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INFORMATION, APPREHENSION, AND DETERRENCE: EXPLORING THE LIMITS OF POLICE PRODUCTIVITY

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ABSTRACT

The capacity of police departments to solve crimes and apprehend offenders is low for many types of crime, particularly crimes of profit. This article reviews a variety of studies of police apprehension and hypothesizes that an important determinant of the ability of the police to apprehend criminals is information. The complete absence of information for many types of crime places fairly clear upper bounds on the ability of the police to effect solutions.

To discover whether these boundaries are high or low we analyzed data from the 1973 National Crime Panel about the types and amount of information potentially available to police through victim reports and patrol activities. The evidence suggests that if the police rely on information made readily

available to them, they will never do much better than they are doing now. On the other hand, there appears to be more information available to bystanders and passing patrols than currently is being used, which suggests that surveillance strategies and improved police methods for eliciting, recording, and analyzing information supplied by victims and witnesses might increase the probability of solving crimes and making arrests. In light of this we review a few possibly helpful innovations suggested in the literature on police productivity and procedure.

> Some characteristics of the crime itself, or of events surrounding the crime, that are beyond the control of investigators, determine whether it will be cleared in most instances. (Greenwood et al., 1975: 65)
>
> There is no feasible way to solve most crimes except by securing the cooperation of citizens to link a person to the crime. (Reiss, 1971: 105)

INTRODUCTION

A recent spate of studies of crime and the deterrent effectiveness of the criminal justice system has raised anew a question as old as Bentham: Does raising the cost of criminal activity significantly reduce the level of crime in a community? In these studies, the cost of criminal activity has been conceptualized in two ways: as the loss of time and opportunity attendant to apprehension (measured by the *certainty* of arrest or punishment), and as the stigma, discomfort, and loss of opportunity that come with conviction by the courts (measured by the *severity* of punishment). Indicators of the distribution of these costs imposed by the criminal justice system are related in these studies to measures of the crime rate in a sample of jurisdictions by employing their variation across areas as surrogates for different policy interventions by the state. The findings are then addressed to the effectiveness of those "policies." (For a prominent example of this sort of analysis, focusing on the death penalty, see Ehrlich, 1975.) The studies differ in their choice of indicators for costs, as well as in their unit of analysis, sources for data, statistical design, and the decision rule by which the deterrence hypothesis will be confirmed or rejected. Not surprisingly, they differ in their conclusions as well.

This article sidesteps the issue of the effectiveness of deterrence policies and focuses instead on one crucial link in the process—the ability of the police to gather evidence, solve crimes, and make arrests. Any measure of the cost of crime ultimately rests on this activity, yet there has been little effort to assess the apprehension activities of the police within a deterrence perspective. The deterrent effect of the severity of sanctions (using as indicators either statutory maximums or sentences actually imposed) or the impact of court conviction (employing as an indicator the ratio of convictions to crimes known to the police) is mediated by the ability of the criminal justice system to

identify and apprehend individual offenders in the first place. If, as one reasonable line of deterrence research indicates (Antunes and Hunt. 1973), certainty of punishment is more important than severity, the importance of the problem becomes even clearer. Even the issue of justice points to the centrality of certainty, for it is the notion that harsh sentences may be imposed on an unfortunate few who happen to be caught that so offends our sensibilities. As we shall see, the plain fact is that for many types of crimes, particularly those motivated by profit, the probability that an arrest will be made is very low. Explaining why this is so is one of the main goals of this article.

We argue that an important determinant of the ability of the police to apprehend criminals is information. The police enjoy varying amounts of information in criminal cases: in some they have positive identifications to go on (victims or witnesses can tell them who did it and, frequently, where that person lives), in others they can garner only rough descriptions of offenders, and in some they have only physical evidence or traces of the methods employed by perpetrators to guide their investigations. Police officers on patrol can spot certain offenses in progress, while in other cases they must await the reports of bystanders or victims themselves. All of these affect the ability of police to solve crimes, and we argue that the absence of information in many cases, coupled with the practical invisibility of many (but fewer) cases to official scrutiny, places limits on the ability of the police to do anything.

In an attempt to discover where those limits are high and low, we employ data from the 1973 national victimization survey conducted by the U.S. Census Bureau to analyze the types and amounts of information potentially available to the police through victim reports and patrol activities. As we shall see, the evidence suggests that if the police rely on information made readily available to them, they never will do much better than they are doing now. On the other hand, there appears to be more information available to bystanders and passing patrols than currently is being used, which suggests that surveillance strategies and improved police methods for eliciting, recording, and analyzing information supplied by victims and witnesses might serve to raise the probability of solving crimes and making arrests.

INFORMATION AS A DETERMINANT OF ARREST: PREVIOUS RESEARCH

Crimes differ in the extent to which they admit of solution. Greenwood's study of crime in New York City found that only 4 percent of burglaries and larcenies, 8 percent of auto thefts, and 13 percent of robberies were cleared by at least one arrest (1970:24). The probability of arrest for crimes of passion was higher, ranging from 46 percent for assault to 71 percent for homicide. Other scholars have reported similar findings in other cities (e.g., Reiss, 1971).

We believe that the availability and reliability of information about incidents and offenders plays a key role in determining the ability of the police to solve crimes and apprehend offenders. The most easily solved crimes are those in which the victim or others close to the act can identify an alleged offender. For this to occur, there must be some interaction between the victim or the victim's friends and a suspect. Furtive crimes that occur in the dead of night or in private places when the victim is not present are unlikely to produce either witnesses or useful information of any type. For example, burglary typically involves no contact between victim and offender, is devoid

of tangible clues, and usually is not even discovered until hours after the burglar has made an exit. Except during a (usually brief) intrusion period, the event takes place out of the public eye and screened from the sight of passing police patrols. As a result, burglary is a crime that is virtually impossible to solve, and the role of the police in responding to it generally is one of record keeping and sympathetic commiseration with victims[1] (Repetto, 1974; Conklin and Bittner, 1973). In contrast, robbery offers a great deal of information that potentially is helpful in identifying and apprehending the robber: There is a direct confrontation between the parties and thus the offender can be described and perhaps identified, weapons used may be described, a getaway vehicle may be observed and traced, and robberies usually are reported promptly so there is a chance that the offender may be apprehended near the scene of the crime (Conklin, 1972; McDonald, 1975).

