, and other crimes. They also showed a high past incidence of car theft.

Other summary data revealed the following:

- Repeat offenders averaged more than 7 prior offenses.
- Over 80% of the offenders were black. (The population of Oakland is approximately 43% black.)
- Over 90% of the offenders were male.
- On the average, the repeat offenders in the four categories had criminal records of 7.4, 8.3, 10.8 and 12.1 years. These figures are associated with car theft, robbery, ADW, and rape, respectively.
- The persons whose most recent offense was car theft had had the highest average number of offenses per year. The average was 1.8 offenses charged per year, contrasted to the ADW and robbery offenders who averaged 1.1 and 1.3 offenses charged per year, respectively.

The tabulation below shows the number of offenders whom we analyzed in the three-month sample in the four felony categories and the total number of offenses charged for this offender population.

	Most Recent Offense Charged			
	Robbery	ADW	Rape	Car Theft
Number of offenders	134	183	16	169
Total offenses charged	836	1,067	129	1,269

It is quite evident that the offender population in our sample had committed a significant number of multiple offenses.

E. Conclusions on the Implications of Uniform Descriptors for Investigative Application

The concept of the computer manipulating vast amounts of data and spewing out all sorts of information has captured the imagination of hardpressed law enforcement agencies as an aid in tracking and identifying felony crime offenders. A 1972 report published by the International City Management Association (ICMA)* predicted that computer procurement for criminal investigation applications will more than quadruple over the next few years. The ICMA further reported that "the surface has only been scratched when it comes to the use of the computer for criminal investigation." While the ICMA referred to agencies experimenting with computerized M.O. systems, they acknowledged that the law enforcement community is divided in their views on the utility of such systems. The article also referred to the assignment of cases to investigative officers on the basis of the probability of cases being solved.

Felony crime solution factors illuminated in this study show that only a small number of investigative elements of information have proved generally useful in crime solution. This finding may incur anathema from several notable police agencies that have gone to great lengths to attempt to capture vast amounts of personal appearance and M.O. information in anticipation of increasing the likelihood of offender identification and apprehension.

Our findings on criminal activity patterns reinforce the ICMA statements of the split views of the law enforcement community. Offenders do not tend to display consistency. They engage in a multitude of crimes, and consequently law enforcement must deal with repeat offenders across a broad spectrum of crimes. This fact alone should encourage police

* ICMA, "Use of Computers by Police: Patterns of Success and Failure," International City Management Association, Washington, D.C. (1974).

departments to develop coordinated efforts to cross over investigation specialization areas and to attempt to construct well-thought-out offender identifiers.

Our recent experience in attempting to assess the utility of a computer-based known-offender investigation system in the host agency raised a critical question: Why did the system not produce better results than those we were able to discern? For example, out of the 205 cases we processed that the CAS requested be run, only 8 useful leads for suspect ID were found. The vehicle subfile system, whose data base input probably limited its utility, produced only 2 useful leads out of 28 runs requested.

The answer to this critical question probably lies in three areas. The original data drawn from a known-offender arrest record file are old; consequently the descriptors derived from more current incident reports may be incompatible with the data base, resulting in a large error due to mismatch. A second problem area may be the operator, who inadvertently causes suppression of possible hits by omitting certain data or not allowing for a sufficiently wider range of, say, possible hair color or hair length. A third problem area, probably a major technical failing, may lie in the software program, which may not have been accurately designed initially. (We also learned that a physical break in the optical lens scanner caused the random search process to produce large errors in hits.)

Although many agencies can cite random successes in developing suspect ID by means of suspect/event-oriented computer based systems, given the present state of the art, and human judgment considerations, we conclude that collection of unlimited numbers of information elements for computer processing is not a panacea for crime solution.

In approaching the attainment of our primary goal, we recognized that a major by-product of the research effort would be the identification of descriptors of events and offenders useful in case solution. We observed that there is an extremely wide variation of format in police incident report forms, not only within a county in California, but statewide and nationally. This variation reveals basic differences in comprehension of the types of information that are crucial for crime reporting, investigation, and prosecution purposes.

The police incident forms vary considerably in complexity. General agreement in critical descriptors is a necessary prerequisite if the best offerings of computer technology are to be effectively utilized.

CHAPTER I. INTRODUCTION

A. Decision Model Conceptual Background

This research project grew out of a study undertaken by SRI in several police agencies in Alameda County, California.* That study examined the roles of detectives and patrol in conducting burglary investigations. The major objectives were to develop a checklist of activities and then a handbook, primarily for the guidance of patrol officers in gathering the most useful information leading to the identification and arrest of an offender and successful case closure. One aspect of this study that appeared to capture the attention of police management nationally was the development of a case follow-up decision model. This case selection model, in essence, is a set of weighted variables or elements of information that, if present in a burglary report at a predetermined numerical level, will enable the case outcome to be predicted with a high degree of certainty.

The model had been validated in the original agencies participating in the experimental program. It was also validated independently by an Oakland Police Department (OPD) consultant team using OPD burglary reports. The surprising result was that 90% accuracy was reported as to whether random cases could be solved--and therefore should be followed up--or could not be solved--and consequently should be set aside, so as to minimize the paperwork burden on investigators.

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*B. Greenberg et al., "Enhancement of the Investigative Function," Vols. I, III and IV, NTIS PB222-895/896/897, Stanford Research Institute, Menlo Park, California (1972-1973).

While the independent OPD validation of the model was encouraging, we had found a wide disparity of confidence in the case clearance probability predictions among the smaller agencies from which our original burglary case samples had been drawn. The accuracy of the prediction levels was clearly associated with varying standards for arrest and case clearance in the participating agencies. The analyses conducted showed clearly that certain agencies stressed some aspects of investigative practices that others did not--and could not, owing to budgetary constraints or policy considerations.

Because the question remained whether the burglary case selection model could be useful for application to crimes against persons, where a direct confrontation occurs between victim and offender, this project was undertaken to analyze crimes against persons and car thefts. The OPD consented to be the host agency for this research.

B. Crime, Socioeconomic, and Demographic Characteristics of Oakland

The 1974 Preliminary Annual Release of the Uniform Crime Reports showed that, although Oakland has a historically high crime rate, the overall crime index for Oakland decreased 3% between 1973 and 1974, whereas for cities having populations of 250,000-500,000 (the group into which Oakland falls), the crime index showed a general 13% increase. The overall national crime index rose by 17%. Except for aggravated assault, Oakland has been going against the national trend for the seven major felony crimes. Table I-1 shows the comparison.

Oakland has a population of approximately 350,000 and has experienced a slight decline in total population since the 1970 census. The city is changing ethnically and is characterized by emigration of whites and immigration of blacks. The educational level of the citizens of Oakland has shown continual improvement. Females are slightly in the majority and are increasingly entering the labor force. Male employment,

Table I-1

CRIME INDEX COMPARISON--OAKLAND AND OTHER CITIES
WITH POPULATIONS BETWEEN 250,000 AND 500,000

Year	Crime Index	Murder	Forcible Rape	Robbery	Aggravated Assault	Burglary	Larceny Theft	Motor Vehicle Theft
				Oakland				
1973	41,595	100	220	2,879	1,853	14,734	17,063	4,746
1974	40,507	78	246	2,883	2,175	14,144	16,702	4,279
Percent Change	-3%	-22%	+12%	+0.1%	+17%	-4%	-2%	-10%
				Other Cities				
Percent Change	+13%	+1%	+14%	+13%	+5%	+16%	+16%	-2%

on the other hand, has been declining. This reduction in male occupation may account for the high unemployment rate as the city gradually shifts to predominantly white-collar jobs.

The social fabric of Oakland appears to be undergoing a fundamental transition. The city's residents are primarily young (between the ages of 18 and 34) and single, and family units tend to be smaller than formerly. The residents are tending to leave single-family housing units and to move to apartments. The changing socioeconomic picture is not appreciably different from that of most other comparable urban areas. (See Appendix A for a more complete discussion.)

C. Oakland Police Department and Criminal Investigation

To cope with the high level of reported crimes, the OPD introduced many important innovations to improve its delivery of services, particularly use of computer-aided systems and a recent restructuring of patrol operations. (See Appendix B for a detailed description of the OPD and the reporting forms analyzed in this study).

The Criminal Investigation Division (CID) is the division of the OPD of direct concern to this project. Although certain functions and procedures have been introduced to enhance the overall efficiency of CID investigational operations, the basic personnel staffing structure and the responsibilities of the detective force do not appear to have been appreciably altered in recent years. The OPD has introduced a Crime Analysis Section (CAS) into the CID and provided a staff of trained civilian computer operators to process crime reports for "enrichment" by interrogating various data banks in the OPD, Alameda County, the California Department of Justice, and the FBI National Crime Information Center (NCIC). The CAS role clearly reflects the recognition that routine data file search functions need not be delegated solely to a skilled detective.

In recent years the role of the detective has come under increasing scrutiny, particularly since the overall national crime rate has soared despite the large amounts of funding provided to law enforcement to bring the crime rate under control. While we have not addressed the probable causes of the rise in crimes, we do recognize the need to maximize the efficiency of investigative resources by alternative means. The primary objective of this research project was to ease the burden of investigators who review a high volume of felony crime reports having a low probability of successful clearance. Consequently, we undertook to analyze a stratified sample of cleared and uncleared cases for four felony categories: robbery--armed, strong-arm, theft from person, and purse snatch, rape--attempted and forcible, assault with a deadly weapon (ADW), and car theft. Our purpose was to determine the feasibility of structuring case follow-up decision rules on the basis of our prior experience in constructing a burglary decision model.

Investigators already apply subjective judgment in determining which cases look sufficiently promising to pursue. But there are basic inefficiencies in relying solely on individual experience and judgment to select the cases to be pursued. The task of reviewing reports for such high-volume crimes as burglary, robbery, assault, and car theft is tedious. The large case-load backlogs piled onto investigators are distracting. Moreover, it has become increasingly clear that, of the felony types analyzed, the majority of the cases cleared have been solved by patrol.

The paperwork generated by patrol (on all cases, whether cleared at the scene or not) shows a tremendous variation in the quality of the information of record that is transmitted ultimately to a detective for possible follow-up. It should be noted that the OPD, in contrast to other, smaller departments in Alameda County, minimizes the involvement of patrol in crime scene investigations. Consequently, the information

secured from the immediate crime scene, for most crime categories, is limited to that which the responding patrol officer is able to secure quickly from the victim or witnesses. It became evident that, unless relevant information is obtained (by patrol or an evidence technician) that will enable further leads to be pursued when the initial report has been filed and passed to the CID, the chances of the case being solved are minimal.

This observation lead to another objective of the study: determination of the elements of information that facilitate identification and apprehension of the offender at the scene, or fleeing from it, and the elements of information that contribute to case solution by investigative personnel. Basically, the initial problem begins at the crime scene, with the ability of the first officers or evidence technicians arriving there to secure relevant investigative information. How efficiently this task is accomplished largely determines the case outcome.

Our approach was to minimize anecdotal examples and intuitive judgment on the case handling by police investigators--at both the patrol and the follow-up investigation levels--by analyzing on a statistical basis the factors that have significantly contributed to case clearance. To do so, we used an extensive, statistically based analytic methodology with the intent to: determine primary elements of information that would enable construction of a case follow-up decision model; emphasize the information elements that trained patrol officers can realistically be expected to secure, assuming cooperative and observant victims and witnesses; and identify the investigative processes that appear to materially assist investigators in identifying offenders.

D. Summary of Felony Crime Statistical Analyses

Each of the four major felony categories analyzed is discussed in a separate chapter. Following is a summary of the levels of occurrence

of each of the felonies during the three-month sample period, as well as an explanation of how to read the cross-tabulation tables.

1. Robbery.

a. Armed robbery. During July, August, and September 1974 330 armed robberies occurred (see Table I-2). Of these 42 cases (12.7%) were cleared, 9 (2.7%) were cleared-other,* and 279 (84.5%) were uncleared. The matrices are interpreted as follows. The column headings indicate the type of case disposition officially made by the CID investigators. The rows indicate the clearance category. The first matrix cell shows that 23 armed robberies were cleared by arrest and prosecution Other entries show the various clearance categories. The Row Total column shows that 42 cases were cleared out of a total of 330 robbery cases occurring in the same period, for a cleared rate of 12.7%.

The second line in the cleared matrix cell under the Arrest and Prosecution column shows that 54.8% of the cleared cases were classified by this category.

The third line of the Arrest and Prosecution column indicates that all (100%) of this column of cases were classified in this manner (this is a column percentage value).

The fourth line indicates that 7% of all armed robbery cases were cleared under the Arrest and Prosecution classification.

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*Cleared cases are those for which the OPD took any formal disposition other than "Complainant Refuses To Prosecute" or "Complaint Refused by District Attorney." Cleared-other cases are those for which the OPD took a "Complaint Refused by District Attorney" or "Complainant Refuses To Prosecute" disposition and a suspect was named. Uncleared cases are those with a formal disposition of "Complainant Refuses To Prosecute" where a suspect was not named, cases where an investigator filed the case without a disposition, and cases where there was no evidence of investigative attention. Appendix D gives a complete discussion of this breakdown.

Table I-2

ROBBERY, ARMED: CLEARANCE BY CASE DISPOSITION

Status	No Disposition	Arrest and Prosecution	Complainant Refuses To Prosecute	Prosecuted for Another Offense	Complaint Refused by D.A.	Prosecuted by Outside Department	Turned over to Juvenile Authority	Notice to Appear	Total
Cleared									
Count	0	23	0	2	0	7	9	1	42
% of row	0%	54.8%	0%	4.8%	0%	16.7%	21.4%	2.4%	
% of column	0	100.0	0	100.0	0	100.0	100.0	100.0	
% of total	0	7.0	0	0.6	0	2.1	2.7	0.3	12.7%
Cleared-Other									
Count	0	0	8	0	1	0	0	0	9
% of row	0%	0%	88.9%	0%	11.1%	0%	0%	0%	
% of column	0	0	28.6	0	100.0	0	0	0	
% of total	0	0	2.4	0	0.3	0	0	0	2.7%
Uncleared									
Count	259	0	20	0	0	0	0	0	279
% of row	92.8 %	0%	7.2%	0%	0%	0%	0%	0%	
% of column	100.0	0	71.4	0	0	0	0	0	
% of total	78.5	0	6.1	0	0	0	0	0	84.5%
Total Count	259	23	28	2	1	7	9	1	330
% of Cases	78.5%	7.0%	8.5%	0.6%	0.3%	2.1%	2.7%	0.3%	100.0%

The Cleared-Other matrix cell is read in the same manner. Note that under the column heading Complainant Refuses To Prosecute [Category 03 in Figure B-9(a) in Appendix B] we have listed the cases where a suspect was named--8 cases cleared-other, for an overall percentage of 88.9% for all cases cited as cleared-other. Line 3 in this column shows that 28.6% of the Complainant Refuses To Prosecute cases fell into the cleared-other category. Line 4 in this column shows that 2.4% of all armed robbery cases were classified as cleared-other--Complainant Refuses To Prosecute, and suspect had been named.

The Uncleared matrix cell has two major column totals. The first column, titled No Disposition shows the cases and their percentages that remained uncleared. Under the Complainant Refuses to Prosecute column, we classified all such OPD cases, whenever no suspect had been named, as uncleared.

All cross tabulations subsequently presented in this report can be interpreted as explained above.

b. Strong-arm robbery. Of the 275 cases of strong-arm robbery sampled (see Table I-3), 36 (13.1%) were cleared; 11 (4%) were cleared-other; and 228 (82.9%) remained uncleared.

c. Theft from person. Of the 110 thefts from person for the time period (see Table I-4), 13 (11.8%) were cleared; 3 (2.7%) were cleared-other; and 94 (85.5%) were uncleared.

d. Purse snatch. Of the 103 purse snatches for the time period, 10 (9.7%) were cleared, and 93 (90.3%) were uncleared (see Table I-5). No purse snatches fell into the cleared-other category.

Table I-3

ROBBERY, STRONG-ARM: CLEARANCE BY CASE DISPOSITION

Status	No Disposition	Arrest And Prosecution	Complainant Refuses To Prosecute	Prosecuted for Another Offense	Complaint Refused by D.A.	Prosecuted by Outside Department	Reprimanded and Released	Turned Over to Juvenile Authority	Notice to Appear	Total
Cleared										
Count	0	20	0	1	0	1	1	11	2	36
% of row	0%	55.6%	0%	2.8%	0%	2.8%	2.8%	30.6%	5.6%	
% of column	0	100.0	0	100.0	0	100.0	100.0	100.0	100.0	
% of total	0	7.3	0	0.4	0	0.4	0.4	4.0	0.7	13.1%
Cleared-Other										
Count	0	0	9	0	2	0	0	0	0	11
% of row	0%	0%	81.8%	0%	18.2%	0%	0%	0%	0%	
% of column	0	0	60.0	0	100.0	0	0	0	0	
% of total	0	0	3.3	0	0.7	0	0	0	0	4.0%
Uncleared										
Count	222	0	6	0	0	0	0	0	0	228
% of row	97.4%	0%	2.6%	0%	0%	0%	0%	0%	0%	
% of column	100.0	0	40.0	0	0	0	0	0	0	
% of total	80.7	0	2.2	0	0	0	0	0	0	82.9%
Total Count	222	20	15	1	2	1	1	11	2	275
% of Cases	80.7%	7.3%	5.5%	0.4%	0.7%	0.4%	0.4%	4.0%	0.7%	100.0%

Table I-4

ROBBERY, THEFT FROM PERSON: CLEARANCE BY CASE DISPOSITION

Status	No Disposition	Arrest and Prosecution	Complainant Refuses To Prosecute	Turned Over to Juvenile Authority	Notice to Appear	Total
Cleared						
Count	0	8	0	4	1	13
% of row	0%	61.5%	0%	30.8%	7.7%	
% of column	0	100.0	0	100.0	100.0	
% of total	0	7.3	0	3.6	0.9	11.8%
Cleared-Other						
Count	0	0	3	0	0	3
% of row	0%	0%	100.0%	0%	0%	
% of column	0	0	33.3	0	0	
% of total	0	0	2.7	0	0	2.7%
Uncleared						
Count	88	0	6	0	0	94
% of row	93.6%	0%	6.4	0%	0%	
% of column	100.0	0	66.7	0	0	
% of total	80.0	0	5.5	0	0	85.5%
Total Count	88	8	9	4	1	110
% of Cases	80.0%	7.3%	8.2%	3.6%	0.9%	100.0%

Table I-5

ROBBERY, PURSE SNATCH: CLEARANCE BY CASE DISPOSITION

Status	No Disposition	Arrest and Prosecution	Complainant Refuses To Prosecute	Turned Over to Juvenile Authority	Total
Cleared					
Count	0	6	0	4	10
% of row	0%	60.0%	0%	40.0%	
% of column	0	100.0	0	100.0	
% of total	0	5.8	0	3.9	9.7%
Uncleared					
Count	92	0	1	0	93
% of row	98.9%	0%	1.1%	0%	
% of column	100.0	0	100.0	0	
% of total	89.3	0	.0	0	90.3%
Total Count	92	6	1	4	103
% of Cases	89.3%	5.8%	1.0%	3.9%	100.0%

2. Rape. Only 65 cases of rape were reported during the period. Of these, 16 (24.6%) were cleared; 12 (18.5%) were cleared-other; and 37 (56.9%) were uncleared (see Table I-6). Ten of the uncleared cases had been cleared as Complainant Refuses To Prosecute. This constitutes 29.7% of the cases in the uncleared category.

3. Assault with a deadly weapon. The 413 ADWs for the time period (see Table I-7) were cleared at a much higher rate than any of the other crimes investigated. Of these ADWs, 206 (49.9%) were cleared; 147 (35.6%) were cleared-other; and only 60 (14.5%) fell into the uncleared category.

4. Car theft. Car theft was the highest-volume crime coded and also had the lowest clearance rate (see Table I-8). Of 1187 car thefts for the time period, 104 (8.8%) were cleared; 38 (3.2%) were cleared-other; and 1045 (88.0%) were uncleared.

Table I-6

RAPE: CLEARANCE BY CASE DISPOSITION

Status	No Disposition	Arrest and Prosecution	Complainant Refuses To Prosecute	Complaint Refused by D.A.	Turned Over to Juvenile Authority	D.A. Citation	Notice to Appear	Total
Cleared								
Count	0	8	0	0	1	1	1	16
% of row	0%	50.0%	0%	0%	37.5%	6.3%	6.3%	
% of column	0	100.0	0	0	100.0	100.0	100.0	
% of total	0	12.3	0	0	9.2	1.5	1.5	24.6%
Cleared-other								
Count	0	0	10	2	0	0	0	12
% of row	0%	0%	83.3%	16.7%	0%	0%	0%	
% of column	0	0	47.6	100.0	0	0	0	
% of total	0	0	15.4	3.1	0	0	0	18.5%
Uncleared								
Count	26	0	11	0	0	0	0	37
% of row	70.3%	0%	29.7%	0%	0%	0%	0%	
% of column	100.0	0	52.4	0	0	0	0	
% of total	40.0	0	16.9	0	0	0	0	56.9%
Total Count	26	8	21	2	6	1	1	65
% of Cases	40.0%	12.3%	32.3%	3.1%	9.2%	1.5%	1.5%	100.0%

Table I-7

ADW: CLEARANCE BY CASE DISPOSITION

Status	No Disposition	Arrest and Prosecution	Complainant Refuses to Prosecute	Complaint Refused by D.A.	Reprimanded and Released	Turned Over to Juvenile Authority	D.A. Citation	Notice to Appear	Total
Cleared									
Count	0	158	0	0	3	20	15	10	206
% of row	0%	76.7%	0%	0%	1.5%	9.7%	7.3%	4.9%	
% of column	0	100.0	0	0	100.0	100.0	100.0	100.0	
% of total	0	38.3	0	0	0.7	0.7	3.6	2.4	49.9%
Cleared-other									
Count	0	0	138	9	0	0	0	0	147
% of row	0%	0%	93.9%	6.1%	0%	0%	0%	0%	
% of column	0	0	91.4	100.0	0	0	0	0	
% of total	0	0	33.4	2.2	0	0	0	0	35.6%
Uncleared									
Count	47	0	13	0	0	0	0	0	60
% of row	78.3%	0%	21.7%	0%	0%	0%	0%	0%	
% of column	100.0	0	8.6	0	0	0	0	0	
% of total	11.4	0	3.1	0	0	0	0	0	14.5%
Total Count	47	158	151	9	3	20	15	10	413
% of Cases	11.4%	38.3%	36.6%	2.2%	0.7%	4.8%	3.6%	2.4%	100.0%

Table I-8

CAR THEFT: CLEARANCE BY CASE DISPOSITION

Status	No Disposition	Arrest and Prosecution	Complainant Refuses To Prosecute	Prosecuted for Another Offense	Complaint Refused by D.A.	Prosecuted by Outside Department	Reprimanded and Released	Turned Over to Juvenile Authority	D.A. Citation	Total
Cleared										
Count	0	43	0	2	0	11	1	46	1	104
% of row	0%	41.3%	0%	1.9%	0%	10.6%	1.0%	44.2%	1.0%	
% of column	0	100.0	0	100.0	0	100.0	100.0	100.0	100.0	
% of total	0	3.6	0	0.2	0	0.9	0.1	3.9	0.1	8.8%
Cleared-Other										
Count	0	0	34	0	4	0	0	0	0	38
% of row	0%	0%	89.5%	0%	10.5%	0%	0%	0%	0%	
% of column	0	0	91.9	0	100.0	0	0	0	0	
% of total	0	0	2.9	0	0.3	0	0	0	0	3.2%
Uncleared										
Count	1042	0	3	0	0	0	0	0	0	1045
% of row	99.7%	0%	0.3%	0%	0%	0%	0%	0%	0%	
% of column	100.0	0	8.1	0	0	0	0	0	0	
% of total	87.8	0	0.3	0	0	0	0	0	0	88.0%
Total Count	1042	43	37	2	4	11	1	46	1	1187
% of Cases	87.8%	3.6%	3.1%	0.2%	0.3%	0.9%	0.1%	3.9%	0.1%	100.0%

CHAPTER II. ROBBERY

As Table I-1 in Chapter I shows, robbery is the highest-volume crime committed against persons. For purposes of our analysis, we considered theft from person and purse snatch as forms of robbery, although they are classified as thefts by the FBI Uniform Crime Reports. We included these offenses because of the personal encounter that occurs between the victim and the offender, even though it is generally shorter than the encounter in an armed or strong-arm robbery.

After classifying robbery into the four subcategories, we then combined them into two groups:

Group 1	Group 2
• Armed	• Theft from person
• Strong-arm	• Purse snatch

Analysis of the frequencies of occurrence and levels of case clearances revealed that within each of the two groups the categories are similar. However, for cross-tabulation purposes, to determine the patterns of the incidents, we combined the two groups. When some cross tabulations produced results that appeared to be incompatible with the actual facts of how these subcategories of robberies were committed and cleared, we separated the cases and calculated their correlation coefficients by Groups 1 and 2 separately.

The analysis is presented in three sections:

- Selected cross tabulations on the entire robbery sample.
- Bivariate correlations and development of a decision rule using discriminant analysis, for the robbery cases in which there was CID involvement. (Our assumption was that CID involvement was likely to have occurred more than 8 hours after the report of the robbery.)
- Bivariate correlations and discussion regarding off-scene arrests made by patrol less than 8 hours after the report of the crime.

A. Cross Tabulations

In this section are selected tables of the sample cases processed, which illustrate the insight developed regarding the nature of robbery and the elements of information found to contribute to suspect ID and successful case closure. Further, the data reveal that patrol operational involvement in responding to robbery incidents has a profound impact on case closure at the patrol and investigation levels. Because showing hundreds of cross tabulations would not be productive, we illustrate only the most interesting analyses.

Analysis of Table II-1, Clearance by Primary Felony Offense, indicates that higher clearance rates were attained for the more serious categories of robbery--strong-arm and armed--than for theft from person and purse snatch. This fact formed a major part of our rationale for the grouping of robbery cases that has been shown. Table II-1 shows that approximately 15% of all robbery cases were cleared (cleared and cleared-other). Of the 818 cases of robbery, 5.7% were cleared strong-arm robberies; 6.2% cleared armed robberies; 2.0% cleared thefts from person; and 1.3% cleared purse snatches. Of the 103 cases of theft

Table II-1

ROBBERY: CLEARANCE BY PRIMARY FELONY OFFENSE

Status	Strong-arm Robbery	Armed Robbery	Theft from Person	Purse Snatch	Total
Cleared					
Count	36	42	13	10	101
% of row	35.6%	41.6%	12.9%	9.9%	
% of column	13.1	12.7	11.8	9.7	
% of total	4.4	5.1	1.6	1.2	12.3%
Cleared-Other					
Count	11	9	3	0	23
% of row	47.8%	39.1%	13.0%	0%	
% of column	4.0	2.7	2.7	0	
% of total	1.3	1.1	0.4	0	2.8%
Uncleared					
Count	228	279	94	93	694
% of row	32.9%	40.2%	13.5%	13.4%	
% of column	82.9	84.5	85.5	90.3	
% of total	27.9	34.1	11.5	11.4	84.8%
Total Count	275	330	110	103	8.8
% of Cases	33.6%	40.3%	13.4%	12.6%	100.0%

from person, 10 were cleared, and no cleared-other were shown. Because this category of street crime is truly a stranger-to-stranger crime, the chance of the victim knowing the offender and refusing to press charges was nonexistent for the sample drawn.

Some weapon was used in 42.6% of the robbery cases. Table II-2 shows the weapons used. The two most common weapons were handguns, which were used in 18.7% of the cases, and knives, which were used in 7.7% of the cases.

Table II-2

ROBBERY: CLEARANCE BY WEAPON USED

Status	No Weapon	Handgun	Rifle	Shotgun	Alleged Gun	Knife	Chemical	Blunt Instrument	Simulated Weapon	Other Weapon	Unknown Weapon	Total
Cleared												
Count	51	12	0	3	3	10	0	3	8	11	0	101
% of row	50.5%	11.9%	0%	3.0%	3.0%	9.9%	0%	3.0%	7.9%	10.9%	0%	
% of column	10.7	7.8	0	60.0	21.8	15.8	0	7.5	29.0	54.7	0	
% of total	6.2	1.5	0	0.4	0.4	1.2	0	0.4	1.0	1.3	0	12.3%
Cleared-Other												
Count	13	4	0	1	0	3	0	1	0	1	0	23
% of row	56.5%	17.4%	0%	4.3%	0%	13.0%	0%	4.3%	0%	4.3%	0%	
% of column	2.7	2.6	0	20.0	0	4.7	0	2.5	0	5.0	0	
% of total	1.6	0.5	0	0.1	0	0.4	0	0.1	0	0.1	0	2.8%
Uncleared												
Count	414	137	9	1	11	50	4	36	20	8	4	694
% of row	59.6%	19.8%	1.3%	0.1%	1.6%	7.2%	0.6%	5.2%	2.8%	1.2%	0.6%	
% of column	86.6	89.6	100.0	20.0	78.2	79.5	100.0	90.0	71.0	40.3	100.0	
% of total	50.6	16.8	1.1	0.1	1.3	6.1	0.5	4.4	2.4	1.0	0.5	84.8%
Total Count	478	153	9	5	14	63	4	40	28	20	4	818
% of Cases	58.4%	18.7%	1.1%	0.6%	1.7%	7.7%	0.5%	4.9%	3.4%	2.5%	0.5%	100.0%

Table II-3 shows the importance of timely reporting of a robbery incident. In over 77% of the cases cleared by arrest, the report had been made within 2 hours of the crime's occurrence. The greatest percentage--65%--of the arrests occurred within the first hour.

It can readily be seen from Table II-4 that, of the 101 cases classified as cleared, 50% were cleared by arrest within the first 2 hours of the report of the incident. The overwhelming majority of these cases were cleared within 1 hour. The inference is that patrol is accounting for the largest percentage of robbery case clearance. Where case clearances are shown distributed over the indicated extended time intervals, e.g., longer than 8 hours of delay in arrest of a suspect, we assume that investigators were following up on leads provided by the initial reporting officers.

A further analysis of the time between report and arrest was undertaken for each of the four categories of robbery. (See Tables II-5 through -8).

In comparing the percentages of the cases cleared within 8 hours and of those whose clearance required more than 8 hours, it can be seen that, except for armed robbery, the greater percentages of the cases were those cleared within 8 hours. A summary comparison follows. [The parentheses (+) indicate the higher percentage and (-) the lower percentage.]

Strong-Arm Robbery	Armed Robbery	Theft from Person	Purse Snatch
<8 hr 9.8% (+)	<8 hr 4.5% (-)	<8 hr 7.3% (+)	<8 hr 6.8% (+)
>8 hr 4.0% (-)	>8 hr 6.0% (+)	>8 hr 3.6% (-)	>8 hr 3.0% (-)

A probable deduction from the above tabulation is that CID investigators are more involved in clearing armed robbery cases than is patrol, but

Table II-3

ROBBERY: CLEARANCE BY TIME BETWEEN OCCURRENCE AND REPORT

Status	Unknown Time	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	4 to 8 Hours	8 to 12 Hours	12 to 24 Hours	1 to 2 Days	2 to 4 Days	4 to 7 Days	14 to 21 Days	30 to 45 Days	45 Plus Days	Total
Cleared														
Count	1	66	12	5	0	2	8	3	1	0	1	1	1	101
% of row	1.0%	65.3%	11.9%	5.0%	0%	2.0%	7.9%	3.0%	1.0%	0%	1.0%	1.0%	1.0%	
% of column	3.2	11.2	14.0	18.5	0	18.6	25.7	15.9	13.3	0	100.0	21.0	100.0	
% of total	0.1	8.1	1.5	0.6	0	0.2	1.0	0.4	0.1	0	0.1	0.1	0.1	12.3%
Cleared-Other														
Count	0	14	3	2	0	0	2	2	0	0	0	0	0	23
% of row	0%	60.9%	13.0%	8.7%	0%	0%	8.7%	8.7%	0%	0%	0%	0%	0%	
% of column	0	2.4	3.5	7.4	0	0	6.4	10.6	0	0	0	0	0	
% of total	0	1.7	0.4	0.2	0	0	0.2	0.2	0	0	0	0	0	2.8%
Uncleared														
Count	31	508	71	20	10	9	21	14	7	1	0	4	0	694
% of row	4.4%	73.1%	10.2%	2.9%	1.5%	1.3%	3.0%	2.0%	0.9%	0.1%	0%	0.5%	0%	
% of column	96.8	86.4	82.5	74.1	100.0	81.4	67.8	73.4	86.7	100.0	0	79.0	0	
% of total	3.7	62.0	8.6	2.4	1.3	1.1	2.6	1.7	0.8	0.1	0	0.5	0	84.8%
Total Count	32	588	86	27	10	11	31	19	8	1	1	5	1	818
% of Cases	3.9%	71.8%	10.5%	3.3%	1.3%	1.3%	3.8%	2.3%	0.9%	0.1%	0.1%	0.6%	0.1%	100.0%

Table II-4

ROBBERY: CLEARANCE BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	8 to 12 Hours	12 to 24 Hours	1 to 2 Days	2 to 4 Days	4 to 7 Days	7 to 10 Days	10 to 14 Days	14 to 21 Days	21 to 30 Days	45 Plus Days	Total
Cleared															
Count	10	47	4	3	2	6	6	6	3	5	3	1	1	4	101
% of row	9.9%	46.5%	4.0%	3.0%	2.0%	5.9%	5.9%	5.9%	3.0%	5.0%	3.0%	1.0%	1.0%	4.0%	
% of column	1.4	94.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	83.3	100.0	100.0	100.0	100.0	
% of total	1.2	5.7	0.5	0.4	0.2	0.7	0.7	0.7	0.4	0.6	0.4	0.1	0.1	0.5	12.3%
Cleared-Other															
Count	19	3	0	0	0	0	0	0	0	1	0	0	0	0	23
% of row	82.6%	13.0%	0%	0%	0%	0%	0%	0%	0%	4.3%	0%	0%	0%	0%	
% of column	2.6	6.0	0	0	0	0	0	0	0	16.7	0	0	0	0	
% of total	2.3	0.4	0	0	0	0	0	0	0	0.1	0	0	0	0	2.8%
Uncleared															
Count	694	0	0	0	0	0	0	0	0	0	0	0	0	0	694
% of row	100.0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
% of column	96.0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of total	84.8	0	0	0	0	0	0	0	0	0	0	0	0	0	84.8%
Total Count	723	50	4	3	2	6	6	6	3	6	3	1	1	4	818
% of Cases	88.4%	6.1%	0.5%	0.4%	0.2%	0.7%	0.7%	0.7%	0.4%	0.7%	0.4%	0.1%	0.1%	0.5%	100.0%

Table II-5

ROBBERY, STRONG-ARM: CLEARANCE BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	8 to 12 Hours	12 to 24 Hours	1 to 2 Days	2 to 4 Days	7 to 10 Days	14 to 21 Days	45 Plus Days	Total
Cleared												
Count	1	20	2	2	1	2	3	1	1	1	2	36
% of row	2.8%	55.6%	5.6%	5.6%	2.8%	5.6%	8.3%	2.8%	2.8%	2.8%	5.6%	
% of column	0.4	87.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
% of total	0.4	7.3	0.7	0.7	0.4	0.7	1.1	0.4	0.4	0.4	0.7	13.1%
Cleared-Other												
Count	8	3	0	0	0	0	0	0	0	0	0	11
% of row	72.7%	27.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
% of column	3.4	13.0	0	0	0	0	0	0	0	0	0	
% of total	2.9	1.1	0	0	0	0	0	0	0	0	0	4.0%
Uncleared												
Count	228	0	0	0	0	0	0	0	0	0	0	228
% of row	100.0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
% of column	96.2	0	0	0	0	0	0	0	0	0	0	
% of total	82.9	0	0	0	0	0	0	0	0	0	0	82.9%
Total Count	237	23	2	2	1	2	3	1	1	1	2	275
% of Cases	86.2%	8.4%	0.7%	0.7%	0.4%	0.7%	1.1%	0.4%	0.4%	0.4%	0.7%	100.0%

Table II-6

ROBBERY, ARMED: CLEARANCE BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	8 to 12 Hours	12 to 24 Hours	1 to 2 Days	2 to 4 Days	4 to 7 Days	7 to 10 Days	10 to 14 Days	21 to 30 Days	45 Plus Days	Total
Cleared														
Count	8	12	2	1	1	2	3	4	2	2	3	1	1	42
% of row	19.0%	28.6%	4.8%	2.4%	2.4%	4.8%	7.1%	9.5%	4.8%	4.8%	7.1%	2.4%	2.4%	
% of column	2.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	66.7	100.0	100.0	100.0	
% of total	2.4	3.6	0.6	0.3	0.3	0.6	0.9	1.2	0.6	0.6	0.9	0.3	0.3	12.7%
Cleared-Other														
Count	8	0	0	0	0	0	0	0	0	1	0	0	0	9
% of row	88.9%	0%	0%	0%	0%	0%	0%	0%	0%	11.1%	0%	0%	0%	
% of column	2.7	0	0	0	0	0	0	0	0	33.3	0	0	0	
% of total	2.4	0	0	0	0	0	0	0	0	0.3	0	0	0	2.7%
Uncleared														
Count	279	0	0	0	0	0	0	0	0	0	0	0	0	279
% of row	100.0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
% of column	94.6	0	0	0	0	0	0	0	0	0	0	0	0	
% of total	84.5	0	0	0	0	0	0	0	0	0	0	0	0	84.5%
Total Count	295	12	2	1	1	2	3	4	2	3	3	1	1	330
% of Cases	89.4%	3.6%	0.6%	0.3%	0.3%	0.6%	0.9%	1.2%	0.6%	0.9%	0.9%	0.3%	0.3%	100.0%

Table II-7

ROBBERY, THEFT FROM PERSON:
CLEARANCE BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within 1 Hour	12 to 24 Hours	2 to 4 Days	7 to 10 Days	45 Plus Days	Total
Cleared							
Count	1	8	1	1	1	1	13
% of row	7.7%	61.5%	7.7%	7.7%	7.7%	7.7%	
% of column	1.0	100.0	100.0	100.0	100.0	100.0	
% of total	0.9	7.3	0.9	0.9	0.9	0.9	11.8%
Cleared-Other							
Count	3	0	0	0	0	0	3
% of row	100.0%	0%	0%	0%	0%	0%	
% of column	3.1	0	0	0	0	0	
% of total	2.7	0	0	0	0	0	2.7%
Uncleared							
Count	94	0	0	0	0	0	94
% of row	100.0%	0%	0%	0%	0%	0%	
% of column	95.5	0	0	0	0	0	
% of total	85.5	0	0	0	0	0	85.5%
Total Count	98	8	1	1	1	1	110
% of Cases	89.1%	7.3%	0.9%	0.9%	0.9%	0.9%	100.0%

Table II-8

ROBBERY, PURSE SNATCH:
CLEARANCE BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within 1 Hour	12 to 24 Hours	4 to 7 Days	7 to 10 Days	Total
Cleared						
Count	0	7	1	1	1	10
% of row	0%	70.0%	10.0%	10.0%	10.0%	
% of column	0	100.0	100.0	100.0	100.0	
% of total	0	6.8	1.0	1.0	1.0	9.7%
Uncleared						
Count	93	0	0	0	0	93
% of row	100.0%	0%	0%	0%	0%	
% of column	100.0	0	0	0	0	
% of total	90.3	0	0	0	0	90.3%
Total Count	93	7	1	1	1	103
% of Cases	90.3%	6.8%	1.0%	1.0%	1.0%	100.0%

that patrol is more effective in the three other categories of robbery. Note that 29 clearances are shown for which no arrest was made. Usually this implies either that a warrant was issued or that the complainant refused to prosecute (Table II-4).