Several types of offenses feature at least limited interaction between suspect and victim, and they all enjoy relatively high rates of apprehension. This relationship ranges from modest (personal theft, including purse snatching) to intense (rapes, assaults, and murder). Robbery lies in the middle of the spectrum. Interaction may be intense and victim observation of the suspect considerable, but the typical robbery takes only 60 to 90 seconds to complete (Eliot, Strack, and Witter, 1975). Few robberies take place between acquaintances. Curtis (1974) sampled police files for 1967 in seventeen cities and reports that about 86 percent of all robberies found there were attributed to strangers. Thus, in most cases descriptions of the suspect's appearance and behavior, although clouded with some uncertainty, constitute the major clues available to the police in robberies. "Robbery, more than any other type of street crime, requires the use of departmental intelligence ("M.O.") files designed to identify suspects" (Greenwood, 1970). The face-to-face confrontation between robber and victim, while failing of positive identification, enhances arrest probabilities.[2] It also gives us more extensive research data on the personal characteristics of robbers such as race, sex, and apparent age, than on other "criminals for profit" (Sagalyn, 1971).

In contrast to robbery, victims and witnesses of rape, assault, and homicide often possess knowledge of the offender's identity. In many reported cases victim and offender are at least acquainted before the event. Amir's (1971) study of rape in Philadelphia indicated that 58 percent of rapes involved individuals who knew one another under other circumstances, while the special study of crime in Washington, D.C. conducted for the President's Commission on Law Enforcement and Administration of Justice (1967) estimated an "acquaintance rate" for rape of 64 percent. Curtis' (1974) study of police files in seventeen cities set that figure at 47 percent.

Acquaintance rates for homicide and aggravated assault usually are higher. Marvin Wolfgang (1958) reported that 86 percent of the murder victims in his sample from Philadelphia were acquainted with their slayer. and the President's Commission study in Washington, D.C. reported 70 percent: Curtis (1974) set the figure at 84 percent. A study of homicide in Chicago for the years 1965 to 1969 found that 71 percent of victims and offenders were so associated, and that in 21 percent of the cases the immediate parties were related by blood (Chicago Police Department. 1970). Nationally, only 23 percent of murders known to the police in 1975 were "felony type," involving other criminal acts such as robbery or burglary (another 9 percent were thought to possibly belong in this category), about the same percentage as those involving spouses, parents, and other

relatives (Federal Bureau of Investigation, 1976). Curtis (1974) attributed 25 percent of all homicides to relatives, and an additional 9 percent to close friends and lovers. Aggravated assaults also are crimes of passion, and many occur within acquaintance networks that allow positive identification when they are reported to the police. Acquaintance rates for assaults known to the police range from 65 to 80 percent, and several studies based on police files have estimated that 20 percent take place within the immediate family (Curtis, 1974; President's Commission, 1967; Pittman and Handy, 1964). Reported rapes, on the other hand, rarely are family affairs: Amir's study (1971) attributed only 2.5 percent to related parties, while Curtis (1974) attributed 7 percent.

Descriptions or positive identifications of offenders are important to the criminal justice system, for criminal acts are more likely to generate arrests if the "circle of investigation" can be decreased by attaching a name or label to a suspect. The circle of investigation defines a pool of possible offenders who must be considered in designating a set of plausible suspects. Any information such as the age, race, or sex of the offender tightens the circle of persons who must be sorted through to identify likely suspects. A national victimization survey conducted for the Law Enforcement Assistance Administration (1975) indicated that only about one-third of all personal crimes of violence were committed by persons who were known to the victim and could be identified (presumably) immediately. Thus, in two-thirds of personal crimes of violence the circle of investigation is fairly large and the task of identifying an assailant is rather arduous. In these instances the cooperation of victims and witnesses is crucial since even simple information about the physical characteristics of offenders aids in reducing the circle of investigation and identifying suspects.[3]

If a crime were committed by someone known to the victim, the circle of investigation would encompass only one person, and the job of the police would be reduced to finding the suspect. This may account for the extremely high clearance rate for homicide even though victims themselves are not in a position to shed much light on the matter.. Many murder suspects even fail to flee the scene of the crime, due perhaps to the bond between the parties. A Chicago murder analysis (Chicago Police Department, 1970) revealed a high incidence of what local police call "smoking gun" homicides: 35 percent of all murders during the 1965–1969 period were cleared when responding patrol officers arrested a suspect at the site (much the same obtains in Philadelphia—see Rubenstein, 1973:343). An additional 20 percent were cataloged as "known but flown" cases, those in which the suspect was not present but proved immediately identifiable by witnesses, neighbors, bystanders, or family members.

The frequency of murder, fortunately, is relatively low. Crimes other than homicide in which virtually no information is available to the police (or at least almost none is recorded by police) are much more common. In a recent study of the disposition of cases by the police in Rochester, New York, conducted for the Police Foundation, Bloch and Bell (1976) judged the utility of suspect and property identifications contained in police reports on burglary and robbery cases. They found descriptions of suspects *nonexistent* in 68 percent of all burglary reports, but in only 3 percent of robbery reports. (This does not mean that information on robbers was all that good—the modal category for those data was "vague.") Thus, for many common crimes the amount of information available in police records may be so low as to render unrealistic the expectation that offenders will be identified, arrested, and brought to trial.

INFORMATION: NEW DATA

Previous research on the information problem faced by participants in the criminal justice system has been based largely on data extracted from local police files. Given the irregular and often unreliable nature of that data, it is remarkable how regular the emerging picture remains.

Victimization surveys now being conducted by the Census Bureau provide a new perspective on these same problems. Victim surveys were designed to bypass the organizational and procedural difficulties involved in collecting reliable national crime data through police departments (see Wolfgang, 1963). Surveys acquire, directly from victims, reports of events that can be analyzed with some confidence (for a description of these surveys and a critical appraisal of their methodology see Skogan, 1976*c*; National Academy of Sciences, 1976). While published official reports based on these data have emphasized the frequency of various types of victimization (e.g., Law Enforcement Assistance Administration, 1975 and 1976), the surveys themselves gather extensive data on detailed characteristics of incidents and victims' recollections of their perpetrators. These data can be analyzed to reveal under what circumstances useful information appears to be available to the criminal justice system, and the frequency with which information about the very existence of criminal events remains hidden from the police and the courts.

The data analyzed in Table 1 were collected through interviews with a national panel of approximately 132,000 people. They were questioned every six months about events occurring during the previous six months for periods between February 1973 and June 1974 to produce estimates of the yearly distribution of crime for calendar 1973 (for a description, see Argana, 1975). The data are analyzed here to uncover "who knows what" about criminals that might be useful to police, improve apprehension rates, and promote the deterrent consequences of that activity.

Table 1 explores the distribution of "don't know" responses to a series of questions asked of all victims uncovered in the survey about their perpetrators. This allows us to judge the frequency with which descriptions of offenders are potentially available to the police.[4] Like research based on police files, the victim data indicate that the most important distinction between crimes is the duration of personal contact between the parties. Interpersonal violence (assaults and rapes) and robberies are characterized by high levels of information at the descriptive level.[5] About 95 percent of the victims of those crimes were willing to assess the sex and race of their assailants, somewhat fewer hazarded an estimate (choosing among a series of ranges) of their ages. Purse snatchings and picked pockets, on the other hand, are personal thefts characterized by brief interchanges of information; only about 50 percent of the victims of those crimes have much of a tale to tell the police if they report the event to them. When we examine property crimes, the paucity of information potentially available to the criminal justice system is apparent. In the case of burglary, only about 5 percent of the victims have anything concrete to tell the police about "whodunit," and the figure is only marginally better for auto theft.

Table 1 also tells us the distribution of positive identifications of suspects as opposed to simple descriptions of perpetrators. The analysis is based on a series of questions probing victim-offender relationships.[6] It categorizes incidents into those in which victims do not even know *what* the relationship might be, so slight is their information;

TABLE 1

DESCRIPTIONS AND IDENTIFICATIONS[1]

Information	Interpersonal Violence[2]	Robbery	Personal Theft[3]	Burglary	Larceny	Vehicle Theft
Percentage of Victims Able to Describe Perpetrator's:						
Sex	96.8	96.1	53.4	5.4	4.3	7.6
Race	96.0	93.9	52.5	4.8	4.2	7.0
Age	90.5	92.1	51.0	4.8	4.1	7.1
Percentage of Victims Who:						
Don't Know Relationship	3.2	3.6	46.0	90.5	92.9	91.8
Know Relationship—						
Is a Stranger	53.8	78.6	49.0	8.5	5.6	5.8
Some Identification Possible	43.0	17.8	5.0	1.0	1.5	2.4
(N of cases)	(3,777)	(1,023)	(512)	(5,789)	(19,601)	(1,198)

[1]Based on all regular and series incidents from the National Crime Panel for reference year 1973; computations by the authors. The figures reported here are refined and differ slightly from those previously reported.
[2]Includes crimes classified by the FBI as assault (simple and aggravated) and rape.
[3]Includes purse snatchings and pocket picking.

cases in which they know enough to know they did not know the other party; and those in which there is a chance that some identification might be made (offenders are described as "casual acquaintances," etc.). To the extent to which positive identifications realistically are required to solve crimes, the data in Table 1 do not speak well to the potential ability of the criminal justice system to solve crimes and deter criminals. While descriptions abound for certain personal crimes, identifications do not. Only in interpersonal violence, which we have seen includes a considerable number of nonstranger assaults and some rapes, can victims positively identify a substantial number of offenders. The frequency of descriptions in robberies is unmatched by identifications, for most robberies are attributed to strangers. Among property crimes, the situation appears hopeless.

This hopelessness reflects our reading of how the police do their work. The fact of policing—as opposed to reconstructions of police work depicted by the media and in detective novels—is that investigatory follow-up work. the gathering of physical evidence, and the ferreting out of criminals through detective work, play a relatively unimportant role in identifying and apprehending offenders. In Bloch and Bell's (1976) study in Rochester, only about 5 percent of burglaries were solved through follow-up investigations, and most of *those* came from interviews with victims and new witnesses. There,

only 0.1 percent of all burglaries were solved by physical evidence, and an additional 0.3 percent by the recovery of traceable property (Bloch and Bell, 1976:45). Of the few burglaries that *were* solved, most were either cleared by arrests at the scene based on information supplied by victims and (mostly) witnesses, or by obtaining confessions from persons later arrested for something else. As the RAND Corporation concluded in a recent analysis of the criminal investigation process (Greenwood et al., 1975:ix):

> The single most important determinant of whether or not a case will be solved is the information the victim supplies to the immediately responding patrol officer. If information that uniquely identifies the perpetrator is not presented at the time the crime is reported, the perpetrator, by and large, will not be subsequently identified.

These data suggest that "unique identifications" are rarely available.

INFORMATION: UNREPORTED CRIME

While duration of contact and other determinants of the perceptual acuity of the victims of crime shape the kind and accuracy of the information they potentially can offer the criminal justice system, even this potential is not fully realized. Two major social and organizational processes—citizen crime-reporting and police incident-recording—mediate the flow of information between victim and system. It is widely known that the police do not record, or record accurately, all of the complaints that are brought to their attention (Seidman and Couzens, 1974). That source of error in crime statistics is beyond the scope of this article, but see Skogan (1976*b*). Victimization surveys, on the other hand, were designed to reveal something of the dimensions of "the dark figure of unreported crime" by probing for the frequency and rationale for nonreporting. What those data reveal is substantial amounts of citizen nonreporting, even in major crime categories (Skogan, 1976*a*). Nonreporting may serve to shield from police attention a large amount of potential strategic intelligence about the distribution of crime (useful for planning, manpower allocation, and the like), and it may also protect individual offenders from the "long arm of the law." It has also led us to overestimate seriously the extent to which the police are able to solve crimes in the United States since measures of "certainty" of punishment in most empirical research on deterring crime have been ratios of the number of arrests for a type of crime (e.g., larceny) divided by the number of crimes of that type officially known to the police. Assuming that unreported crimes would be unlikely to generate additional arrests if they were known to the police,[7] then to the extent that crimes are underreported our estimation of the capacity of police to make arrests (certainty) is erroneously inflated.

Table 2 summarizes National Crime Panel estimates of citizen reporting practices for the major types of crime measured by the survey. The data indicate that over 67 percent of all attempted and successful auto theft was reported to the police (or they were on the scene of the crime), while the comparable figure was about 50 percent for robbery and only about 22 percent for simple property larceny. The failure of many or most crimes to come to the attention of the police in the first place clearly sets severe upper limits on their ability to solve an appreciable portion of them, given current patterns of citizen reporting and police activity.