Tables II-9 through -11 show the races of the victims and offenders broken down into the cleared, cleared-other, and uncleared cases. These tables show that:

- Where white offenders committed robberies (all categories) against white victims, the overall clearance rate was 26% (11 clearances for a total of 43 cases).
- For black offenders with black victims, the clearance rate was 22% (45 clearances for a total of 203 cases).
- For black offenders with white victims, the clearance rate was only 11% (47 clearances for a total of 443 cases).

Table II-12 shows the races of the victims and offenders in the cleared and cleared-other cases where the suspect was known to the victim. The analysis was made to ascertain whether differences could be observed in the degree to which victims and suspects of different ethnic groupings were known to one another. The findings are that in the cleared cases:

- White offender/white victim--9% of the victims knew the offenders (1 cleared and known out of a total of 11 cleared cases).
- White offender/black victim--50% of the black victims knew the white offenders (1 cleared and known out of 2 cleared cases).

Table II-9

ROBBERY: VICTIM'S RACE BY OFFENDER'S RACE--
CLEARED CASES

	Offender				
Victim	Not Known	White	Black	Mexican	Total
Not Known					
Count	0	0	2	0	2
% of row	0%	0%	100.0%	0%	
% of column	0	0	2.4	0	
% of total	0	0	2.0	0	2.0%
White					
Count	0	9	43	1	53
% of row	0%	17.0%	81.1%	1.9%	
% of column	0	75.0	50.6	33.3	
% of total	0	8.9	42.6	1.0	52.5%
Black					
Count	1	2	30	1	34
% of row	2.9%	5.9%	88.2%	2.9%	
% of column	100.0	16.7	35.3	33.3	
% of total	1.0	2.0	29.7	1.0	33.7%
Mexican					
Count	0	0	4	1	5
% of row	0%	0%	80.0%	20.0%	
% of column	0	0	4.7	33.3	
% of total	0	0	4.0	1.0	5.0%
Japanese					
Count	0	0	2	0	2
% of row	0%	0%	100.0%	0%	
% of column	0	0	2.4	0	
% of total	0	0	2.0	0	2.0%
Other					
Count	0	1	4	0	5
% of row	0%	20.0%	80.0%	0%	
% of column	0	8.3	4.7	0	
% of total	0	1.0	4.0	0	5.0%
Total Count	1	12	85	3	101
% of Cases	1.0%	11.9%	84.2%	3.0%	100.0%

Table II-10

ROBBERY: VICTIM'S RACE BY OFFENDER'S RACE--
CLEARED-OTHER CASES

	Offender			
Victim	White	Black	Mexican	Total
White				
Count	2	4	0	6
% of row	33.3%	66.7%	0%	
% of column	66.7	21.1	0	
% of total	8.7	17.4	0	26.1%
Black				
Count	0	15	0	15
% of row	0%	100.0%	0%	
% of column	0	78.9	0	
% of total	0	65.2	0	65.2%
Mexican				
Count	0	0	1	1
% of row	0%	0%	100.0%	
% of column	0	0	100.0	
% of total	0	0	4.3	4.3%
Japanese				
Count	1	0	0	1
% of row	100.0%	0%	0%	
% of column	33.3	0	0	
% of total	4.3	0	0	4.3%
Total Count	3	19	1	23
% of Cases	13.0%	82.6%	4.3%	100.0%

Table II-11

ROBBERY: VICTIM'S RACE BY OFFENDER'S RACE--
UNCLEARED CASES

	Offender				
Victim	Not Known	White	Black	Mexican	Total
Not Known					
Count	1	4	3	0	8
% of row	11.9%	52.3%	35.8%	0%	
% of column	3.8	11.3	0.5	0	
% of total	0.1	0.6	0.4	0	1.2%
White					
Count	9	32	396	13	449
% of row	1.9%	7.1%	88.2%	2.9%	
% of column	32.2	81.7	64.9	66.2	
% total	1.2	4.6	57.0	1.9	64.7%
Black					
Count	11	3	158	0	172
% of row	6.6%	1.6%	91.8%	0%	
% of column	43.0	7.0	25.9	0	
% of total	1.6	0.4	22.7	0	24.8%
Mexican					
Count	6	0	20	7	32
% of row	17.2%	0%	62.3%	20.5%	
% of column	21.0	0	3.3	33.8	
% of total	0.8	0	2.9	1.0	4.6%
American Indian					
Count	0	0	4	0	4
% of row	0%	0%	100.0%	0%	
% of column	0	0	0.7	0	
% of total	0	0	0.6	0	0.6%
Chinese					
Count	0	0	10	0	10
% of row	0%	0%	100.0%	0%	
% of column	0	0	1.7	0	
% of total	0	0	1.5	0	1.5%
Other					
Count	0	0	18	0	18
% of row	0%	0%	100.0%	0%	
% of column	0	0	2.9	0	
% of total	0	0	2.6	0	2.6%
Total Count	26	39	609	20	694
% of Cases	3.8%	5.6%	87.8%	2.8%	100.0%

Table II-12

ROBBERY: VICTIM'S RACE BY OFFENDER'S RACE--
OFFENDER KNOWN TO VICTIM
(Cleared and Cleared-Other Cases)

	Offender			
Victim	White	Black	Mexican	Total
White				
Count	1	4	0	5
% of row	20.0%	80.0%	0%	
% of column	50.0	14.3	0	
% of total	3.1	12.5	0	15.6%
Black				
Count	1	24	1	26
% of row	3.8%	92.3%	3.8%	
% of column	50.0	85.7	50.0	
% of total	3.1	75.0	3.1	81.3%
Mexican				
Count	0	0	1	1
% of row	0%	0%	100.0%	
% of column	0	0	50.0	
% of total	0	0	3.1	3.1%
Total Count	2	28	2	32
% of Cases	6.3%	87.5%	6.3%	100.0%

- Black offender/white victim--9% of the white victims knew the black offenders (4 cleared and known out of 47 cleared cases).
- Black offender/black victim--53% of the black victims knew the black offenders (24 cleared and known out of 45 cleared cases).

The deduction from the above is that among all the robbery categories the probability that the victim can name the perpetrator is highest when both the victim and the offender are black.

B. Bivariate Correlations and Decision Models

The next step in our analysis of the robbery data was to analyze the cleared cases where there had been CID input. As stated earlier, we put into this group the cases classified as cleared or cleared-other where an arrest had not been made within 8 hours from the time of report of the crime. The cleared and cleared-other cases were considered together, because bivariate correlations run separately with the two groups indicated that their correlations with the variables under consideration differed only slightly. In addition, the larger sample size increased the statistical significance of the analysis.

From our examination of the cross tabulations and subjective interpretation of the data, we chose 108 variables for further analysis and potential inclusion in the decision model. (These are listed in Appendix D, Table D-1.) Bivariate correlations were run with these variables for both the strong-arm/armed robbery and theft from person/purse snatch groups. The variables that showed at least 0.1 correlation with clearance are listed in Tables II-13 and -14. These tables show extensive overlap between the two categories of robbery, especially among the

Table II-13

STRONG-ARM/ARMED ROBBERY VARIABLES DERIVED
FROM BIVARIATE CORRELATION ANALYSIS
OF CLEARANCES REQUIRING MORE THAN 8 HOURS

Variable	Correlation Coefficient
Suspect named (TP/PS)*	0.4621
Suspect known (TP/PS)	0.4365
Suspect previously seen (TP/PS)	0.4066
License number of vehicle given	0.2889
Vehicle registration check--useful lead (TP/PS)	0.2848
Field Contact report	0.2570
Places suspect frequented named (TP/PS)	0.2480
Other physical evidence match	0.2202
Offender and victim same race (TP/PS)	0.2106
Evidence technician at crime scene	0.2072
Three or more reporting individuals	0.2047
White offender	0.2036
Suspect's associates named/indicated (TP/PS)	0.2014
Greater than 30 minutes contact between victim and offender (TP/PS)	0.1959
White offender and black victim (TP/PS)	0.1797
Crime File run-person--useful lead (TP/PS)	0.1797
Clothing match	0.1797
Weapons match	0.1797
Black victim (TP/PS)	0.1783
Description of vehicle given	0.1701
Vehicle registration check made (TP/PS)	0.1639
Crime occurrence between 0801 and 1200 hours	0.1630
Fingerprints taken	0.1554
Vehicle registered to suspect (TP/PS)	0.1551
Vehicle used	0.1500
Color of vehicle given	0.1484
Other weapon used (TP/PS)	0.1483
Black offender and black victim	0.1471
Victim invited offender in (TP/PS)	0.1460
Sexual aberrations indicated	0.1389
White offender and white victim	0.1382
Offender movement by automobile	0.1314
Fingerprints match	0.1269
Offender described as wearing glasses	0.1112
One offender	0.1017

*TP/PS--Also significant for theft from person/purse snatch.

Table II-14

THEFT-FROM-PERSON/PURSE-SNATCH ROBBERY VARIABLES DERIVED FROM BIVARIATE CORRELATION ANALYSIS OF CLEARANCES REQUIRING MORE THAN 8 HOURS

Variable	Correlation Coefficient
Vehicle registration check--useful lead (S/A)*	0.4165
Offender silent--note passed	0.4165
Suspect named (S/A)	0.4046
Suspect known (S/A)	0.3656
Suspect previously seen (S/A)	0.3469
Words spoken by offender	0.3235
Crime File run-person--useful lead (S/A)	0.2938
Offender violent	0.2938
Greater than 30 minutes contact between victim and offender (S/A)	0.2755
Offender pretended	0.2242
Black offender and black victim (S/A)	0.2186
Crime occurred between 0401 and 0800 hours	0.2148
Places suspect frequented named (S/A)	0.2105
Vehicle registered to suspect (S/A)	0.1797
Three clothing descriptors given	0.1633
Black victim (S/A)	0.1557
Victim invited offender in (S/A)	0.1461
Two reporting individuals	0.1345
Eyes of offender described	0.1295
Other weapon used (S/A)	0.1292
Crime file run-vehicle	0.1292
Offender and victim same race (S/A)	0.1283
Suspect's associates named/indicated (S/A)	0.1258
Female offender	0.1217
Mexican-American offender	0.1213
Vehicle registration check made (S/A)	0.1118

*S/A--Also significant for strong-arm and armed robbery.

variables with the highest correlations with clearance. We therefore decided to construct one decision rule for all categories of robbery.

We selected the data elements for further screening on the basis of their correlation coefficients and our subjective judgment of the usefulness of certain data elements for police investigative purposes. For example, we initially assumed that variables concerned with weather and illumination (rain, fog, clear, daylight, dawn, dusk, dark, artificial light) would be reported by the beat officer when interrogating a victim of a street crime, to determine factors affecting the victim's ability to describe an offender. In the 818 cases sampled, one of the variables--dark--was noted only seven times. The others were noted three times or usually not mentioned. The SRI data coders could have made assumptions about the state of darkness by noting the time of a crime, but the reports usually did not mention street illumination. Consequently, we eliminated these variables from further consideration.

Not listed in Table II-13 are some variables that we fully expected to have some statistical significance. Elements of information on suspect physical descriptions, such as height, weight, eyes, hair, glasses, and teeth, all exhibited negative correlation coefficients for case clearances by arrest or were below the 0.1000 threshold level established. Use of handguns also showed negative correlation with clearance. There are logical explanations for the behavior of these variables. Practically every report of an incident contains some of these descriptions. But the fact that most cases are uncleared, even though some of these descriptors appeared in both cleared and uncleared cases, indicates that the physical descriptor elements are not prime suspect identifiers. The negative correlation reveals that more uncleared cases contained this variable, e.g., handgun, than did cleared cases.

A similar explanation holds for wearing apparel descriptors having little prime impact on suspect ID. However, note that the variable clothing match in Table II-13 shows a contribution to case clearance. Again there is a logical explanation. Suppose that a suspect was apprehended on the basis of some other information lead in the set shown in Table II-13. If a victim or witness had described the offender's apparel, the description had been recorded in the report, and a suspect had been apprehended wearing the garments recorded, these procedures would have supported a positive ID. This variable then adds weight to suspect ID and case clearance by arrest.

Before a discriminant analysis could be successfully undertaken, however, it was necessary to restructure many of the variables to ensure that they were independent from one another (as discussed in Appendix D). Variables that were restructured included: vehicle, vehicle registration check, and physical evidence variables.

Many iterative discriminant analyses were run using various combinations of variables with varying methods of restructuring. This multi-staged procedure was necessary to establish the set best able to discriminate between the cleared and uncleared cases, and to predict with a high degree of accuracy the group (cleared or uncleared) to which a particular case belonged. The analysis below describes some of the major decisions we made leading to the development of the decision model.

An important (perhaps obvious) decision was to exclude cases that had been solved on the basis of the suspect being named or known. The police are the first to point out that, if the suspect is identified in the crime report, the case is essentially solved. The statistics supported this observation. When these two variables are included in discriminant analysis, their presence is so dominating that the other variables seem worthless.

A second reason for excluding cases where the suspect had been named or known is that we were trying to gain insight into what other investigative leads are important in case clearance. A case where the suspect is known requires little investigation except to develop the case for prosecution. A bivariate correlation analysis on the four robbery subgroups, of cases that required more than 8 hours between report and clearance, with the offender neither named nor known, produced the list of correlated variables shown in Table II-15.

Table II-15

VARIABLES FOR CASES WITH CLEARANCES
REQUIRING MORE THAN 8 HOURS
AND OFFENDER UNNAMED AND UNKNOWN
USED IN THE DISCRIMINANT ANALYSIS

Variable	Correlation Coefficient
Suspect previously seen	0.3410
Total physical evidence matched	0.3243
Evidence technician	0.2979
Places suspect frequented named	0.2858
Vehicle registration check	0.2398
Sexual aberrations	0.2138
Offender movement description	0.1822
Duration of contact--victim/offender	0.1607
Weapon used	0.1276
Offender/victim race	0.1193
Number of reporting individuals	0.1084
Total number of physical descriptors	0.1052
Total cash value of property taken	0.1030

Table II-16 shows the results of the discriminant analysis performed on the selected set of 13 variables. The standardized discriminant function coefficients on the right of the table provide the ranking of importance to case clearance.

Table II-16

ROBBERY DISCRIMINANT FUNCTION COEFFICIENTS

Variable	Discriminant Function Coefficients
Suspect previously seen	0.65
Evidence technician	0.61
Places suspect frequented named	0.42
Total physical evidence matched	0.37
Vehicle registration information	0.22
Offender movement description	0.21
Weapon used	0.16
Offender/victim race	0.12
Total cash value of property	0.11
Total physical descriptors	0.08
Number of reporting individuals	0.03
Duration of contact	0.04
Sexual aberration	-0.08

On the basis of the discriminant function coefficients calculated, we selected seven variables to be used in the decision model. In addition, the variables suspect named and suspect known are included, but set apart from the other categories. Table II-17 displays the robbery investigation decision model constructed on a relative scale of 10. The weighted variables in the model reflect the contribution of the element of information to prediction of case clearance. The importance of each item is relative to that of all the other elements.

Table II-17

ROBBERY INVESTIGATION DECISION MODEL

Information Element	Weighting Factor
Suspect named	10*
Suspect known	10*
Suspect previously seen	10*
Evidence technician used	10
Places suspect frequented named	10*
Physical evidence--each item matched	6.1
Vehicle registration	
Query information available	1.5
Vehicle stolen	3.0
Useful information returned	4.5
Vehicle registered to suspect	6.0
Offender movement description	
On foot	0
Vehicle (not car)	0.6
Car	1.2
Car color given	1.8
Car description given	2.4
Car license given	3.0
Weapon used	1.6

INSTRUCTIONS

(1) Circle the weighting factor for each information element that is present in the incident report.

(2) Total the circled factors.

(3) If the sum is less than 10, suspend the case; otherwise, follow up the case.

(4) Weighting factors do not accumulate; i.e., if both the auto license and color are given, the total is 3.0 not 4.8.

*These values as calculated actually exceed the threshold of 10. The values provided here are conceptually simpler and make no difference in the classification of groups.

The reader must always keep in mind that the decision model shown in Table II-17 was based on the OPD's operational practices that affect case handling, and consequently the manner by which cases are cleared. Other departments may have different policies, procedures, and capabilities. Consequently, the decision model usage must be carefully considered in light of each agency's operational procedures. It can be seen that our decision model contains a number of items of information resulting from preliminary enrichment procedures routinely performed by OPD personnel. This implies that the screening process should take place after certain basic investigative procedures, e.g., license number checks, have been made.

A further important consideration is that this model should be considered a dynamic model. The individual weighted categories of investigative information should be checked throughout the investigatory phase of the case. If a suspect is then not identified, the case can realistically be set aside as unsolvable.

A description of the variables in the decision model follows:

- Named and known. If the suspect is either named at the time of report or known to either the victim or a witness, the case is to be assigned a weight of 10 and therefore should be investigated.
- Suspect previously seen. If either the victim or a witness has previously seen the suspect, although this person is unable to name the suspect, the case should be pursued.
- Evidence technician. We rarely found that physical evidence had led to the initial identification of a suspect, although it did contribute to the strengthening of a case. However, the presence of an evidence technician at the crime scene

indicated an a priori judgment on the part of a patrol officer that physical evidence was present. Evidence technicians are a limited resource and are generally called to the scene only when the likelihood of clearance appears to be good.

- Places suspect frequented named. Presence of this iable indicated that either a witness or the victim, although unable to name the suspect, was able to provide information regarding where the suspect lived or worked, or places he or she frequented, e.g., bars.
- Offender movement description. A case was found to be more likely to be solved when an auto was involved, particularly when the license number was given.
- Total physical evidenced matched. We found no particular piece of physical evidence heavily contributory to clearance. Nor did we find that the mere presence of elements of unmatched physical evidence was associated with case clearance. The match variable implies that when a suspect has been apprehended, any physical evidence found on his person matching a description obtained from a crime scene, corroborates his identity as the offender.
- Weapon used. The use of a weapon in a robbery was found to contribute slightly to clearance of the case.
- Vehicle registration. If a license number is provided, a vehicle registration check is run, and the registered owner is identified. If the vehicle has been reported stolen, this is of some investigative value. However, if the vehicle is registered to the suspect, this is of greater investigative importance.

Ninety percent of the cases in our sample were correctly grouped as cleared or uncleared by the classification function derived from the discriminant analysis and reflected by the relative scaling in the decision model. The 10% error can be explained as follows: 8 cases that were eventually cleared were classified as uncleared, and 14 cases that remained uncleared were placed into the cleared category. The 8 cleared cases categorized as uncleared might initially seem to be a cause for concern. However, we pursued a further analysis to determine how these cases were eventually solved and whether an initial screening would have resulted in their not being cleared. Of the 8 cases, 6 were solved without investigation on the part of OPD detectives:

- Two were bank robberies investigated by the FBI (all bank robberies are referred to the FBI regardless of the information available).
- In 3 cases the offender was later linked to a robbery case when he was found in possession of the property reported as stolen.
- In one case, the suspect turned himself in.

In 2 cases, investigation by OPD detectives did lead to the eventual identification of a suspect, despite the fact that little information was available initially.

Table II-18 illustrates the case disposition decision rule developed for burglary follow-up screening in a prior SRI research project. The methodology for the development of the robbery model evolved from the earlier reported research. Attention is drawn to the similarity of the variables in the two rules and their relative weights in contributing to case clearances. In both models the victim of the crime, or a witness viewing it, provides the most useful information leading to case clearance.

Table II-18

BURGLARY CASE DISPOSITION DECISION RULE

Information Element	Weighting Factor
Estimated range of time of occurrence	
Less than 1 hour	5
1 to 12 hours	1
12 to 24 hours	0.3
More than 24 hours	0
Witness's report of offense	7
On-view report of offense	1
Usable fingerprints	7
Suspect information developed-- description or name	9
Vehicle description	0.1
Other	0
Total score	

INSTRUCTIONS

(1) Circle the weighting factor for each information element that is present in the incident report.

(2) Total the circled factors.

(3) If the sum is less than or equal to 10, suspend the case; otherwise, follow up the case.

From B. Greenberg et al., "Enhancement of the Investigative Function," Vols. I and IV, Stanford Research Institute, Menlo Park, California (1972-1973).

But in the robbery cases, apart from the naming of the suspect, which also is a dominant element in burglary case clearance, vehicle information is the next-most-important information element leading to suspect ID.

The burglary model was validated by drawing additional case samples from selected participating agencies. The decision rule was used as a guide to select which cases would be cleared if followed up. We were somewhat dismayed to discover that a range of predictive accuracy in case selection varied from a high of 90% to a low of 67%. The explanation for the wide variation is simply that the agencies involved had inconsistent policies governing the criteria by which a burglary case is cleared. The highest accuracy was associated with an agency whose case clearance policies were extremely consistent with the evidence leading to suspect ID, arrest, and prosecution for the offense. The other agencies had less stringent policies.

The burglary model was independently evaluated by a study team in the OPD. The group drew a random sample of approximately 300 burglary cases, which were screened by a combination of personnel: analysts, clerks, and a police intern. The cases screened by use of the model numerical weighting scale were compared to cases actually selected by trained investigators for case follow-up or suspension.

The results of this comparison showed that the case scaling checklist methodology provided a more accurate basis on which to predict subsequent clearance. For example, in one experiment using an analyst and a clerical assistant, the checklist consistently predicted 71% of all clearances and 92% of arrests classified as cleared by arrest and prosecution. When clearances and investigations were compared, using the checklist and investigator for one mode of comparison, and the investigator only for a second mode, a clearance-to-investigation (CI) ratio of about 76% resulted in cases chosen for follow-up by both the

checklist and the investigators. In contrast, the CI ratio dropped to approximately 55% for the cases selected only by the investigators.

In the OPD experiment, both the checklist and the investigator modes of case selection produced small Type I and Type II errors, i.e., missing a case that was subsequently cleared or selecting a case for follow-up that was obviously cold. However, a number of cases that the checklist selected for follow-up were cases that the analyst thought should have been followed up but were not. In summary, the OPD experiment indicated that, for agencies having a large volume of burglary reports to handle (Oakland reported 14,000 for 1971), an appreciable amount of skilled investigator time could be spared by having a semiskilled clerk prescreen the burglary reports, using the case selection checklist methodology.*

It appears desirable that a similar series of validation tests should be conducted with the robbery decision rule. It should be noted that the predictive accuracy obtained by the OPD study was achieved on the basis of the burglary decision rule, which did not reflect the OPD case clearance policies. The surprisingly high accuracy obtained may be attributable to the OPD's policy of stringent case clearance criteria.

C. Elements of Information Associated with Patrol Case Clearances

Patrol is evidently accounting for the largest percentage of case clearance for robbery taken as a whole. Of the cleared cases, 57% were cleared in less than 8 hours, with 47% cleared within 1 hour. Our assumption is that after 8 hours there is some CID involvement. Beyond 8 hours, 41% of the cleared cases were cleared; we have no indication of the time involved for 2% of the cases (accounted for by cases in which

*Greenberg, et al., op. cit., Vol. IV, pp. 10 through 15, and Appendix B.

warrants had been issued, and others where no arrests were made, but cases were cleared-other). (See Table II-4.) Although there would be little value to developing a decision rule for patrol in responding to a robbery incident, it is useful to examine, by the methodology described above, the categories of information contributing to the success of patrol in apprehending suspects.

Table II-19 lists, in order of decreasing correlation, the significant variables derived from the bivariate correlation analysis for variables associated with strong-arm/armed robbery cases where an off-scene arrest was made less than 8 hours after the crime had been reported.

Table II-19

STRONG-ARM/ARMED ROBBERY VARIABLES
DERIVED FROM BIVARIATE CORRELATION ANALYSIS
OF OFF-SCENE ARRESTS OCCURRING IN LESS THAN 8 HOURS

Variable	Correlation Coefficient
Total number of physical evidence matches (TP/PS)*	0.5498
Evidence collected and matched (TP/PS)	0.3541
Duration of contact--victim/offender (TP/PS)	0.2809
Total amount of physical evidence (TP/PS)	0.2214
Field contact report--useful	0.2184
Offender movement	0.1922
Suspect previously seen	0.1902
Victim cooperative	0.1300
Number of reporting individuals (TP/PS)	0.1299
Suspect known	0.1180
Suspect named	0.1042
Occurrence between 0801 and 1200 hours (TP/PS)	0.1031

*(TP/PS)--Also significant for theft from person/purse snatch.

An interesting observation about the variables listed in Table II-19 (showing significance in patrol clearance) is that those concerned with evidence and with matches of evidence appear to be the most important contributing factors to suspect ID. Clothing, race, and physical descriptors appear to contribute minimally to suspect ID in a statistical sense. We can conjecture as to the factors accounting for nonappearance of these elements in our data. The officer making the arrest may have had information on the offender's description, but neglected to record it on the report. We know from practical experience that clothing descriptors have a certain time usefulness in searching for a fleeing offender. But the fact that 508 robbery reports (out of 818 cases sampled) were reported within 1 hour of occurrence and were not cleared shows that whatever descriptions were provided did not contribute heavily to the overall case clearances.

The fact that the victim provided an indication of who the offender was or could name him appears to have been significant contributory factors to case clearance. In some areas, when the victim described certain pieces of evidence and these matched those in possession of the offender, a positive ID was made. This latter fact is borne out by the high correlation coefficients associated with physical evidence. Since we collected data from the official reports of incidents, our statistical results naturally reflect the information that the reporting and investigating officers recorded.

We also looked at case clearance factors associated with theft from person/purse snatch case for off-scene arrests occurring less than 8 hours after report. Table II-20 lists, in order of decreasing correlation, the variables derived from the bivariate correlation analysis.

Table II-20

THEFT-FROM-PERSON/PURSE-SNATCH ROBBERY VARIABLES
DERIVED FROM BIVARIATE CORRELATION
ANALYSIS OF OFF-SCENE ARRESTS OCCURRING
IN LESS THAN 8 HOURS

Variable	Correlation Coefficient
Total amount of physical evidence (S/A)*	0.6178
Total number of physical evidence matches (S/A)	0.6178
Evidence collected and matched (S/A)	0.6178
Offender silent	0.5018
Offender violent	0.5018
Words spoken	0.2442
Direction of flight provided	0.2101
Offender pretended to be	0.1764
Duration of contact--victim/offender (S/A)	0.1724
Occurrence between 0801 and 1200 hours (S/A)	0.1715
Places suspect frequented named	0.1637
Number of reporting individuals (S/A)	0.1543
Person attacked	0.1285
Height of offender given	0.1103
Black offender/white victim	0.1043
Victim cooperative	0.1022
Time between occurrence and report	0.1002

*(S/A)--Also significant for strong-arm/armed robbery.

Table I-4 indicates that 13 cases of theft from person were cleared and 3 were cleared-other. There were 10 cleared purse snatch cases. Of the 13 total clearances for theft from person, 8 were cleared by arrest within 1 hour. Although the clearance percentages are high for the less-than-8-hour category--62% for theft from person and 70% for purse snatch--the overall clearance rate for these two categories is low: 14.5% and 9.7%, respectively. If we use Table II-3 as an indicator of the overall robbery clearance rate as a function of time between

occurrence and report, we conclude that nearly 72% of all robberies are reported within 1 hour, but only 13.6% are cleared. We can only conjecture from these data whether the clearance rate is coupled to the rapidity of patrol response or whether the quality of data greatly affects the successful apprehension of the suspect. Unfortunately, we could not capture a potentially useful piece of information: the time of arrival of a police officer at the scene. The incident report does not show this time factor. The complaint-dispatch card shows the time the complaint was received at the OPD Communications desk. But a major effort would be entailed to link this information to patrol response and time of arrival on scene.

In summary, the best inference we can draw from the less-than-8-hour clearances is that Tables II-19 and -20 show that clearances are based on the victim's providing some indication of knowing the offender and then the patrol officer quickly responding to pick him up (within 1 hour) and finding him in possession of some form of identifiable physical evidence.

CHAPTER III. ASSAULT WITH A DEADLY WEAPON

Assault with a deadly weapon (ADW) differs from the other felonies analyzed in that most of the cases were cleared. As shown in Table I-7, 49.9% of the cases were classified cleared, and 35.6% were classified cleared-other, for a total clearance rate of 85.5%.

ADW was selected for analysis for two principal reasons:

- ADW is part of the larger category of felony assault, which is one of the Part I crimes versus persons. We decided to concentrate our efforts on ADW because the ADW felonies are by far the most numerous within the category of felony assault.*
- We were interested in investigating the criminal histories of persons suspected of committing ADWs to ascertain any previous involvement in other criminal activity.

In this section we first present a number of interesting cross tabulations prepared from our data and then discuss the investigative inferences regarding case clearance that can be drawn from the data.

The predominant characteristic of the ADW cases was that in 280 (69%) of the total of 413 cases the victims knew the offenders (Table III-1). Table III-2 shows the races of the offenders and victims in the cases where they were known to each other. Persons of the same race were involved in 239 (85%) of the 280 cases; in 222 of these cases (79% of the

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*Felony assault also includes "assault with intent to murder," "shooting at dwelling," and "child or wife beating." In California, the penal code for ADW is P.C. 245.

Table III-1

ADW: CLEARANCE BY SUSPECT KNOWN

Status	Not Known	Known to Victim	Known to Witness	Known to Police	Known to Other Person	Total
Cleared						
Count	54	140	9	1	1	206
% of row	26.1%	68.2%	4.3%	0.7%	0.7%	
% of column	45.1	50.1	81.7	100.0	100.0	
% of total	13.0	34.0	2.2	0.4	0.4	49.9%
Cleared-Other						
Count	14	133	0	0	0	147
% of row	9.8%	90.2%	0%	0%	0%	
% of column	12.1	47.4	0	0	0	
% of total	3.5	32.1	0	0	0	35.6%
Uncleared						
Count	51	7	2	0	0	60
% of row	85.0%	11.7%	3.3%	0%	0%	
% of column	42.8	2.5	18.3	0	0	
% of total	12.3	1.7	0.5	0	0	14.5%
Total Count	119	280	11	1	1	413
% of Cases	28.8%	67.8%	2.6%	0.4%	0.4%	100.0%

280 cases) the victims and offenders were black. Table III-3 shows the races of the offenders and victims in the 133 cases where they were not known to each other. Persons of the same race were involved in 65 (49%) of the 133 cases. Thus, when a person was assaulted by a person of the same race, they were more likely to be known to each other than when the victim and offender were of different races.

Table III-4 shows the time of occurrence of the ADWs. As might be expected, they were concentrated in the late night and early morning hours, with 26.3% occurring between 8 p.m. and midnight, and another 21.2% between midnight and 4 a.m.

Table III-2

ADW: OFFENDER'S RACE BY VICTIM'S RACE--
OFFENDER KNOWN TO VICTIM

	Victim							
Offender	Not Known	White	Black	Mexican	American Indian	Japanese	Other	Total
Not known								
Count	0	0	2	0	0	0	0	2
% of row	0%	0%	100.0%	0%	0%	0%	0%	
% of column	0	0	1.1	0	0	0	0	
% of total	0	0	0.9	0	0	0	0	0.9%
White								
Count	0	7	6	1	0	0	1	15
% of row	0%	46.5%	40.1%	6.7%	0%	0%	6.7%	
% of column	0	23.3	2.6	13.5	0	0	28.8	
% of total	0	2.5	2.1	0.4	0	0	0.4	5.3%
Black								
Count	3	18	222	1	0	0	1	245
% of row	1.2%	7.4%	90.3%	0.6%	0%	0%	0.4%	
% of column	66.7	61.6	96.3	19.9	0	0	28.8	
% of total	1.1	6.5	79.2	0.5	0	0	0.4	87.6%
Mexican								
Count	0	3	0	5	0	0	0	8
% of row	0%	37.8%	0%	62.2%	0%	0%	0%	
% of column	0	10.1	0	66.5	0	0	0	
% of total	0	1.1	0	1.8	0	0	0	2.8%
American Indian								
Count	1	1	0	0	3	0	0	6
% of row	23.1%	23.1%	0%	0%	53.9%	0%	0%	
% of column	33.3	5.0	0	0	100.0	0	0	
% of total	0.5	0.5	0	0	1.2	0	0	2.3%
Japanese								
Count	0	0	0	0	0	1	0	1
% of row	0%	0%	0%	0%	0%	100.0%	0%	
% of column	0	0	0	0	0	100.0	0	
% of total	0	0	0	0	0	0.5	0	0.5%
Other								
Count	0	0	0	0	0	0	1	1
% of row	0%	0%	0%	0%	0%	0%	100.0%	
% of column	0	0	0	0	0	0	42.5	
% of total	0	0	0	0	0	0	0.5	0.5%
Total Count	4	30	230	7	3	1	3	280
% of Cases	1.6%	10.6%	82.2%	2.6%	1.2%	0.5%	1.2%	100.0%

Table III-3

ADW: OFFENDER'S RACE BY VICTIM'S RACE--
OFFENDER NOT KNOWN TO VICTIM

	Victim					
Offender	Not Known	White	Black	Mexican	American Indian	Total
Not known						
Count	0	4	5	1	0	10
% of row	0%	40.0%	50.0%	10.0%	0%	
% of column	0	7.7	8.5	9.6	0	
% of total	0	3.0	3.8	0.8	0	7.5%
White						
Count	3	13	1	1	1	20
% of row	14.9%	65.1%	7.5%	7.5%	5.1%	
% of column	27.3	24.9	2.5	14.2	100.0	
% of total	2.2	9.7	1.1	1.1	0.8	14.9%
Black						
Count	6	32	50	6	0	95
% of row	6.8%	34.1%	52.8%	6.3%	0%	
% of column	59.1	62.6	84.8	57.1	0	
% of total	4.8	24.3	37.6	4.5	0	71.3%
Mexican						
Count	0	0	1	2	0	3
% of row	0%	0%	42.5%	57.5%	0%	
% of column	0	0	2.5	19.2	0	
% of total	0	0	1.1	1.5	0	2.6%
American Indian						
Count	1	1	0	0	0	3
% of row	50.0%	50.0%	0%	0%	0%	
% of column	13.6	2.9	0	0	0	
% of total	1.1	1.1	0	0	0	2.2%
Other						
Count	0	1	1	0	0	2
% of row	0%	50.0%	50.0%	0%	0%	
% of column	0	1.9	1.7	0	0	
% of total	0	0.8	0.8	0	0	1.5%
Total Count	11	52	59	10	1	133
% of Cases	8.1%	38.9%	44.4%	7.8%	0.8%	100.0%

Table III-4

ADW: CLEARANCE BY TIME OF OCCURRENCE

Status	Unknown Time	0001-0400 Hours	0401-0800 Hours	0801-1200 Hours	1201-1600 Hours	1601-2000 Hours	2001-2400 Hours	Total
Cleared								
Count	0	34	7	19	47	42	57	206
% of row	0%	16.3%	3.6%	9.1%	22.8%	20.4%	27.8%	
% of column	0	38.3	30.7	51.3	62.1	53.1	52.6	
% of total	0	8.1	1.8	4.5	11.4	10.2	13.9	49.9%
Cleared-Other								
Count	0	35	14	15	23	25	35	147
% of row	0%	23.8%	9.4%	10.1%	15.4%	17.1%	24.1%	
% of column	0	40.0	57.0	40.5	30.0	31.8	32.6	
% of total	0	8.5	3.3	3.6	5.5	6.1	8.6	35.6%
Uncleared								
Count	1	19	3	3	6	12	16	60
% of row	1.7%	31.7%	5.0%	5.0%	10.0%	20.0%	26.7%	
% of column	100.0	21.7	12.4	8.2	7.9	15.2	14.7	
% of total	0.2	4.6	0.7	0.7	1.5	2.9	3.9	14.5%
Total Count	1	88	24	37	76	79	109	413
% of Cases	0.2%	21.2%	5.9%	8.9%	18.3%	19.2%	26.3%	100.0%

As Table III-5 shows, the ADWs tended to be reported to the police promptly; 71.3% were reported within 1 hour after occurrence, and another 9.0% between 1 and 2 hours after occurrence. Few reports were made beyond one day (19 cases).

Approximately half the crimes occurred in buildings; the remainder took place in the street or in a park or recreational area (see Table III-6). In the case of crime location, we note a difference among the three clearance categories, with 53% of the cleared cases, 55.7% of the cleared-other cases and only 33.3% of the uncleared cases occurring in a building. A similar difference is shown in Table III-7, which gives the facility category where a crime took place. Although 47% of the cleared cases and 54.4% of the cleared-other cases took place in residences, only one-fourth of the uncleared cases occurred in residential facilities. Thus a significantly higher number of cleared than uncleared cases occurred inside, with the uncleared cases being predominantly street crimes.

Table III-8 shows the weapons used in the ADWs. The most common weapon was a handgun: 33.4% of the cases involved handguns. Another 23.4% involved knives, and 10.9% involved the use of a blunt instrument. In 24.3% of the cases the weapons used were classified as "other." This typically was bodily force, because an assault can be classified as an ADW when the suspect is sufficiently stronger than the victim to inflict on him severe bodily harm. Rifles, shotguns, and alleged guns accounted for only 8 of the 413 ADWs, with the weapon used either unknown or not indicated in 25 cases.

Almost four out of five ADWs were committed by a single offender (see Table III-9). This percentage is lower for the uncleared cases, where three out of five crimes involved one offender and another 21.7% involved two offenders. In only 28 out of the total sample of 413 cases were more than two offenders involved.