When we examine the next filter in the flow of information to the police, the ability

TABLE 2

NONREPORTING AND THE FLOW OF INFORMATION[1]

Crime	Percentage Reported[2] or Police on Scene	Percentage Reported and Know Race of Offender	Percentage Reported and Positive Identification	N
Interpersonal Violence	40.1	38.1	16.9	3,777
Robbery	49.6	43.6	7.4	1,023
Personal Theft	31.6	18.9	1.4	512
Burglary	45.8	2.6	0.2	5,789
Larceny	22.5	1.0	0.3	19,603
Vehicle Theft	67.2	3.5	0.5	1,198

[1]Computed by the authors from the 1973 National Crime Panel regular and series incidents.
[2]A small number of "don't know" responses to the question on reporting to the police are treated as nonreporters in this analysis.

of victims to pass on some description of the offender in crimes that are reported, we find further attenuation in the ability of the police to ensure high levels of certainty of arrest. The effect is not large for interpersonal violence, for most of those crimes that are reported to the police carry with them some modicum of information. In the case of robbery, and especially purse snatching, the effect of nonreporting and a lack of descriptive information each make serious inroads into the solvability of offenses, however. Only 19 percent of all personal thefts were reported to the police *and* carried with them some information about the offender. Again, in the case of property offenses only an extremely small number of cases admit of much useful information for the criminal justice system.

The most realistic column of Table 2, that which isolates reported crimes in which some positive identification might be made, indicates that almost all of the cases that might come to the attention of the police can be solved only with some difficulty. Only interpersonal violence, crimes that are characterized by victim-offender relationships of some duration and often take place within acquaintanceship networks, have the potential to yield many positive identifications. Identifications could be made only in about 7 percent of all robberies, 1 percent of personal thefts, and even fewer burglaries.

The data in Tables 1 and 2 indicate that there are severe structural obstacles to the solution of large numbers of serious crimes by the police. The obstacles are "structural" in the sense that they rest on enduring human patterns of cognition and behavior under conditions of uncertainty and stress. Offenders in many of these events are seen only fleetingly, often under bad conditions, and estimates of such personal attributes as age are doubtlessly difficult under any circumstances. Research by Buckhout (1974) has

TABLE 3

NATIONAL APPREHENSION RATIOS (1973)

Crime[1]	UCR Arrests[2]	UCR Incidents[3]	Survey[4] Incidents	Apprehension Ratios[5] UCR	Survey
Forcible Rape	25,720	51,000	153.000	0.50	0.17
Aggravated Assault	208,100	416,270	1,313,180	0.50	0.16
Robbery	127,530	382,680	1,214,884	0.33	0.10
Vehicle Theft	155,800	923,600	1,330,470	0.17	0.12
Burglary	434,000	2,540,000	7,818,026	0.17	0.06

[1]Following standard UCR (Uniform Crime Reports) definitions, these are crimes that generally are compatible between the UCR and LEAA's (Law Enforcement Assistance Administration) victim surveys. Robbery and burglary counts include both household and commercial survey data; FBI conventions regarding incident and victimization counting rules are used here. Personal theft is excluded here for lack of good comparable UCR figures see Skogan (1976*d*).
[2]*Uniform Crime Report, 1973,* Table 24; FBI 100 percent estimates for U.S. population.
[3]*Uniform Crime Report, 1973,* pp. 11–29; FBI 100 percent estimates for U.S. population.
[4]Estimated U.S. totals calculated from unpublished tabulations supplied by the Census Bureau (incident series) from the 1973 reference year National Victim Survey data.
[5]Estimated U.S. totals computed by dividing UCR arrests by UCR, U.S. estimates, and by survey incident estimates for 1973.

documented the well-known unreliability of eyewitness testimony. These problems are not likely to go away, or even to change very dramatically in magnitude.

These data thus may be seen as setting some rough upper limits on the extent to which society can deal effectively with major crimes. The ability of the criminal justice system to solve, by arrest, crimes with a positive identification is high, but those crimes are a very small portion of all crimes. Effective and innovative police work may extend the ability of the system to apprehend criminals some distance into the pool of crimes with suspect descriptions, but, given the limited resources and the great number of cases coming to the attention of the police daily, such sleuthing never will extend very far. Thus, even crimes that do come to the attention of the police will include a great number (perhaps 20 to 90 percent) of successful predations. When we add to that number the vast pool of events that go unreported in the first place, it is clear that the certainty of arrest for specific crimes is quite low indeed.

Table 3 attempts to estimate more realistic certainty levels for various types of crimes. It presents both official and survey data on crimes relevant to the computation of "apprehension ratios," or the ratio of arrests to crimes. Such ratios typically are used to measure certainty of arrest or police effectiveness in a jurisdiction (Hatry, 1975) and serve as indicators of the certainty component of deterrence models. Table 3 indicates that the use of officially reported crime in the denominator of such measures greatly enhances the apparent certainty of arrest in each category, for those data underestimate

the frequency of crime in the population. The ratio of arrests to officially known crime in the aggravated assault category reaches nearly 1:2, while the ratio of arrests to the National Crime Panel's estimate of the number of aggravated assaults in the United States is closer to 1:6½.

By this measure, the certainty of arrest for assault (a crime involving serious physical injury or the use of a dangerous weapon) is much lower than previously calculated. A difference of the same magnitude can be noted in the forcible rape category and (less dramatically) for robbery and burglary. The apprehension ratio for burglary in particular is extraordinarily small when we calculate it as the ratio of arrests to survey-measured crime.[8] These figures, in fact, raise some question whether deterrence processes have ever "been given a chance" in this country. Much academic research on deterrence has concluded that certainty of punishment, not severity of punishment, is the key to effective crime reduction (see Antunes and Hunt, 1973). The low apprehension rates presented here indicate that the holes in the preventive net cast by the criminal justice system are so large that we should not be surprised that the threat of criminal sanction appears to have so little impact.[9]

POLICE ORGANIZATION AS AN INFORMATION-GATHERING STRATEGY

The criminal justice system will depend on the development of dramatically more effective means of coping with many types of crime to raise the certainties of arrest significantly. Only by extending the arm of the law rather deeply into the pool of currently unidentified offenders will such inroads be made. It thus is useful to examine policing strategies as organizational devices for gathering information. Such strategies are numerous. Patrol officers cruise looking for "activity," and attempt to arrive on the scene rapidly after the reporting of a crime. Technicians gather fingerprints and other physical evidence. Detectives assemble photographs of suspicious persons and descriptions of their methods of operation.

While these activities reflect conventional wisdom about the effective organization of policing, recent studies have begun to challenge their efficacy. Reiss has pointed out that arrest productivity in general is low, and that when arrests are made, they are likely to be made by patrol officers rather than detectives. In an analysis of 1965 Washington, D.C. data, Reiss found the 87 percent of arrests for Part I Index crimes (crimes against persons) were made by the patrol division (1971: 104). He believes that the reason for this is that "arrests do not result from investigation by a specialized division of the department, such as the detective division, but rather from the routine activity of patrol as it responds to citizen calls for assistance" (1971: 105). Similarly, Greenwood et al. (1975) sharply questioned the productivity of most detective work. They found that little time is in fact devoted to the investigation of most serious crimes, and that most investigatory effort is spent in essentially administrative activity. The detective practice of reinterviewing victims, duplicating in many instances the work of patrol officers, does not expand the amount of information available in most cases. As Greenberg et al., found in their study of robbery and other crimes, "unless relevant field information had been obtained at the crime scene by the responding [patrol] officer, if the offender had not been apprehended, the chances of the case being solved at the detective level were minimal" (1977:XX).

Greenwood et al., (1975) also argue that most physical evidence is unproductive, and that fingerprinting as it is currently organized rarely itself leads to arrests. They conclude that these problems are in part structural, relating less to the quality of police work (they found that neither training nor the organization of detective work much affected these matters) than to the nature of the task at hand, and that certain crimes, "which constitute the majority, are difficult, if not impossible, to solve, regardless of the efforts expended by police" (Greenwood et al., 1975:65). Or, as Conklin and Bittner (1973) noted while traveling with burglary detectives, some "evidence" of *any* sort was present in only one-third of all cases. Repetto's study of residential burglaries in Boston indicated similar low investigative productivity levels—only 2.0 percent of the cases were solved by detective follow-up investigation (1974:50).

Other research has begun to challenge the assumptions underlying police patrol strategies: that the visible presence of patrol cars on the streets prevents crimes from occurring, and that when crimes do occur, police officers will be able to either observe them in progress or arrive on the scene rapidly enough to gather fast-dissipating information. The preventive effect of patrol is difficult to assess, and it is becoming apparent that the Kansas City South Patrol Experiment (Kelling et al., 1974) has provided neither a definitive nor generalizable answer to that question (Larson, 1975; Davis and Knowles, 1975). Data gathered from victims in the national crime survey indicate that there is an upper limit to the number of crimes that potentially can be observed by police patrols, and that very few crimes currently are being interrupted in progress by passing patrols. However, the vulnerability of certain crimes to police intervention, which is shaped by the information available to the criminal justice system, is not as severely constrained as the potential for positive eyewitness identification. Although apprehension is much more problematic when that information is not available, crimes that are visible or in which a rapid "hue and cry" may be raised provide opportunities for intervention that may raise certainty levels if appropriate policing strategies are adopted.

Table 4 presents 1973 National Crime Panel data on the location of criminal offenses, categorized to shed some light on the extent to which those incidents were likely to occur in public places where they could be observed either by bystanders or passing police patrols. Incidents in Table 4 are classified as taking place (1) in a home, (2) in a public building, or (3) on a street, field, park, or "near home" (and, of course, some fell in the ubiquitous "other" category). Assuming that those that took place on a street, etc., were most visible to police patrols, we can see in Table 4 that the potential for police intervention varies considerably from crime to crime. Robbery, more than assault and rape,[10] takes place in public places, as do many larcenies and vehicle thefts.

Rapes in particular tend to occur in the home (almost 30 percent of the total reported in the 1973 survey), a place legally and culturally almost completely shielded from official view (Stinchcombe, 1963). In between fall many personal thefts and larcenies (purse snatchings and the like) that occur in shops or office buildings, but not in places highly visible to official police. It is most likely that private security guards, along with controlled access and egress from buildings and employee training in vigilance, would have the highest deterrent payoff in such cases. The large number of robberies that take place on the street (visible to the police) or in public buildings (visible to bystanders able to raise a rapid hue and cry), combined with the high amount of descriptive information available in such crimes, may recommend them for special attention by criminal justice planners. Policies to increase police or public surveillance of the streets, reduce neigh-

TABLE 4

VULNERABILITY OF CRIMES TO PATROL[1]

Crime	At Home	In a Building[2]	On Street or Near Home	Other	% of Police "On Scene"[3]
Total Assault	11.0	23.4	54.2	11.4	3.7
Forcible Rape	29.3	7.8	45.5	17.4	1.4
Robbery	10.9	18.8	64.8	5.5	1.6
Personal Theft	2.1	47.7	39.3	10.8	0.7
Larceny	4.8	27.0	60.0	8.2	0.3
Burglary	96.3	3.7	0.0	0.0	0.4
Vehicle Theft	0.0	1.5	94.8	2.8	1.8

[1]Based on all regular and series incidents in the 1973 National Crime Panel data. Incident N's are the same as previous tables.
[2]The "in a building" category combines events occurring in schools, hotels, office buildings, and personal crimes occurring in commercial establishments.
[3]Percentage of incidents in each type of crime, *regardless of the place of occurrence*, in which the police were present or arrived at the scene without being called.

borhood anonymity, and encourage bystander reporting to the police may have substantial payoffs in raising certainty rates for robbery. It is important to note, however, that these visibility figures probably again set important upper bounds on the solvability of crimes. As Rubinstein has noted (1973:339–40), the ordinary routines of police work virtually preclude the extension of patrol intervention into private or even semipublic places:

> For the policeman, the determining factor of any crime's importance is its setting. He defines the location of all crimes by the deceptively simple distinction between "inside" and "outside." [O]utside means any location a patrolman can be reasonably expected to see while on patrol. . . . Any outside crime is an afront to the patrolman's notion of himself as a guardian of his territory, an occurrence which suggests to his superiors that he was not doing his job properly.

Thus, for example (p. 339), "If a burglar breaks into a building through a rear door or cuts a hole in a roof, his act is considered an inside crime, because the patrolman had no chance to notice anything amiss, even if he was patrolling alertly." And (p. 341), "The majority of all murders and aggravated assaults occur inside and therefore they are not 'on' the patrolman."

The result is that relatively few crimes currently are being interrupted in progress.[11] As Table 4 also indicates, in no major category were as many as 4 percent of crimes so described by victims in the 1973 survey. Robbery was typical of personal crimes: in that year only 1.6 percent were in progress when the police arrived or the police arrived before they could be summoned. For larceny and burglary similar percentages were

vanishingly small. The data on the visibility of crimes presented in Table 4 indicate that these figures potentially could become much larger, however. Many crimes, including some with currently low apprehension rates, frequently occur on the street or in other public places where police and citizen activities might have more productive consequences if they were effectively organized.[12]

SHOULD ONLY "GOOD" ARRESTS BE COUNTED?