Table III-5

ADW: CLEARANCE BY TIME BETWEEN OCCURRENCE AND REPORT

Status	Unknown Time	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	4 to 8 Hours	8 to 12 Hours	12 to 24 Hours	1 to 2 Days	2 to 4 Days	4 to 7 Days	7 to 10 Days	10 to 14 Days	14 to 21 Days	Total
Cleared														
Count	1	153	13	8	6	3	10	1	2	3	0	0	1	206
% of row	0.7%	74.3%	6.5%	4.1%	3.1%	1.7%	5.1%	0.7%	1.2%	1.4%	0%	0.5%	0.7%	
% of column	24.9	51.9	35.0	56.7	54.1	63.5	45.8	30.0	55.3	39.9	0	100.0	100.0	
% of total	0.4	37.0	3.2	2.0	1.6	0.8	2.5	0.4	0.6	0.7	0	0.2	0.4	49.9%
Cleared-Other														
Count	3	103	15	3	4	0	11	3	0	3	0	0	0	147
% of row	2.3%	69.8%	10.1%	2.3%	3.0%	0%	7.7%	2.3%	0%	2.3%	0%	0%	0%	
% of column	58.2	34.8	39.8	23.2	37.5	0	49.8	70.0	0	46.6	0	0	0	
% of total	0.8	24.8	3.6	0.8	1.1	0	2.7	0.8	0	0.8	0	0	0	35.6%
Uncleared														
Count	1	39	9	3	1	2	1	0	2	1	1	0	0	60
% of row	1.7%	65.0%	15.0%	5.0%	1.7%	3.3%	1.7%	0%	3.3%	1.7%	1.7%	0%	0%	
% of column	16.9	13.2	24.2	20.2	8.4	36.5	4.4	0	44.7	13.5	100.0	0	0	
% of total	0.2	9.4	2.2	0.7	0.2	0.5	0.2	0	0.5	0.2	0.2	0	0	14.5%
Total Count	6	295	37	15	12	5	23	5	4	7	1	1	1	413
% of Cases	1.4%	71.3%	9.0%	3.6%	2.9%	1.3%	5.5%	1.2%	1.1%	1.8%	0.2%	0.2%	0.4%	100.0%

Table III-6

ADW: CLEARANCE BY LOCATION OF CRIME

Status	Unknown	Street	Park or Recreational Area	Building	Total
Cleared					
Count	6	87	4	109	206
% of row	2.9%	42.2%	1.9%	53.0%	
% of column	100.0	45.5	79.8	51.7	
% of total	1.4	21.1	1.0	26.4	49.9%
Cleared-Other					
Count	0	65	0	82	147
% of row	0%	44.3%	0%	55.7%	
% of column	0	34.1	0	38.8	
% of total	0	15.8	0	19.8	35.6%
Uncleared					
Count	0	39	1	20	60
% of row	0%	65.0%	1.7%	33.3%	
% of column	0	20.4	20.2	9.5	
% of total	0	9.4	0.2	4.8	14.5%
Total Count	6	191	5	211	413
% of Cases	1.4%	46.3%	1.2%	51.1%	100.0%

Table III-7

ADW: CLEARANCE BY FACILITY CATEGORY

Status	Unknown	Residential	Commercial	Public	Transportation	Total
Cleared						
Count	75	97	16	7	11	206
% of row	36.5%	47.0%	7.7%	3.6%	5.3%	
% of column	47.9	50.5	49.8	100.0	43.1	
% of total	18.2	23.4	3.8	1.8	2.6	49.9%
Cleared-Other						
Count	47	80	9	0	11	147
% of row	31.9%	54.4%	6.1%	0%	7.7%	
% of column	29.8	41.7	28.1	0	45.0	
% of total	11.3	19.3	2.2	0	2.7	35.6%
Uncleared						
Count	35	15	7	0	3	60
% of row	58.3%	25.0%	11.7%	0%	5.0%	
% of column	22.3	7.8	22.1	0	11.9	
% of total	8.5	3.6	1.7	0	0.7	14.5%
Total Count	157	192	32	7	25	413
% of Cases	38.0%	46.4%	7.7%	1.8%	6.1%	100.0%

Table III-8

ADW: CLEARANCE BY WEAPON USED

Status	No Weapon	Handgun	Rifle	Shotgun	Alleged Gun	Knife	Blunt Instrument	Other Weapon	Unknown Weapon	Total
Cleared										
Count	12	61	4	2	0	45	23	59	0	206
% of row	6.0%	29.4%	1.9%	1.2%	0%	21.8%	11.1%	28.6%	0%	
% of column	54.1	44.0	100.0	71.2	0	46.6	50.6	58.6	0	
% of total	3.0	14.7	1.0	0.6	0	10.9	5.5	14.3	0	49.9%
Cleared-Other										
Count	3	61	0	0	0	36	18	28	0	147
% of row	2.3%	41.6%	0%	0%	0%	24.8%	12.4%	18.8%	0%	
% of column	15.1	44.4	0	0	0	37.8	40.5	27.5	0	
% of total	0.8	14.8	0	0	0	8.8	4.4	6.7	0	35.6%
Uncleared										
Count	7	16	0	1	1	15	4	14	2	60
% of row	11.7%	26.7%	0%	1.7%	1.7%	25.0%	6.7%	23.3%	3.3%	
% of column	30.7	11.6	0	28.8	100.0	15.6	8.9	13.9	100.0	
% of total	1.7	3.9	0	0.2	0.2	3.6	1.0	3.4	0.5	14.5%
Total Count	23	138	4	3	1	96	45	100	2	413
% of Cases	5.5%	33.4%	1.0%	0.8%	0.2%	23.4%	10.9%	24.3%	0.5%	100.0%

Table III-9

ADW: CLEARANCE BY NUMBER OF OFFENDERS

Status	Not Known	One	Two	Three	Four	Five	Total
Cleared							
Count	1	173	24	3	4	1	206
% of row	0.5%	84.1%	11.6%	1.4%	1.9%	0.5%	
% of column	33.3	52.9	44.0	18.1	44.2	33.3	
% of total	0.2	42.0	5.8	0.7	1.0	0.2	49.9%
Cleared-Other							
Count	0	118	17	10	0	1	147
% of row	0%	80.5%	11.7%	7.0%	0%	0.7%	
% of column	0	36.1	31.9	63.5	0	33.3	
% of total	0	28.7	4.2	2.5	0	0.2	35.6%
Uncleared							
Count	2	36	13	3	5	1	60
% of row	3.3%	60.0%	21.7%	5.0%	8.3%	1.7%	
% of column	66.7	11.0	24.0	18.4	55.8	33.3	
% of total	0.5	8.7	3.1	0.7	1.2	0.2	14.5%
Total Count	3	328	54	16	9	3	413
% of Cases	0.7%	79.3%	13.1%	3.9%	2.2%	0.7%	100.0%

Not only did ADWs tend to be reported promptly, but where an arrest was made, it was generally made within 1 hour of the time of report (82% of the arrests). Table III-10 gives the time between the report of the crime and the arrest of a suspect and shows whether a suspect's name had been given to the police at the time of report. (Suspect named is broken down into: real name given, also known as (AKA) given, partial name given, and nickname given.) Arrests were made in 55 cases where the suspect had not been named. However, 49 of these arrests occurred within 1 hour of the report of the offense. Clearly, ADW can be characterized as a crime generally committed by a person known to the victim. When an unnamed suspect was arrested, the arrest was generally within 1 hour of the report of the crime.

Bivariate correlations were run with 105 variables. The cleared and cleared-other cases formed one group, and the uncleared cases were another group. Thus the closer the bivariate correlation is to one, the more closely associated with clearance is the variable. Listed in Table III-11 are the variables showing at least a 0.15 correlation with clearance, in order of descending correlation (i.e., the first has the highest association with clearance).

Only two arrests were made after 8 hours from the time of report where a suspect had not been named (after 8 hours it is reasonable to assume that patrol's input had ended and an investigator had received control of the case). Consequently, it was decided that a follow-up investigation decision rule could not realistically be constructed for ADW.

Although a follow-up decision rule was not constructed, a discriminant analysis was run to illustrate the variables contributing to clearing ADWs. All variables with a correlation coefficient of at least 0.1 were included. Cases were excluded where an arrest was made less than 8 hours after report. Cases where an arrest was made more than 8 hours after report and

Table III-10

ADW: SUSPECT NAMED BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within One Hour	1 to 2 Hours	2 to 4 Hours	4 to 8 Hours	12 to 24 Hours	2 to 4 Days	4 to 7 Days	7 to 10 Days	10 to 14 Days
Not named										
Count	60	49	3	1	0	1	1	0	0	0
% of row	52.4%	42.4%	2.6%	0.9%	0%	0.9%	0.9%	0%	0%	0%
% of column	28.3	29.9	33.3	22.5	0	18.3	33.3	0	0	0
% of total	14.6	11.8	0.7	0.2	0	0.2	0.2	0	0	0
Real Name										
Count	140	109	6	3	1	4	2	1	2	1
% of row	50.5%	39.3%	2.1%	1.2%	0.5%	1.6%	0.7%	0.5%	0.7%	0.5%
% of column	65.9	66.8	66.7	77.5	100.0	81.7	66.7	100.0	100.0	100.0
% of total	34.0	26.4	1.4	0.8	0.4	1.1	0.5	0.4	0.5	0.4
AKA-Also Known As										
Count	0	1	0	0	0	0	0	0	0	0
% of row	0%	100.0%	0%	0%	0%	0%	0%	0%	0%	0%
% of column	0	0.9	0	0	0	0	0	0	0	0
% of total	0	0.4	0	0	0	0	0	0	0	0
Partial Name										
Count	8	1	0	0	0	0	0	0	0	0
% of row	66.7%	12.4%	0%	0%	0%	0%	0%	0%	0%	0%
% of column	3.7	0.9	0	0	0	0	0	0	0	0
% of total	1.9	0.4	0	0	0	0	0	0	0	0
Nickname										
Count	4	2	0	0	0	0	0	0	0	0
% of row	64.4%	35.6%	0%	0%	0%	0%	0%	0%	0%	0%
% of column	2.1	1.5	0	0	0	0	0	0	0	0
% of total	1.1	0.6	0	0	0	0	0	0	0	0
Total Count	213	163	9	4	1	5	3	1	2	1
% of Cases	51.4%	39.6%	2.1%	1.1%	0.4%	1.3%	0.7%	0.4%	0.5%	0.4%

Table III-11

ADW VARIABLES DERIVED FROM
BIVARIATE CORRELATION ANALYSIS

Variable	Correlation Coefficient
Suspect known	0.5112
Suspect named at time of report	0.4948
Words spoken by offender	0.4279
Suspect previously seen	0.2870
Offender and victim of same race	0.2547
Black offender/black victim	0.2533
Weapons as evidence	0.2477
Victim invited offender in	0.2341
Black victim	0.2306
Suspect's associates named or indicated	0.2297
Places suspect frequented named	0.2081
Weapon match	0.1996
Offender violent	0.1963
One offender	0.1809
Crime location--building	0.1540

cleared and cleared-other cases where no arrest was made were considered as one group; the uncleared cases formed the other group. The eight variables that exhibited the largest discriminant function coefficients are:

- Suspect named (more than twice the size of the next coefficient)
- License number given
- Suspect known
- Black victim/black offender
- Words spoken by offender

- Weapons as evidence and match
- Victim invited offender in
- Suspect previously seen.

These variables, although not suitable for the construction of a decision rule, nevertheless indicate the type of information most likely to contribute to ADW case clearances.

CHAPTER IV. CAR THEFT

Motor vehicle theft was the highest-volume crime analyzed. In the three-month sample period, there were 1187 motor vehicle thefts (California Vehicle Code 10851). The crime also showed the lowest clearance rate of any of the crimes investigated, with 8.8% classified cleared and another 3.2% classified as cleared-other (see Table I-8).

The reasons for this low clearance rate are clear. In the other crimes coded, there is at least a brief offender/victim confrontation. In car theft cases, the victim generally has no idea who stole his vehicle nor, in many cases, does he know the time when it was stolen. This leaves the police investigator with very little information on which to base his investigation.

In response to these issues, the OPD procedure for handling cases of motor vehicle theft is different from that for other felony crimes. The report is taken over the telephone by a police technician rather than by a patrol officer at the scene, unless the crime is "in progress." Then efforts are concentrated on recovering the vehicle rather than on apprehending an offender. If the vehicle is occupied when it is recovered, the occupants are obviously booked for motor vehicle theft.

Because of this procedure, the construction of a case follow-up decision rule for motor vehicle theft was not technically feasible. In this chapter, however, we present a number of interesting cross tabulations and correlations gleaned from our data.

Unlike the ADW cases, where over 71% of the offenses were reported to the police within 1 hour (see Chapter III), only 12.3% of the car thefts were reported within an hour of occurrence (see Table IV-1).

Table IV-1

CAR THEFT: CLEARANCE BY TIME BETWEEN OCCURRENCE AND REPORT

Status	Unknown Time	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	4 to 8 Hours	8 to 12 Hours	12 to 24 Hours	1 to 2 Days	2 to 4 Days	4 to 7 Days	30 to 45 Days	Total
Cleared												
Count	21	32	9	10	10	8	6	5	1	1	1	104
% of row	20.2%	30.8%	8.7%	9.6%	9.6%	7.7%	5.8%	4.8%	1.0%	1.0%	1.0%	
% of column	27.4	21.9	7.4	6.4	6.0	3.4	3.8	8.8	2.6	3.4	50.0	
% of total	1.8	2.7	0.8	0.8	0.8	0.7	0.5	0.4	0.1	0.1	0.1	8.8%
Cleared-Other												
Count	7	3	4	3	6	3	2	4	4	1	1	38
% of row	18.4%	7.9%	10.5%	7.9%	15.8%	7.9%	5.3%	10.5%	10.5%	2.6%	2.6%	
% of column	9.1	2.1	3.3	1.9	3.6	1.3	1.3	7.1	10.2	3.4	50.0	
% of total	0.6	0.3	0.3	0.3	0.5	0.3	0.2	0.3	0.3	0.1	0.1	3.2%
Uncleared												
Count	49	111	109	143	150	225	150	48	34	27	0	1,045
% of row	4.7%	10.6%	10.4%	13.7%	14.3%	21.5%	14.3%	4.6%	3.3%	2.6%	0%	
% of column	63.5	76.0	89.3	91.7	90.4	95.3	94.9	84.1	87.2	93.2	0	
% of total	4.1	9.3	9.2	12.0	12.6	18.9	12.6	4.0	2.9	2.3	0	88.0%
Total Count	77	146	122	156	166	236	158	57	39	29	2	1,187
% of Cases	6.5%	12.3%	10.3%	13.1%	14.0%	19.9%	13.3%	4.8%	3.3%	2.5%	0.2%	100.0%

However, nearly 83% of the car theft cases were reported within the first 24 hours after occurrence.

As has been noted, the time of occurrence of the car theft is also often in doubt (see Table IV-2). No information regarding time of occurrence was given in 3.4% of the cases. In another 72.4% of the cases, the time of occurrence was given as a range of time, e.g., between 1600 and 2400 hours. In only 24.2% of the cases was the victim or a witness able to state exactly when the theft took place. However, the time of occurrence was certain in 37.5% of the cleared cases and in 39.5% of the cleared-other cases.

Table IV-3 is presented to illustrate the paucity of information available in the cases. In 84.5% of the cases, the sex of the offender was not known at the time of report. However, this fact was unknown in only 25% of the cleared cases and 10.5% of the cleared-other cases, which indicates that the ability to describe a suspect contributes to clearing the case.

A lower percentage of the suspects in the car theft cases had previously been seen, known, or named than in the other felonies investigated (see Tables IV-4, -5, and -6).* Nevertheless, these variables were important contributors to clearance, with the suspect having previously been seen in 22.1% of the cleared cases and 55.3% of the cleared-other cases. The suspect was known in 19.2% of the cleared and 63.1% of the cleared-other cases and was named in 21.2% of the cleared and 65.9% of the cleared-other cases.

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*The 20 uncleared cases where a suspect was named might seem puzzling. Actually, they are 3 cases in our coding (weighted to 20) where a person gave a name, presumably his own, when renting a car which he subsequently neglected to return. The cars were recovered, but the suspects were no longer in them.

Table IV-2

CAR THEFT: CLEARANCE BY CERTAINTY OF TIME OF OCCURRENCE

Status	No Time	Certain Time	Uncertain Time	Total
Cleared				
Count	14	39	51	104
% of row	13.5%	37.5%	49.0%	
% of column	34.6	13.6	5.9	
% of total	1.2	3.3	4.3	8.8%
Cleared-Other				
Count	6	15	17	38
% of row	15.8%	39.5%	44.7%	
% of column	14.8	5.2	2.0	
% of total	0.5	1.3	1.4	3.2%
Uncleared				
Count	20	234	791	1,045
% of row	2.0%	22.3%	75.7%	
% of column	50.5	81.2	92.1	
% of total	1.7	19.7	66.6	88.0%
Total Count	40	288	859	1,187
% of cases	3.4%	24.2%	72.4%	100.0%

Table IV-3

CAR THEFT: CLEARANCE BY OFFENDER SEX

Status	Not Known	Female	Male	Total
Cleared				
Count	26	4	74	104
% of row	25.0%	3.8%	72.1%	
% of column	2.8	12.7	31.7	
% of total	2.2	0.3	6.2	8.8%
Cleared-Other				
Count	4	6	28	38
% of row	10.5%	15.8%	73.7%	
% of column	0.4	19.1	12.0	
% of total	0.3	0.5	2.4	3.2%
Uncleared				
Count	892	21	131	1,045
% of row	85.4%	2.1%	12.6	
% of column	96.7	68.2	56.3	
% of total	75.2	1.8	11.1	88.0%
Total Count	922	31	233	1,187
% of Cases	77.7%	2.6%	19.7%	100.0%

Table IV-4

CAR THEFT: CLEARANCE BY SUSPECT PREVIOUSLY SEEN

Status	Not Previously Seen	Seen by Victim	Seen by Witness	Seen by Citizen Informant	Seen by Police	Total
Cleared						
Count	81	15	7	0	1	104
% of row	77.9%	14.4%	6.7%	0%	1.0%	
% of column	7.4	24.5	29.6	0	100.0	
% of total	6.8	1.3	0.6	0	0.1	8.8%
Cleared-Other						
Count	17	19	2	0	0	38
% of row	44.7%	50.0%	5.3%	0%	0%	
% of column	1.6	31.0	8.5	0	0	
% of total	1.4	1.6	0.2	0	0	3.2%
Uncleared						
Count	996	27	15	7	0	1,045
% of row	95.3%	2.6%	1.4%	0.7%	0%	
% of column	91.0	44.5	61.9	100.0	0	
% of total	83.9	2.3	1.2	0.6	0	88.0%
Total Count	1,094	61	24	7	1	1,187
% of Cases	92.2%	5.2%	2.0%	0.6%	0.1%	100.0%

Table IV-5

CAR THEFT: CLEARANCE BY SUSPECT KNOWN

Status	Not Known	Known to Victim	Known to Witness	Known to Police	Total
Cleared					
Count	84	17	2	1	104
% of row	80.8%	16.3%	1.9%	1.0%	
% of column	7.4	36.3	18.5	100.0	
% of total	7.1	1.4	0.2	0.1	8.8%
Cleared-Other					
Count	14	23	1	0	38
% of row	36.8%	60.5%	2.6%	0%	
% of column	1.2	49.1	9.3	0	
% of total	1.2	1.9	0.1	0	3.2%
Uncleared					
Count	1,030	7	8	0	1,045
% of row	98.6%	0.7%	0.7%	0%	
% of column	91.3	14.5	72.2	0	
% of total	86.8	0.6	0.7	0	88.0%
Total Count	1,128	47	11	1	1,187
% of Cases	95.1%	3.9%	0.9%	0.1%	100.0%

Table IV-6

CAR THEFT: CLEARANCE BY SUSPECT NAMED

Status	Not Named	Real Name	AKA-Also Known As	Partial Name	Nickname	Total
Cleared						
Count	82	20	0	2	0	104
% of row	78.8%	19.2%	0%	1.9%	0%	
% of column	7.3	32.6	0	50.0	0	
% of total	6.9	1.7	0	0.2	0	8.8%
Cleared-Other						
Count	13	21	2	2	0	38
% of row	34.2%	55.3%	5.3%	5.3%	0%	
% of column	1.2	34.2	100.0	50.0	0	
% of total	1.1	1.8	0.2	0.2	0	3.2%
Uncleared						
Count	1,024	20	0	0	1	1,045
% of row	97.9%	2.0%	0%	0%	0.1%	
% of column	91.5	33.3	0	0	100.0	
% of total	86.2	1.7	0	0	0.1	88.0%
Total Count	1,119	61	2	4	1	1,187
% of Cases	94.2%	5.2%	0.2%	0.3%	0.1%	100.0%

Because of the procedures followed by the OPD--an arrest is made if the car is occupied when it is recovered--the time between report and arrest is more scattered than for the other felonies investigated (Table IV-7). Of the 107 arrests, 33 occurred within 1 hour of the time of report of the theft; but another 21 occurred 1 to 2 days after the time of report, and 11 occurred within 2 to 4 days after the time of report. Two arrests occurred in each of the following categories: 10 to 14 days after report; 14 to 21 days after report; and 21 to 30 days after report. One arrest occurred more than 45 days after report.

As mentioned above, the priority of the OPD in dealing with car theft cases is to recover the car (see Table IV-8). During the sampling period, 94.4% of the vehicles were recovered. This percentage includes 101 recoveries where cases were cleared, 37 recoveries where cases were cleared-other, and 983 recoveries where there were no clearances.

Despite our belief that it was not possible to construct a follow-up decision rule, we did run both bivariate correlations and a discriminant analysis with the motor vehicle theft cases to determine the relative importance of each variable in contributing to clearance of the cases.

The "8 hours after time of report rule" was not followed in the car theft cases, because patrol typically is not involved in these cases, which are usually reported by telephone. Thus the sample was considered as a whole. The variables in Table IV-9 had a correlation coefficient of at least 0.15 with clearance (cleared and cleared-other combined). Only the variables where we had data in most of the cases were included (i.e., where there was not an overwhelming number of missing values, as was often the case). Again, they are listed in order of descending correlation with clearance.

A discriminant analysis was run with these variables, as well as with several others having even weaker correlation with clearance. (A cut-off of 0.1 was used.) The nine variables found to have the largest

Table IV-7

CAR THEFT: CLEARANCE BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	4 to 8 Hours	8 to 12 Hours	12 to 24 Hours	1 to 2 Days	2 to 4 Days	4 to 7 Days	10 to 14 Days	14 to 21 Days	21 to 30 Days	45 Plus Days	Total
Cleared															
Count	13	30	2	3	7	4	5	19	9	5	2	2	2	1	104
% of row	12.5%	28.8%	1.9%	2.9%	6.7%	3.8%	4.8%	18.3%	8.7%	4.8%	1.9%	1.9%	1.9%	1.0%	
% of column	1.2	90.9	50.0	100.0	70.0	80.0	83.3	90.5	81.8	71.4	100.0	100.0	100.0	100.0	
% of total	1.1	2.5	0.2	0.3	0.6	0.3	0.4	1.6	0.8	0.4	0.2	0.2	0.2	0.1	8.8%
Cleared-Other															
Count	22	3	2	0	3	1	1	2	2	2	0	0	0	0	38
% of row	57.9%	7.9%	5.3%	0%	7.9%	2.6%	2.6%	5.3%	5.3%	5.3%	0%	0%	0%	0%	
% of column	2.0	9.1	50.0	0	30.0	20.0	16.7	9.5	18.2	28.6	0	0	0	0	
% of total	1.9	0.3	0.2	0	0.3	0.1	0.1	0.2	0.2	0.2	0	0	0	0	3.2%
Uncleared															
Count	1,045	0	0	0	0	0	0	0	0	0	0	0	0	0	1,045
% of row	100.0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
% of column	96.8	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of total	88.0	0	0	0	0	0	0	0	0	0	0	0	0	0	88.0%
Total Count	1,080	33	4	3	10	5	6	21	11	7	2	2	2	1	1,187
% of Cases	91.0	2.8%	0.3%	0.3%	0.8%	0.4%	0.5%	1.8%	0.9%	0.6%	0.2%	0.2%	0.2%	0.1%	100.0%

Table IV-8

CAR THEFT: CLEARANCE BY CAR RECOVERED

Status	Not Recovered	Recovered	Total
Cleared			
Count	3	101	104
% of row	2.9%	97.1%	
% of column	4.5	9.0	
% of total	0.3	8.5	8.8%
Cleared-Other			
Count	1	37	38
% of row	2.6%	97.4%	
% of column	1.5	3.3	
% of total	0.1	3.1	3.2%
Uncleared			
Count	62	983	1,045
% of row	6.0%	94.0%	
% of column	94.0	87.7	
% of total	5.2	82.8	88.0%
Total Count	66	1,121	1,187
% of Cases	5.6%	94.4%	100.0%

Table IV-9

CAR THEFT VARIABLES DERIVED FROM
BIVARIATE CORRELATION ANALYSIS

Variable	Correlation Coefficient
Suspect description developed (positive if race, sex, or age given)	0.5070
Suspect known	0.4431
Suspect named	0.4323
Suspect previously seen	0.3185
On-view report of crime	0.2964
Suspect associates named/indicated	0.2741
Vehicle registration check, useful lead	0.2738
Offender invited suspect in (typically offender took advantage of owner)	0.2728
Facility category-residential	0.2584
Places suspect frequented named	0.2277
Fingerprint match	0.1934
Direction of flight provided	0.1944
Crime lab report	0.1764
Time between occurrence and report less than one hour	0.1757
Time of occurrence certain	0.1527

discriminant function coefficients are: suspect description developed; vehicle registration check useful; on-view report of offense; suspect named; time of occurrence between 0400 and 0800 hours; suspect known; time between occurrence and report (a negative coefficient indicating that the longer the time, the lower the probability of clearance); other physical evidence present; and victim invited offender in.

These variables, while not suitable for the construction of a decision rule because of the lack of follow-up investigation in the Department, nevertheless indicate that the ability to develop any information regarding a suspect is the key to solving a car theft case. In the absence of such information, apprehension is largely a random event.

CHAPTER V. RAPE

Rape was the lowest-volume crime category that we analyzed. In the three-month sample there were a total of 65 reported cases; all were coded for computer processing. Rape was chosen as a felony for analysis for various reasons:

- It is an FBI Part I crime against person.
- It is a traumatic experience for the victim.
- It is one of the most difficult crimes to prosecute.

The crime clearance classification for our analysis is shown in Table V-1. It can be seen that approximately 21% of the forcible rape cases were cleared. The same percentage of the forcible rape cases were classified cleared-other under our criteria. The total clearance rate for forcible rape was 42.8%. For attempted rape, approximately 30% of the cases were classified cleared, and 13% were cleared-other. The total clearance rate for attempted rape was 43.4%.

Differences between our classification and the case disposition taken by the OPD have been shown in Table I-6. This table has shown that we classified nearly 25% of the reported cases as cleared and nearly 19% of the reported cases as cleared-other. This totals to about 43% overall clearance. On the other hand, by using the OPD classification procedure, 60% overall clearance would be shown.

The rape cases differed in many respects from the other felony cases we studied. Our analysis of other person-to-person crimes (robbery and ADW), showed that the suspects named and being known dominated the other indicators contributing to case solution. This was not true for the rape cases. It can be seen from Table V-2 that 37.8% of the uncleared cases

Table V-1

RAPE: CLEARANCE BY PRIMARY FELONY OFFENSE

Status	Forcible Rape	Attempted Rape	Total
Cleared			
Count	9	7	16
% of row	56.3%	43.8%	
% of column	21.4	30.4	
% of total	13.8	10.8	24.6%
Cleared-Other			
Count	9	3	12
% of row	75.0%	25.0%	
% of column	21.4	13.0	
% of total	13.8	4.6	18.5%
Uncleared			
Count	24	13	37
% of row	64.9%	35.1%	
% of column	57.1	56.5	
% of total	36.9	20.0	56.9%
Total Count	42	23	65
% of Cases	64.6%	35.4%	100.0%

Table V-2

RAPE: CLEARANCE BY SUSPECT NAMED

Status	Not Named	Real Name	Partial Name	Nickname	Total
Cleared					
Count	8	7	1	0	16
% of row	50.0%	43.8%	6.3%	0%	
% of column	22.9	41.2	10.0	0	
% of total	12.3	10.8	1.5	0	24.6%
Cleared-Other					
Count	4	5	1	2	12
% of row	33.3%	41.7%	8.3%	16.7%	
% of column	11.4	29.4	10.0	66.7	
% of total	6.2	7.7	1.5	3.1	18.5%
Uncleared					
Count	23	5	8	1	37
% of row	62.2%	13.5%	21.6%	2.7%	
% of column	65.7	29.4	80.0	33.3	
% of total	35.4	7.7	12.3	1.5	56.9%
Total Count	35	17	10	3	65
% of Cases	53.8%	26.2%	15.4%	4.6%	100.0%

remained uncleared even though the suspects had been named. (In ADW, for example, only 18.3% of the uncleared cases showed named suspects.) Similar differences appeared when the suspect-known variable was analyzed. It seemed that this element of information was not being (or could not be) used as effectively in the rape cases as in other person-to-person crimes. On the other hand, rape cannot be characterized as a stranger-to-stranger type of crime. Table V-2 shows that, in 46.2% of all cases, some name was present. Additionally, in 35.4% of the cases, the offender was known by someone at the scene, and in 24.6% of the cases the offender had been seen previously.

The remainder of t' s chapter records some information gleaned from our preliminary rape analysis using cross tabulations, followed by some of the results of the correlation analysis. Although it was not feasible to construct a decision rule for follow-up investigation of rape cases, we performed a discriminant analysis of screened variables to try to identify the information elements that contributed most to case clearance.

One aspect that we analyzed initially was the relationship of the elapsed time between report and arrest to clearance (Table V-3 shows the cross tabulation). In 8 of the 16 cases in the cleared category, arrests

Table V-3

RAPE: CLEARANCE BY TIME BETWEEN REPORT AND ARREST

Status	No Arrest	Within 1 Hour	1 to 2 Hours	Total
Cleared				
Count	8	6	2	16
% of row	50.0%	37.5%	12.5%	
% of column	14.0	100.0	100.0	
% of total	12.3	9.2	3.1	24.6%
Cleared-Other				
Count	12	0	0	12
% of row	100.0%	0%	0%	
% of column	21.1	0	0	
% of total	18.5	0	0	18.5%
Uncleared				
Count	37	0	0	37
% of row	100.0%	0%	0%	
% of column	64.9	0	0	
% of total	56.9	0	0	56.9%
Total Count	57	6	2	65
% of Cases	87.7%	9.2%	3.1%	100.0%

were made within the first 2 hours after report. Half the reports of the cleared cases did not indicate the lapse of time between report and arrest. Of these 8 cases, 2 involved nonarrest types of legal action (D.A. Citation, Notice To Appear); 2 were classified as cleared on the basis of warrants having been issued. The remaining cases had notations such as the suspect being "out on week-end release," or no arrest was indicated because the suspect was already being held for another offense. Since most of the arrests occurred within 2 hours, it must be assumed that patrol is making the most significant contribution to clearance.

We next looked at the relationship of the elapsed time between occurrence and report to case clearance. (Table V-4 shows the cross tabulation.) In 14 of the 16 cleared cases, the incidents were reported within 12 hours of occurrence. Ten out of 12 cleared-other cases were reported before 12 hours. Less than half (39%) of all the clearances were effected when the time between incident and report did not exceed 1 hour. For about half (32 cases) of the 65 total cases sampled, time lapses of less than 1 hour were indicated. But only 28% of these were cleared (9 cases), and 6% were classified as cleared-other (2 cases). There seems to be some indication of a higher clearance rate when incidents were reported quickly; but the effect was not dramatic, because about half the total cases (including the uncleared cases) were reported quickly.

The victims in the cleared-other category seem to have shown a basic reluctance to report the crimes. Note that only 16.7% of these cases were reported in the first hour; in the other categories the figure was about 50%. In most of the cases in the cleared-other category, the victims named the offenders in the initial reports and then failed to respond to the OPD investigators' attempts to contact them. The OPD often clears such cases (as well as cases where no offender was named) as "Complainant Refuses To Prosecute."

Table V-4

RAPE: CLEARANCE BY TIME BETWEEN OCCURRENCE AND REPORT

Status	Unknown Time	Within 1 Hour	1 to 2 Hours	2 to 4 Hours	4 to 8 Hours	8 to 12 Hours	12 to 24 Hours	4 to 7 Days	Total
Cleared									
Count	1	9	3	1	0	1	1	0	16
% of row	6.3%	56.3%	18.8%	6.3%	0%	6.3%	6.3%	0%	
% of column	50.0	28.1	25.0	20.0	0	33.3	25.0	0	
% of total	1.5	13.8	4.6	1.5	0	1.5	1.5	0	24.6%
Cleared-Other									
Count	1	2	3	2	2	1	1	0	12
% of row	8.3%	16.7%	25.0%	16.7%	16.7%	8.3%	8.3%	0%	
% of column	50.0	6.3	25.0	40.0	33.3	33.3	25.0	0	
% of total	1.5	3.1	4.6	3.1	3.1	1.5	1.5	0	18.5%
Uncleared									
Count	0	21	6	2	4	1	2	1	37
% of row	0%	56.8%	16.2%	5.4%	10.8%	2.7%	5.4%	2.7%	
% of column	0	65.6	50.0	40.0	66.7	33.3	50.0	100.0	
% of total	0	32.3	9.2	3.1	6.2	1.5	3.1	1.5	56.9%
Total Count	2	32	12	5	6	3	4	1	65
% of Cases	3.1%	49.2%	18.5%	7.7%	9.2%	4.6%	6.2%	1.5%	100.0%

The next aspect we considered was the location of the crimes. We noticed that frequently the victim had been moved from the location of initial contact. Most of the rape cases were reported as having occurred with a street contact of some kind. Figure V-1 is a bar graph of the two primary locations: street and building. From this figure it can be seen that a crime that had no aspect of street contact was four times as likely to be in the cleared category as one that did.

After the initial contact, most rape offenders and victims moved to a place of relative privacy (if the initial contact was not in a private location). The facility category is the best indicator of where the crimes actually took place. The cross tabulation of this variable is shown in Table V-5. It can be seen that at least seven of the street victims were moved to residential facilities. Twenty-one of the street contacts apparently continued in transportation (all automobiles in this case). One must not draw the conclusion that, since a higher percentage of crimes

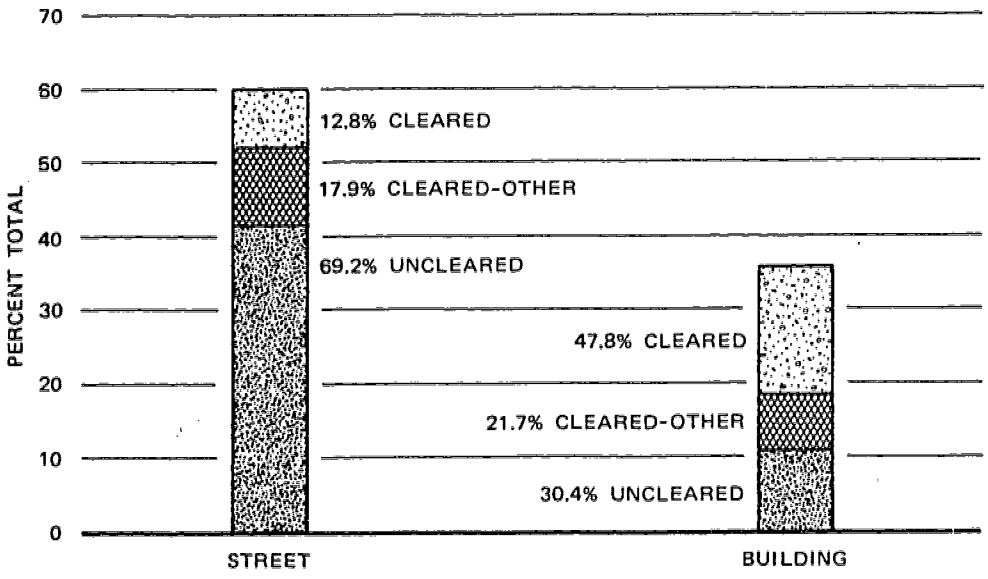

FIGURE V-1 CRIME LOCATION BY CLEARANCE CATEGORY

Table V-5

RAPE: CLEARANCE BY FACILITY CATEGORY

Status	Unknown	Residential	Commercial	Public	Transportation	Total
Cleared						
Count	5	8	1	0	2	16
% of row	31.3%	50.0%	6.3%	0%	12.5%	
% of column	41.7	26.7	100.0	0	9.5	
% of total	7.7	12.3	1.5	0	3.1	24.6%
Cleared-Other						
Count	1	7	0	0	4	12
% of row	8.3%	58.3%	0%	0%	33.3%	
% of column	8.3	23.3	0	0	19.0	
% of total	1.5	10.8	0	0	6.2	18.5%
Uncleared						
Count	6	15	0	1	15	37
% of row	16.2%	40.5%	0%	2.7%	40.5%	
% of column	50.0	50.0	0	100.0	71.4	
% of total	9.2	23.1	0	1.5	23.1	56.9%
Total Count	12	30	1	1	21	65
% of Cases	18.5%	46.2%	1.5%	1.5%	32.3%	100.0%

are associated with residential facilities were cleared, this variable by itself is important. It must be considered along with the building/street variable discussed previously.

We next consider the victim and witness descriptions and offender-related information as recorded in our data base. The items selected are those that could best be discussed in terms of our data base. There were many other aspects surrounding the crime that we elected not to code.

The data show that 37.2% of the victims who reported rape to the OPD were white, and 56.3% were black. There were 10 crimes committed against juvenile victims. The other 54 crimes were committed against

adults, and one victim's age was unknown. We noticed that a large number of the white victims and a lesser (but still significant) number of the black victims were described by the police as "known prostitutes." Such statements may have had a bearing on case clearance.

The offender in most rape cases is described as a black adult; 75% of the cases were committed by blacks. The physical characteristics describing offenders were quite varied.

Tables V-6, -7, and -8 show the offender/victim race relationship. Black offenders assaulted white victims in 38% of all cases, and black offenders assaulted black victims in 35%. Other offender/victim race involvement was statistically minor by comparison.

Of the 28 cases cited as cleared (16) and cleared-other (12), the majority (57% or 16 of 28) were black offender/black victim cases. This statistic is to be compared to the 25% clearance level of black offender/white victim (7 cases out of 28). When both the offender and the victim were black, a higher percentage of cases were cleared.

Correlation coefficients for the rape case variables were derived by the procedure discussed in Appendix D.

The bivariate correlation coefficients of the elements of information contributing to case clearance are shown in Table V-9. Only the coefficients with a significance level of at least 0.125 are included.

The race variables showed high correlations with clearance. These variables and suspect named, black victim, suspect known, and suspect previously seen are probably all victim-supplied information. We believe that many of the offender/victim same-race situations occurred in cases where the offender was named and known.

Table V-6

RAPE: OFFENDER'S RACE BY VICTIM'S RACE--CLEARED CASES

	Victim			
Offender	White	Black	Mexican	Total
White				
Count	0	1	0	1
% of row	0%	100.0%	0%	
% of column	0	11.1	0	
% of total	0	6.3	0	6.3%
Black				
Count	5	8	0	13
% of row	38.5%	61.5%	0%	
% of column	83.3	88.9	0	
% of total	31.3	50.0	0	81.3%
Mexican				
Count	1	0	1	2
% of row	50.0%	0%	50.0%	
% of column	16.7	0	100.0	
% of total	6.3	0	6.3	12.5%
Total Count	6	9	1	16
% of Cases	37.5%	56.3%	6.3%	100.0%

Table V-7

RAPE: OFFENDER'S RACE BY VICTIM'S RACE--CLEARED-OTHER CASES

	Victim			
Offender	White	Black	Mexican	Total
White				
Count	1	0	0	1
% of row	100.0%	0%	0%	
% of column	33.3	0	0	
% of total	8.3	0	0	8.3%
Black				
Count	2	8	0	10
% of row	20.0%	80.0%	0%	
% of column	66.7	100.0	0	
% of total	16.7	66.7	0	83.3%
Mexican				
Count	0	0	1	1
% of row	0%	0%	100.0%	
% of column	0	0	100.0	
% of total	0	0	8.3	8.3%
Total Count	3	8	1	12
% of Cases	25.0%	66.7%	8.3%	100.0%

Table V-8

RAPE: OFFENDER'S RACE BY VICTIM'S RACE--UNCLEARED CASES

	Victim						
Offender	Not Known	White	Black	Mexican	American Indian	Chinese	Total
Not known							
Count	0	1	0	0	0	0	1
% of row	0%	100.0%	0%	0%	0%	0%	
% of column	0	4.2	0	0	0	0	
% of total	0	2.7	0	0	0	0	2.7%
White							
Count	0	1	2	0	0	1	4
% of row	0%	25.0%	50.0%	0%	0%	25.0%	
% of column	0	4.2	22.2	0	0	100.0	
% of total	0	2.7	5.4	0	0	2.7	10.8%
Black							
Count	1	18	7	0	0	0	26
% of row	3.8%	69.2%	26.9%	0%	0%	0%	
% of column	100.0	75.0	77.8	0	0	0	
% of total	2.7	48.6	18.9	0	0	0	70.3%
Mexican							
Count	0	3	0	1	1	0	5
% of row	0%	60.0%	0%	20.0%	20.0%	0%	
% of column	0	12.5	0	100.0	100.0	0	
% of total	0	8.1	0	2.7	2.7	0	13.5%
Other							
Count	0	1	0	0	0	0	1
% of row	0%	100.0%	0%	0%	0%	0%	
% of column	0	4.2	0	0	0	0	
% of total	0	2.7	0	0	0	0	2.7%
Total Count	1	24	9	1	1	1	37
% of Cases	2.7%	64.9%	24.3%	2.7%	2.7%	2.7%	100.0%

Table V-9

RAPE VARIABLES DERIVED
FROM BIVARIATE CORRELATION ANALYSIS

Variable	Correlation Coefficient
Suspect and victim same race	0.4067
Suspect named	0.3814
Black victim/black suspect	0.3714
Crime location-building	0.3580
Black victim	0.3335
Suspect known	0.3067
Physical force used and injury inflicted	0.2648
Description of physical attack mode	0.2374
Facility category-residential	0.2290
Suspect previously seen	0.2056
Clothing as evidence	0.2055
Suspect associates named	0.2055
Clothing match	0.1983
Weapon(s) as evidence	0.1985
Weapon match	0.1393

The importance of the crime location-building variable has already been discussed. The fact that physical force and injury to the victim were associated with the cleared cases is a measure of the seriousness of the crimes and aided in establishing a believable case (in court terms).

Although we had decided not to construct a follow-up decision rule for rape, we conducted two separate analyses to reveal several characteristics of the rape cases. We first performed a factor analysis on the

cases. Factor analysis is an analytical technique that can be used to reduce the number of variables under consideration in an analysis by establishing underlying relationships among them. This process then enables the variables to be rearranged or reduced in number. Factor analysis transforms a set of variables into a particular linear combination of variables that accounts for more of the variance in the data than any other linear combination of variables.

Our goal in the factor analysis was to establish factors that explained the characteristics of the cleared cases. All variables from our correlation coefficient runs exhibiting correlation coefficients of at least 0.100 with a significance level of at least 0.125 were included in the analysis. Only the cleared and cleared-other cases were considered because the objective was to determine the factors that these cases exhibited. The five dominating factors resulting from this analysis were the following combinations of variables:

- Crime location-building and facility category-residential.
- Physical force used, injury inflicted, and description provided of physical attack mode.
- Suspect named and suspect known.
- Black victim/black offender and offender and victim same race.
- Clothing as evidence and clothing match.

Second, a discriminant analysis was performed on the data. Two groups were used in the analysis: the cleared and cleared-other cases and the uncleared cases. All variables with a significance of at least 0.125 and a correlation coefficient of at least 0.100 were included. These seven variables exhibited the highest discriminant function coefficients:

- Crime location-building. Cases occurring inside were more likely to be cleared than street cases.
- Condition of victim. Cases were more likely to be cleared if the crimes had resulted in injuries to the victims.
- Juvenile offender. Cases with juvenile offenders were more likely to be solved than cases with adult offenders.
- Black victim. Cases with a black victim were more likely to be solved than cases with a white victim.
- Clothing as evidence and clothing match. Clothing was an important factor in case solution.
- Offender and victim of the same race. These cases were solved at a higher rate than cases where offender and victim were of different races.
- Suspect named. Obviously this was an important factor in clearing a case.

CHAPTER VI. ANALYSIS OF OFFENDER CRIMINAL HISTORIES

A. Introduction

This chapter analyzes criminal histories of the suspects identified in our sample. The past criminal offenses were classified into 17 categories:

Strong-arm robbery	Theft, from person
Armed robbery	Theft, purse snatching
Felony assault	Theft, shoplifting
Burglary	Theft, other
Car theft	Narcotics and drugs
Homicide, willful	Stolen property
Forcible rape	Vehicle law violation
Attempted rape	Other

Not indicated

The offenders were classified into four groups on the basis of their most recent offense (ADW, car theft, robbery, and rape).

The histories were obtained from various OPD divisions.* Juvenile records are available only for offenses committed in Oakland and are usually destroyed when the person reaches 18. Therefore, the juvenile histories of adult offenders are incomplete. Analyses were made on the following characteristics of the offenders:

- Race and sex
- Number of prior offenses

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*Offenders for whom no records could be found are excluded.

- Type of prior offenses
- Time from first to most recent offense
- Average number of prior offenses per year.

B. Summary

The major findings of the analyses are summarized below.

- Over 80% of the offenders were black. (The population of Oakland is approximately 43% black.)
- Over 90% of the offenders were male.
- Of the felony crimes analyzed, the one in which the highest percentage of females participated was ADW (about 20% of the ADW offenders were females, compared to about 10% female participation in robbery and car theft).
- Over 80% of the offenders had prior offenses on record. The persons whose most recent offense was car theft or rape had a higher prior offense record (about 86%) than did those whose most recent offense was robbery or ADW (about 81%).
- Repeat offenders averaged more than seven prior offenses.
- The patterns of prior offenses varied somewhat according to the most-recent-offense grouping.
- The average age at first offense was about 3 years younger for the persons with the most recent offense of car theft or robbery (15.5 years) than for the ADW and rape offenders (18.5 years).
- On the average, the repeat offenders had criminal records covering 7.4 to 12.1 years. The 7.4-year criminal record average was that for the car theft offenders.
- The persons whose most recent offense was car theft showed the highest average number of offenses per year in crime. Their average was 1.8 offenses per year; persons in the other three classifications averaged 1.2 offenses per year.

1. Race and sex characteristics of offenders. Table VI-1 shows the distribution of offenders by race and most recent offense. This table also illustrates the sample size available for subsequent analyses. Note that there were only 16 offenders in the rape classification while there were over 130 in each of the other three classifications. Consequently, the characteristics of these 16 rape offenders may not be fully representative of Oakland rape offenders.

Table VI-1

DISTRIBUTION OF NUMBER OF OFFENDERS
BY RACE AND MOST RECENT OFFENSE

Race	Most Recent Offense			
	ADW	Auto theft	Robbery	Rape
White	20	17	15	2
Black	150	110	111	11
Mexican	4	5	5	3
American Indian	4	3	0	0
Japanese	1	0	0	0
Other	3	0	1	0
Not known	1	34	2	0
Total	183	169	134	16

Table VI-2 gives the percentage distribution of offenders by race (offenders with race not indicated were not included in these calculations). This table shows a distribution of offenders by race that is fairly consistent across ADW, car theft, and robbery. For rape, however, there is a statistically significant higher percentage of offenders of Mexican extraction, accompanied by a smaller percentage of blacks.

Table VI-2

DISTRIBUTION OF PERCENTAGE OF OFFENDERS
BY RACE AND MOST RECENT OFFENSE

Race	Most Recent Offense			
	ADW	Auto Theft	Robbery	Rape
White	11.0%	12.6%	11.4%	12.5%
Black	82.4	81.5	84.1	68.8
Mexican	2.2	3.7	3.8	18.8
Others	4.4	2.2	0.8	0.0

The distribution of offenders by sex is given in Tables VI-3 and -4. An interesting observation that can be made from these tables is the significantly higher participation of females in ADW than in car theft or robbery. Females account for almost 20% of the ADW offenders and less than 10% of the robbery or car theft offenders.

Table VI-3

DISTRIBUTION OF NUMBER OF OFFENDERS BY SEX
AND MOST RECENT OFFENSE

Most Recent Offense	Sex		
	Male	Female	Not Indicated
ADW	147	35	1
Auto theft	120	14	35
Robbery	123	10	1
Rape	16	0	0

Table VI-4

DISTRIBUTION OF PERCENTAGE OF OFFENDERS
BY SEX AND MOST RECENT OFFENSE

Most Recent Offense	Sex*	
	Male	Female
ADW	80.8%	19.2%
Auto theft	89.6	10.4
Robbery	92.5	7.5
Rape	100.0	0.0

*Offenders with sex not indicated were not included in the percentage calculations.

2. Number of prior offenses. Over 80% of the offenders in each of the four most-recent-offense classifications had been charged with one or more prior offenses. The percentages are given in Table VI-5. The rape and car theft categories had a higher percentage of repeat offenders than did the robbery and ADW categories.

Figure VI-1 shows the percentage of offenders having at least a given number of prior offenses. Four curves are given on Figure VI-1, one for each type of recent offense. For example, the figure shows that 40% of the ADW offenders had six or more prior offenses.

Table VI-6 summarizes the number of prior offenses for repeat offenders. In each group, some had only one prior offense, but some had at least 20 prior offenses. In addition to the minimum and maximum number of prior offenses committed by the offenders in each of the four groups, Table VI-6 gives the average number of prior offenses committed by the persons in each group. The standard deviation is a statistical measure

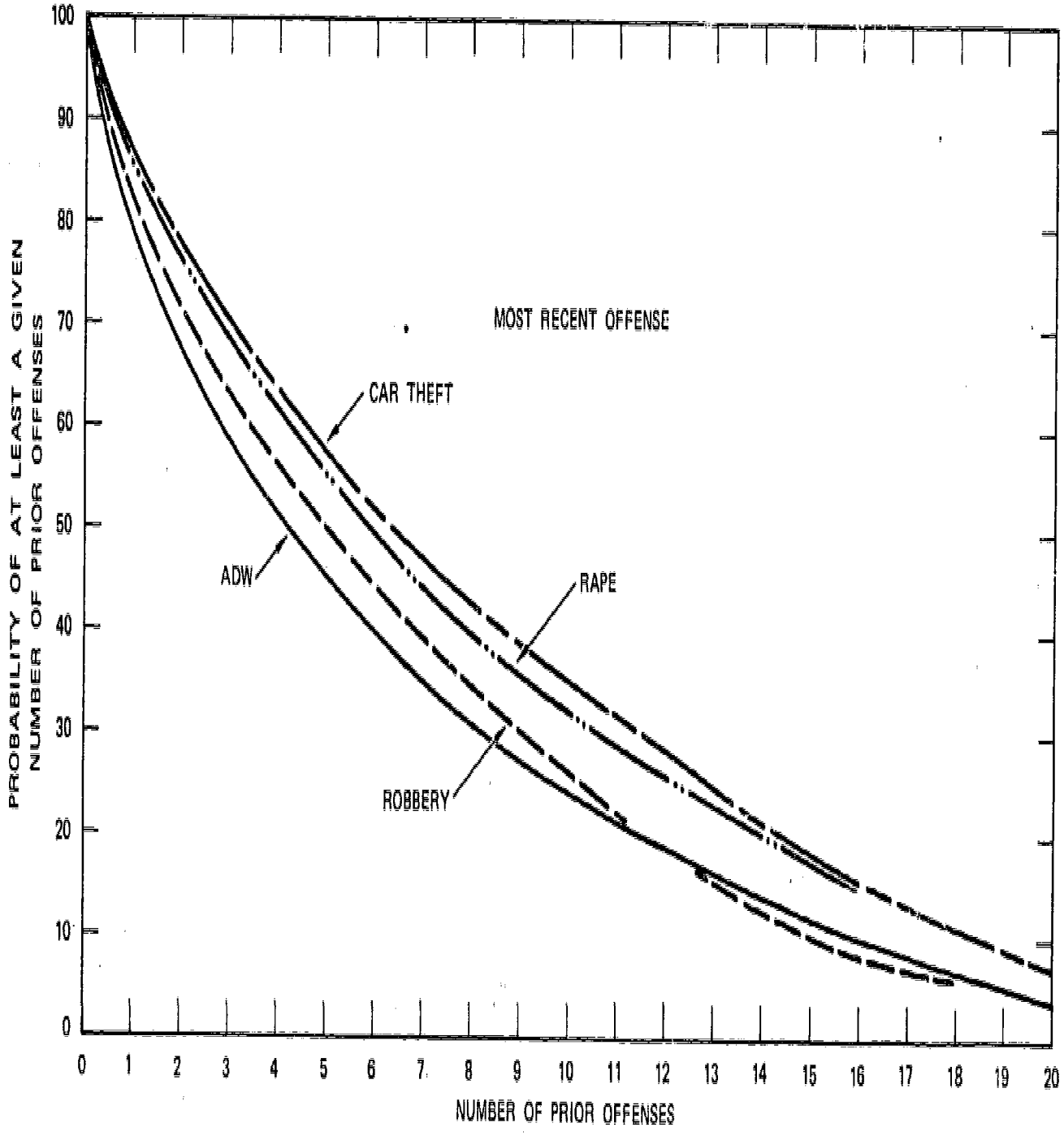

FIGURE VI-1 PROBABILITY OF AT LEAST A GIVEN NUMBER OF PRIOR OFFENSES ON THE BASIS OF AN OFFENDER'S MOST RECENT OFFENSE

Table VI-5

PERCENTAGE DISTRIBUTION OF OFFENDERS
HAVING ONE OR MORE PRIOR OFFENSES

Most Recent Offense	Number of Prior Offenses	
	None	One or More
ADW	19.8%	80.2%
Auto theft	14.2	85.8
Robbery	18.7	81.3
Rape	12.5	87.5

Table VI-6

CHARACTERISTICS OF NUMBER OF PRIOR OFFENSES FOR REPEAT
OFFENDERS CLASSIFIED BY MOST RECENT OFFENSE

Most Recent Offense	Average	Minimum Value	Maximum Value	Standard Deviation
ADW	7.3	1	>20	5.9
Car theft	8.8	1	>20	6.1
Robbery	7.7	1	>20	5.7
Rape	9.2	1	>20	6.3

of the variability of the data within each group. If the data are normally distributed, the average plus and minus one standard deviation will enclose about 67% of all the data observations. The average numbers of prior offenses varied between 7 and 9. The ADW and robbery offenders averaged about 1.5 fewer prior offenses than did the car theft and rape offenders. This difference is statistically significant.

3. Types of prior offenses. The hypothesis examined was that repeat offenders in our felony categories would show different patterns of past offenses. Table VI-7 was developed to test this hypothesis. It shows the percentage of offenders, classified by most recent offense, who had at least one prior offense of a specified classification (e.g., of the offenders last charged with ADW, 21.4% had at least one prior felony assault charge).

Some interesting observations drawn from this prior-offense analysis are given below, according to most recent offense:

- ADW. These persons had the highest percentage of past felony assaults. They also showed a high past incidence of burglary, other theft, narcotics and drugs, vehicle law violations, and other crimes.
- Robbery. These persons showed a high past incidence of burglary, auto theft, other theft, narcotics and drugs, vehicle law violations, and other crimes.
- Car theft. These persons had the highest percentage of past car theft, shoplifting, other theft, and stolen property. They also showed a high past incidence of burglary, narcotics and drugs, vehicle law violations, and other crimes.
- Rape. These persons had the highest percentage of past burglary, rape, narcotics and drugs, vehicle law violations, and other crimes. They also showed a high past incidence of car theft.

4. Age at first offense. Table VI-8 summarizes the age at first offense for repeat offenders. (This table does not imply that the first offense was the same type as the most recent offense.) The average age

Table VI-7

OFFENDER PRIOR OFFENSE PERCENTAGE DISTRIBUTION

Prior Offense	Most Recent Offense			
	ADW	Car Theft	Robbery	Rape
None	19.8%	14.2%	18.7%	12.5%
Strongarm robbery	12.1	12.4	14.9	12.5
Armed robbery	2.8	5.3	10.5	12.5
Felony assault	21.4	14.8	13.4	18.8
Burglary	28.6	47.3	46.3	56.3
Car theft	14.3	40.8	22.4	25.0
Homicide, willful	2.8	1.8	1.5	0.0
Forcible rape	2.2	4.7	2.2	12.5
Attempted rape	0.6	0.0	2.2	6.3
Theft, person	0.6	1.2	3.7	6.3
Theft, purse snatch	1.7	4.1	3.0	6.3
Theft, shoplifting	11.0	21.3	9.7	12.5
Theft, other	28.6	47.9	38.1	31.3
Narcotics and drugs	22.5	29.6	29.9	43.8
Stolen property	7.1	21.3	9.0	12.5
Vehicle law violation	32.4	32.0	23.1	43.8
Other violation	64.3	70.4	58.2	75.0
Other, not indicated	2.8	0.6	11.2	0.0

at the first offense was about 3 years less for the car theft and robbery groups than for the ADW and rape groups. These differences are statistically significant. Table VI-8 also shows the remarkably early age (4 to 11 years) at which some of the offenders began their involvement in crime.

Table VI-8

CHARACTERISTICS OF AGE AT FIRST OFFENSE FOR REPEAT OFFENDERS CLASSIFIED BY MOST RECENT OFFENSE

Most Recent Offense	Age at First Offense (years)			
	Average	Minimum	Maximum	Standard Deviation
ADW	19.0	7	43	6.7
Car theft	15.8	5	35	4.9
Robbery	15.2	4	27	4.6
Rape	18.3	11	35	7.1

5. Time from first offense to most-recent offense. This analysis covered the length of time during which the offenders were known to have been associated with crime, that is, the time span between their first and most recent offenses. The data for this analysis are summarized in Table VI-9.

Table VI-9

TIME SPAN OF CRIMINAL ACTIVITY FOR REPEAT OFFENDERS

Most Recent Offense	Number of Years from First Offense to Most Recent Offense			
	Average	Minimum	Maximum	Standard Deviation
ADW	10.8	< 1	50	9.7
Car theft	7.4	< 1	35	6.6
Robbery	8.3	< 1	32	6.6
Rape	12.1	< 1	38	11.1

The repeat offenders in the four categories had average criminal records covering approximately 7.4 to 12.1 years. The persons with the most recent offense of car theft had the shortest period of crime (7.4 years). This is significantly less than for the ADW (10.8 years) and rape (12.1 years) offenders.

Figure VI-2 shows the percentage of all offenders in the robbery, ADW, and car theft groups having criminal records covering at least a stated number of years. The rape group is not shown on this figure because of the small number of rape offenders for whom age data were available. For example, Figure VI-2 is read as follows: 20% of the car theft offenders had a criminal record spanning 11 years or more.

6. Average number of offenses per year. The average number of offenses per year from first offense to most-recent offense might be considered a measure of the degree of a criminal's participation in crime. Actually, it is only a measure of the number of times that the offender has been apprehended and can be assumed to be a measure of degree of participation only if there is a positive correlation between apprehension and participation. The data summarizing the average number of offenses per year for repeat offenders are given in Table VI-10. This table shows that the persons with the most recent offense of car theft had the highest average offense rate (1.8 per year). This is significantly higher than for the ADW and robbery groups, which had an average offense rate of 1.2 per year. In Table VI-9 it can be seen that the car thieves showed the lowest average number of years in crime.

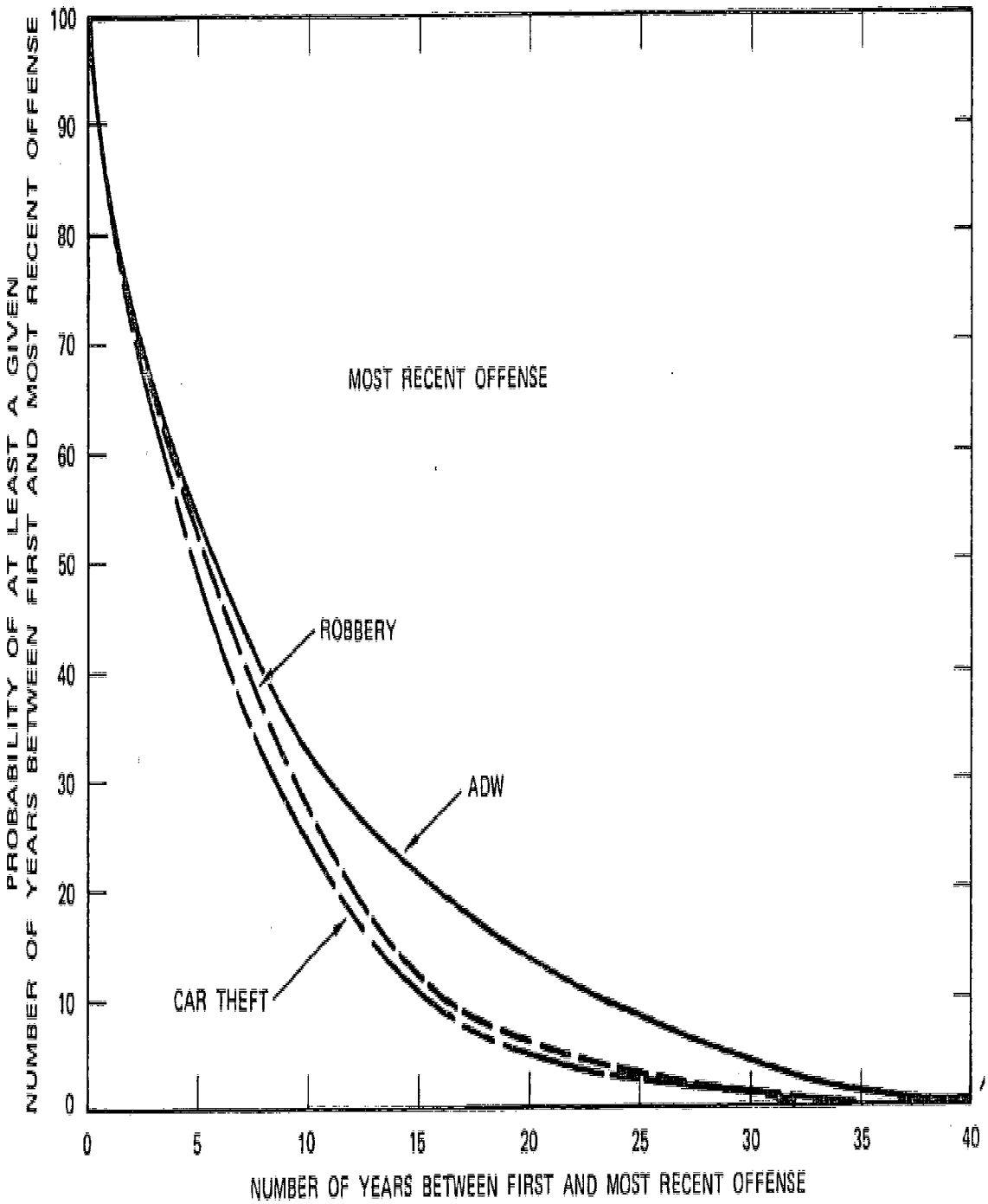

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FIGURE VI-2 PROBABILITY OF AT LEAST A GIVEN NUMBER OF YEARS BETWEEN AN OFFENDER'S FIRST AND MOST RECENT OFFENSE BASED ON THE MOST RECENT OFFENSE

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Table VI-10

REPEATERS' NUMBER OF OFFENSES PER YEAR

Most Recent Offense	Number of Offenses per Year			
	Average	Minimum	Maximum	Standard Deviation
ADW	1.1	0.0	6.0	1.0
Car theft	1.8	0.3	5.1	1.2
Robbery	1.3	0.2	5.5	1.1
Rape	1.7	0.3	5.0	1.3

CHAPTER VII. IMPLICATIONS OF UNIFORM DESCRIPTORS FOR INVESTIGATIVE APPLICATIONS

A. Is There a Case for Automated M.O. Investigative Aids?

Many law enforcement agencies have spent hundreds of thousands, and collectively perhaps tens of millions, of dollars in installing a variety of computers to assist in offender identification. The mystique of the computer as manipulating vast amounts of data and spewing out all sorts of information has captured the imagination of hard-pressed law enforcement agencies seeking assistance in tracking and identifying felony crime offenders. However, such systems have yet to demonstrate marked success, particularly in solving modus operandi (M.O.) investigation problems.

A report published in 1972* predicted, on the basis of a survey conducted by the ICMA, that, although "the use of the computer for criminal investigation and dispatch has received little attention to date ... this will change in the future .... Applications for investigations will more than quadruple, rising from 3.7% to 8.8% of the average total police computer use." The report continued that "police ent and resource allocation was clearly regarded as the most important computer use, with crime related files (used for investigation and analysis as well as for reporting) and police patrol and inquiry as second and third, respectively."

The same report went on to state that:

> ... the surface has only been scratched when it comes to the use of the computer for criminal investigation .... Several police departments indicated that they had had considerable

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*"Use of Computers by Police: Patterns of Success and Failure," International City Management Association (ICMA), Washington, D.C. (April 1972) pp. 6, 7, 9.

> success in automating their field interview reports. Also, there are several experiments underway to establish modus operandi files for use of the computer in tracing criminal patterns and in linking crime to known offenders. (The feelings of the law enforcement community seem split, though, over the utility of modus operandi efforts.)
>
> Although it is still early to make firm predictions, it is quite possible that the computer will have a major influence on the police investigative function. For example, various police officers talked of using the computer to assign cases to investigative officers on the basis of the probability of cases being solved [emphasis supplied] and of the constant interaction between man and machine at all phases of the investigative process.

Certainly the burglary and robbery case follow-up predictive models reported in Chapter II demonstrate the feasibility of implementing the concept of case assignment on the basis of probability of solution, but police investigators must recognize that only a small number of information elements are crucial. This finding may incur anathema from several notable police agencies that have gone to great lengths to attempt to capture vast amounts of personal appearance and M.O. information in anticipation of increasing the likelihood of offender ID and apprehension.

In effect, the results of our research have posed three crucial questions that should receive serious attention by police investigators and planning and funding agencies in their quest for investigative aids:

- What elements of information can police investigators realistically expect to obtain regarding a crime event and the personal characteristics of the offender?
- What are the best procedures for establishing and preserving a logically structured data base that can recall this information in a manner that will materially assist the investigator in solving a crime?

- Is it realistic to expect that the classical concept of M.O. can be developed for automated data processing systems to enable recognition of a distinctive crime commission pattern exhibited by a given offender?

With regard to the third question, it has been noted that the ICMA report stated that the law enforcement community is divided over this issue. Our findings on criminal activity patterns further reveal no consistency on the part of offenders: They engage in a multitude of crimes.

As the reader can see in Appendix C, we provided for the collection and analysis of a large number of elements of investigative information including M.O. The categories of information in the data collection form are a composite contraction of information elements printed in precoded formats by such police departments as Los Angeles, Miami,* Denver,* Detroit,† and Kansas City.†

A CALSPAN document† reported the results of an analysis of what might be termed first-generation EDP M.O. systems used by several law enforcement agencies, notably the Detroit and Kansas City, Missouri, Police Departments and the State of Michigan. Although the CALSPAN findings on the hits obtained by the EDP systems used by these departments demonstrated a useful capability, the researchers hedged on recommending (to the State of New York) a headlong rush to implement such a system:

---

*"Prescriptive Package, Police Crime Analysis Unit Handbook," U.S. Dept. of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, Washington, D.C. (November 1973).

†Albert Zavala et al., "Use of Computer-Based Modus Operandi Data Systems," Cornell Aeronautical Laboratory Inc. (now CALSPAN Corp.) Buffalo, New York, October 1970.

> Increasing system utilization on 61 documented hits in one department is not sufficient, per se, to recommend the establishment of a full scale M.O. system. However, the reliability of M.O. as an identification tool has been shown ... [and] ... that M.O. data can be used effectively in combination with personal appearance information.

B. The OPD Crime File System

The OPD Crime File System is a known-offender-based system with supporting vehicle and fingerprint subsystems. This system became operational in 1973, following the inputting of selected categories of known felons and their physical appearance characteristics. It provides four main categories of information.

- Physical characteristics of offenders (derived from certain categories of arrest records).
- The types of crimes that the known offenders have committed.
- Mugshots and fingerprint displays of the subjects in the system.
- Listing the descriptions of vehicles obtained from citations and selected FI reports.

Figure VII-1 illustrates the Subject File Query form, which contains the address codes for data elements entered into the computer subject file input (SFI). Figure VII-2 shows the address codes for the Vehicle File Input (VFI) form. The forms illustrated are used by the Crime Analysis Section (CAS) computer operators to interrogate the Crime File memory bank, using the descriptive information on offenders and vehicles contained in the felony reports that are tagged for enrichment. The data elements contained in the SFI and VFI forms were subjectively selected for the Crime File System by OPD R&D staff, with assistance from the Criminal Investigation Division (CID).

During the course of our analysis of investigative sources of information leading to a felony suspect's ID, we noted on Card 7 of the data

SUBJECT FILE QUERY FORM

TF-5368 (4/73) OAKLAND POLICE DEPARTMENT

ID NUMBER (ENTER CII OR OPD NUMBER)

DATE ________

CII _ _ _ _ _ _ _

OPD _ _ _ _ _ _

NAME _
LAST, FIRST MIDDLE

SEX
[CIRCLE ONE]
- A1 Male
- A2 Female

RACE
[CIRCLE ONE OR TWO]
- B1 White
- B2 Black
- B3 Brown
- B4 Yellow
- B5 Undetermined

AGE
[ENTER MINIMUM & MAXIMUM AGE LIMITS]
C1

[/ _ _ / _ _ YEARS OF AGE]

RESIDENCE CODE
[ENTER UP TO 3 ONE-DIGIT DISTRICT NOS.]
D1

[/ _ / _ / _]

TYPE OF CRIME
[CIRCLE ONE OR TWO]
- E1 Commercial burglary
- E2 Residential burglary
- E3 Locked auto burglary
- E4 Possession of stolen property
- E5 ✱ E1, E2, E3, or E4
- E6 Armed robbery
- E7 Strongarm and purse snatch
- E8 ✱ E6 or E7
- E9 Auto theft
- E10 Grand theft
- E11 Check and credit card
- E12 Felony assault
- E13 Murder
- E14 ✱ E12 or E13
- E15 Rape
- E16 Indecent exposure
- E17 Child molesting
- E18 Other sex
- E19 ✱ E15, E16, E17, or E18
- E20 Narcotics and drugs
- E21 Fraud and bunco
- E22 Arson
- E23 Multiple felonies
- E24 Operates in teams (major crimes only, such as robbery and burglary)
- E25 Associated with shoplifting ring
- E26 Associated with check/credit card ring
- E27 Associated with group advocating or practicing violence
- E28 Associated with extortion/loan shark ring
- E29 Associated with consumer fraud/bunco ring
- E30 Associated with organized prostitution
- E31 Associated with organized narcotics
- E32 Associated with organized gambling
- E33 Associated with auto stripping ring

HEIGHT
[ENTER MINIMUM AND MAXIMUM HEIGHT LIMITS]
F1

[/ _ _ / _ _ INCHES]

WEIGHT
[ENTER MINIMUM AND MAXIMUM WEIGHT LIMITS]
G1

[/ _ _ _ / _ _ _ POUNDS]

HAIR COLOR Δ
[CIRCLE ONE OR TWO]
- H1 Blond
- H2 Brown
- H3 Black
- H4 Red
- H5 White or grey

HAIR STYLE Δ
[CIRCLE ONE, TWO, OR THREE]
- J1 Bald
- J2 Partly bald or thinning
- J3 Close cut or short
- J4 Medium length
- J5 Long (below ears)
- J6 Afro american-natural style
- J7 Afro american-processed style
- J8 Curly, wavy, or kinky
- J9 Straight

EYE COLOR Δ
[CIRCLE ONE]
- K1 Brown or black
- K2 Blue, grey, green, or hazel

EYE DEFECTS Δ
[CIRCLE ONE]
- L1 Either eye blind, missing, or artificial
- L2 Wears glasses (prescription)
- L3 L1 or L2

EARS Δ
[CIRCLE ONE]
- M1 Cauliflower
- M2 Partial or missing
- M3 Excessively protruding
- M4 Male with earring(s)

LIPS Δ
[CIRCLE ONE]
- N1 Hairlip
- N2 Unusually large
- N3 Other permanent deformity

COMPLEXION Δ
[CIRCLE ONE OR TWO]
- P1 Light, fair
- P2 Dark, black
- P3 Freckled or splotchy
- P4 Pockmarked

TATTOO MARKS Δ
[CIRCLE ONE]
- Q1 Arms
- Q2 Hands or fingers
- Q3 Face and neck
- Q4 Other location or combinations of the above

FACIAL HAIR Δ
[CIRCLE]
- R1 Yes

TEETH Δ
[CIRCLE ONE OR TWO]
- S1 Irregular or protruding
- S2 Metal fillings visible
- S3 Visible decay or stains
- S4 False, chipped, or missing teeth

AMPUTATIONS & DEFORMITIES Δ
[CIRCLE ONE]
- T1 Arms
- T2 Hands or fingers
- T3 Legs or feet
- T4 Other or combinations of the above

VISIBLE SCARS, MOLES, BIRTH-MARKS, OR NEEDLE TRACKS Δ
[CIRCLE ONE]
- U1 Arms
- U2 Hands or fingers
- U3 Face, head, or neck
- U4 Other location or combinations of the above

SPEECH Δ
[CIRCLE ONE OR TWO]
- V1 Foreign accent
- V2 Noticeable regional accent
- V3 Lisp
- V4 Stutter

PECULIARITIES Δ
[CIRCLE ONE]
- W1 Limp
- W2 Effeminate male or masculine female
- W3 Wears clothing of opposite sex (impersonator)
- W4 Twitch of eye(s), face, or other

NICKNAME
[ENTER UP TO 10 CHARACTERS, IF NONE, ENTER FIRST NAME]
X1
/ _ _ _ _ _ _ _ _ _ _

MUG SHOT ADDRESSES

____ ____ ____ ____

FINGERPRINT FICHE ADDRESS ________

FINGERPRINT CODES
[ENTER FINGER NUMBER AND THREE-DIGIT CODE, UP TO THREE TIMES; USE "?" FOR UNKNOWN CHARACTERS]
Y1

[/ _ / _ _ _ / _ / _ _ _ / _ / _ _ _]

CRIME SYSTEM

FIGURE VII-1 OPD SUBJECT FILE QUERY FORM

VEHICLE FILE INPUT (VFI) FORM
[QUERY ONLY]

DATE _____

FIELD CONTACT

CIRCLE ONE
A1 Yes
A2 No

DATE OF CITATION

ENTER CITATION PERIOD AS "DAY, MONTH, & YEAR", 1 OR 2 SIX-DIGIT DATES
B1
#_ _ _ _ _ _ _ _ _ _ _ _
D D M M Y Y D D M M Y Y

YEAR OF VEHICLE

ENTER TWO-DIGIT YEAR NUMBER
C1
#19_ _

MAKE/MODEL

CIRCLE ONE MAKE AND A MODEL IF APPLICABLE
D1 Alpha Romeo
D2 Alpine
D3 American Motors
#0 No specific model
#1 Ambassador
#2 AMX
#3 Gremlin
#4 Hornet
#5 Javelin
#6 Rambler American
(See D38-#2/D46-#1)
D4 Aston-Martin
D5 Audi
D6 Austin
D7 Austin Healey
D8 Bentley
D9 BMC
D10 BMW
D11 Borgward
D12 Buick
#0 No specific model
#1 Riviera
#2 Skylark
D13 Cadillac
#0 No specific model
#1 El Dorado (FLE)
D14 Capri (Import)
D15 Chevrolet
#0 No specific model
#1 Camero
#2 Caprice
#3 Chevelle
#4 Chevy II
#5 Corvair
#6 Corvette
#7 El Camino
#8 Impala
#9 Malibu (ELL)
#10 Monte Carlo
#11 Nova (CH2)
#12 Vega
D16 Chrysler
#0 No specific model
#1 Imperial
D17 Datsun
D18 Desoto
D19 Dodge
#0 No specific model
#1 Challenger
#2 Charger
#3 Coronet
#4 Dart
Dune Buggy (See D51-#1)

MAKE/MODEL -CONTINUED-

AUTOMOBILES -CONTINUED-
D20 Edsel
D21 English Ford (British)
D22 Ferrari
D23 Fiat
D24 Fiat-Abarth
D25 Ford
#0 No specific model
#1 Cobra
#2 Fairlane
#3 Falcon
#4 Galaxie
#5 LTD
#6 Maverick
#7 Mustang
#8 Pinto
#9 Ranchero
#10 Thunderbird
#11 Torino (FAI)
D26 Hillman
D27 Honda
D28 International (Harvester)
D29 Jaguar
D30 Jeep
D31 Karmann Ghia
D32 Lincoln
#0 No specific model
#1 Capri
#2 Continental
D33 Lotus
D34 Mazda
D35 Mercedes-Benz
D36 Mercury
#0 No specific model
#1 Comet
#2 Cougar
D37 MG
D38 Nash
#0 No specific model
#1 Metropolitan
#2 Rambler
(See D3-#6/D46-#1)
D39 Oldsmobile
#0 No specific model
#1 Cutlass (F-85)
D40 Opel
D41 Packard
D42 Peugeot
D43 Plymouth
#0 No specific model
#1 Barracuda
#2 Belvedere
#3 Duster
#4 Fury
#5 GTX
#6 Road Runner
#7 Satellite
#8 Valiant
D44 Pontiac
#0 No specific model
#1 Bonneville
#2 Firebird
#3 Grand Prix
#4 GTO
#5 LeMans
#6 Tempest
D45 Porsche
D46 Rambler
#0 No specific model
#1 American
(See D3-#6/D38-#2)
D47 Renault

MAKE/MODEL -CONTINUED-

AUTOMOBILES -CONTINUED-
D48 Rolls-Royce
D49 Saab
D50 Shelby American
(See D25-#7)
D51 Special Vehicle
#0 No specific model
#1 Dune Buggy
D52 Studebaker
D53 Subaru
D54 Sunbeam
D55 Suzuki
D56 Toyota
D57 Triumph
D58 Volkswagon
D59 Volvo
D60 Willys-Overland
MOTORCYCLES
D61 BSA
D62 Harley-Davidson
D63 Honda
D64 Kawasaki
D65 Suzuki
D66 Triumph
D67 Yamaha

BODY TYPE

CIRCLE ONE
E1 2-door
E2 4-door
E3 Station Wagon
E4 Convertible
E5 Pickup
E6 Sportscar
E7 Van
E8 Panel
E9 Bus
E10 Hearse

COLOR

CIRCLE ONE (SINGLE COLOR) OR TWO (2-TONE)

T/S*	B*	
F1	F1	Black
F2	F2	Brown, Beige, Bronze, or Tan
F3	F3	Red, Pink, or maroon
F4	F4	Orange
F5	F5	Yellow or Gold
F6	F6	Green or Turquoise
F7	F7	Blue
F8	F8	Purple or Lavender
F9	F9	Silver or Grey
F10	F10	White or Cream

*NOTE:
T/S=TOP OR SINGLE COLOR
B=BOTTOM COLOR

STATE

CIRCLE ONE
G1 California
G2 Other

LICENSE NUMBER

ENTER UP TO 6 CHARACTERS LEFT JUSTIFIED WITH ALL BLANKS (SPACES) OMITTED AND INSERT "?" FOR UNKOWN CHARACTERS
H1
#_ _ _ _ _ _

TF-537(3/72) oakland police department

CRIME SYSTEM

FIGURE VII-2 OPD VEHICLE FILE QUERY FORM

collection form (shown in Appendix C) whether Items 3 and 4, Crime File run-person, and Crime File run-vehicle, respectively, had actually been run on the cases we analyzed, and whether the results of the computer file search had been useful. Table VII-1 summarizes the numerical results observed for the sample of cases analyzed.

The Crime File statistical analysis results are not impressive with regard to the number of runs that had yielded useful leads to offenders on the basis of personal appearance descriptions and descriptions of vehicles that might have been involved in a crime. The Vehicle File appears to have produced exceptionally poor results. By comparison, however, vehicle registration check via the Police Information Network (PIN) and the California Law Enforcement Telecommunications System (CLETS) when the registration number was available, in the case of robbery (as shown

Table VII-1

RESULTS OF CRIME FILE SYSTEM UTILIZATION

	Crime File Run					
	Person		Vehicle			
Felony Category	Cases Run	Runs Useful	Cases Run	Vehicle Stolen	Vehicle Linked to Suspect	Runs Useful
Robbery (armed & strongarm)	139	3	11	1*	1*	1*
Assault	35	4	9	--	--	0
Car theft	6	0	0	--	--	0
Rape	25	1	8	--	--	1

*Same case.

in Table II-17, the case decision model), were much more useful investigative aids.

We found no indication that the Crime File fingerprint subsystem had ever been used for analysis when latent fingerprints had been recovered for the few cases so noted. This subsystem may be more useful for burglary cases, but we did not pursue such an analysis.