Thus far we have focused on the problem of identifying and arresting offenders. However, all arrests are not equally productive. Some arrests result in a guilty plea or conviction, but many do not. Measures of arrest productivity must look beyond the simple counting of arrests. Making an arrest is one thing; making an arrest that will result in an indictment and conviction is something else entirely. In some senses a better measure of arrest productivity is the ratio of arrests resulting in conviction to crimes known to the police. This reflects, at least in part, the diligence with which police have conducted investigations and built cases. In a related suggestion, Hatry (1975) has proposed as one measure of productivity the number of arrests that survive the first judicial screening per police man-year. He argues that simply counting arrests without regard to quality, particularly if used as a measure of the performance of a department or of individual officers within a department, may produce perverse effects; specifically, police "may be encouraged to make excessive, unreasonable, or at least marginal arrests" (Hatry, 1975:103). Whatever the specific measure, attempts to gauge arrest productivity must reflect the quality of those arrests; the way in which the police do their job in investigating a case has a profound effect on the eventual disposition of those who are arrested. As Jacob has noted (1978:173), "The quality of police work determines, to a considerable extent, what the courts can do with those whom the police arrest."

Of course, as police are quick to point out, these productivity measures also reflect the influence of other actors such as prosecutors, judges, witnesses, and juries, over whom the police have little or no control. Still, considering productivity from the perspective of arrests that result in conviction has much to recommend it. While over three-fourths of all Index crimes are not cleared by arrest, there also is considerable slippage out of the justice system after an arrest has been made. An analysis of data from Kansas City (Pate, Bowers, and Parks, 1976) revealed that of those persons arrested for Part I Index crimes *half* were not indicted, and thus were simply released. Of those who were indicted, only one-third were eventually convicted or pleaded guilty. Two-thirds, the bulk of those indicted, had charges dropped by the prosecutor, were dismissed by the judge, or were found not guilty. Given that such a small portion of offenses is solved by arrest, the substantial attrition (over 80 percent) within the prosecution and court system of the cases of those few who are arrested is disturbing. This means that the certainty of conviction for many types of crime is virtually nil, and police productivity measured in terms of "good" arrests (i.e., those that hold up in court and result in a conviction or guilty plea) is similarly low. The data reported by Pate and his associates indicate that the Kansas City Police Department, widely respected as one of the best in the country, manages one felony conviction per 14,720 patrol hours, or about one conviction per seven work years![13]

Similar results have been reported for Washington D.C. Analyzing data from the

Prosecutor's Management Information System (PROMIS), researchers from the Institute for Law and Social Research found that only about 9 percent of commercial robberies were cleared by an arrest.[14] Furthermore, about half of those arrested dropped out of the system; the result was that only about 5 percent of felonious commercial robberies reported to the police resulted in either a felony or misdemeanor conviction or guilty plea. The figures for commercial burglaries were even worse. Only about 4 percent of commercial burglaries known to police resulted in an arrest, and over half of those arrested dropped out of the system; thus, about 2 percent of the commercial burglaries known to police resulted in a conviction or guilty plea of some kind.

A second analysis of Washington, D.C. PROMIS data reported the curious finding that arrest productivity in the Washington police primarily results from the actions of a small portion of the force; the department's arrest productivity appears to be concentrated in a small subset of the force (Forst, Luclanovic, and Cox, 1977). The analysis revealed that 46 percent of the department's sworn personnel made no arrests at all in 1974; a total of 63 percent made no arrest resulting in a guilty plea or conviction. Forst and his associates found that over half of all arrests that resulted in a guilty plea or conviction were produced by 368 officers, about 8 percent of the department's sworn personnel. Why these officers were so productive while most of the force was notably unproductive is unknown. The limited data in the PROMIS files allow Forst and his colleagues to point to some interesting possibilities, but a definite answer is impossible. They believe that arrests succeed in court only when the arresting officer presents the prosecutor with strong physical evidence and good witnesses. Only 32 percent of the department's 1974 robbery arrests resulted in a conviction (or guilty plea), but "the number of convictions per 100 robbery arrests was 60 percent higher when tangible evidence was recovered than when it was not, and it was 40 percent higher when the MPD secured at least two lay witnesses than when they did not" (Forst, Lucianovic, and Cox, 1977:24). Thus, although both the RAND study of detectives (Greenwood et al., 1975) and the Rochester team policing study (Bloch and Bell, 1976) found that officers seldom gathered physical evidence, and that when they did it did not prove helpful in *solving* cases, neither of those studies followed cases after arrest to learn their fate in the courts. Had they done so, the role of tangible evidence might have taken on more importance in their analysis.

The extent to which blame for post-arrest attrition should be apportioned among police, courts, prosecutors, victims, and witnesses is unclear. However, an analysis of the Washington PROMIS data by Cannavale and Falcon (1976) provides some indication of a few of the things that can go wrong. They found a serious problem caused by interrogation practices used by police in field settings. Investigating why a substantial number of witnesses could not be located by either follow-up detective investigators or the prosecutor's office, Cannavale and Falcon found that this was often the result of witnesses being interrogated by police within earshot of the offender. In these circumstances they tended to give false names and addresses to avoid the possibility of retribution at the hands of the offender. Of course when they did this, witnesses could not be contacted to appear in court, thus allowing the offender to go free in many instances.[15] The research also brought to light major problems within the prosecutor's office in the management of cases and witnesses. A program was devised to modify police field interrogation practices, and the prosecutor's office totally revamped its previously erratic witness management system. These changes should reduce somewhat the 23 per-

cent of cases that were dropped by the prosecutor's office because witnesses were classified as unfindable or uncooperative. Of course, some victims and witnesses truly are uncooperative. A study by the Vera Institute (1976) of the 100,739 felony arrests made by the New York City police in 1971 found that only about 5 percent of those arrests resulted in felony prison sentences. In about half of the cases involving a victim there was a prior relationship between the victim and the defendant, and in many of these cases the victim refused to press charges.

WHAT IS TO BE DONE?

In this article we have pointed out some unpleasant empirical generalizations about the operation of police in local communities.

The capacity of police to solve most kinds of crime is low. Most Part I offenses known to the police are *not* solved.

When crimes are solved and arrests made, it is almost always due to extensive information supplied to police by witnesses and victims as to the identity and whereabouts of the offender.