In Table II-17, the robbery decision model, where the data category elements have been assigned numerical weights in accordance with the contribution they were found to have made to case clearance, physical appearance descriptors do not appear as significant. Physical appearance descriptors certainly must make some contribution to case solution, since the Crime File run-person variable carries some statistical weight for robbery cases. The fact that a few useful leads are shown in Table VII-1 reveals that the query of the data bank must have produced a range of mug shots from which a victim or witness identified the suspect.

We cannot give a conclusive explanation for the OPD Crime File System's failure to show a significant contribution to the cases in our study. We did observe one failure obviously attributable to the incompatibility of the SFI descriptors in the computer memory file and the operator's interpretation of the subject descriptors in the incident report. It is apparent that the success of the operation is greatly affected by the way the operator must interrogate the memory bank to accommodate variations in suspect personal appearance characteristics as they appear in the incident report.

In addition to observing the general CAS Crime File and other EDP investigation operations, we observed a test case conducted by the lieutenant in command of the Robbery Section.

The test case produced by the lieutenant was a robbery that had been reported a week or so earlier but had not been processed through the Crime

File System. At the time the test case was run, the robbery suspect had been arrested for another crime, and the officer wanted to follow the procedures by which the case was processed. These procedures were carried out by the most experienced Crime File operators available.

The height and weight characteristics of the suspect as given in the reported robbery incident were keyed into the computer, with slight adjustments of inches and pounds to allow for variation in the subjective judgments of the victim and the officer. (See Figure VII-1 for the descriptors referred to in this example.) The computer is so programmed that precise measurements and descriptors must be keyed in for the initial pass. The search process automatically suppresses possible suspects whose descriptors are at variance with those keyed in.

A major problem was encountered in the keying of the suspect's hair color. The incident report stated that the suspect had long "reddish-blond" hair. Note that the codes for hair in Figure VII-1, H1 through H5, allow only for blond or red hair--not reddish-blond. Consequently, the operator keyed in long blond and long red hair. Obviously, judgment as to what constitutes long hair is somewhat subjective.

Another problem concerned the type of crime committed, so that the data bank could be queried as to the prior-crime M.O. of the suspect. The robbery incident was coded as armed robbery, because, when the suspect had been surprised in the act of committing a burglary, he drew a gun and fled. Since the report was classified as a 211 P.C. (robbery penal code) and not with an additional 459 P.C. (burglary), the operator made the error in judgment of keying only Code E6 (armed robbery). The operator also overlooked the fact that the suspect had been reported to have a tattoo (Codes Q1 through Q4). Together the descriptors produced much too large a "hit" range for the first pass.

Before proceeding further, the name of the suspect was given to the operator to determine whether this name was in the system. The operator keyed in the OPD arrestee file number, the State Department of Justice CII number, and the suspect's name. The correct identity and mug shot were produced. The subject was shown to have a prior record of burglary, strong-arm robbery, drug, and vehicle violations.

After it had been determined that the suspect's name was indeed in the system, a more carefully considered set of descriptors was keyed, including multiple felonies, Code E32, and facial Code R1 (the report had noted a "droopy" mustache). The teleprinter produced the name of five subjects matching these descriptors. The suspect's name was among the five printed out. A request was made for the five mugs to be shown. Incredibly, the CRT console failed to retrieve the named suspect's mug. An error was then discovered in the address coding of the suspect mug to his SFI record.

Coincidentally with our inquiries regarding the Crime File System's results, the OPD discovered basic flaws in the system that could not be immediately explained. A total core dump was made, and each entry was carefully checked. One problem was traced to a crack in the optical lens system; another was attributed to the software program. The OPD is of the opinion that the supplier failed to deliver a fully operational system. The software system underwent redesign by an OPD consultant software specialist. We understand that the OPD believes it has now corrected the problems.

C. Comparison of Alternative M.O. Systems

In retrospect: What have we learned about a computerized suspect-oriented file system? Although the many agencies that use such systems can cite anectodal examples of successes achieved--and probably achieved

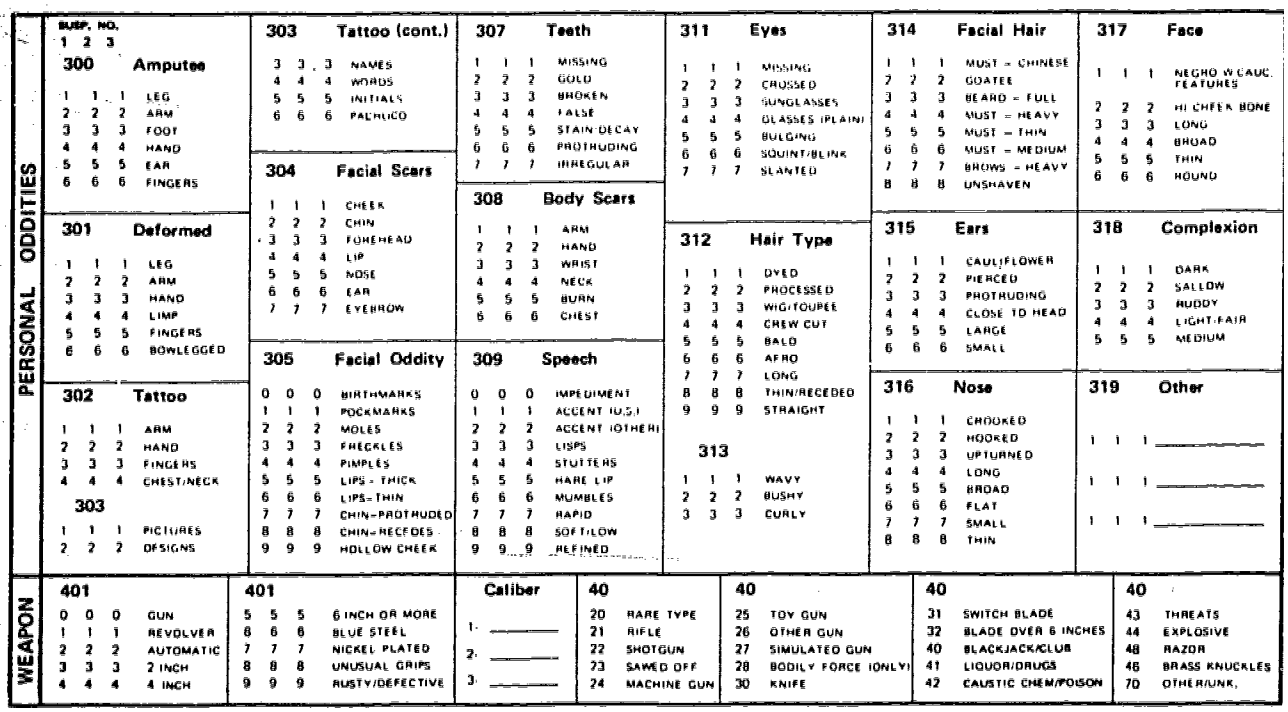
when other approaches would have required an enormous effort to search files--the simple fact seems to be that the successes are not spectacular in a statistical sense. The OPD Crime File System, as contrasted with others, appears to have been designed with the approach that the criminal population with which the OPD has to deal is largely a recidivist population. Chapter VI has shown that over 80% of the offenders whose criminal histories were analyzed had had prior offenses. The repeat offenders averaged more than seven prior offenses during their span of contact with the OPD (or other agencies).

A major police department has had under development since 1969 an extremely complex pattern recognition and information correlation system. Originally, a number of subsystem capabilities were envisioned. But with the passing of time, the system design was scaled down to provide three basic information subfiles, on persons, events, and vehicles. The input data are to be derived from incident and field interrogation (FI) reports as they occur. As of the summer of 1975, the system was not known to be operational, despite extensive field testing since 1971. We mention this system and one other mainly to contrast their data input structure with the OPD's less ambitious Crime File System. No event information is stored in the OPD system.

Two police agencies' M.O.-type systems that we have looked at have been designed to be built up and kept current on the basis of events and associated suspects. Consequently, both departments will be inputting, to the computer storage system, suspect information developed by as many officers and investigators as generate the reports. Both systems, as contrasted to the OPD, will input data for unsolved cases, with the desired objective of developing patterns of events as well as the M.O. of suspects. Much as our technological imagination would like to see such systems succeed, we cannot overlook their relative inability to live up to the expectations in the past, for very fundamental reasons.

Figures VII-3 and VII-4 show descriptor and M.O. checklist extracts from two police agencies' incident reports. The checklist forms were designed for use by patrol officers and possibly by follow-up investigators. The extremely detailed personal appearance and crime attribute data were intended for input into the central data processing center. The data sought are not unlike the type of information we were seeking in the OPD reports. Although we concede that the OPD patrol is not provided with such extensive and detailed check lists to query witnesses and victims, we seriously doubt that victims who have been subjected to the trauma of an armed robbery or assault can respond well to extensive questioning as would be required by these represented forms. The OPD incident report form asks for general characteristics of the crime and the perpetrator. We found, consequently, extreme variation in the level of details recorded. But there was no way for the analyst-coders to ascertain whether the limiting factor was the victim (other than a statement that, in the officer's opinion, the individual reporting was under the influence of drugs or alcohol or was injured). Whether the reporting officer had even bothered to try to secure certain information could not be ascertained from the reports analyzed.

We can state with some confidence that, because of the sample size we drew, and the fact that OPD patrol officers are probably sufficiently trained to ask for and record vital information, it may be unrealistic to expect officers to obtain such fine details at a crime scene as are indicated in Figures VII-3 and 4. Also, this level of detail has yet to be demonstrated as generally useful. Although the information may be available, the cost in time and resources to collect and process the data will be high. Furthermore, we strongly suspect that patrol officers would find the filling out of such forms burdensome and too time-consuming, unless they had been convinced of benefits.



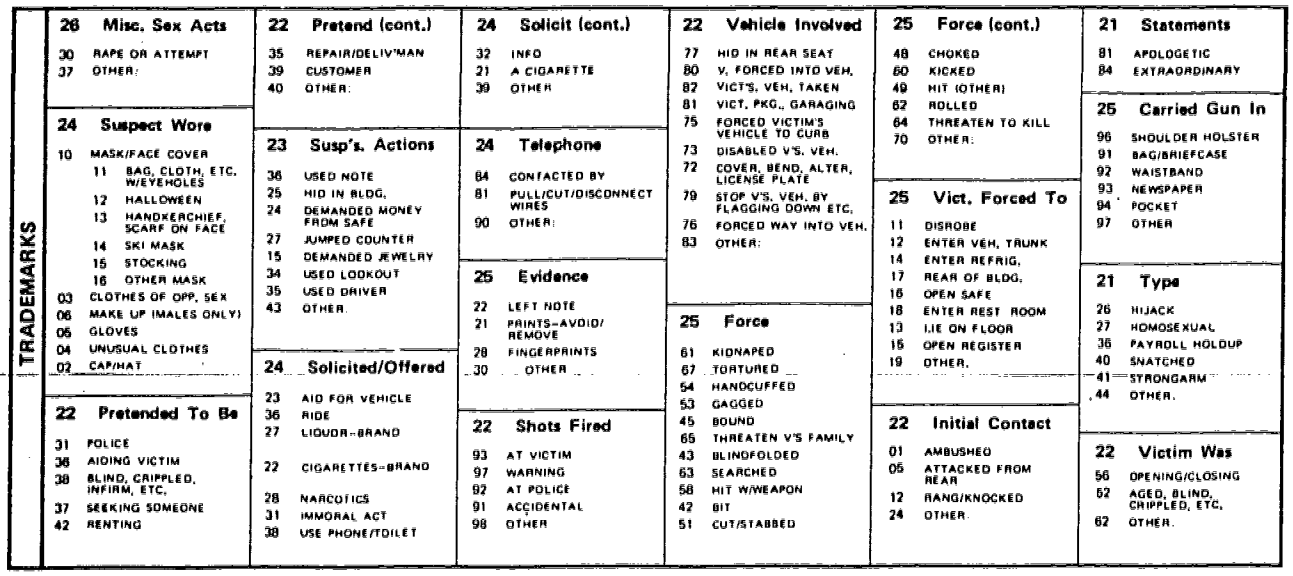


FIGURE VII-3 ROBBERY REPORT CHECK-OFF LIST

PG. _____ OF _____

SUSPECT INFORMATION

FACE SHAPE
Unknown	1	2	3
Heart	1	2	3
Oval	1	2	3
Round	1	2	3
Square	1	2	3

FACIAL ODDITY
Unknown	1	2	3
Birthmarks	1	2	3
Freckles	1	2	3
Moles/Warts	1	2	3
Pimples	1	2	3
Pockmarks	1	2	3

FACIAL SCARS
Unknown	1	2	3
Forehead	R L	R L	R L
Eyebrow	R L	R L	R L
Nose	R L	R L	R L
Cheek	R L	R L	R L
Ear	R L	R L	R L
Lip	U L	U L	U L
Chin	R L	R L	R L

FACIAL HAIR
Unknown	1	2	3
Brows, Thin	1	2	3
Medium	1	2	3
Bushy	1	2	3
Must., Thin	1	2	3
Medium	1	2	3
Bushy	1	2	3
Beard, Full	1	2	3
Ear Hair	1	2	3
Goatee	1	2	3
Nose Hair	1	2	3
Sideburns,	1	2	3
Mid. Ear	1	2	3
Below	1	2	3
Unshaven	1	2	3

HAIR TYPE
Unknown	1	2	3
Afro	1	2	3
Afro, Mini	1	2	3
Bald	1	2	3
Braided	1	2	3
Crew Cut	1	2	3
Curly	1	2	3
Dyed/Bleached	1	2	3
Frosted	1	2	3
Natural	1	2	3
Processed	1	2	3
Straight	1	2	3
Streaked	1	2	3
Thin/Receded	1	2	3
Wavy	1	2	3
Wig/Toupe	1	2	3
Length,			
Ear	1	2	3
Shoulder	1	2	3
Below Shoulder	1	2	3

EYES
Unknown	1	2	3
Round	1	2	3
Slanted	1	2	3
Bulging	1	2	3
Sunken	1	2	3
Squint	1	2	3
Blink	1	2	3
Crossed	1	2	3
Turned In	R L	R L	R L
Turned Out	R L	R L	R L
Missing	R L	R L	R L
Patch	R L	R L	R L
Artificial	R L	R L	R L
Blind	R L	R L	R L

EARS
Unknown	1	2	3
Small	1	2	3
Medium	1	2	3
Large	1	2	3
Close to Head	1	2	3
Protruding	1	2	3
Cauliflower	R L	R L	R L
Pierced	R L	R L	R L
Missing	R L	R L	R L

NOSE
Unknown	1	2	3
Small	1	2	3
Medium	1	2	3
Large	1	2	3
Thin	1	2	3
Broad	1	2	3
Long	1	2	3
Flat	1	2	3
Crooked	1	2	3
Hooked	1	2	3
Upturned	1	2	3

TEETH
Unknown	1	2	3
None		2	3
Broken	U L	U L	U L
Gapped	U L	U L	U L
Irregular	U L	U L	U L
Protruding	U L	U L	U L
Missing	U L	U L	U L
Stain/Decay	U L	U L	U L
Bridge	U L	U L	U L
Partial	U L	U L	U L
False	U L	U L	U L
Capped, Gold	U L	U L	U L
Silver	U L	U L	U L
Designed	U L	U L	U L

OTHER FACIAL
Unknown	1	2	3
Lips, Thick	1	2	3
Thin	1	2	3
Chin, Protrude	1	2	3
Recede	1	2	3
Double	1	2	3
Dimple	1	2	3
Cheek Dimple	R L	R L	R L

BODY SCARS
Unknown	1	2	3
Neck	R L	R L	R L
Shoulder	R L	R L	R L
Upper Arm	R L	R L	R L
Elbow	R L	R L	R L
Lower Arm	R L	R L	R L
Wrist	R L	R L	R L
Hand	R L	R L	R L
*Fingers	R L	R L	R L
Chest	R L	R L	R L
Abdomen	R L	R L	R L
Back	R L	R L	R L
Side	R L	R L	R L
Buttocks	R L	R L	R L
Upper Leg	R L	R L	R L
Knee	R L	R L	R L
Lower Leg	R L	R L	R L
Ankle	R L	R L	R L
Foot	R L	R L	R L

DEFORMED
Unknown	1	2	3
Upper Arm	R L	R L	R L
Lower Arm	R L	R L	R L
Hand	R L	R L	R L
*Fingers	R L	R L	R L
Back	R L	R L	R L
Upper Leg	R L	R L	R L
Lower Leg	R L	R L	R L
Foot	R L	R L	R L
*Toes	R L	R L	R L

AMPUTEE
Unknown	1	2	3
Breast	R L	R L	R L
Entire Arm	R L	R L	R L
Lower Arm	R L	R L	R L
Hand	R L	R L	R L
*Fingers	R L	R L	R L
Entire Leg	R L	R L	R L
Lower Leg	R L	R L	R L
Foot	R L	R L	R L
*Toes	R L	R L	R L
Art. Limb (Specify) _____	R L	R L	R L

TATTOO
Unknown	1	2	3
Upper Arm	R L	R L	R L
Lower Arm	R L	R L	R L
Hand	R L	R L	R L
Fingers	R L	R L	R L
Chest	R L	R L	R L
Abdomen	R L	R L	R L
Back	R L	R L	R L
Buttocks	R L	R L	R L
Upper Leg	R L	R L	R L
Lower Leg	R L	R L	R L

SPEECH
Unknown	1	2	3
Accent/For. Lang.	1	2	3
Impediment	1	2	3
Mumbles	1	2	3
Pitch, High	1	2	3
Low	1	2	3
Speed, Fast	1	2	3
Slow	1	2	3
Volume, Soft	1	2	3
Loud	1	2	3

SUSP. EMOTIONAL STATE
Unknown	1	2	3
Angry	1	2	3
Calm	1	2	3
Determined	1	2	3
Excited	1	2	3
Irrational	1	2	3
Nervous	1	2	3
Stupor	1	2	3
Other #1 _____			
Other #2 _____			
Other #3 _____			

SUSP. PRETENDED TO BE
Blind	1	2	3
Conduct Survey	1	2	3
Crippled	1	2	3
Customer	1	2	3
Deliv. Person	1	2	3
Disabled Motor.	1	2	3
Employee	1	2	3
Employer	1	2	3
Friend	1	2	3
Ill	1	2	3
Injured	1	2	3
Need of Assist.	1	2	3
Need Phone	1	2	3
Police	1	2	3
Public Util.	1	2	3
Relative	1	2	3
Renting	1	2	3
Repair Person	1	2	3
Sales Person	1	2	3
Seeking Someone	1	2	3
Soliciting	1	2	3
Other #1 _____			
Other #2 _____			
Other #3 _____			

SUSP. WORE
Unknown	1	2	3
Contacts	1	2	3
Glasses	1	2	3
Frameless	1	2	3
Half	1	2	3
Plastic	1	2	3
Sun	1	2	3
Wire Frame	1	2	3
Gloves	1	2	3
*Mask	1	2	3
Hearing Aid	1	2	3
Other #1 _____			
Other #2 _____			
Other #3 _____			

SUSP. ACTIONS
Unknown	1	2	3
Ate on Prem.	1	2	3
Drank on Prem.	1	2	3
Chewed Tob./Gum	1	2	3
Intox./Drugs	1	2	3
Smoked on Prem.	1	2	3
Pipe	1	2	3
Cigar	1	2	3
Rolled Cig.	1	2	3
Cigarettes			
Brand #1 _____			
Brand #2 _____			
Brand #3 _____			
Disabled Phone	1	2	3
Left Handed	1	2	3
Right Handed	1	2	3
Silent	1	2	3
Talkative	1	2	3
Systematic/Org.	1	2	3
Used Decoy	1	2	3
Used Driver	1	2	3
Used Lookout	1	2	3
Used Telephone	1	2	3
Was Polite	1	2	3
Abusive Language	1	2	3
Defecated	1	2	3
Urinated	1	2	3

Left Tools	1	2	3
Used Vic. Tools	1	2	3
Prepared Exit	1	2	3
Ransacked	1	2	3
Was Tidy	1	2	3
Selective in Items	1	2	3
Took Items in Vic. Container	1	2	3
Used Trailer	1	2	3
Bound Victim(s)	1	2	3
Covered Victim	1	2	3
Disrobed Fully	1	2	3
Disrobed Partially	1	2	3
Fondled Victim	1	2	3
Masturbated	1	2	3
Penetrated Victim	1	2	3
Perf. Act of Sodomy	1	2	3
Climaxed	1	2	3
Used Prophylactic	1	2	3
Used False ID.	1	2	3
Used Sympathy	1	2	3
Made Promise(s)	1	2	3
Limped	1	2	3
Perf. Medical Serv.	1	2	3

FORCE USED BY SUSP.
Unknown	1	2	3
Cutting	1	2	3
Pulling	1	2	3
Shooting	1	2	3
Shoving	1	2	3
Striking	1	2	3
Striking-Weapon	1	2	3
Threatening	1	2	3

MEANS USED BY SUSP.
Unknown	1	2	3	
Pistol	"	"	"	U
Revolver	"	"	"	U
Rifle	1	2	3	U
Rifle, Sawed	1	2	3	U
Shotgun	1	2	3	U
Shotgun, Sawed	1	2	3	U
Toy Gun	1	2	3	U
Other Gun	1	2	3	U
Brand #1 _____				
Brand #2 _____				
Brand #3 _____				
Caliber/Ga.				U
Unusual Grips	1	2	3	U
Blue Steel	1	2	3	U
Nickel Plated	1	2	3	U
Rusty	1	2	3	U
Knife	"	"	"	U
Switchblade	1	2	3	U
Razor	1	2	3	U
Chopping Tool	1	2	3	U
Ice Pick	1	2	3	U
Surgical Inst.	1	2	3	U
Bottle	1	2	3	U
Club	1	2	3	U
Chain	1	2	3	U
Rock/Brick	1	2	3	U
Smashing Inst.	1	2	3	U
Motor Vehicle	1	2	3	U
Caustic Chem.	1	2	3	U
Poison	1	2	3	U
Hot Liquid	1	2	3	U
Rope	1	2	3	U
Tape	1	2	3	U
Wire	1	2	3	U
Pass/Hidden Key	1	2	3	U
Bolt Cut./Pliers	1	2	3	U
Drill	1	2	3	U
Pry Tool	1	2	3	U
Punch	1	2	3	U
Saw	1	2	3	U
Shim	1	2	3	U
Carried Away	1	2	3	U
Explosive	1	2	3	U
Flammable Liq.	1	2	3	U
Flammable, Other	1	2	3	U
Torch	1	2	3	U
Check	1	2	3	U
Credit Card	1	2	3	U
Note	1	2	3	U
Ruse/Con	1	2	3	U
Physical Force	1	2	3	U
Threat	1	2	3	U
*Special Device	1	2	3	U
Other #1 _____				
Other #2 _____				
Other #3 _____				

C. R. N. _____

SUSPECT'S INJURIES
None Visible	1	2	3
Visibly Upset	1	2	3
Minor Injury	1	2	3
Serious Injury	1	2	3
Death	1	2	3
Unknown	1	2	3

VICTIM'S INJURIES
None Visible	1	2	3
Visibly Upset	1	2	3
Minor Injury	1	2	3
Serious Injury	1	2	3
Death	1	2	3
Unknown	1	2	3

VICTIM'S ACTIONS
None/Unknown	1	2	3
Allowed Entry	1	2	3
Apprehending Susp.	1	2	3
Arguing W/Susp.	1	2	3
Bystander	1	2	3
Committing Crime	1	2	3
Customer/Client	1	2	3
Engaged in Fight	1	2	3
Escape	1	2	3
Interfering	1	2	3
Intox./Drugs	1	2	3
Oper. Motor Veh.	1	2	3
Part. in Disturb.	1	2	3
Pedestrian	1	2	3
Sleeping	1	2	3
Vehicle Accident	1	2	3
Other _____	1	2	3

VICTIM FORCED TO
Commit Crime	1	2	3
Consume Liq./Pill	1	2	3
Disrobe	1	2	3
Disrobe Partially	1	2	3
Drive Motor Veh.	1	2	3
Enter Building	1	2	3
Enter Restroom	1	2	3
Enter Room	1	2	3
Enter Vehicle	1	2	3
Enter Veh. Trunk	1	2	3
Leave W/Suspect	1	2	3
Lie on Floor	1	2	3
Open Cash Register	1	2	3
Open Safe	1	2	3
Perform Sex Act	1	2	3
Rear of Bldg.	1	2	3
Use Telephone	1	2	3
Other _____	1	2	3

FORCE USED BY VICTIM
Unknown	1	2	3
Cutting	1	2	3
Pulling	1	2	3
Shooting	1	2	3
Shoving	1	2	3
Striking	1	2	3
Striking-Weapon	1	2	3
Threatening	1	2	3

RESISTANCE BY VICTIM
None	1	2	3
Before Crime	1	2	3
During Crime	1	2	3
After Crime	1	2	3
Unknown	1	2	3

SUSP./VIC. RELATIONSHIP

#1 SUSP.
Rel. _____	1	2	3
Rel. _____	1	2	3
Rel. _____	1	2	3
Acquaintance	1	2	3
Stranger	1	2	3
Unknown Relation	1	2	3

#2 SUSP.
Rel. _____	1	2	3
Rel. _____	1	2	3
Rel. _____	1	2	3
Acquaintance	1	2	3
Stranger	1	2	3
Unknown Relation	1	2	3

#3 SUSP.
Rel. _____	1	2	3
Rel. _____	1	2	3
Rel. _____	1	2	3
Acquaintance	1	2	3
Stranger	1	2	3
Unknown Relation	1	2	3

FIGURE VII-4a INVESTIGATION REPORT CHECK-OFF LIST

PG. _____ OF _____

CRIME SCENE:

ENTRY			AND	EXIT		
1	2	3	Unknown	1	2	3
1	2	3	Adj. Prem.	1	2	3
1	2	3	Basement	1	2	3
1	2	3	Fire Escape	1	2	3
1	2	3	Front	1	2	3
1	2	3	Garage Dr.	1	2	3
1	2	3	Inter. Hall	1	2	3
1	2	3	Patio	1	2	3
1	2	3	Rear	1	2	3
1	2	3	Roof	1	2	3
1	2	3	Side	1	2	3
1	2	3	Underground	1	2	3
1	2	3	Vent	1	2	3
1	2	3	1st Floor	1	2	3
1	2	3	2nd Floor	1	2	3
1	2	3	3rd Floor	1	2	3
___	___	___	Door Dir.	___	___	___
___	___	___	Serv. Dr. Dir.	___	___	___
___	___	___	Wall Dir.	___	___	___
___	___	___	Window Dir.	___	___	___
1 _____			Other	1 _____		
2 _____			Other	2 _____		
3 _____			Other	3 _____		

SAFE/FIREBOX

Unknown	1	2	3
Burned	1	2	3
Drilled	1	2	3
Explosive	1	2	3
Peeled/Pried	1	2	3
Punched	1	2	3
Removed	1	2	3
Unlocked	1	2	3
No Force	1	2	3

VENDING MACHINE

Unknown	1	2	3
Burned	1	2	3
Drilled	1	2	3
Punched	1	2	3
Removed	1	2	3
Unlocked	1	2	3
No Force	1	2	3
Forced	1	2	3

WINDOW

By Door	1	2	3
In Door	1	2	3
Crank/Swing	1	2	3
Fixed/Display	1	2	3
Louvered	1	2	3
Sash	1	2	3
Skylight	1	2	3
Sliding	1	2	3
Broken	1	2	3
Cut	1	2	3
Removed	1	2	3
Taped	1	2	3
Unlocked	1	2	3
Other 1 _____			
Other 2 _____			
Other 3 _____			

SCREEN

Cut	1	2	3
Pried	1	2	3
Removed	1	2	3
Torn	1	2	3
Other 1 _____			
Other 2 _____			
Other 3 _____			

DOOR

Hinged-Solid	1	2	3
Hinged-Hollow	1	2	3
Overhead	1	2	3
Sliding	1	2	3
Rmvd. Hinge Pins	1	2	3
Unlocked	1	2	3
Other 1 _____			
Other 2 _____			
Other 3 _____			

LOCK

Burned	1	2	3
Cut	1	2	3
Forced Hasp	1	2	3
Picked	1	2	3
Pried	1	2	3
Pulled	1	2	3
Punched	1	2	3
Removed	1	2	3
Shimmed	1	2	3
In Door	1	2	3
Padlock	1	2	3
Other 1 _____			
Other 2 _____			
Other 3 _____			

BUSINESS/STORE

Chain	1	2	3
Independent	1	2	3
Retail	1	2	3
Wholesale	1	2	3

Norm. Bus. Hrs.

1 _____ / _____

2 _____ / _____

3 _____ / _____

RESIDENCE

Apt./Project	1	2	3
Single Family	1	2	3
Mult. Family	1	2	3
Hotel	1	2	3
Motel	1	2	3
Mobile Home	1	2	3
Other 1 _____			
Other 2 _____			
Other 3 _____			

VEHICLE

Bus	1	2	3
Passenger	1	2	3
Taxi	1	2	3
Truck	1	2	3
Vending	1	2	3
Other _____	1	2	3

MISCELLANEOUS

Alley	1	2	3
Church	1	2	3
Const. Site	1	2	3
From Cash Reg.	1	2	3
From Motor Veh.	1	2	3
From Person	1	2	3
Garage/Carport	1	2	3
Parking Lot	1	2	3
Playground/Park	1	2	3
Railroad Car	1	2	3
School	1	2	3
Street	1	2	3
Vacant Lot	1	2	3
Other 1 _____			
Other 2 _____			
Other 3 _____			

C. R. N. _____

INSIDE LIGHTING

Unknown	1	2	3
Good	1	2	3
Partial	1	2	3
None	1	2	3

VISIBILITY FROM STREET

Unknown	1	2	3
Good	1	2	3
Partial	1	2	3
None	1	2	3

SECURITY INFORMATION

Alarm, Outside	1	2	3
Alarm, Silent	1	2	3
Brand 1 _____			
Brand 2 _____			
Brand 3 _____			
Bars	1	2	3
Employee Present	1	2	3
Fence (Security)	1	2	3
Floodlights	1	2	3
Neighbor. Watch	1	2	3
Operation ID.	1	2	3
Photo. Equip.	1	2	3
T. V. Camera	1	2	3
Watchdog	1	2	3
Watchman	1	2	3
Other 1 _____			
Other 2 _____			
Other 3 _____			

WEATHER CONDITIONS

( ) Unknown	( ) Rain
( ) Clear	( ) Snow
( ) Cloudy	( ) Fog
( ) Other _____	

FIGURE VII-4b INVESTIGATION REPORT CHECK-OFF LIST (Concluded)

Patrol's main objective in responding to a crime scene is to quickly ensure that the victim is cared for and that the offender is described sufficiently quickly and adequately that he might be intercepted Consequently, the responding officer would not be in a mood to run through an extensive list of descriptions to be checked off, which he might deem extraneous anyway, if a fleeing felon were to be quickly apprehended. Our statistical data identify the categories of information found to be most closely associated with case solution. We found little indication that eye, hair, ear, face, or nose characteristics, or mannerisms, had any significance in a post-crime-scene investigation and clearance.

Consequently, we suggest that agencies having extensive computer facilities should seriously reevaluate policies that inflict an enormous paper burden on patrol officers.

Our review of the literature prior to undertaking this project revealed great contrast between "real world" results and controlled laboratory-type experimental findings. We regard the selected studies referenced here as well-designed and well-evaluated experiments. But the conclusions drawn did not take into consideration the operational realities with which we were confronted in analyzing actual crime reports. For example, one study* speculated, on the basis of earlier results by its authors, that:

> One might predict that if the number of pictures through which a witness had to search in the identification process could be reduced, the probability of a correct identification might be greatly enhanced. For example, witnesses might provide some preliminary information that would make it possible to eliminate a large number of pictures, keeping only those ... consistent with the verbal description.

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*K. R. Laughery et al., "Human Memory and the Identification Process," State University of New York at Buffalo (September 1971), p. 33.

A second study concluded:*

> Psychological studies of memory for words and pictures reveal that memory for pictures is superior to that for words, and memory for faces is better than that for other pictures. The larger the series of pictures to be recognized the poorer the memory .... Good identifiers, as opposed to poor, more frequently use facial markings (i.e., unusual features) in identifying suspects. Poor identifiers more frequently use general or intuitive methods in identifying suspects.

Our statistical analyses of the personal appearance descriptors, in particular, reveal an unimpressive low positive correlation with case clearance. Most frequently, we found the correlations with case clearance to be negative. The latter finding indicates that, although the personal appearance descriptors (physical and mannerism characteristics) appear in both cleared and uncleared cases, the overwhelming appearance in uncleared cases causes the correlations to become negative. Thus, the solved cases have been cleared on the basis of investigative information other than physical descriptors. (These factors have been fully documented in Chapter II.)

D. The Investigative Utility of Field Interrogation

One aspect of police investigative operations has not been elaborated on in the earlier chapters: the utility of the somewhat "unofficial" FI or FC (field contact) reporting systems. Many, if not a majority of, agencies use this technique of stopping persons and vehicles for probable cause, even though no crime has been committed. The general rationale for this practice is that stopping persons under suspicious circumstances has frequently led to an arrest for a reported crime, or the persons

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*A. Zavala, ed., "Personal Appearance Identification: Psychological Studies of Human Identification and Recognition Processes," Cornell Aeronautical Laboratory, Inc. (now CALSPAN Corp.) (Jan. 1970), p. XIII-3.

stopped for interrogation have been found to be in possession of stolen property, dangerous drugs, or narcotics paraphernalia. Although the results of our analyses of the OPD crime reports showed some FC reports associated with case clearances, the actual number of such occurrences was few. Also, we think it likely that the linking of a named suspect to an FC report was an after-the-fact finding.

The OPD does not emphasize an FC program; consequently, the amount of investigatory data in the FC files may not contribute very much to crime-solving leads. Recently, however, a comprehensive evaluation of the San Diego Police Department FI System was published, which reveals interesting if not conclusive findings:*

> The analysis supports the hypothesis that some level of FI activity, as opposed to none, provides a deterrent effect on suppressible crimes in localized areas. Further study is recommended to investigate probable area-displacement effects and to identify the factors involved in determining the optimum levels of FI activities. However, there were indications that burglary, petty theft, and malicious mischief/disturbances--crimes most frequently committed by two or more juveniles or young adults--may be the types most influenced.
>
> Taking into account that most (approximately 83%) of the arrests in the Department arise from other than FI activities (such as radio calls), and that more than 98% of field interrogations reported do not result in arrests, it is clear that whatever effects field interrogations have on suppressing crime stem mainly from the FI process itself.
>
> Although the analysis failed to show that the frequency of arrests was significantly influenced by the frequency of Field Interrogations, there were indications that FI activities contributed to 15 percent or more of the total arrests made by patrol officers and that reports of Field Interrogations helped to lead to additional arrests as the result of crime investigation activities.

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*J. E. Boydstun et al., "San Diego Field Interrogation Final Report," System Development Corporation (Police Foundation, August 1975), pp. 5-6.

The current manual filing and retrieval system employed by the San Diego Police Department effectively prohibits any extensive use of FI reports by investigators. Under these conditions, it appears that the actual utility of FI reports to investigators is minimal, although the potential utility is considered to be high by the investigators themselves. Recently, investigators were provided an improved method (a computer-based system) for comparing FI report data with the suspect information contained in crime reports. The use of this computer-based system is being analyzed.

E. The Necessity for Exposing the Functional Needs of Investigation

In summary, we deduce from the experiential data cited from the literature and from our analyses that the utility of EDP suspect/event-oriented systems is highly dependent on a massive data collection and compilation effort. Furthermore, the success of such systems is critically dependent on the ability of the investigating officers to develop important information that clearly contributes to offender identification. The collection of finely detailed information on a massive scale is not only expensive and time-consuming, but may actually be counterproductive. Therefore, on the basis of OPD operational procedures and results, we conclude: The roles of patrol and detective cannot be viewed as distinct and separate functions.

There should be no mystique about investigative work. The primary requisite is supportive, interactive departmental teamwork to ensure the acquisition of relevant information that will enable efficient sequential case-handling procedures. We view patrol as not only fulfilling a crime-suppressant role but also performing an investigative function. How efficiently the patrol officer documents the events of a crime to which he responds (in which no suspect is apprehended on scene) will have a definite impact on the case outcome as other investigators attempt to pursue the case.

Our original intent in this project was to write a concluding chapter that would present an "idealized" crime report form that could serve the multiple purposes desired by efficient police case management practitioners and that would also embrace the best offerings of computer technology. But on reflection we now consider that a more constructive approach would be to involve the law enforcement community. We are co. .nced that police agencies themselves are able to devise reporting formats and to design supporting investigative systems to serve their particular requirements. But what is needed for the success of these tasks is consideration of the implication of the facts presented in this report and in the work of others researching the field of criminal investigation and police performance measures.

We therefore recommend that the concluding chapter we had intended to write should be written as an outgrowth of a workshop to be conducted under the aegis of the National Institute of Law Enforcement and Criminal Justice. The issues we have raised and the supportive facts presented here could serve as a stimulus to participating police agencies experiencing concern over the interrelationship between investigative and patrol operations. Furthermore, the contribution of technology as an aid in controlling the criminal population needs to be explored in concert with agencies who have made, and who are contemplating making, heavy financial and personnel resource investments. Too frequently a research report gathers dust on a recipient's bookshelf. But through a workshop drawing attention to important, if not controversial, findings, participating agencies would find more reason to become part of creative policy and decision-making processes that can impact on the growing national crime rate.

Appendix A

SOCIOECONOMIC PROFILE
OF OAKLAND

APPENDIX A. SOCIOECONOMIC PROFILE OF OAKLAND

The City of Oakland is one of the two major inner-core cities of the San Francisco-Oakland Standard Metropolitan Statistical Area (SMSA). The SMSA contains more than three million inhabitants, which makes it the sixth largest population area in the country. Oakland occupies about 54 square miles, and its 1975 population is estimated at 350,000, which is approximately a 3% decrease from the 1970 U.S. Census data.

Examination of the many neighborhood socioeconomic units that make up the city would provide a more accurate picture of Oakland, but for the purpose of this report, a brief overview is included to give some understanding of the urban unit as a whole. The socioeconomic data examined here pertain to ethnic characteristics, age and sex distribution, and income and employment. Wherever possible, statistical comparisons are made from the 1960 and 1970 U.S. Census data, or more recent information if it is available. These comparisons may provide some indicators as to future trends affecting crime, crime patterns, and apprehension of law breakers.

1. Ethnic Composition

Since the 1960 U.S. census, the City of Oakland has shown a trend toward an increasing minority population. This increasing minority population is not inflating the city's total population, since there has been a steady migration of whites out of Oakland. Table A-1 illustrates the most recent ethnic statistics collected by the Oakland City Planning Department.

Table A-1

CITY OF OAKLAND
ETHNIC COMPOSITION: 1970 AND 1975

	1970*		1975†		Percent Change 1970-75
	Population	Percent	Population	Percent	
Total population	361,561	100.0%	350,000	100.0%	-3%
White	182,620	50.5	127,100	36.3	-30
Black	122,301	33.8	149,100	42.6	+22
Spanish heritage	35,372	9.8	42,800	12.2	+21
American Indian	2,890	0.8	4,200	1.2	+45
Chinese	11,335	3.1	14,000	4.0	+24
Japanese	2,405	0.7	3,000	0.9	+25
Filipino	3,633	1.0	7,000	2.0	+93
Hawaiian	351	0.1	400	0.1	+14
Korean	222	0.1	2,000	0.6	+801
Other non-white	432	0.1	400	0.1	-7

*1970 U.S. Census.

†1975 Oakland City Planning Department estimate, July 1975.

In 1969 it was estimated that by 1985 the black population would be a majority of the inhabitants.* Currently, the black population is approximately 43% of the city's total, and the school age population is 65% black. The other minority population segments, except those of Spanish surname, are relatively small.

*"Options for Oakland: A Summary Report on the Oakland 701 Project," City Planning Department, Oakland, California (December 1969).

2. Age and Sex Characteristics

The age distribution characteristics indicate some possibly significant changes that occurred between the 1960 census and the 1970 census. The number of children under the age of 18 decreased by 11.6%. The only major increase was in the 18 to 24 age group of both sexes, which exhibited a 61% increase. A smaller increase (10%) was indicated in the 25 to 34 age group. The population 65 years of age and older remained substantially unchanged, with women outnumbering men by approximately three to two. Overall, the total population of Oakland appears to be becoming younger in that the median age dropped from 35.7 years to 31.9 years.

Even though females exceeded males by 8% in 1970, this represents a drop from a high of 9.5% in 1960. Women exceeded men by 12.5% in the population group over 18 years of age, but the sex distribution for children under 18 was nearly equal. Oakland's work force reflected the national trend of more women entering employment; in 1970 it was 42% female. This was a 3% increase over the 1960 figures. The number of employed females increased by 4,500, while the male employment decreased by 17,000.

3. Income and Employment

Monetary income within the city substantially increased between the two census surveys. The median family income for all economic groups rose 52% during the 10-year span, although no correction for inflation was figured. In 1970, 50% of the employed population earned in excess of $9,625, and the average salary was $11,279. A little more than 23% of the families earned more than $15,000. The percentage of families whose income was below the federal poverty level was 12.2% in 1970, with no comparable data available in the 1960 census; 13.9% of the families in Oakland were receiving some form of public assistance in 1970. Unemployment continues to be a major problem for the city. The July 1975 labor

statistics indicate that Oakland experienced a 13.9% unemployment rate as compared to 9.9% for the Bay Area and 8.4% for the nation as a whole.

White-collar jobs significantly increased by 21% between 1960 and 1970. As a result of this increase, 57% of all the jobs available in the city were white-collar in 1970. Blue-collar jobs decreased by 10% during the same period. Service workers had increased by 21%, although they represented only 15% of the total labor force in 1970. Manufacturing jobs had declined, and this trend was projected to continue. Oakland's labor force appears to be in a state of transition, because the city is becoming one of white-collar service workers, technicians, and professionals.

Appendix B

SURVEY OF THE OPD AND ITS
INVESTIGATIVE PROCEDURES

APPENDIX B. SURVEY OF THE OPD AND ITS INVESTIGATIVE PROCEDURES

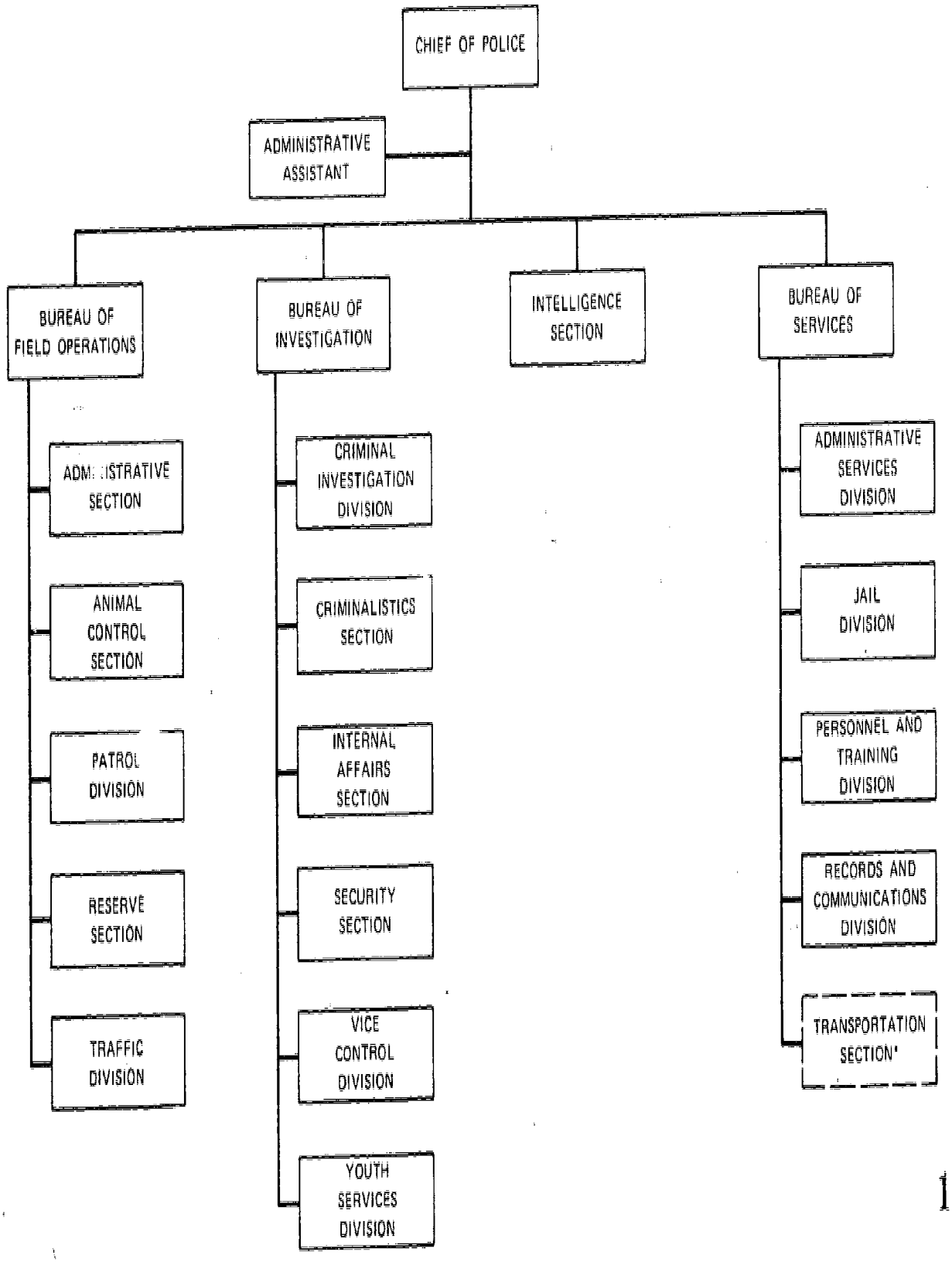
1. OPD Organization and Crime Reporting Procedure

At the initial stage of the project, interviews were held with the OPD Chief and Deputy Chief designated to assist the effort. Introductions were made to appropriate Division Commanders and investigative and records surpervisory personnel. Tours were conducted of the divisions containing information of potential value to the project's objectives. Given below is a summary of how the OPD is organized. Documents we analyzed that were related to reports of felony crime investigations are illustrated.

As of 1973, the OPD was authorized the following personnel: sworn, 722; civilian, 280; and 76 auxiliary officers. The Department is organized into three bureaus, each commanded by a Deputy Chief, and one section. Figure B-1 shows the three bureaus and the one section reporting to the Chief: Bureau of Field Operations; Bureau of Investigation; Intelligence Section; and Bureau of Services. Our research activities were largely confined to the Criminal Investigation Division (CID), Youth Services Division, Records and Communications Division, and Patrol Division.

The CID is commanded by a captain. Six lieutenants supervise special sections, such as Auto Theft, Burglary/Theft I and II, Homicide, Robbery, and Forgery/Fraud. Currently, 72 sergeants, 5 inspectors, 12 police officers, and one policewoman make up the CID sworn personnel complement.

During the period from which our sample was drawn, the city was organized into 29 beats. As of January 1975, however, the OPD realigned its patrol operations after considerable study and became organized into 35 beats under what is known as the Patrol 35 plan. The major objectives



*Functional Supervision of the Equipment Department's Transportation Section.

FIGURE B-1 ORGANIZATION CHART-OAKLAND POLICE DEPARTMENT

of the reorganization were to improve patrol response to citizens' calls and to improve the overall delivery of police services. Selective riding with patrol by SRI staff occurred after the new beat structure had been implemented, but we made no attempt to determine whether the revised operations had had any impact on crime suppression or clearance levels.

Briefly, the flow of crime incident information generally originates by a call to OPD headquarters and is handled sequentially by any of several operators in the communications and dispatch section. The OPD operator evaluates the importance of the complaint and records the critical information on the Complaint-Dispatch form (Figure B-2). If a crime is in progress, the operator time-stamps a red-border card and places it on a conveyor for immediate handling by the dispatchers. The patrol vehicle status board is scanned for an available beat unit, and dispatch orders are given, together with as much information as is needed to inform the responding unit(s) of the nature of the crime and the offender's description. According to the new Patrol 35 Plan, dispatch is given the responsibility to control vehicle deployment, and the card is filed in the slot designated for the assigned unit. In practice, however, multiple units may respond, depending upon how the adjacent beat officers view the seriousness of the crime and their freedom or desire to assist. A nonpriority complaint dispatch card is handled on a unit-availability basis.

Located in the communications room is a direct-wire annunciator panel of silent hold-up and intrusion alarms linked to important facilities such as banks. In response to an alarm, immediate dispatch of patrol elements is made, and a call to the installation is also made. Specific information is requested regarding a crime in progress. Descriptions of the perpetrators are obtained and put on the air. The OPD has been fairly successful in apprehending bank robbers by such quick and efficient procedures.

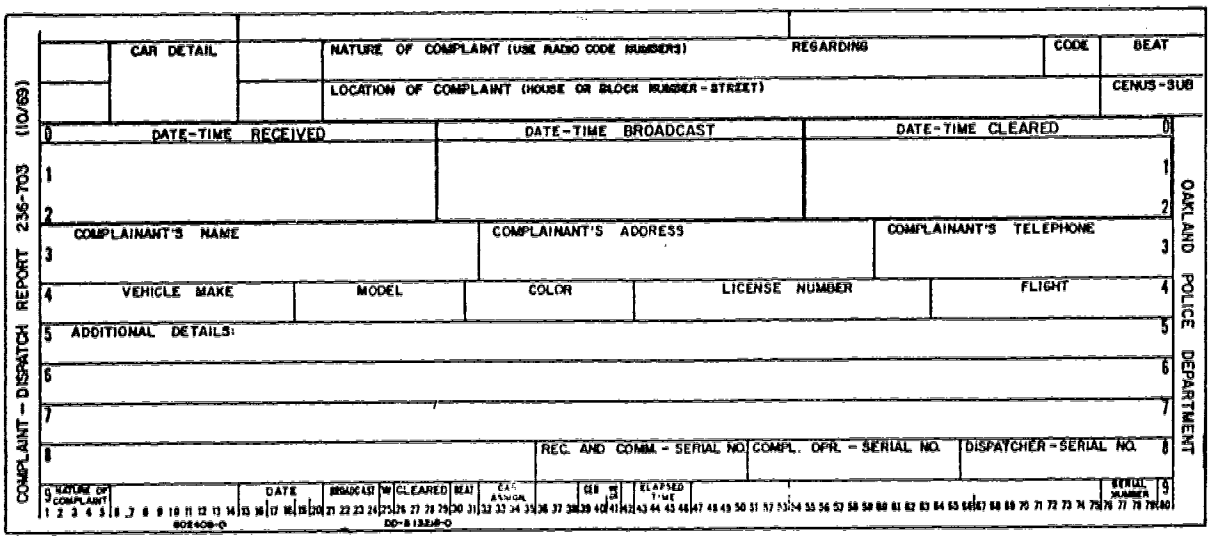


FIGURE B-2a OPD COMPLAINT DISPATCH REPORT (OBVERSE)

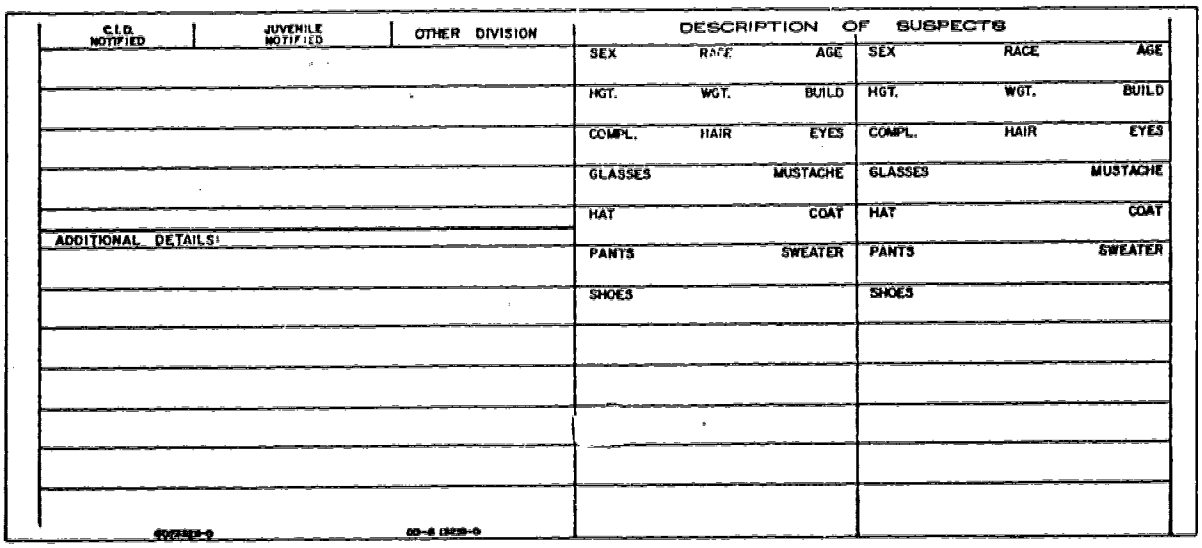
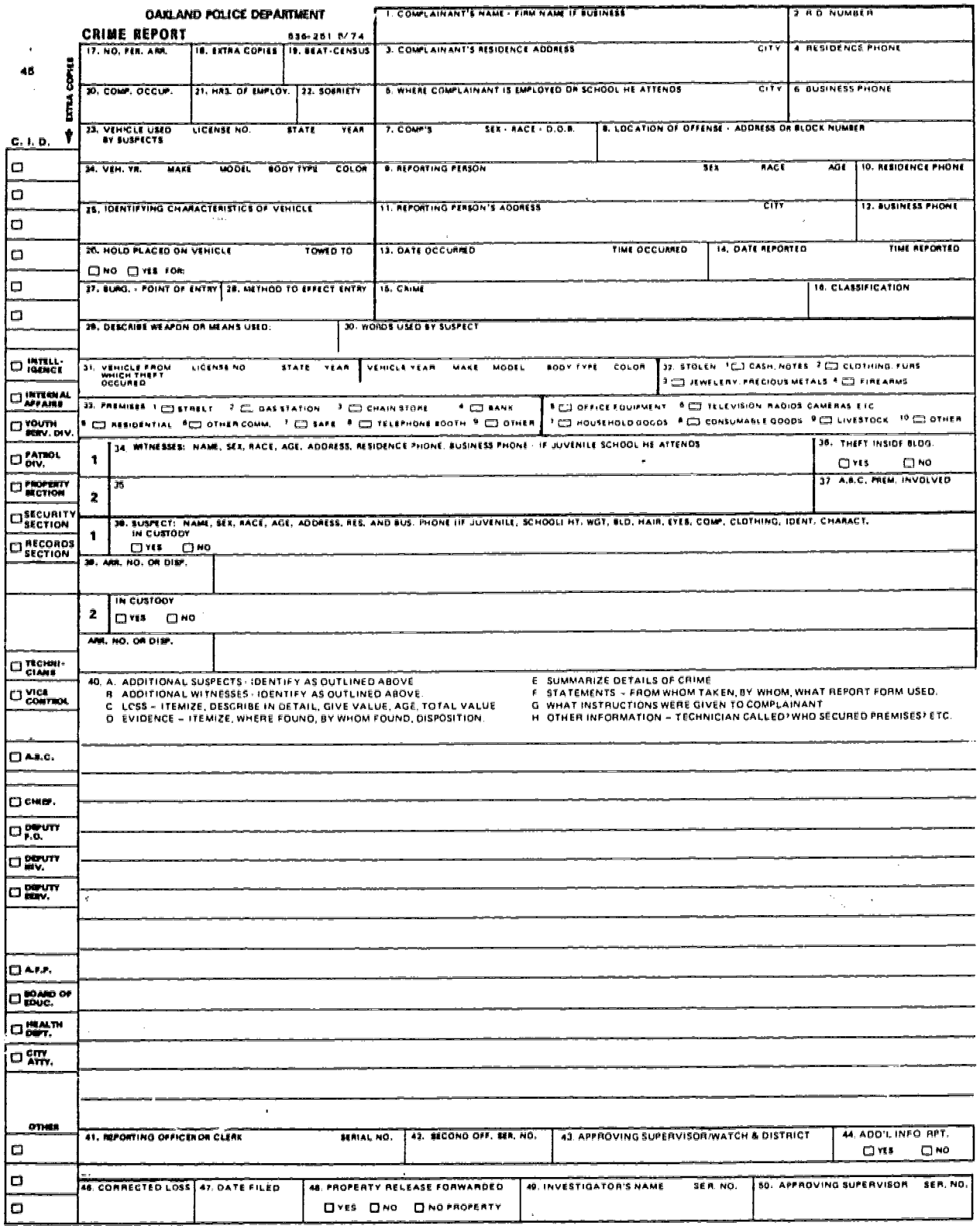


FIGURE B-2b OPD COMPLAINT DISPATCH REPORT (REVERSE)

All complaint-dispatch cards are filed away in boxes after the responding unit has indicated that the assignment has been completed and the unit is back in operation. No serial numbers are assigned to these cards, and no provision is made to link the cards to specific incident reports for possible use by investigators. Whether any potential information might be available or lost through the medium of the complaint-dispatch form may be worthy of some analysis. The Richmond, California, Police Department evidently feels the complaint-dispatch form is of value, for a case number is immediately assigned to it. It is then possible to bring the report of incident and the dispatch card together for a complete record of the event.

When there is a crime incident to which a patrol officer responds (and supporting units, e.g., special operations section, detectives, or helicopter), an official report is prepared. The basic form used is the Crime Report (Figure B-3). This report form is prepared in longhand and filed at Headquarters. It is then immediately processed for EDP recording of certain information. Tapes and printouts on incidents are created daily by the City of Oakland Data Processing Center, for statistical and operational uses. The OPD Research and Development Section controls this procedure. We found that, although the computer tapes and printouts were useful to identify all the crime incidents and certain data as to locations and times by report number, the effort to scan manually for felony offenses by felony category (penal codes) would have been too great for our purposes. Consequently we reprogrammed copies of the OPD tapes to facilitate the indexing of felony reports of interest.

Basically, the general OPD crime report, compared to others we have worked with, is well-designed. If there is a need for more descriptive data on an incident, supplementary information can be continued on the Additional Information Report (Figure B-4). Incidents regarding vehicles are described in the Vehicle Report (Figure B-5).



OAKLAND POLICE DEPARTMENT

CRIME REPORT 836-251 R/74

45 EXTRA COPIES

C. I. D.

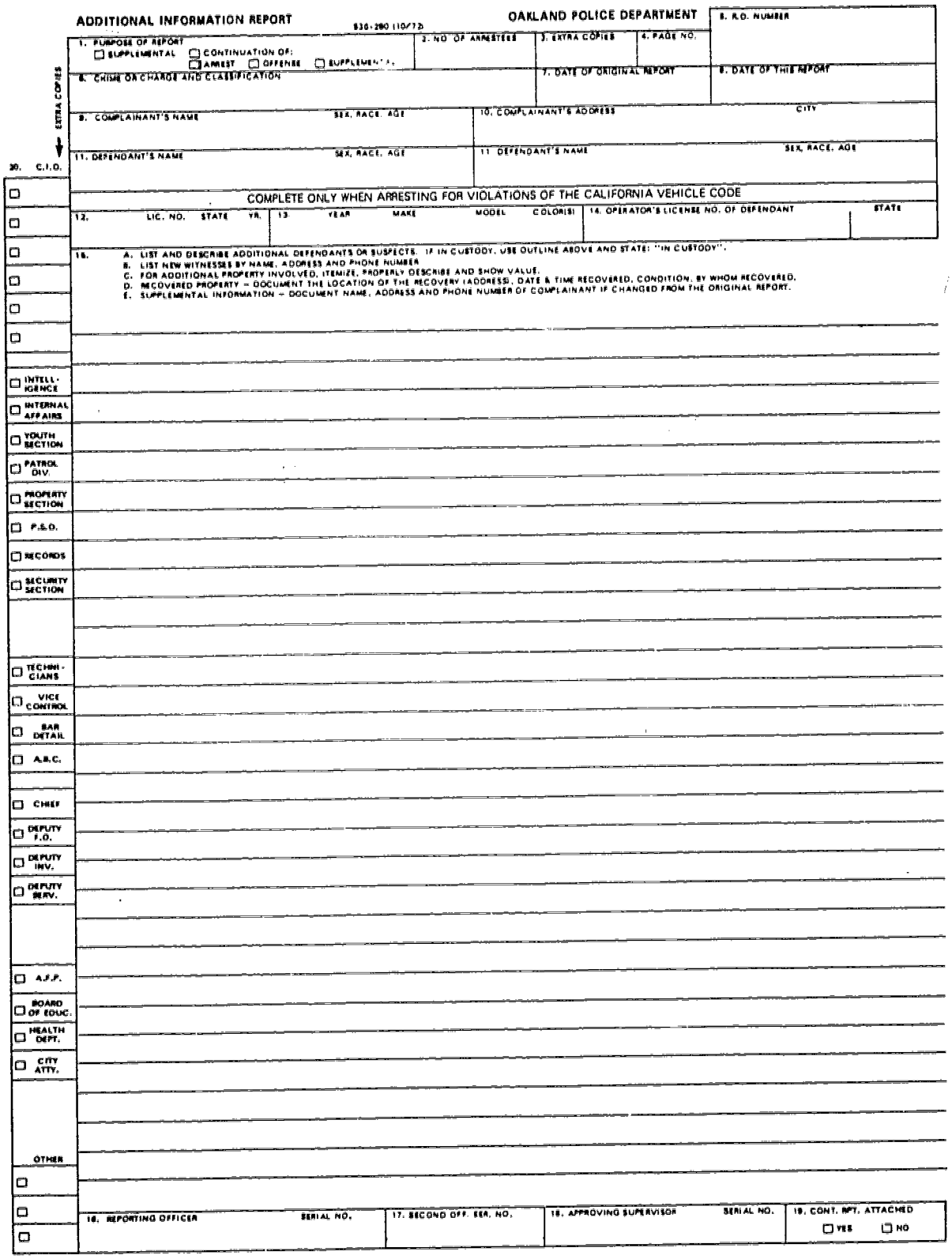
☐ INTELLIGENCE
☐ INTERNAL AFFAIRS
☐ YOUTH SERV. DIV.
☐ PATROL DIV.
☐ PROPERTY SECTION
☐ SECURITY SECTION
☐ RECORDS SECTION
☐ TECHNICIANS
☐ VICE CONTROL
☐ A.B.C.
☐ CHIEF.
☐ DEPUTY P.O.
☐ DEPUTY INV.
☐ DEPUTY SERV.
☐ A.F.P.
☐ BOARD OF EDUC.
☐ HEALTH DEPT.
☐ CITY ATTY.
OTHER

1. COMPLAINANT'S NAME - FIRM NAME IF BUSINESS
2. R.D. NUMBER
17. NO. PER. ARR.
18. EXTRA COPIES
19. BEAT-CENSUS
3. COMPLAINANT'S RESIDENCE ADDRESS CITY
4. RESIDENCE PHONE
30. COMP. OCCUP.
31. HRS. OF EMPLOY.
32. SOBRIETY
5. WHERE COMPLAINANT IS EMPLOYED OR SCHOOL HE ATTENDS CITY
6. BUSINESS PHONE
23. VEHICLE USED BY SUSPECTS LICENSE NO. STATE YEAR
7. COMP'S SEX - RACE - D.O.B.
8. LOCATION OF OFFENSE - ADDRESS OR BLOCK NUMBER
34. VEH. YR. MAKE MODEL BODY TYPE COLOR
9. REPORTING PERSON SEX RACE AGE
10. RESIDENCE PHONE
35. IDENTIFYING CHARACTERISTICS OF VEHICLE
11. REPORTING PERSON'S ADDRESS CITY
12. BUSINESS PHONE
26. HOLD PLACED ON VEHICLE TOWED TO
☐ NO ☐ YES FOR:
13. DATE OCCURRED TIME OCCURRED
14. DATE REPORTED TIME REPORTED
27. BURG. - POINT OF ENTRY
28. METHOD TO EFFECT ENTRY
15. CRIME
16. CLASSIFICATION
29. DESCRIBE WEAPON OR MEANS USED:
30. WORDS USED BY SUSPECT
31. VEHICLE FROM WHICH THEFT OCCURED LICENSE NO STATE YEAR
VEHICLE YEAR MAKE MODEL BODY TYPE COLOR
32. STOLEN 1 ☐ CASH, NOTES 2 ☐ CLOTHING, FURS 3 ☐ JEWELERY, PRECIOUS METALS 4 ☐ FIREARMS
33. PREMISES 1 ☐ STREET 2 ☐ GAS STATION 3 ☐ CHAIN STORE 4 ☐ BANK 5 ☐ RESIDENTIAL 6 ☐ OTHER COMM. 7 ☐ SAFE 8 ☐ TELEPHONE BOOTH 9 ☐ OTHER
5 ☐ OFFICE EQUIPMENT 6 ☐ TELEVISION, RADIOS, CAMERAS, ETC 7 ☐ HOUSEHOLD GOODS 8 ☐ CONSUMABLE GOODS 9 ☐ LIVESTOCK 10 ☐ OTHER
1 34. WITNESSES: NAME, SEX, RACE, AGE, ADDRESS, RESIDENCE PHONE, BUSINESS PHONE - IF JUVENILE SCHOOL HE ATTENDS
36. THEFT INSIDE BLDG. ☐ YES ☐ NO
2 35
37. A.B.C. PREM. INVOLVED
1 38. SUSPECT: NAME, SEX, RACE, AGE, ADDRESS, RES. AND BUS. PHONE (IF JUVENILE, SCHOOL) HT, WGT, BLD, HAIR, EYES, COMP, CLOTHING, IDENT. CHARACT.
IN CUSTODY ☐ YES ☐ NO
39. ARR. NO. OR DISP.
2 IN CUSTODY ☐ YES ☐ NO
ARR. NO. OR DISP.

40. A. ADDITIONAL SUSPECTS - IDENTIFY AS OUTLINED ABOVE
B ADDITIONAL WITNESSES - IDENTIFY AS OUTLINED ABOVE.
C LOSS - ITEMIZE, DESCRIBE IN DETAIL, GIVE VALUE, AGE, TOTAL VALUE
D EVIDENCE - ITEMIZE, WHERE FOUND, BY WHOM FOUND, DISPOSITION.
E SUMMARIZE DETAILS OF CRIME
F STATEMENTS - FROM WHOM TAKEN, BY WHOM, WHAT REPORT FORM USED.
G WHAT INSTRUCTIONS WERE GIVEN TO COMPLAINANT
H OTHER INFORMATION - TECHNICIAN CALLED? WHO SECURED PREMISES? ETC.

41. REPORTING OFFICER OR CLERK SERIAL NO.
42. SECOND OFF. SER. NO.
43. APPROVING SUPERVISOR/WATCH & DISTRICT
44. ADD'L INFO RPT. ☐ YES ☐ NO
46. CORRECTED LOSS
47. DATE FILED
48. PROPERTY RELEASE FORWARDED ☐ YES ☐ NO ☐ NO PROPERTY
49. INVESTIGATOR'S NAME SER. NO.
50. APPROVING SUPERVISOR SER. NO.

FIGURE B-3 OPD CRIME REPORT



ADDITIONAL INFORMATION REPORT 830-280 (10/73) OAKLAND POLICE DEPARTMENT

1. PURPOSE OF REPORT ☐ SUPPLEMENTAL ☐ CONTINUATION OF: ☐ ARREST ☐ OFFENSE ☐ SUPPLEMENTAL
2. NO. OF ARRESTEES
3. EXTRA COPIES
4. PAGE NO.
5. R.D. NUMBER
6. CRIME OR CHARGE AND CLASSIFICATION
7. DATE OF ORIGINAL REPORT
8. DATE OF THIS REPORT
EXTRA COPIES
9. COMPLAINANT'S NAME SEX, RACE, AGE
10. COMPLAINANT'S ADDRESS CITY
11. DEFENDANT'S NAME SEX, RACE, AGE
11. DEFENDANT'S NAME SEX, RACE, AGE
20. C.I.O.

COMPLETE ONLY WHEN ARRESTING FOR VIOLATIONS OF THE CALIFORNIA VEHICLE CODE

12. LIC. NO. STATE YR.
13. YEAR MAKE MODEL COLOR(S)
14. OPERATOR'S LICENSE NO. OF DEFENDANT STATE

15. A. LIST AND DESCRIBE ADDITIONAL DEFENDANTS OR SUSPECTS. IF IN CUSTODY, USE OUTLINE ABOVE AND STATE: "IN CUSTODY".
B. LIST NEW WITNESSES BY NAME, ADDRESS AND PHONE NUMBER
C. FOR ADDITIONAL PROPERTY INVOLVED, ITEMIZE, PROPERLY DESCRIBE AND SHOW VALUE.
D. RECOVERED PROPERTY – DOCUMENT THE LOCATION OF THE RECOVERY (ADDRESS), DATE & TIME RECOVERED, CONDITION, BY WHOM RECOVERED.
E. SUPPLEMENTAL INFORMATION – DOCUMENT NAME, ADDRESS AND PHONE NUMBER OF COMPLAINANT IF CHANGED FROM THE ORIGINAL REPORT.

☐ INTELLIGENCE
☐ INTERNAL AFFAIRS
☐ YOUTH SECTION
☐ PATROL DIV.
☐ PROPERTY SECTION
☐ P.S.D.
☐ RECORDS
☐ SECURITY SECTION
☐ TECHNICIANS
☐ VICE CONTROL
☐ BAR DETAIL
☐ A.B.C.
☐ CHIEF
☐ DEPUTY F.O.
☐ DEPUTY INV.
☐ DEPUTY SERV.
☐ A.F.F.
☐ BOARD OF EDUC.
☐ HEALTH DEPT.
☐ CITY ATTY.
OTHER

16. REPORTING OFFICER SERIAL NO.
17. SECOND OFF. SER. NO.
18. APPROVING SUPERVISOR SERIAL NO.
19. CONT. RPT. ATTACHED ☐ YES ☐ NO

FIGURE B-4 OPD ADDITIONAL INFORMATION REPORT

VEHICLE REPORT

OAKLAND POLICE DEPARTMENT

836 284 (3/71)

EXTRA COPIES

48. C.I.D.

INTELLIGENCE

INTERNAL AFFAIRS

YOUTH SECTION

PATROL DIV.

PROPERTY SECTION

P.S.D.

RECORDS

SECURITY SECTION

TECHNICIANS

VICE CONTROL

BAR DETAIL

A.B.C.

CHIEF

DEPUTY F.O.

DEPUTY INV.

DEPUTY SERV.

A.F.F.

BOARD OF EDUC.

HEALTH DEPT.

CITY ATTY.

OTHER

16. NO. PERS. ARR. | 17. EXTRA COPIES | 17. BEAT CENSUS

18. REPORTING PERSON SEX RACE DATE OF BIRTH

19. REPORTING PERSON'S ADDRESS CITY

20. R/P'S RES. PHONE | 21. R/P'S BUS. PHONE | 22. SOBRIETY

23. DESCRIBE LOCATION OF THEFT OR TOW

24. IF TOWED: NAME OF GARAGE TOW TAG NO.

25. ☐ REPORT PHONED IN DATE AND TIME SERIAL NO.
☐ TOW CLEARED

1. REGISTERED OWNER'S NAME | SEX RACE DATE OF BIRTH | 2. LICENSE NUMBER

3. REGISTERED OWNER'S RESIDENCE ADDRESS CITY | STATE YR EXPIRES

4. WHERE IS REG. OWNER EMPLOYED CITY | R. O. NUMBER

5. REG. OWN'S RES. PHONE | 6. REG. OWN'S BUS. PHONE | 7. VEHICLE'S IDENTIFICATION NO.

8. YEAR MAKE MODEL BODY TYPE COLOR(S) | 9. TYPE OF VEHICLE

10. LOCATION FROM WHERE STOLEN OR TOWED (ADDRESS) | 11. DATE AND TIME STOLEN OR TOWED

12. LOCATION WHERE RECOVERED (ADDRESS) | 13. DATE AND TIME RECOVERED

14. NATURE OF INCIDENT | 16. DATE AND TIME REPORTED

26. IGNITION LOCKED ☐ YES ☐ NO | 27. KEYS IN IGNITION ☐ YES ☐ NO | 28. SPEEDOMETER READING | 29. DOORS LOCKED ☐ YES ☐ NO | 30. WINDOWS CLOSED ☐ YES ☐ NO | 31. TRUNK LOCKED ☐ YES ☐ NO

32. **STOLEN VEHICLES:** LIST ACCESSORIES **RECOVERED OR IMPOUNDED VEHICLES:** DESCRIBE DAMAGE, OR EVIDENCE OF STRIPPING OR TAMPERING.

33. **STOLEN VEHICLES:** PERSON LAST DRIVING VEHICLE (NAME, SEX, RACE, AGE, ADDRESS, RES. AND BUS. PHONE)

34. OTHER CRIME

RECOVERED VEHICLES

35. BY WHOM RECOVERED (OFFICER'S NAME AND SERIAL NO. - IF CITIZEN, NAME, ADDRESS, RES. AND BUS. PHONE)

36. DESCRIBE LOCATION OF RECOVERY

37. VEHICLE LEGALLY PARKED ☐ YES ☐ NO IF NOT, EXPLAIN

38. NO. OF ORIGINAL PLATES ON VEHICLE

39. CONDITION OF VEHICLE - CHECK ONE

☐ DRIVABLE
☐ DRIVABLE STRIPPED
☐ DRIVABLE WRECKED
☐ DRIVABLE STRIPPED/WRECKED
☐ NOT DRIVABLE
☐ NOT DRIVABLE STRIPPED
☐ NOT DRIVABLE WRECKED
☐ NOT DRIVABLE STRIPPED/WRECKED

40. TECHNICIAN AT SCENE? IF YES, STATE HIS NAME. IF NOT, EXPLAIN WHY.

41. DATE AND TIME NOT FILE CLEARED SER. NO. OF PERSON NOTIFIED

42. WITNESSES NAME, SEX, RACE, AGE, ADDRESS, RES. AND BUS. PHONE IF JUVENILE, SCHOOL HE ATTENDS NO. 1

43. **INSTRUCTIONS:**

1. REPRINT THE LICENSE NUMBER PHONETICALLY SPELLING OUT ALL LETTERS
2. LIST THE LICENSE PLATE NUMBERS IF OTHER THAN ORIGINAL PLATES
3. IDENTIFY ANY ADDITIONAL WITNESSES AS OUTLINED IN BOX NO. 42
4. IDENTIFY OR DESCRIBE SUSPECT. GIVE NAME, ADDRESS, SEX, RACE, AGE, HEIGHT, WEIGHT, HAIR, EYES, COMPLEXION AND CLOTHING. (IF ARRESTED, GIVE NAME, SEX, RACE, AGE, AND STATE IN CUSTODY.)
5. SUMMARIZE CIRCUMSTANCES OF INCIDENT
6. STOLEN VEHICLES - DESCRIBE ANY PROPERTY IN VEHICLE AT TIME OF THEFT WHICH SUSPECT MIGHT PAWN OR SELL.
7. IMPOUND VEHICLES - DESCRIBE ANY PHYSICAL EVIDENCE WHICH MAY CONNECT VEHICLE WITH A CRIME.
8. RECOVERED VEHICLES - INDICATE WHERE AND HOW VEHICLE WAS ENTERED, THE METHOD USED TO START VEHICLE, ANY PHYSICAL EVIDENCE LEFT IN VEHICLE BY SUSPECT (ALSO STATE THE DISPOSITION OF FOUND PHYSICAL EVIDENCE).
9. DENOTE PERSONS FROM WHOM STATEMENTS WERE TAKEN, WHO TOOK THEM, AND IN WHAT FORM (STATEMENT FORM, NOTEBOOK PAPER, ETC.).

44. REPORTING OFFICER OR CLERK SERIAL NO. | 45. SECOND OFF. SER. NO. | 46. APPROVING SUPERVISOR SERIAL NO. | 47. CONT. RPT. ATTACHED ☐ YES ☐ NO

FIGURE B-5 OPD VEHICLE REPORT

The OPD has a limited field contact procedure. The form is illustrated in Figure B-6. If an individual is stopped by an officer on probable cause when no crime has been committed, a field contact (FC) card is prepared if the officer feels there may be "suspicious circumstances" surrounding the person or vehicle. Two procedures are then followed. If a vehicle is involved, the information is processed for entry into the automated Crime File system. If only people are involved, the cards are filed alphabetically by year in a cabinet. The Crime Analysis Section, described later, conducts searches for FC reports when a suspect has been named but not necessarily apprehended.

If the responding officer decides that the crime scene (for specific priority felonies) warrants the services of an evidence technician to search for and recover relevant physical evidence, he makes a request. The technician compiles the Technicians Report (Figure B-7). Processing of physical evidence, particularly fingerprints, is undertaken by the Criminalistics Section. Its report is filed on the Criminalistics Section Service Request form (Figure B-8).