The amount of information about the offender that could be supplied by victims and witnesses is a function of the type of crime and the circumstances in which it occurs. For many ordinary crimes the amount of information that can be supplied police is extremely slight.

Most arrests are made by patrol officers; the arrest productivity of detectives is very low.

The capacity of police and prosecutors to successfully prosecute those who are arrested is low. Most of those arrested for Part I offenses will eventually have charges dropped or the case dismissed.

In the face of these grim realities what, if anything, can be done? Could the police do better if they tried? Would increased efforts by citizens improve arrest productivity? We believe that although a dramatic improvement in arrest rates is unlikely (and indeed may be impossible), there are a number of promising ways by which police and communities may be able to effect real gains in arrest productivity. Our approach is based on two premises: (1) the importance of citizens as co-producers of police outputs and (2) the crucial importance of information as the basis for solving crimes and arresting offenders. As Kelling and his associates concluded:

> Assigning the police full responsibility for the maintenance of order, the prevention of crime and the apprehension of criminals constitutes far too great a burden on far too few. Primary responsibility rests with families, the community and its individual members. The police can only facilitate and assist members of the community in the maintenance of order, and no more. (1974:533)

The solution of crimes is the shared responsibility of both the citizens and the police in a community; both are in a very real sense co-producers of police services.[16] The role of the police in solving crime has long been taken for granted; the notion that citizens also play an important role in this process is somewhat more novel. Citizens are important because most information about crime, including the fact that it has occurred, comes from citizens who are victims or witnesses. Because the success of the police in making arrests is so dependent on the actions of witnesses and victims, citizens share responsibility for police productivity.[17] Reiss underscored this when he pointed out (1967:105) that, "the capacity of the police to solve any crime is severely limited by citizens, partly owing to the fact that there is no feasible way to solve most crimes except by securing the cooperation of citizens to link a person to the crime." Convincing the public that this is true may require a considerable effort. Popular films, novels, and television dramas generally portray crime as a matter that will be dealt with effectively by the police. As a result, the public has formed certain expectations about crime that underemphasize the role of victims and witnesses and overestimate the efficacy of the police. As Sanders wryly pointed out (1977:100), because they have seen it on television, burglary victims expect that police will dust for fingerprints, and when prints are found they believe that "if you send the prints to the FBI, they'll send you the name, photograph, and address of the burglar." Police departments must convince the public that the realities of policing differ from the sometimes flattering images depicted in the mass media, and that crimes can be solved only when citizens report them to the police and assist in identifying the offender.

To be sure, police departments contribute to the solution of crimes, but communities must be aware that, realistically, the police *acting on their own* have a very limited impact. The recent response-time study by the Kansas City Police Department (1977) dramatically underscores this point. The researchers found that the average victim did not contact police until more than six minutes after the incident occurred. They estimated however that reporting crimes within two minutes of completion would increase arrests 10 percent. Further, if burglaries *observed* by victims or witnesses were reported within one minute, the probability of making a response-related arrest would improve 40 percent. It is ironic that for all the public concern expressed in recent years about improving *police* response time, as far as improving on-scene arrests goes, the average amount of delay introduced by citizens is so great that it virtually precludes the translation of reductions in police response time into increased arrest productivity.[18]

The police cannot be everywhere; in fact the police "discover" very few crimes in progress. Communities must rely on their citizens to call police to the scene of a crime and, if the offender has already fled, to provide as complete a description as possible of the incident, the offender, and any missing property. We believe that community awareness campaigns should stress the importance of those witnessing a crime (or suspicious behavior) reporting the incident to police and making notes on the description of suspects, getaway car, etc., to improve the quality of information they can provide the police. Some communities have undertaken citizen "anticrime" programs, but the focus of many of these campaigns has been limited to crime deterrence through such tactics as personal self-defense courses or installing better door and window locks. Our approach to the crime of burglary would not ignore household "hardening" measures, but it would also stress the importance of vigilant and concerned neighbors and the necessity of preparing an inventory and description of major items of property in each household.

Citizens need to know that burglars are generally apprehended only when their activities are noticed by neighbors who alert the authorities or when police are able to trace stolen property based on information provided by the victim.

Once citizens have been prodded into reporting crimes and information about crime, the focus of responsibility shifts from citizens to the police. It is possible that some improvement in arrest productivity may result from modest changes in the way police go about their work. In policing, innovations and proposed innovations to enhance productivity abound. We will not undertake a systematic review of suggested police innovations; that is beyond the scope of this article.[19] However, we do wish to consider some selected examples to illustrate how the ideas we have developed can serve as a framework for thinking about innovation and arrest productivity.

We believe that the key to greater arrest productivity lies in *increasing* the amount and quality of information available to the police, *preserving* (i.e., not losing) that information, and efficiently *making use* of the information. Police practices must be scrutinized in terms of the way they affect the acquisition and use of information.

The initial police response to citizen reports is made by patrol officers. Most arrests are made either by patrol officers or by detectives using information that was recorded by patrol officers. The way patrol officers do their job has important consequences. If the investigating officer does not ask appropriate questions about the incident, witnesses may not volunteer and important information will be omitted. Or if information is not recorded accurately and in some comprehensible format, any follow-up investigation will be impeded. For this reason many police departments have begun to revise their training procedures to emphasize the importance of preliminary investigation in accurately gathering relevant information while events are still fresh in the minds of witnesses. This position is summarized by Chief George Hart of the Oakland Police Department who argues 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 function 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" (1977:xv).

In connection with revised training, many police departments (Greenwood et al., 1975:83) are restructuring their incident report forms so that patrol officers routinely record on a standardized form information about offenders and their characteristics.[20] It is expected that this will increase the amount of information recorded by patrol officers, and, because of the standardized format, the information gathered in the initial investigation should be more accessible to follow-up investigators and police planners. However, as Greenberg et al. (1977) point out, implementing these ideas in the investigation process involves some serious trade-offs; it is not true that more information necessarily is more productive. In some circumstances, the use of lengthy, precoded incident forms may be counterproductive. Greenberg and his associates at Stanford Research Institute agree that information is essential to apprehension and prosecution, but they are pessimistic about the way in which this notion has been implemented in some departments where investigating officers must wade through long, general lists of questions and precoded investigation forms. They believe that 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" (1977:*xxii*). Greenberg and his colleagues argue that the key to enhanced productivity lies in collecting *only* that information that is likely to

be useful in identifying and apprehending an offender. They have developed and tested specialized investigation forms for robbery that minimize the amount of information collected but maximize the likelihood that it will be useful information (Greenberg et al., 1977). In earlier research Greenberg, Yu, and Lang (1973), developed a similar specialized form and decision model for investigating burglaries. A replication testing this burglary model in some thirty police departments currently is being conducted by the Police Executive Research Forum (Farmer, 1978).