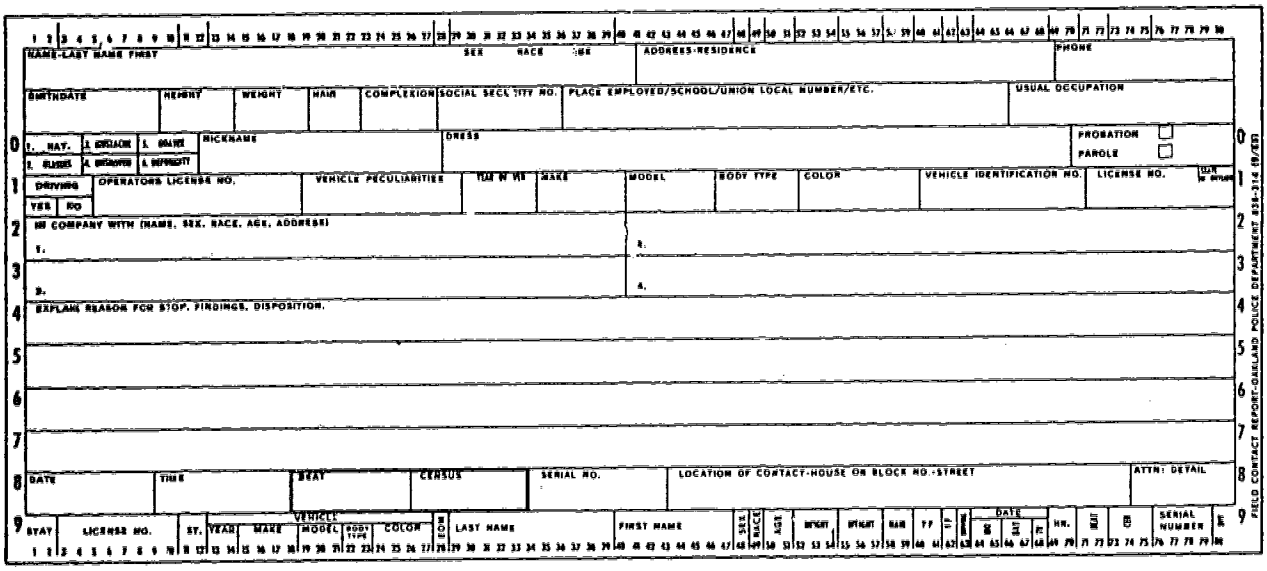
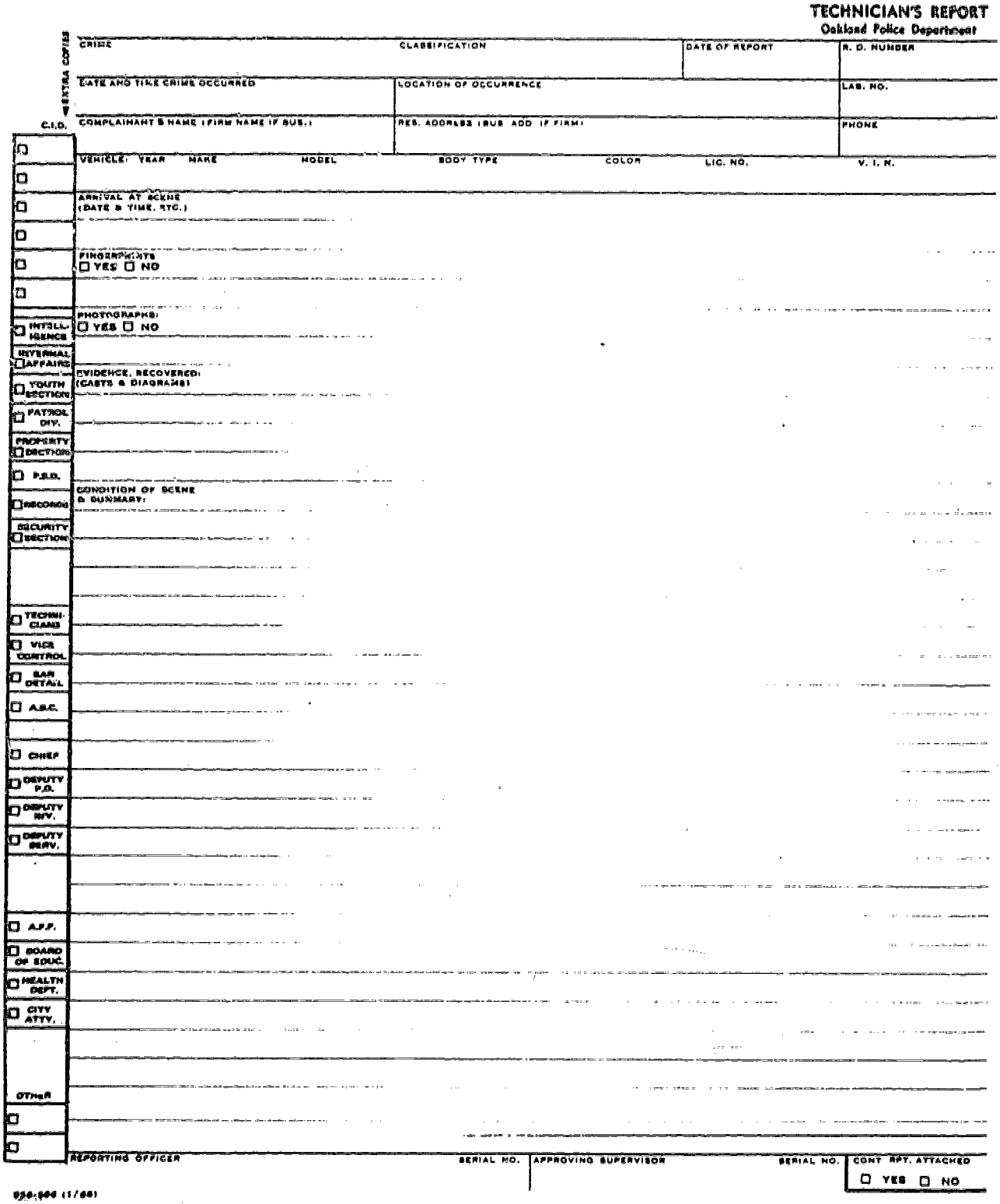


FIGURE B-6 OPD FIELD CONTACT REPORT



TECHNICIAN'S REPORT
Oakland Police Department

EXTRA COPIES

CRIME	CLASSIFICATION	DATE OF REPORT	R. D. NUMBER
DATE AND TIME CRIME OCCURRED	LOCATION OF OCCURRENCE		LAB. NO.
COMPLAINANT'S NAME (FIRM NAME IF BUS.)	RES. ADDRESS (BUS. ADD. IF FIRM)		PHONE

C.I.D.

VEHICLE: YEAR	MAKE	MODEL	BODY TYPE	COLOR	LIC. NO.	V. I. N.

ARRIVAL AT SCENE (DATE & TIME, ETC.)

FINGERPRINTS ☐ YES ☐ NO

PHOTOGRAPHS: ☐ YES ☐ NO

EVIDENCE, RECOVERED: (CASTS & DIAGRAMS)

CONDITION OF SCENE & SUMMARY:

- ☐ INTELLIGENCE
- ☐ INTERNAL AFFAIRS
- ☐ YOUTH SECTION
- ☐ PATROL DIV.
- ☐ PROPERTY SECTION
- ☐ P.I.O.
- ☐ RECORDS
- ☐ SECURITY SECTION
- ☐ TECHNICIANS
- ☐ VICE CONTROL
- ☐ BAR DETAIL
- ☐ A.B.C.
- ☐ CHIEF
- ☐ DEPUTY P.O.
- ☐ DEPUTY INV.
- ☐ DEPUTY SERV.
- ☐ A.F.F.
- ☐ BOARD OF EDUC.
- ☐ HEALTH DEPT.
- ☐ CITY ATTY.
- ☐ OTHER

REPORTING OFFICER	SERIAL NO.	APPROVING SUPERVISOR	SERIAL NO.	CONT. RPT. ATTACHED
				☐ YES ☐ NO

FIGURE B-7 OPD TECHNICIAN'S REPORT

CRIMINALISTICS SECTION SERVICE REQUEST
Oakland Police Department

R. D. NO.
LCF NO. (LAB USE)

TECHNICIAN'S REPORT ON FILE? YES ☐ NO ☐	NAME OF VICTIM OR COMPLAINANT	ADDRESS
CRIME	DATE OF CRIME	LOCATION

RELATIVE URGENCY OF ANALYSIS REQUESTED

☐ SUSPECT IN CUSTODY - _____ CAN HOLD _____ CANNOT HOLD WITHOUT RESULTS OF ANALYSIS.

☐ SUSPECT NOT IN CUSTODY - NOT URGENT.

☐ WILL BE NEEDED FOR PRELIMINARY HEARING.

☐ NOT NEEDED UNTIL SUPERIOR COURT TRIAL.

REQUEST IS MADE FOR:

☐ FINGERPRINT COMPARISON

☐ OTHER TYPE OF ANALYSIS - BE SPECIFIC - PROVIDE PROPERTY PAGE AND ITEM NUMBERS OF EVIDENCE YOU WANT EXAMINED.

_____

_____

SUSPECTS	OPD NO.		
1.		4.	
2.		5.	
3.		6.	

REQUESTED BY _____ DETAIL _____ TELEPHONE EXT. _____

APPROVED BY _____ DATE _____

LABORATORY EXAMINATION COMPLETED BY _____ DATE _____

SUMMARY OF RESULTS OF LABORATORY EXAMINATION

MAKE 3 COPIES. FORWARD ORIGINAL AND ONE COPY TO CRIMINALISTICS SECTION.

836-859 (7/71)

FIGURE B-8 OPD CRIMINALISTICS SECTION SERVICE REQUEST

Depending on the seriousness of the crime, a detective may be active in the initial investigation. Generally, however, the CID investigators respond after the initial crime reports, and supporting documents are forwarded to them. A record of the assigned CID investigators working on a case is prepared on the Follow-Up Investigation Report [Figure B-9(a)]. The unique feature of this form is Item 16, which indicates the official disposition of the case. The OPD policy is that only the investigator can officially assign a disposition to a given case. The reverse side of the form [Figure B-9(b)] is an Investigator's Check-Off List to remind the investigator to pursue the procedures specified. We rarely found that check-off entries had been made on the reports we analyzed in the CID record files. CID policy is that, except for homicide, a 30-day suspense time is imposed for completing an investigation. Reasons for delays must be cited.

Figure B-10 shows the form used by the interviewing officers when taking statements. We frequently found that information contained in this form was not contained in the crime report or the supplementary forms. This information has a certain value regarding descriptions of events and persons involved.

Alameda County has developed a Consolidated Arrest Report (Figure B-11) which is used by all jurisdictions in the county. Certain key information in the uniform arrest report is transferred to the County CORPUS EDP system (Criminal Oriented Records, Productions, Unified System). CORPUS terminals are provided at the OPD and the county jails so that a PFN (person filing number) for booking can be assigned permanently to the arrestee. If the subject has had a prior arrest and conviction record, the same PFN number is recorded on the new arrest report (bearing the assigned case number). A CORPUS terminal is also located in the CID to assist in suspect identification, and terminals are presumably becoming available in other Alameda County law enforcement agencies.

FOLLOW-UP INVESTIGATION REPORT
OAKLAND POLICE DEPARTMENT

1. DATE OF THIS REPORT	2. RD NUMBER	3. FOLLOW-UP REPORT NO.

4. ORIGINAL COMPLAINANT'S NAME	5. CHANGE COMPLAINANT'S NAME AND ADDRESS TO

6. ORIGINAL CRIME AND CLASSIFICATION	7. CHANGE CRIME AND CLASSIFICATION TO

8. TYPE OF PREMISES	9. OBJECT OF ATTACK	10. DATE OF ORIGINAL REPORT

11. WHERE AUTO WAS RECOVERED	12. VALUE OF LOSS	13. VALUE-RECOVERED PROPERTY

14. NAME OF SUSPECTS RESPONSIBLE	SEX-RACE-DOB	ARREST NUMBER	OPD NUMBER
#1			
#2			

DATE	15. ENTER THE RESULTS OF EACH STEP OF YOUR INVESTIGATION

16. DISPOSITION

- ☐ 01 Arrest and Prosecution
- ☐ 03 Comp. Refuses to Prosecute
- ☐ 06 Complaint Refused by D.A.
- ☐ 04 Pros. for Another Offense
- ☐ 12 D.A. Citation
- ☐ OX Unfounded
- ☐ 08 Pros. By Outside Department
- ☐ 02 Occurred in Other Jurisd.
- ☐ 09 Turned Over to Military Auth.
- ☐ 07 Death of Offender
- ☐ 14 Located or Returned Home
- ☐ 13 Found Property Ret. to Owner

JUVENILE DISPOSITION ONLY

- ☐ 11 Turned Over to Juvenile Authority
- ☐ 15 Juvenile Court Citation
- ☐ 10 Reprimanded and Released
- ☐ 16 Notice to Appear

17. INVESTIGATING OFFICER'S NAME SERIAL NO.	18. APPROVING SUPERVISOR SERIAL NO.

336-201 (REV. 5-71)

FIGURE B-9a OPD FOLLOW-UP INVESTIGATION REPORT (OBVERSE)

INVESTIGATOR'S CHECK-OFF LIST
OAKLAND POLICE DEPARTMENT

	YES	NO	NOT APPLICABLE
MO CHECK			
VISIT CRIME SCENE			
CONTACT COMPLAINANT			
CONTACT WITNESS(ES)			
INTERROGATE SUSPECT(S)			
LINE-UP ON SUSPECT(S)			
ROGUES GALLERY RUN			
INFORMANTS			
REVIEW TECHNICIAN REPORTS			
CHECK WITH CRIMINALIST (PRINTS, ETC.)			
EVIDENCE REVIEWED			
EVIDENCE DISPOSED OF			
VEHICLE RELEASED			
APB			
DAILY BULLETIN NOTICE			
YOUTH SECTION CONTACT			
OUTSIDE AGENCY CONTACT:			
Parole			
Probation			
Other Departments			
CRIME ANALYSIS SECTION:			
Field Contacts			
Vehicle Listings			
Known Offenders			
Recap Information			
CONFERENCES WITH PROSECUTING ATTORNEY			
CASE REPORT MADE			

INVESTIGATOR	SERIAL NO.	APPROVING SUPERVISOR	SERIAL NO.

FIGURE- B-9b OPD FOLLOW-UP INVESTIGATION REPORT (REVERSE)

1. NAME OF COMPLAINANT OR DEFENDANT	2. REPORT NUMBER

STATEMENT
Oakland Police Department

3. NAME OF PERSON GIVING STATEMENT SEX RACE DOB	4. RESIDENCE ADDRESS PHONE

5. EMPLOYMENT (NAME - ADDRESS - PHONE - OCCUPATION) OR SUPPLEMENTAL INFORMATION IF UNEMPLOYED OR TRANSIENT

6. STATEMENT TAKEN BY _____ (name) _____ (serial no.) ON _____ (date) FROM _____ (time started) TO _____ (time completed)

AT _____ (location where statement taken) IN PRESENCE OF _____ (names and addresses of persons present when statement taken)

FOR VEHICLE COLLISIONS ONLY

VEHICLE YEAR	MAKE	MODEL	TYPE	COLOR(S)	LICENSE NO.	STATE (Out Only)	OPERATOR'S NO.	STATE (Out Only)

REGISTERED OWNER	ADDRESS	CITY	RES. OR BUS. PHONE

ADMONITION: YOU HAVE THE RIGHT TO REMAIN SILENT. ANYTHING YOU SAY CAN AND WILL BE USED AGAINST YOU IN A COURT OF LAW. YOU HAVE THE RIGHT TO TALK TO A LAWYER AND HAVE HIM PRESENT WITH YOU WHILE YOU ARE BEING QUESTIONED. IF YOU CANNOT AFFORD A LAWYER ONE WILL BE APPOINTED TO REPRESENT YOU BEFORE ANY QUESTIONING, IF YOU WISH ONE.

WAIVER:

DO YOU UNDERSTAND EACH OF THESE RIGHTS I HAVE EXPLAINED TO YOU? _____

HAVING THESE RIGHTS IN MIND, DO YOU WISH TO TALK TO US NOW? _____

STATEMENT:

536-200-1 (6-74)

FIGURE B-10 OPD STATEMENT

Oakland Police Department
Arresting Agency: CA 00109

ALAMEDA COUNTY CONSOLIDATED ARREST REPORT

1 Defendant's Last Name | First | Middle | Gen
2 Report No.
3 Drivers License No.
PFN
Booking Agency
4 True Name
5 Date of Arrest
6 Social Security No.
7 AKA or Nickname
8 Time of Arrest
9 Miscellaneous I.D. No.
10 Address | City | State
11 Phone
12 Employer | Phone
13 Occupation
14 Sex | Race | Hair | Eyes | Height | Weight | Date of Birth | Age
15 Supervising Sgt.
Right Index Finger
16 POB | Bald | Skin | Glas | Mar | Dep | CZ | YRCO | YCAL | YADR
CII Number
Complete [ ] To CIB
17 Salient Characteristics
18 Clothing
New PFN [ ]
I.D. Confirmed [ ] By:

19 Code Section	20 M/F	21 Court	22 Action/Wt. No.	23 Bail	24 PIN Number	25 UD	CEN

Cash at Booking $
Released: [ ] Cite [ ] Bond [ ] O.R. [ ] Bail [ ] 849B (1, 2, 3)
Citation Number
Bond Number
Receipt Number
Court Appearance
Court Date & Time
Signature of Person Taking Prints
Signature of Person Printed ×

26 Type of Arrest: Warrant [ ] Onview [ ] Citizen [ ] Other [ ]
27 Location of Arrest
28 Loc. Code
29 Beat
30 Arresting Officer | No.
31 Assisting Officer | No.
32 Transporting Officer | No.
33 Hold For
34 Authority
35 Hold Released
36 Veh. License No. State | Year
37 Year | Make | Model | Color
38 Towed To | Hold [ ]
39 Evidence Held [ ] Yes [ ] No

40 I hereby arrest the above person on the charge indicated and request a peace officer to take him into custody. I will appear as directed and sign a complaint against the person I have arrested.

Signed ____________________

Name | Address | Home Phone | Business Phone

41 Person to Be Notified | Juv [ ] | Emerg [ ]
42 Residence Phone
43 Relationship
44 Date/Time of Notification
45 Address of Person to be Notified
46 Business Phone
47 Officer Who Made Notification
48 Co-Defendant | Sex – Race – Age | Co-Defendant | Sex – Race – Age | Co-Defendant | Sex – Race – Age
49 Complainant's Name | Address | City | State

50 NARRATIVE INSTRUCTIONS: A. List all charges by name and code section; B. Itemize multiple charges; C. Document your admonishment of the arrested persons; D. Enter the names and charges of other arrested persons involved in the incident who are not co-defendants; E. On Petty Theft Arrests, enter the total amount of the theft; F. If you are completing on offense or an offense report DO NOT start the narrative on this sheet.

Extra Copies To:
Armed With Deadly Weapon [ ] | Caused Great Bodily Harm [ ]
Used A Firearm [ ] | Acted in Concert (Sex Offense) [ ]
51 Addt. Info. Rept. [ ] | Offense Report [ ]
52 Prisoner Signature/Outgoing
53 Officer Signature/Outgoing | Date & Time
54 Reason for Release
55 Juv. Dispo: [ ] Internal [ ] Refer Probation [ ] Other Agency [ ]
56 [ ] Pin Check [ ] NCIC Check
57 [ ] C.H. To D.A.
58 [ ] Process Complete
59 [ ] To CII
Ckd. By:

(Jan. 74) 636-262

FIGURE B-11 ALAMEDA COUNTY CONSOLIDATED ARREST REPORT (OPD)

A useful instrument, specifically designed for use by the Alameda County Office of the District Attorney, is the Prosecutor's Case Summary (Figure B-12). Recognizing the case loads carried by prosecutors and the voluminous records (as shown previously) that can be amassed on suspects arrested for alleged crimes, OPD case investigators prepare a brief of a case to facilitate a complaint to be signed by a given deputy district attorney. A complaint issued by the prosecutor, in effect, provides the basis for the OPD case disposition category "01-Arrest and Prosecution" shown in Figure B-9(a)(Follow-up Investigation Report).

2. Crime Analysis Section

We found it significant that the OPD had set up a Crime Analysis (CAS) unit to review all incident reports to determine whether additional information could be provided to assist investigators in following up certain cases. The intent was to minimize the number of detectives needed to undertake routine tasks. Consequently, we made a special effort to evaluate the effectiveness of the CAS report enrichment procedures insofar as their efforts contributed to case solutions. Unfortunately, the CAS system had not been formalized and running, as described below, for a sizeable portion of the sample felony cases we drew for July, August, and September 1974.

The CAS procedure is as follows: When patrol turns in the incident reports prepared, they are sent to the Report Reproducing Unit (located in the CID). The reports are assigned a number, and a computer card is prepared for complainant reference and for preparation of statistical reports. After reproduction of the original report in multiple copies, CAS staff receives the report for staff review. Each report is coded by an alphanumeric designation indicating the priority handling (letters A-J) and type of information search to be conducted (numbers 1-15).

OAKLAND POLICE DEPARTMENT **PROSECUTOR'S CASE SUMMARY**

DEFENDANT'S NAME	SEX	RACE	AGE	DOB	CHARGE	CASE NUMBER

DEFENDANT'S RES. ADDRESS AND TELEPHONE	WHERE OR BY WHOM EMPLOYED

DATE AND TIME ARRESTED	LOCATION OF ARREST	ARREST NUMBER

ARRESTING OFFICER	SERIAL NO.	ARRESTING OFFICER	SERIAL NO.	INVESTIGATING OFFICER	SERIAL NO.

VICTIM'S NAME	SEX	RACE	AGE	DOB	RES. ADDRESS AND PHONE	BUSINESS ADDRESS AND PHONE

DATE AND TIME OF OFFENSE	LOCATION OF OFFENSE

THE FOLLOWING DATA SHOULD BE SUMMARIZED IN THE ORDER AND UNDER THE HEADINGS SHOWN: (1) WITNESSES. (2) SUMMARY OF OFFENSE. (3) SUMMARY OF EXPECTED TESTIMONY OF WITNESSES. (4) PHYSICAL EVIDENCE AND WHERE PRESENTLY LOCATED. (5) GROUNDS FOR ARREST, I.E. REASONABLE CAUSE, WARRANT, ETC. (6) DEFENDANT'S CRIMINAL RECORD (ATTACH RAP SHEET). (7) IF STATEMENT TAKEN FROM DEFENDANT, BY WHOM AND WHETHER CONFESSION, DENIAL, ADMISSION, REFUSED. (8) OTHER REMARKS. (9) SIGN AND DATE REPORT.

ADDITIONAL DEFENDANTS - ENTER SAME INFORMATION AS FOR DEFENDANT NO.

WITNESS' NAME	SEX	RACE	AGE	RES. ADDRESS AND PHONE	BUSINESS ADDRESS AND PHONE

© R44055 338-302 (11-88)

FIGURE B-12 OPD PROSECUTOR'S CASE SUMMARY

The priority case handling letter code designations are summarized as follows:

A. Investigation of offenses involving great bodily injury and other major or serious crimes against the person.

B. In-custody felony suspects.

C. Named felony suspects not in custody posing a major threat to society.

D. Major property loss.

E. In-custody misdemeanor suspects.

F. Named felony suspects not in custody and not posing an immediate threat to society.

G. Other felony offenses.

H. Misdemeanor offenses in which losses are above a given level.

I. Misdemeanor offenses in which losses are below a given level.

J. Investigation of violation of local regulatory ordinances.

Figure B-13 is a copy of the CID Investigators Information Sheet. The arabic numbers represent sources of information, indicated by a CAS staff analyst, to be checked. Thus, an ADW report having a named suspect not in custody could be coded as C-2,-3,-5,-14. The Data Collection Form, Card 7 (see Appendix C), is the source from which we could ascertain whether the information searches requested and conducted by the CAS staff had produced "useful leads" and/or had linked stolen property, vehicles, or firearms to a suspect. Computer hard-copy printouts, FC reports, and rap sheets are attached to the incident report if useful information has been obtained. In the case of Item 3, Crime File run-person, the computer operator interrogates the data base by inputting subject descriptors. (The computer system is discussed in Chapter VII.) The TT terminal prints the number of hits, that is the possible suspects who match the descriptors.

CRIMINAL INVESTIGATION DIVISION
INVESTIGATIVE INFORMATION SHEET

CRIME:_____

Complainant:_____ RD#:_____

1._____ 1028 Registration
2._____ Warrant Information
3._____ Crime File Run - Person
4._____ Crime File - Vehicle
5._____ Field Contact Information
6._____ Crime Re-cap Logs
7._____ Driver's License Physical Data
8._____ Stolen Article Run
9._____ Teletype (property loss) to DOJ
10._____ Pin Map Data
11._____ Firearms Query
12._____ Corpus Information
13._____ Vehicles Registered to Suspect
14._____ Firearms Registered to Suspect
15._____ Other_____

☐ Report review notice has been sent to the Reporting Officer.

DATE TIME INVESTIGATIVE FOLLOW-UP INFORMATION

_____

_____

_____

Crime Analysis Section personnel will provide the above listed information to investigators if applicable.

REMARKS:

_____

FIGURE B-13 OPD CID INVESTIGATIVE INFORMATION SHEET

If the number is small, say five or ten, the operator gets a printout of names. With any larger hit range, it is left to the investigator to determine whether to pursue further checking. A companion CRT display is associated with the Crime File System. After the TT terminal has printed the names of suspects whose descriptions match the input query, mugs can be called up for review by witnesses. The relative success of the CAS report enrichment process has been discussed in Chapters II and VII, where the specific variables (such as Crime File run--person) has been ranked according to their contribution to the felony category clearances we analyzed.

The CAS has access to data and sources as shown in Table B-1.

In addition to the Crime File computerized system for known offender and vehicle descriptions, a consolidated CRT display and hard copy printer terminal in the CAS provide centralized access to the county, state, and federal investigative data banks.

In August 1974, the CID issued a directive charging the CAS members with the responsibility of forwarding crime reports to appropriate sections when there was sufficient investigative information to permit a follow-up investigation.

The OPD had been informed, by an OPD research group, of the earlier work published by SRI, on a burglary case follow-up decision model. Although it appears that, initially, the concept was adapted to OPD needs, the culling of reports by the CAS has evidently been abandoned. The CID detectives read all reports.

Table B-1

OPD COMPUTERIZED AND MANUAL INVESTIGATIVE DATA SOURCES

Data	Data Bank and Access
Warrant information	Alameda County (and Bay Area) Police Information Network--PIN
	California Department of Justice Criminal Justice Information System--CJIS
	California Law Enforcement Telecommunications System--CLETS
	National Crime Information Center--NCIC
	Wanted Persons System--WPS
Known offenders' descriptions	OPD Crime File System
	CORPUS
	CJIS
	NCIC
Driver's license physical data	Department of Motor Vehicles, Automated Name Index--DMV/ANI (CLETS)
Field contact information	OPD Crime File System
	OPD manual file
Crime incidents	OPD crime recap manual logs
Vehicle information	PIN; Crime File System; NCIC; DMV/ANI; Stolen Vehicle System--SVS (CLETS)
Stolen property information	Automated Property System (California Department of Justice)--APS (CLETS)
	NCIC
Firearms information	CJIS, NCIC } Automated Firearms System (AFS)--(CLETS)

3. Other CID Investigative Resources

For cases involving juveniles, the Youth Services Division (YSD) handles the follow-up investigations, and all records on the juveniles are retained by the YSD.

Adult criminal histories are retained in the CAS area on microfiche which is obtained from the Central Identification Bureau (CIB) run by the Alameda County Sheriff's Office. Rap sheets are requested from the California Department of Justice to supplement the county criminal history records.

The OPD has a Criminalistics Section which processes physical evidence. This section also has a CRT display of fingerprints filed by a digital code. This is a subsystem of the CID Crime File System. If good quality latent prints are brought in, the criminalists classify them and interrogate the computer. Comparison is then made if the hit range is of reasonable size. No special effort was made to tour this operation, because we were familiar with its operation. However, the contribution to case clearance by means of physical evidence was analyzed in context with each felony category described in Chapters II through V. The presence of a Technicians Report (Figure B-7) or a Crime Lab Report (Figure B-8) in a given case report provided us with the information as to whether physical evidence had been useful in the investigation.

Because the current case investigation files are more complete in the CID, we elected to work from this source. The Records Division keeps hard copies of reports for two years. In some instances, especially for rape cases, we reviewed the Records Division files, because the Rape Investigation unit and its files were not housed in the Police Administration building. The Records Division also maintains a daily updated alphabetical microfilm listing of names (complainants, victims, and arrestees) associated with certain event information and the report numbers. This "com-alpha" index system was useful in tracking some suspect names.

The Research and Development (R&D) Section of the Administrative Services Division is the unit that compiles statistical data on crimes. At first, we used their system of indexing reports to identify the report numbers of felonies that we wanted to sample. Using this printout proved much too time-consuming and cumbersome for our need to draw a large-scale sample of cases. Consequently, the R&D Section procured copies of computer tapes of reports, which we reprogrammed into a more convenient format for our purposes.

The OPD R&D Section also undertakes new programs, such as the design and procurement of the now operational Crime File System.

Appendix C

DATA COLLECTION FORMS

FELONY INVESTIGATION DATA COLLECTION FORM -- PROJECT #3674
FIRST CARD -- FELONY CLASSIFICATION

Card type ___ 1 (1) (2) Primary Felony Offense (see below) ___ ___ (3) (4) R.D. Report No. ___ ___ ___ ___ ___ ___ ___ (5) (6) (7) (8) (9) (10) (11) (right justify)

Data Recorder's Initials ___ ___ ___ (12) (13) (14) Date Compiled (month/day) ___ ___ ___ ___ (15) (16) (17) (18)

Location of Incident: Beat ___ ___ (19) (20) Census ___ ___ ___ (21) (22) (23) Date of Occurrence (month/day) ___ ___ ___ ___ (24) (25) (26) (27)

Time of Occurrence (2400 hr) ___ ___ ___ ___ (28) (29) (30) (31) Range of time: Between (2400 hr) ___ ___ ___ ___ (32) (33) (34) (35) and ___ ___ ___ ___ (36) (37) (38) (39) Day of Week ___ (40)

1 = Mon	5 = Fri
2 = Tu	6 = Sat
3 = Wed	7 = Sun
4 = Th	

Date Reported (month/day) ___ ___ ___ ___ (41) (42) (43) (44) Time Reported (2400 hr) ___ ___ ___ ___ (45) (46) (47) (48)

Additional Offenses Charged ___ ___ / ___ ___ / ___ ___ / ___ ___ (49) (50) / (51) (52) / (53) (54) / (55) (56)

Case Disposition* ___ ___ (57) (58) Date ___ ___ ___ ___ (59) (60) (61) (62) Case Suspended ___ (63) Date ___ ___ ___ ___ (64) (65) (66) (67)

Case Uncleared ___ (68) Closed by Admission ___ (69) Complaint Signed/Date ___ ___ ___ ___ (70) (71) (72) (73)

Warrant Issued ___ (74) Date Released to CID ___ ___ ___ ___ (75) (76) (77) (78) Priority Handling Code ___ (79)

Offense Designation	Offense Code	EDP	Offense Designation	Offense Code	EDP
Strongarm robbery	( )	1	Theft:		
Armed robbery	( )	2	From person	( )	9
Felony assault	( )	3	Pursesnatch	( )	10
Burglary	( )	4	Shoplifting	( )	11
Auto theft	( )	5	Other (state) _____	( )	12
Homicide, willful	( )	6	Narcotics and drugs	( )	13
Forcible rape	( )	7	Stolen property	( )	14
Attempted rape	( )	8	Vehicle laws	( )	15
			Other _____ (state)	( )	16

* Code from bottom of Follow-up Investigation Report.

SECOND CARD -- INVOLVED PERSONNEL

Card type 2 (1) (2)

Primary Felony Offense (3) (4)

R.D. Report No. (5) (6) (7) (8) (9) (10) (11)

	(Name and Rank)	(ID Numbers)	Last Date Case Handled:
Reporting Officer(s)		(12) (13) (14) (15) (16) (17)	(18) (19) (20) (21)
		(22) (23) (24) (25) (26) (27)	(28) (29) (30) (31)
Investigating Officer(s)		(32) (33) (34) (35) (36) (37)	(38) (39) (40) (41)
		(42) (43) (44) (45) (46) (47)	(48) (49) (50) (51)
Arresting Officer(s)		(52) (53) (54) (55) (56) (57)	
		(58) (59) (60) (61) (62) (63)	
Evidence Technician		(64) (65) (66) (67) (68) (69)	

Date at Scene (month/day) (70) (71) (72) (73)

Time at Scene (2400 hr) (74) (75) (76) (77)

THIRD CARD -- CRIME SCENE AREA

Card type __ 3 (1) (2)

Primary Felony Offense __ __ (3) (4)

R.D. Report No. __ __ __ __ __ __ __ (5) (6) (7) (8) (9) (10) (11)

Location: (see list # 1)

Street __ / __ / __ (12) (13) (14)

Park or Recreational Area __ (15)

Building __ __ / __ __ (16)(17) (18)(19)

Sport/Recreational Event __ (20)

Facility Category (see list #2) __ __ (21)(22)

List # 1 -- Location:

Street

0 = Not stated
1 = Residential area
2 = Business district
3 = Sidewalk
4 = Parking lot
5 = Isolated

Recreational

6 = In building
7 = Open area
8 = Wooded or shrubbery area
9 = Rest room

Building

10 = In premises
11 = Ground floor
12 = Upper floor
13 = Elevator
14 = Grounds
15 = Hallway
16 = Doorway
17 = Other _____ (state)

List # 2 -- Facility Category

Residential

0 = Not stated
1 = Apartment
2 = Hotel
3 = Motel
4 = Single family
5 = Multi-family
6 = Other _____ (state)

Commercial

7 = Not stated
8 = Restaurant
9 = Bar
10 = Food store/supermarket
11 = Liquor
12 = Industrial mfg.
13 = Retail, large
14 = Retail, small
15 = Business office
16 = Medical office
17 = Pharmacy

Commercial (cont)

18 = Bank
19 = Gas station
20 = Phone booth
21 = Other _____ (state)

Public

22 = Not stated
23 = School
24 = House of Worship
25 = Place public assenbly
26 = Other _____ (state)

Transportation

27 = Bart
28 = Bus
29 = Taxi
30 = Auto
31 = Other _____ (state)

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FOURTH CARD -- INCIDENT SUBJECT DESCRIPTORS GENERAL (Note: Attach form for each of multiple victims or witnesses)

Card type __ 4 (1) (2) Primary Felony Offense __ __ (3) (4) R.D. Report No. __ __ __ __ __ __ __ (5) (6) (7) (8) (9) (10) (11)

Reported By: Victim __ (12) Witness __ (13) Citizen Informant __ (14) Police Informant __ (15)

Alarm __ (16) On View __ (17) No. of Reporting Individuals __ (18)

Principal Reporting Individual(s) Providing Useful Information: (see list below) a) Age group __ (19) Sex __ (20) Race __ (21)

b) Age group __ (22) Sex __ (23) Race __ (24) c) Age group __ (25) Sex __ (26) Race __ (27)

Victim's Condition: Uninjured __ (28) Minor, not Hospitalized __ (29) Hospitalized not serious __ (30) Hospitalized serious __ (31)

Dead __ (32) Lucid (Y/N) __ (33) Cooperative (Y/N) __ (34)

Weather and Illumination Conditions: (record only if stated in report) Rain __ (35) / Fog __ (36) / Clear __ (37) / Unknown __ (38) /

Daylight __ (39) / Dawn __ (40) / Dusk __ (41) / Dark __ (42) / Artificial __ (43) (B = Bright, D = Dim)

Age Group	Sex	Race	
A = Adult	M = Male	W = White	C = Chinese
J = Juvenile	F = Female	N = Negro	J = Japanese
	Ø = Other ____ (state)	M = Mexican	Ø = Other ____ (state)
		I = American Indian	

FIFTH CARD -- SUBJECT DESCRIPTORS
PROPERTY LOSS

Card type 5 (1) (2) Primary Felony Offense (3) (4) R.D. Report No. (5) (6) (7) (8) (9) (10) (11)

Weapon used/ observed (12)(13) (list #1) Physical force used & injury inflicted (14) Description provided of physical attack mode (15) Special attempts to conceal identity by stealth or handling of victim (16)

Sexual actions and/or aberrations indicated (17) Vehicle used or taken (18) Description: make model,type,year (19) Color (20) License No. (21)

1 = Calif.
2 = Other
see Crd. 7

Property Taken: (see list #2) Cash, Negotiables (22) Value (23) / Clothing- furs (24) Value (25) / Jewelry, precious metals (26) Value (27) /

Firearms (28) Value (29) / Office equip. (30) Value (31) / TV-Radio camera (32) Value (33) / Household goods (34) Value (35) /

Consumable goods (36) Value (37) / Livestock (38) Value (39) / Hardware (40) Value (41) / Stocks- bonds (42) Value (43) /

Liquor (44) Value (45) / Auto theft (46) / Auto theft- stripped (47) / Credit cards (48) / Wallet (49) / Purse (50) /

Checks (51) / Drugs (52) Value (53) / Other (54) Value (55) _____ (state) _____ / Total cash value (56)

Property Identification Indicated: Description (57) Serial no.(s) (58)

List # 1 Weapons

1 = Handgun
2 = Rifle
3 = Shotgun
4 = Alleged gun
5 = Knife
6 = Explosive
7 = Chemical
8 = Blunt instrument
9 = Simulated
10 = Other _____ (state)
11 = Unknown

List # 2 Cash Value

1 = < $ 100
2 = $100 - $200
3 = $200 - $500
4 = $500 - $1,000
5 = $1,000 - $2,000
6 = $2,000 - $5,000
7 = > $5,000

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SIXTH CARD -- PHYSICAL EVIDENCE

Card type __ 6 (1) (2) Primary Felony Offense __ __ (3) (4) R.D. Report No. __ __ __ __ __ __ __ (5) (6) (7) (8) (9) (10) (11)

Classification of Entry: Street crime __ (12) Forced entry __ (13) Unlawful entry __ (14) Invited in __ (15) No Indication __ (16)

Mode of Entry: Door __ (17) Window __ (18) Roof __ (19) Wall __ (20) Basement __ (21) Concealed __ (22) Other __ (23) _____ (state)

Object of Attack: Property __ (24) Persons __ (25) Safe __ (26)

Physical Evidence Cited and/or Recovered and Matched from a) Crime Scene B) Suspects:

a) Toolmarks __ (27) b) Tool match __ (28) / a) Tools __ (29) b) Match __ (30) / a) Fingerprints-palmprints __ (31) b) Match __ (32) /

a) Footprints __ (33) b) Shoes __ (34) / a) Tiremarks __ (35) b) Tires __ (36) / a) Weapons __ (37) b) Match __ (38) /

a) Clothing __ (39) b) Match __ (40) / a) Bloodstains __ (41) b) Match __ (42) / a) Trace Materials __ (43) b) Match __ (44) _____ (state)

a) Other Physical evidence __ (45) b) Match __ (46) _____ (state)

Indication of alarm or telephone bypass/disconnect __ (47) Crime scene description __ (see list below) (48) / __ (49)

Crime Lab report __ (50) Date __ __ __ __ (51) (52) (53) (54) Criminalist name _____

Crime Scene Description

1 = Clean
2 = Ransacked
3 = Fouled premises
4 = Used facilities
5 = Consumed food/drink
6 = Other _____ (state)

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SEVENTH CARD -- INVESTIGATIVE SOURCES UTILIZED

Card type __ 7 (1) (2) Primary Felony Offense __ __ (3) (4) R.D. Report No. __ __ __ __ __ __ __ (5) (6) (7) (8) (9) (10) (11)

Criminal Investigation Sources Checked:	Date Checked* (month/day)	Response
[1] Vehicle registration (1028)	__ __ __ __ (12)(13)(14)(15)	Useful lead __ (16) [13] Vehicle registered __ (17) Vehicle stolen __ (18)
[2] Warrant information	__ __ __ __ (19)(20)(21)(22)	Useful lead __ (23)
[3] Crime file run-person	__ __ __ __ (24)(25)(26)(27)	Useful lead __ (28) Suspect(s) ID __ (29)
[4] Crime file - vehicle	__ __ __ __ (30)(31)(32)(33)	Useful lead __ (34) Vehicle stolen __ (35) Vehicle linked to suspect __ (36)
[5] Field contact report	__ __ __ __ (37)(38)(39)(40)	Useful lead __ (41)
[6] Crime re-cap logs	__ __ __ __ (42)(43)(44)(45)	Useful lead __ (46)
[7] Drivers license physical data	__ __ __ __ (47)(48)(49)(50)	Useful lead __ (51)
[9] TT to DOJ/stolen property	__ __ __ __ (52)(53)(54)(55)	[8] Stolen article recovery run __ (56) Positive link __ (57)
[10] Pin map data	__ __ __ __ (58)(59)(60)(61)	Useful feedback __ (62)
[11] Firearms query	__ __ __ __ (63)(64)(65)(66)	Stolen __ (67) [14] Registered to suspect __ (68)
[12] CORPUS information	__ __ __ __ (69)(70)(71)(72)	Positive response __ (73)
[15] Other _____ (state)	__ __ __ __ (74)(75)(76)(77)	Useful lead __ (78)

[] Case code

* If date not known, use XXXX.

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EIGHTH CARD -- OFFENDER DESCRIPTORS (Note: Complete one form for each Offender)
WITNESS/VICTIM CONFRONTATION

Card type __ 8 (1) (2) Primary Felony Offense __ __ (3) (4) R.D. Report No. __ __ __ __ __ __ __ (5) (6) (7) (8) (9) (10) (11) Offender Code __ (12)

General Offender Description: (see list # 1) Age group __ (13) Sex __ (14) Race __ (15) Number of Offenders __ (16)

Duration of time subject in contact or view by reporting party __ __ __ (17)(18)(19) (Indicate less than One minute by *)
(in minutes)

Detailed Physical Description Provided on Subject†: Height __ (20) Weight __ (21) Eyes __ (22) Hair __ (23) Scars __ (24) Birth marks moles, warts __ (25)

Tattoos __ (26) Head shape __ (27) Hair style/ color __ (28) Ears __ (29) Glasses __ (30) Facial characteristics __ (31) Lips __ (32) Mouth __ (33)

Teeth __ (34) Chin __ (35) Nose __ (36) Facial hair (Y/N) __ (37) Hands __ (38) Torso __ (39) Arms __ (40) Legs __ (41) Build (overall) __ (42)

S = Slight
M = Medium
H = Heavy
U = Unknown

Detailed Description of Subject's Clothing Provided‡: Headgear __ (43) Top coat/ rainwear __ (44) Jacket __ (45) Shirt/ blouse __ (46) Sweater __ (47)

Pants __ (48) Skirt/ dress __ (49) Footwear __ (50) Uniform __ (51) Suit __ (52) Head/face covering __ (53) Gloves __ (54) Other __ (55) Color __ (56)
(state-) _____

List # 1 -- General Offender Description

Age group	Sex	Race			
A = Adult	M = Male	W = White	M = Mexican	C = Chinese	O = Other (state)
J = Juvenile	F = Female	N = Negro	I = Amer. Indian	J = Japanese	_____

† Override by * if there is a physical anomaly indicated such as amputation, or unusual deformities.

‡ Override each article of clothing with * for color given.

EIGHTH CARD -- OFFENDER DESCRIPTORS (Continued) (Note: Complete one form for each offender)
WITNESS/VICTIM CONFRONTATION

Description of Subject's Speech: Words spoken ___ (57) Silent/note passed ___ (58) Notable accent ___ (59) Speech defect ___ (60)

Description of Subject's Actions that Seemed Unusual: Psychological state ___ (see list # 1) (61) Pretended to be ___ (see list # 2) (62)

Offender's Associates/Movements: Suspect associates named/indicated ___ (63) Places suspect(s) frequented named ___ (64) Direction of flight provided ___ (65)

Offender movement by ___ (see list # 3) (66) Suspects known to ___ (see list # 4) (67) Suspects previously seen by ___ (see list # 4) (68) Suspect(s) named ___ (see list # 5) (69)

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List # 1 -- Psychological State

1 = Calm
2 = Nervous
3 = Under influence of drugs/ intoxicated
4 = Violent

List # 2 -- Pretended to be

1 = Ask direction
2 = Ailing
3 = Customer
4 = Repair/delivery
5 = Seeking someone
6 = Panhandling
7 = Salesman
8 = Asked for something
9 = Other _____ (state)

List # 3 -- Offender Movement

1 = Foot
2 = Auto
3 = Bicycle
4 = Unknown
5 = Other _____ (state)

List # 4 -- Suspect Known/Seen By

1 = Victim(s)
2 = Witnesses
3 = Citizen informant
4 = Police informant
5 = Police surmise
6 = Other _____ (state)

List # 5 -- Suspect(s) Name

1 = Real name
2 = Also known as (AKA)
3 = Partial
4 = Nickname

NINTH CARD -- OFFENDER DESCRIPTORS (Note: Complete form for each suspect identified)
IDENTIFICATION AND ARREST

Card type __ 9 (1) (2) Primary Felony Offense __ __ (3) (4) R.D. Report No. __ __ __ __ __ __ __ (5) (6) (7) (8) (9) (10) (11) Off. __ (12)

Name of Suspect _____ (last name first)

Identification from: Crime file description __ (13) Photos __ (14) Line up __ (15)

On scene in vicinity __ (16) Independent witness/victim ID __ (17) Other __ (18) _____ (state)

Arrest Criteria: (primary) Arrest made on basis of F.C. (suspicious person) __ (19) Vehicle check __ (20) Possession of stolen property __ (21)

Suspect named __ (22) Pickup arrest based upon: a) Radio broadcast __ (23) b) Daily patrol briefing information __ (24)

Cal. license no. of involved vehicle __ __ __ __ __ __ (25)(26)(27)(28)(29)(30) Stolen __ (31) Linked to suspect __ (32)

Previous citations __ (33) Linked when in custody for other offense __ (34) Linked via Pawn transaction __ (35) Linked from other agency tips __ (36)

Linked by Associates __ (37) Polygraph (P/F) __ (38) Witness/victim later locates suspect __ (39)

TENTH CARD -- SUSPECT CRIMINAL HISTORY (Note: Attach form for each of multiple suspects charged)

Card type 1 0 (1) (2) Primary Felony Offense ___ (3) (4) R.D. Report No. ___ ___ ___ ___ ___ ___ ___ (5) (6) (7) (8) (9) (10) (11) Offender Code ___ (12)

Name _____ (last name first) P.F.N. ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ (13)(14)(15)(16)(17)(18)(19)(20)(21)(22)

CII No. ___ ___ ___ ___ ___ ___ ___ ___ (23)(24)(25)(26)(27)(28)(29)(30) CEN or Juvenile No. ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ (31)(32)(33)(34)(35)(36)(37)(38)(39)(40) CJS Status at time of arrest (list #1) ___ (41)

D.O.B. ___ ___ ___ ___ ___ ___ (42)(43)(44)(45)(46)(47) Date of arrest ___ ___ ___ ___ (48)(49)(50)(51) Time of arrest ___ ___ ___ ___ (52)(53)(54)(55) On scene (Y/N) ___ (56)

Location of arrest: Oakland' ___ (57) Other ___ (58) _____ (state)

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Age at time of arrest ___ ___ (59)(60) Race as determined from arrest and booking record (see list #2) ___ (61)

Residence at Time of Arrest: Street address _____ (Census ___ ___ ___)

Oakland ___ (62) Other Alameda County ___ (63) Contra Costa ___ (64) San Francisco ___ (65) Calif. ___ (66) Other ___ (67) _____ (state)

First offense charged (year) ___ ___ (68)(69) Age at time of first arrest ___ ___ (70)(71)

List 1 -- CJS Status	List 2 -- Race
1 = On Parole	W = White
2 = On Probation	N = Negro
3 = Out on bail	M = Mexican
4 = On own recog.	I = Amer. Indian
5 = Escapee	C = Chinese
6 = No priors	J = Japanese
	Ø = Other _____ (state)

ELEVENTH CARD -- SUSPECT CRIMINAL HISTORY (Continued) (Note: Complete forms as required to record all prior offenses)

Card type 1 1 (1) (2) Primary Felony Offense ___ (3) (4) R.D. Report No. ___ ___ ___ ___ ___ ___ ___ (5) (6) (7) (8) (9) (10) (11) Offender Code ___ (12)

Prior Offenses:
(see list below)

Type ___ (13)(14) Date ___ ___ ___ ___ ___ ___ (15)(16)(17)(18)(19)(20) (month day year) Location ___ (21) Disposition ___ (22) R.D. No. ___ ___ ___ ___ ___ ___ ___ (23)(24)(25)(26)(27)(28)(29)

Type ___ (30)(31) Date ___ ___ ___ ___ ___ ___ (32)(33)(34)(35)(36)(37) Location ___ (38) Disposition ___ (39) R.D. No. ___ ___ ___ ___ ___ ___ ___ (40)(41)(42)(43)(44)(45)(46)

Type ___ (47)(48) Date ___ ___ ___ ___ ___ ___ (49)(50)(51)(52)(53)(54) Location ___ (55) Disposition ___ (56) R.D. No. ___ ___ ___ ___ ___ ___ ___ (57)(58)(59)(60)(61)(62)(63)

Type ___ (64)(65) Date ___ ___ ___ ___ ___ ___ (66)(67)(68)(69)(70)(71) Location ___ (72) Disposition ___ (73) R.D. No. ___ ___ ___ ___ ___ ___ ___ (74)(75)(76)(77)(78)(79)(80)

Type Prior Offenses

1 = Strongarm robbery
2 = Armed robbery
3 = Felony assault
4 = Burglary
5 = Auto theft
6 = Homicide, willful
7 = Forcible rape
8 = Attempted rape
9 = Theft from person
10 = Pursesnatch
11 = Shoplifting
12 = Theft-Other _____ (state)
13 = Narcotics and drugs
14 = Stolen property
15 = Vehicle laws
16 = Other _____ (state)

Location

1 = Oakland
2 = Other Alameda County _____ (City)
3 = Contra Costa County
4 = San Francisco
5 = California
6 = Other _____ (state)

Disposition

1 = Conviction/incarcerated
2 = Probation
3 = Parole
4 = Juvenile disposition
5 = Other _____ (state)

TWELFTH CARD -- BLANK FOR NOTES

Card type 1 2 (1) (2) Primary Felony Offense __ __ (3) (4) R.D. Report No. __ __ __ __ __ __ __ (5) (6) (7) (8) (9) (10) (11)

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Appendix D

DATA COLLECTION AND PROCESSING METHODOLOGY

APPENDIX D. DATA COLLECTION AND PROCESSING METHODOLOGY

1. Data Collection Procedures

a. Felony crimes coded. We have already stated that the felony crimes selected for development of case selection rules were: robbery, rape, ADW, and car theft. The reasons for selecting these crime categories were:

- They are all Part I crimes as classified by the FBI Uniform Crime Reports.
- The only Part I crimes not represented are burglary and homicide. Burglary had been examined in a previous felony investigation research project.* Homicide was not selected because, regardless of the information available, police departments investigate all homicides owing to the seriousness of the offense.
- ADW was selected from the category of felonious assault because it is the highest-volume assault category in Oakland.

We coded data covering a three-month period: July, August, and September 1974. The cases were classified into the following three categories:

- Cleared. These cases were those for which the OPD took one of the following formal clearances [see Appendix B Figure B-9(a)].

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*B. Greenberg et al., op. cit.

- Arrest and prosecution (includes cases where warrants had been issued).
- Prosecuted for another offense.
- D.A. citation issued.
- Prosecuted by outside department.
- Turned over to Juvenile Authority (juvenile disposition).
- Reprimanded and released (juvenile disposition).
- Notice to appear (juvenile disposition).

- Cleared-other. These cases included some of those for which the OPD took either a "Complainant Refuses To Prosecute" or "Complaint Refused by District Attorney" clearance. We placed only the cases where a suspect was named into the cleared-other category. The OPD also uses the "Complainant Refuses To Prosecute" clearance in some cases where the complainant does not cooperate--for example, by not returning the investigator's phone calls or refusing to come to the OPD to view mugs of possible suspects. Such cases were placed into the uncleared category.
- Uncleared. Included in the uncleared category were cases fulfilling one of the following criteria:
  - Cases classified as "Complainant Refuses To Prosecute," where a suspect was not named.
  - Cases where the investigator filed the case without a clearance. Typically, the investigator stated he was "filing the case pending further investigative leads."
  - Cases where there was no evidence of investigative attention.

b. Sampling procedure. To identify the report numbers of the cases to be coded, we transcribed the City of Oakland OPD tapes for the time period into a suitable format that grouped report numbers by felony categor thus facilitating the drawing of specific reports. Because of the large number of crimes reported during the time period, it was not necessary to code all the ADWs, robberies, and car thefts to achieve an adequate sample size. We disregarded cases classified as "unfounded" by the OPD as not being germane to the project objectives. Our general sampling criteria were to code all cleared cases and a random sample of uncleared cases, as follows:

- Strong-arm and armed robbery. All cleared and cleared-other cases and approximately one-fourth of all uncleared cases were coded.
- Purse snatch and theft from person. All cleared and cleared-other and approximately one-third of all uncleared cases were coded.
- Rape. All rape cases were coded.
- ADW. Of the cases in the cleared category, two-thirds of the "Arrest and Prosecution" and all the other cases were coded. One-third of the cleared-other cases were coded. All the uncleared cases were coded. (This sampling procedure differs from those for the other felony categories because the greater number of cases fall into cleared and cleared-other rather than into uncleared categories, as is the case for the other crimes under consideration.)
- Car theft. All the cleared and cleared-other cases were coded, together with one-sixth of the uncleared cases.

All the tables presented in this report reflect weighting factors that were applied to the sample drawn so that they would reflect the total number of felony cases reported during the three-month period.

c. Data coding form. An 11-page data coding form was developed to record the information from the various OPD reports (see Appendix C for the form used). The data collection form provided for coding of information in the following areas:

- General information. Felony offense, time of occurrence, case disposition, beat, and census.
- Personnel involved. Reporting, investigating, and arresting officers, evidence technician, and dates of involvement.
- Crime scene. Location of crime and type of facility involved.
- General incident descriptors. Who reported offense; age, sex and race of principal reporting individuals; condition of victim; and weather conditions.
- Property taken.
- Weapon used.
- Vehicle used. Whether description, color, and/or license number were provided.
- Physical evidence present.
- Investigative resources utilized. Whether various computer or manual information systems were utilized and whether they provided information useful in the investigation.

- Offender descriptors. Information elements on multiple offenders to a maximum of five, such as: age, sex, and race; duration of time offender was in contact with or in view by reporting party; physical description and clothing description provided on offender; information regarding offender's associates and movements (e.g., whether offender was known to victim, offender's name was given, or offender's direction of flight was provided).
- Means by which the offender was identified and how arrest was effected.
- Suspect criminal history. Date of birth, date and time of arrest, residence at time of arrest, age at time of first arrest, and so forth.
- Prior offenses. Type, date, location, and disposition of the suspect's prior offenses.

The data collection form was designed, pretested, and modified to reflect the type of information available in the OPD files.

d. Data coding procedures. After the felony case report numbers had been identified, the cases were pulled from OPD files for coding. Whenever possible, we used the CID files because they were generally the most complete. When the case files could not be located in the CID, we consulted the Records Division files. In all cases, the entire file was read: the initial offense report, the arrest report, the follow-up investigation report, supplemental statements, evidence technician reports, the crime analysis, EDP printouts, and the like.

Frequently, information on prior criminal involvement of identified suspects was not contained in the case files. In these instances, we used several other OPD resources to obtain the information:

criminal history diazo microfiche files located in the CAS, juvenile records located in the Youth Services Division, and the Alameda County CORPUS information. All subject identities were suppressed in the data processing procedures.

2. Data Processing Procedures

Essentially the same data processing procedures were followed for each of the four felony categories. These procedures were designed with several goals in mind:

- Successive reduction in the number of variables under consideration. As discussed in the preceding section, the data coding form provided for close to 1000 variables. A primary goal of the data processing was to provide a means for reducing the number of variables considered for input to a decision model construct.
- Understanding the differences between cases that were cleared and those that remained uncleared. All our variables were considered in light of their association with clearance. Our goal, therefore, was not merely to be able to describe the general characteristics of the four felony types but rather to be able to state what distinguished the cleared from the uncleared cases.
- Forming ways of predicting whether a case will be cleared or remain uncleared. We were interested in developing models which when applied to cases of different felony types would be able to predict with a high degree of accuracy whether a case would be cleared.

Our data processing procedures were statistically based, rather than anecdotal in nature. In other words, we were looking at generalized investigations according to felony types rather than at individual cases. Our objective was to develop generalized models that would predict whether a case taken at random would be cleared rather than in investigating in depth the factors that led to the solution of a particular case. Clearly, at times, certain factors that are not significant in a statistical sense lead to case closure. We, however, are more concerned with factors that can predict case clearance with a high degree of accuracy in a large sample of cases. This view is consistent with police management practices which must be applied to the high volume of reported crimes.

The following tasks were undertaken in the data processing procedures for each of the four felony types:

- Keypunching and cleaning up data. The obvious first step in the data processing was to keypunch the data and eliminate coding and keypunch errors. Also, at this stage we were able to make the first reduction in the size of the data base by determining which variables never or rarely appeared.
- Setting up SPSS files. The Statistical Package for the Social Sciences (SPSS) was chosen as the primary medium for the analysis of the felony data. A major reason for this choice is the flexibility of the data management facilities available in this package. The data in an SPSS file can easily be recoded and combined, as well as written out in a variety of forms for use in other analyses.
- Running cross tabulations. Extensive cross tabulations were run using an SPSS subprogram and an SRI-developed program. These cross tabulations were carefully analyzed

to determine the variables that appeared to be associated with the cleared or uncleared cases. For example, the variables suspect named and suspect known were obviously associated with clearance. In other cases, a more subtle association appeared.

- Deriving Pearson correlation coefficients. Another measure of the relation between two variables is the correlation coefficient. Correlation coefficients were calculated for over 100 variables for each of the felony types in order to determine the statistical importance of the relationships observed in the cross tabulations. The SPSS subprogram used gives the following data for each correlation coefficient calculated:
  - The actual correlation coefficient. This is a number that varies between -1 and 1. We set up the data so that a number close to 1 would indicate a high positive correlation with clearance. A number close to -1 indicates a high negative correlation with clearance. A number close to 0 indicates that the variable had little correlation with clearance.
  - The number of cases used in the calculation, depending on the number of missing values for the variable pair.
  - The level of statistical significance of the coefficient. The closer this number is to 0, the higher the degree of statistical significance.

  Table D-1 illustrates the variables chosen initially for robbery analysis and the correlation these variables show with arrest for armed and strong-arm robbery (Table D-2).

Table D-1

INITIAL LIS ROBBERY VARIABLES

VAR004 - Evidence technician at crime scene
VAR005 - Crime location-street
VAR006 - Crime location-building
VAR007 - Crime reported by witness
VAR008 - One reporting individual
VAR009 - Two reporting individuals
VAR010 - Three or more reporting individuals
VAR011 - Adult victim
VAR012 - Juvenile victim
VAR013 - Female victim
VAR014 - Male victim
VAR015 - White victim
VAR016 - Black victim
VAR017 - Victim of other race
VAR018 - Victim lucid
VAR019 - Victim cooperative
VAR020 - Handgun used
VAR021 - Knife used
VAR022 - Other weapon used
VAR023 - Sexual aberrations indicated
VAR024 - Vehicle used
VAR025 - Description of vehicle given
VAR026 - Color of vehicle given
VAR027 - License number of vehicle given
VAR028 - Cash, negotiables, taken
VAR029 - Credit cards taken
VAR030 - Less than $100 taken
VAR031 - $100-200 taken
VAR032 - $200-500 taken
VAR033 - $500-1000 taken
VAR034 - $1000-2000 taken
VAR035 - More than $2000 taken
VAR036 - Victim invited offender in
VAR037 - Attack against property
VAR038 - Attack against person
VAR039 - Fingerprints taken
VAR040 - Fingerprints match
VAR041 - Weapons as evidence
VAR042 - Weapons match
VAR043 - Clothing as evidence

Table D-1 (Continued)

VAR044 - Clothing match
VAR045 - Other physical evidence
VAR046 - Other physical evidence match
VAR047 - Vehicle registration check made
VAR048 - Vehicle registration check--useful lead
VAR049 - Vehicle registered to suspect
VAR050 - Vehicle stolen
VAR051 - Crime file run-person
VAR052 - Crime file run-person--useful lead
VAR053 - Crime file run-vehicle
VAR054 - Field contact report
VAR055 - Adult offender
VAR056 - Juvenile offender
VAR057 - Female offender
VAR058 - Male offender
VAR059 - White offender
VAR060 - Black offender
VAR061 - Mexican-American offender
VAR062 - One offender
VAR063 - Two offenders
VAR064 - Three or more offenders
VAR065 - Less than 1 minute contact between victim and offender
VAR066 - 1-10 minutes contact between victim and offender
VAR067 - 11-30 minutes contact between victim and offender
VAR068 - Greater than 30 minutes contact between victim and offender
VAR069 - Height of offender given
VAR070 - Weight of offender given
VAR071 - Eyes of offender described
VAR072 - Hair of offender described
VAR073 - Offender described as wearing glasses
VAR074 - Teeth of offender described
VAR075 - Sum of physical descriptors given (not a binary variable)
VAR076 - One or two physical descriptors given
VAR077 - Three physical descriptors given
VAR078 - Four or more physical descriptors given
VAR079 - Offender described as wearing jacket
VAR080 - Offender described as wearing shirt/blouse
VAR081 - Offender described as wearing pants
VAR082 - Sum of clothing descriptors given (not a binary variable)

Table D-1 (Concluded)

VAR083 - One or two clothing descriptors given
VAR084 - Three clothing descriptors given
VAR085 - Four or more clothing descriptors given
VAR086 - Words spoken by offender
VAR087 - Offender silent/note passed
VAR088 - Offender described as violent
VAR089 - Offender pretended to be: asking directions, ailing, customer, repair/delivery, seeking someone, panhandling, salesman, asked for something, other
VAR090 - Suspect's associates named/indicated
VAR091 - Places suspect frequented named
VAR092 - Direction of flight provided
VAR093 - Offender movement by automobile
VAR094 - Offender movement by foot
VAR095 - Suspect known to: victim(s), witnesses, citizen informant, police informant, police surmise, other
VAR096 - Suspect previously seen by: victim(s), witnesses, citizen informant, police informant, police surmise, other
VAR097 - Suspect named: real name, also known as, partial, nickname
VAR098 - Less than 1 hour between occurrence and report of crime
VAR099 - One to 2 hours between occurrence and report of crime
VAR100 - More than 2 hours between occurrence and report of crime
VAR101 - Crime occurred between 0001 and 0400 hours
VAR102 - Crime occurred between 0401 and 0800 hours
VAR103 - Crime occurred between 0801 and 1200 hours
VAR104 - Crime occurred between 1201 and 1600 hours
VAR105 - Crime occurred between 1601 and 2000 hours
VAR106 - Crime occurred between 2001 and 2400 hours
VAR107 - White offender and white victim
VAR108 - White offender and black victim
VAR109 - Black offender and black victim
VAR110 - Black offender and white victim
VAR111 - Offender and victim same race

Table D-2

PEARSON CORRELATION COEFFICIENTS: STRONG-ARM/ARMED ROBBERY VERSUS ARREST

Variable Pair		Variable Pair		Variable Pair		Variable Pair		Variable Pair		Variable Pair	
Arrest	0.1749	Arrest	0.0070	Arrest	-0.0149	Arrest	0.1405	Arrest	-0.1605	Arrest	0.0200
with	N(605)	with	N(588)	with	N(588)	with	N(605)	with	N(595)	with	N(595)
VAR004	Sig 0.000	VAR005	Sig 0.865	VAR006	Sig 0.719	VAR007	Sig 0.001	VAR008	Sig 0.000	VAR009	Sig 0.627
Arrest	0.2604	Arrest	-0.0602	Arrest	0.0602	Arrest	-0.0160	Arrest	0.0160	Arrest	-0.1003
with	N(595)	with	N(603)	with	N(603)	with	N(603)	with	N(603)	with	N(596)
VAR010	Sig 0.000	VAR011	Sig 0.139	VAR012	Sig 0.139	VAR013	Sig 0.695	VAR014	Sig 0.695	VAR015	Sig 0.014
Arrest	0.0766	Arrest	0.0495	Arrest	0.0918	Arrest	0.1983	Arrest	-0.1131	Arrest	0.0372
with	N(596)	with	N(596)	with	N(379)	with	N(346)	with	N(605)	with	N(605)
VAR016	Sig 0.062	VAR017	Sig 0.228	VAR018	Sig 0.074	VAR019	Sig 0.000	VAR020	Sig 0.005	VAR021	Sig 0.361
Arrest	0.1069	Arrest	0.1625	Arrest	0.1307	Arrest	0.1603	Arrest	0.1414	Arrest	0.3190
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR022	Sig 0.009	VAR023	Sig 0.000	VAR024	Sig 0.001	VAR025	Sig 0.000	VAR026	Sig 0.000	VAR027	Sig 0.000
Arrest	-0.0971	Arrest	-0.0650	Arrest	-0.0242	Arrest	-0.0123	Arrest	0.0355	Arrest	0.0106
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR028	Sig 0.017	VAR029	Sig 0.110	VAR030	Sig 0.553	VAR031	Sig 0.762	VAR032	Sig 0.384	VAR033	Sig 0.794
Arrest	0.0135	Arrest	-0.0445	Arrest	0.1178	Arrest	-0.2260	Arrest	-0.0053	Arrest	0.1031
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR034	Sig 0.740	VAR035	Sig 0.274	VAR036	Sig 0.004	VAR037	Sig 0.000	VAR038	Sig 0.897	VAR039	Sig 0.011
Arrest	0.1090	Arrest	0.1132	Arrest	0.2898	Arrest	0.1425	Arrest	0.2681	Arrest	0.2104
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR040	Sig 0.007	VAR041	Sig 0.005	VAR042	Sig 0.000	VAR043	Sig 0.000	VAR044	Sig 0.000	VAR045	Sig 0.000
Arrest	0.3077	Arrest	0.1663	Arrest	0.2445	Arrest	0.1283	Arrest	0.0238	Arrest	-0.1842
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR046	Sig 0.000	VAR047	Sig 0.000	VAR048	Sig 0.000	VAR049	Sig 0.002	VAR050	Sig 0.559	VAR051	Sig 0.000
Arrest	0.1543	Arrest	-0.0617	Arrest	0.2260	Arrest	-0.1254	Arrest	0.1254	Arrest	0.0799
with	N(605)	with	N(605)	with	N(605)	with	N(574)	with	N(574)	with	N(604)
VAR052	Sig 0.000	VAR053	Sig 0.129	VAR054	Sig 0.000	VAR055	Sig 0.003	VAR056	Sig 0.003	VAR057	Sig 0.050

Table D-2 (Concluded)

Variable Pair		Variable Pair		Variable Pair		Variable Pair		Variable Pair		Variable Pair	
Arrest	-0.0799	Arrest	0.1309	Arrest	-0.0957	Arrest	-0.0108	Arrest	-0.0210	Arrest	0.0258
with	N(604)	with	N(604)	with	N(604)	with	N(604)	with	N(605)	with	N(605)
VAR058	Sig 0.050	VAR059	Sig 0.001	VAR060	Sig 0.019	VAR061	Sig 0.791	VAR062	Sig 0.607	VAR063	Sig 0.527
Arrest	-0.0059	Arrest	-0.0720	Arrest	-0.0839	Arrest	0.1234	Arrest	0.1845	Arrest	-0.1472
with	N(605)	with	N(560)	with	N(560)	with	N(560)	with	N(560)	with	N(605)
VAR064	Sig 0.884	VAR065	Sig 0.089	VAR066	Sig 0.047	VAR067	Sig 0.003	VAR068	Sig 0.000	VAR069	Sig 0.000
Arrest	-0.0060	Arrest	0.0857	Arrest	-0.0431	Arrest	0.0507	Arrest	-0.0121	Arrest	-0.0881
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR070	Sig 0.884	VAR071	Sig 0.035	VAR072	Sig 0.290	VAR073	Sig 0.213	VAR074	Sig 0.766	VAR075	Sig 0.030
Arrest	0.0179	Arrest	-0.0256	Arrest	0.0057	Arrest	-0.0401	Arrest	0.0258	Arrest	-0.1107
with	N(517)	with	N(517)	with	N(517)	with	N(605)	with	N(605)	with	N(605)
VAR076	Sig 0.684	VAR077	Sig 0.561	VAR078	Sig 0.897	VAR079	Sig 0.325	VAR080	Sig 0.527	VAR081	Sig 0.006
Arrest	-0.1010	Arrest	-0.0427	Arrest	-0.0002	Arrest	-0.0701	Arrest	0.0523	Arrest	0.0014
with	N(605)	with	N(468)	with	N(468)	with	N(468)	with	N(605)	with	N(605)
VAR082	Sig 0.013	VAR083	Sig 0.356	VAR084	Sig 0.996	VAR085	Sig 0.130	VAR086	Sig 0.199	VAR087	Sig 0.973
Arrest	0.1260	Arrest	0.0107	Arrest	0.0634	Arrest	0.1602	Arrest	0.0571	Arrest	0.1126
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(413)
VAR088	Sig 0.002	VAR089	Sig 0.793	VAR090	Sig 0.120	VAR091	Sig 0.000	VAR092	Sig 0.160	VAR093	Sig 0.022
Arrest	-0.1666	Arrest	0.2487	Arrest	0.3087	Arrest	0.1972	Arrest	-0.0302	Arrest	-0.0678
with	N(413)	with	N(605)	with	N(605)	with	N(605)	with	N(588)	with	N(588)
VAR094	Sig 0.001	VAR095	Sig 0.000	VAR096	Sig 0.000	VAR097	Sig 0.000	VAR098	Sig 0.465	VAR099	Sig 0.100
Arrest	0.0762	Arrest	-0.0192	Arrest	-0.0647	Arrest	0.1881	Arrest	-0.0111	Arrest	-0.0248
with	N(588)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR100	Sig 0.065	VAR101	Sig 0.638	VAR102	Sig 0.112	VAR103	Sig 0.000	VAR104	Sig 0.785	VAR105	Sig 0.543
Arrest	-0.0179	Arrest	0.1572	Arrest	0.1543	Arrest	0.0333	Arrest	-0.1206	Arrest	0.0730
with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)	with	N(605)
VAR106	Sig 0.660	VAR107	Sig 0.000	VAR108	Sig 0.000	VAR109	Sig 0.413	VAR110	Sig 0.003	VAR111	Sig 0.073

A value of 99.0000 is printed if a coefficient cannot be computed.

- Conducting discriminant analyses. Variables showing a degree of correlation with clearance and a reasonable level of statistical significance were then selected for discriminant analysis. Because discriminant analysis assumes that the variables are independent from one another, extensive recoding was done to establish this independence. For example, instead of four variables--vehicle used or taken, description given, color given, and license number given--one vehicle variable was created with values on a sliding scale. (If a vehicle was used or taken, a score of 1 was assigned; if the vehicle was described, a score of 2 was assigned; if the color was given, a score of 3 was assigned; and if a license number was given, a score of 4 was assigned.)

  Discriminant analysis was the technique chosen for the final development of the model, because it is particularly well suited for separation of groups based on the relative importance of the variables. The discriminant calculation forms a linear combination of the discriminating variables called the discriminant function. The weighting coefficients used in this function are a measure of the relative value of the variable in separating the groups. With this knowledge a classification coefficient (weight factor) could be derived for use in the case follow-up decision model. We chose to use a combination of the BMD and SPSS packages for the analysis. BMD provides output that is formatted in such a way that the calculated values of the discriminant coefficients are more easily traced to the actual values of the variables. SPSS, owing to its superior data management capabilities, facilitated extensive experimentation in

variable design and recoding. The values calculated by the two packages are not significantly different. (See Appendix E for a technical discussion of discriminant analysis.)

- Analyzing offender data. The criminal history data processing involved the use of several SPSS and SRI-developed computer programs. A variety of other statistical summary and analysis techniques were used to extract inferences and conclusions from the data.

Appendix E

DISCUSSION OF DISCRIMINANT ANALYSIS METHODOLOGY

APPENDIX E. DISCUSSION OF DISCRIMINANT ANALYSIS METHODOLOGY

1. General

The objective of discriminant analysis is to provide a statistical basis to distinguish between members of two or more groups (or populations) with acceptable probabilities of being correct. The technique involves the sampling of cases with confirmed group membership by obtaining measurements on variables that would characterize the group identity of the cases. These variables are called discriminating variables. On the basis of the value of these variables, "discriminant functions" are constructed that serve as the basis of a "decision rule" to be used in the classification of cases with unknown memberships.

2. The Construction of Discriminant Functions

Let:

g = total number of groups

i = group index

n_i = sample size of Group i

j = sample index

m = total number of discriminating variables

k = discriminating variable index

x_{ijk} = value of variable k for the j^{th} sample in Group i.

The maximum allowable number of discriminant functions = $\min.\{g - 1, m\}$.

For this project, the groups that we wish to be differentiated for each offense in question are the cleared cases and the uncleared cases. Therefore, only one discriminant function is allowed, which takes the form:

$$Z = \lambda_1 x_1 + \lambda_2 x_2 + \ldots \lambda_m x_m \quad ,$$

where Z is the composite score of the discriminant function; λ_1, λ_2, ..., λ_m are the weighting coefficients; and x_1, x_2, ... x_m are the values of the m discriminating variables used in the discriminant analysis. These variables may be normalized if desirable.

The vector λ (i.e., λ_1, λ_2, ..., λ_m) is derived by solving simultaneously the following set of equations (in matrix notation):

$$A\lambda = d \quad ,$$

where $A = S^1 + S^2$,

$$S^i = \left[S^i_{uv}\right] \quad \text{for} \quad \begin{array}{l} i = 1, 2 \\ u = 1, 2, \ldots, m \\ v = 1, 2, \ldots, m \end{array}$$

$$S^i_{uv} = \sum_{j=1}^{n_i} \left(x_{iju} - x_{i.u}\right)\left(x_{ijv} - x_{i.v}\right)$$

and d is a vector of the differences between the means of two groups on the m measurements:

$$d = \left[x_{1.} - x_{2.}\right] = \left[x_{1.1} - x_{2.1}, x_{1.2} - x_{2.2}, \ldots, x_{1.m} - x_{2.m}\right]$$

The vector λ may be solved as follows:

$$\lambda = A^{-1}d$$

The resulting vector is a set of weighting coefficients characterizing the most discriminating linear combination of the variables measured.

Depending on the discriminating variables used, the Z score can be computed for:

- The mean values for the discriminant functions for Groups 1 and 2:

$$\bar{Z}_1 = \lambda_1 x_{1.1} + \lambda_2 x_{1.2} + \ldots + \lambda_m x_{1.m}$$

$$\bar{Z}_2 = \lambda_1 x_{2.1} + \lambda_2 x_{2.2} + \ldots + \lambda_m x_{2.m}$$

  For each mean-value discriminant function, the variance $V(Z_i)$ and standard deviation $\sqrt{V(Z_i)}$ can also be computed.

- Each sample in Groups 1 and 2:

$$Z_{1j} = \lambda_1 x_{1j1} + \lambda_2 x_{1j2} + \ldots + \lambda_m x_{1jm}$$

$$\text{for} \quad j = 1, 2, \ldots, n_1$$

$$Z_{2j} = \lambda_1 x_{2j1} + \lambda_2 x_{2j2} + \ldots + \lambda_m x_{2jm}$$

$$\text{for} \quad j = 1, 2, \ldots, n_2$$

3. Tests

Two tests are commonly used for estimating the statistical significance of an analysis.*

Mahalanobis' D^2:

$$D^2 = (n_1 + n_2 - 2) \sum_{i=1}^{m} \sum_{j=1}^{m} a^{ij} (x_{1.i} - x_{2.i})(x_{1.j} - x_{2.j})$$

where $[a^{ij}]$ are elements of A^{-1}.

This test is to estimate the squared distance between the mean values of the discriminating variables of the two groups. It is desirable that D^2 be maximized.

*See Dixon, p. 216. A selected bibliography is given at the end of this appendix.

The F-test:

$$F(m_1 m_1 + n_2 - 1 - m) = \frac{n_1 n_2 (n_1 + n_2 - m - 1)}{m(n_1 + n_2)(n_1 + n_2 - 2)} \cdot D^2 \quad .$$

This test requires the assumption that the sample measurements have a multivariate normal distribution. It is used for testing the similarity of the variances between the two populations.

4. The Selection of a Cutting Point

Under a two-group classification scheme, we can view the system as having two distributions along the same axis, with an overlapping area (see Figure E-1). Point C is a cutting point, which is an arbitrary separation point between the two groups:

$$j \in \begin{cases} G_1 & \text{if} \quad Z_j < C \\ G_2 & \text{if} \quad Z_j > C \\ G_1 \text{ or } G_2 & \text{if} \quad Z_j = C \end{cases}$$

where G_1 and G_2 denote Group 1 and Group 2, respectively.

The area E_1 represents the probability of case misclassification for Group 1, i.e., of the cases being classified as belonging to Group 2 when, in fact, they belong to Group 1. Similarly, the area E_2 represents the probability of misclassification of cases having membership in Group 2.

The position of C is determined by the risk values that the analyst places on the consequences of misclassification. Assuming normal distribution, the area E_1 or E_2 may be computed by transforming C into a unit-normal deviate K_c.

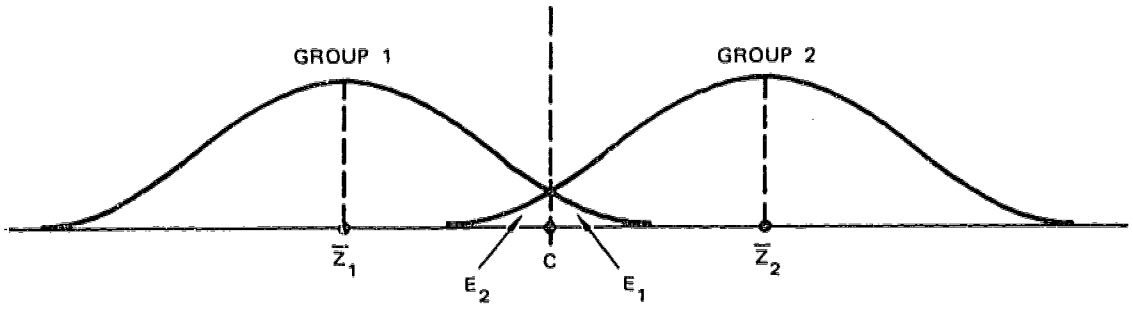

FIGURE E-1 DISTRIBUTIONS OF Z-SCORES IN TWO GROUPS

For E_1:

$$K_c = \frac{C - \bar{Z}_1}{\sqrt{V(Z_1)}} \quad .$$

For E_2:

$$K_c = \frac{C - Z_2}{\sqrt{V(Z_2)}} \quad .$$

If the distributions of the two populations are approximately equal, and the loss function of misclassification between the two groups is identical, then a cutting point placed midway between $\bar{Z}_1$ and $\bar{Z}_2$, i.e., $C = 1/2 (\bar{Z}_1 + \bar{Z}_2)$ (hence $E_1 = E_2$), would be desirable. Otherwise, the frequency distribution of the known cases under each group, as well as the population size of each group, should be analyzed before the selection of a cutting point.

5. The Determination of a Decision Rule

In the foregoing discussion, all the measurements for the discriminating variables are taken from samples with known dispositions (cleared or uncleared). The determination of a cutting point is then primarily

based on historical data. However, the utility of the discriminant analysis lies not only in establishing historical relationships but in predicting the identity of cases in which the group memberships are not known. The same discriminating variables used in constructing the discriminant function will be used to measure the new cases and to calculate the Z scores, using the weighting coefficients developed from historical data. The Z score for each new case is then compared with Cutting Point C in order to establish the probable group identity of the new case.

Since Point C is relative to the scale chosen for the discriminant function, multiplication of the entire discriminant function by a scalar would automatically change the magnitude of C but would not alter the relationship between the cutting point and the Z scores. Therefore, it is often operationally convenient to select a modified value of C that is a positive integer, e.g., 10, instead of the original C value, say, -0.0192. Likewise, the weighting coefficients should also be multiplied by the same scalar in the computation for the Z scores; thus the Z scores would be on the same scale with the threshold value C. Let C' and Z_j' denote the transformed cutting point and the transformed Z score for new Case j, respectively, then the decision rule may be shown as follows:

$$\text{Case j belongs to:} \begin{cases} \text{Group 1} & \text{if} \quad C' > Z_j' \\ \text{Group 2} & \text{if} \quad C' < Z_j' \\ \text{Indifferent} & \text{if} \quad C' = Z_j' \end{cases}$$

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☆ U.S. GOVERNMENT PRINTING OFFICE : 1977 O—241-093 (2125)