Another area of police department improvement involves liaison between patrol officers and detectives. As Bloch and Bell (1976) note, relations between patrol officers and detectives are frequently characterized more by a spirit of hostility and mistrust rather than a spirit of cooperation. Unless the patrol officer sees an opportunity to personally make an arrest, the preliminary investigation is often perfunctory. Detective investigators, in turn, tend to ignore preliminary investigation reports and begin anew, duplicating work already done. The goal of the Rochester Team Policing experiment was to improve productivity by improving patrol detective liaison. In the Rochester experiment, instead of dividing patrol officers into geographically based units and relegating detectives to a single, centralized detective division, detectives were paired with patrol officers to form police teams; each team was assigned to a specific geographic area. Teams had their own offices and were responsible for most police services within their areas on a twenty-four-hour basis. Team commanders were responsible for both patrol and investigative operations. Both Rochester police officials and outside evaluators judged the experiment to be a success (Bloch and Bell, 1976); detectives were able to use preliminary investigation reports much more productively, and their follow-up investigation developed significantly greater additional information. The result was a substantial increase in arrest productivity.[21]

The Rochester experiment also developed two management techniques that were credited with improving productivity. One was centralized case management, which allowed a team commander to assign specific investigative tasks rather than entire cases, to specific patrol officers or detectives. This allowed work to proceed very quickly, and also allowed work to go round the clock when needed. The second management technique was "early case closure." This recognized that some crimes are unsolvable—information is scant, there are no leads, and prospects for identifying the offender are miniscule. As Greenwood et al. showed (1975:65), regardless of the amount of effort expended by investigators, cases like this will not be solved. Under early case closure "hopeless" cases are identified as quickly as possible on the basis of a number of explicit solvability factors and they are officially closed. This allows investigators to concentrate on those cases where there is at least a reasonable chance of solving the case and making an arrest.[22]

A final area of productivity enhancement that we wish to discuss is that of computerized data analysis and data management systems. These systems, which are coming into use in many police departments, potentially can improve the capacity of police departments to make use of the voluminous data that they routinely gather. Some police departments are using their data systems to follow cases through the prosecution and trial phase of the judicial system. Proper use of a data analysis system allows police departments to keep track of the number of "good" (i.e., prosecutable) arrests they are making and pinpoint problems of departmental practices needing improvement (Cannavale and Falcon, 1976).

Other possible applications include computerized M.O. (*modus operandi*, or, method of operation) files, computerized fingerprint files. and computer-assisted mug shot systems. However, the practical utility of existing systems designed to apply computers to these problems is open to question. Greenberg et al. (1977), found the computerized M.O. systems, fingerprint systems, and physical description inventories they examined to be of little value in identifying offenders. Among the factors they felt were responsible for this failure were the often low quality of information entered into the systems and the fact that few offenders seem to specialize in a single type of street crime. Although an automated, national fingerprint search capability would be particularly helpful (Greenwood et al., 1975; Greenberg, Yu, and Lang, 1973), it appears that the availability of any operational and practical system is still some years in the future.

The examples we have reviewed are only a few of many proposals for enhancing police productivity and improving the likelihood of identifying and apprehending felons. We have presented these examples as illustrations of the kinds of innovation being tried by a number of police departments. Unfortunately, as Antunes and Hunt (1973) pointed out, while the most effective deterrent policy may be one that increases the certainty of apprehension as much as possible, neither criminal justice researchers nor police administrators know how this might be accomplished or what it might cost. We have no specific remedies to propose. Our purpose has been to focus attention on the capacity of the police to identify and apprehend offenders. We have shown that the probability of apprehension varies according to the type of crime and the circumstances surrounding the crime. For crimes of profit, apprehension probabilities are very low, and the reason for this is the paucity of information about the identity of the offender. Our analysis of victim survey data indicates that, while there is much room for improvement, the information problem is real and fixes discernable limits on police productivity.

We believe that scholars and police administrators must forthrightly address the productivity problem and shift their attention to apprehension strategies and tactics that involve the public and that are formed within the information acquisition and utilization framework we have discussed. Crime is a problem for which there are no easy solutions. But we believe that communities can, and should, ameliorate the problem by gradually improving their capacity to identify and apprehend offenders. Given our present state of ignorance about these matters, there is a need for a major effort to identify potentially helpful programs and innovations, and to rigorously evaluate their usefulness in a variety of community settings. This, combined with programs that involve the public in the fight against crime, holds the key to improving the currently dismal situation.

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NOTES

In this regard, Greenwood et al., note (1975:7) that "it may be obvious at the outset that the crime is not likely to be solved. The police view in these situations is that a distraught victim deserves attention, regardless of the eventual result."

Indeed, one study (Ward, Ward, and Feely, 1975:64–65), points out that within the set of events classified as robbery, clearance rates are systematically *lower* for unarmed compared with armed robbery. The study attributes this difference to the substantially lower amount of information available in unarmed robberies that, as a group, are briefer in duration than those in which a weapon is employed.

A substantial proportion of arrests for serious crime occurs because a victim or witness is able to supply police with the name *and* address of the offender (Greenwood et al., 1975:68). Similar findings are reported by Isaacs (1967), Folk (1971), Feeney et al. (1973), Conklin (1972), and Conklin and Bittner (1973).

Of course, the total amount of information available undoubtedly includes additional information provided by witnesses who were not victims. The National Victim Survey focuses on information recalled by those who were victims. We have no data on the amount of information available from respondents who witnessed crimes other than those in which they were victimized. There may be an important amount of untapped information available from nonvictim witnesses that might improve arrest productivity. Unfortunately, we know of no victim-survey data that address this point, and thus we must leave the question unresolved. That this is something worth considering in the design of future surveys is suggested by the Kansas City response-time study that found that about 9 percent of crimes reported to police were reported by witnesses who were not victims (Kansas City Police Department, 1977).

Assaults and rapes have been combined here for methodological reasons. Validity research by the Census Bureau indicates that rapes are often "confused" with assaults by the survey instrument (Turner, 1972). Also, only 158 rapes were uncovered by the 1973 national survey, although this weights to over 150,000 for estimation pruposes.

Validity research by the Census Bureau indicates that the survey figures for assault substantially underestimate the amount of nonstranger assault in the population, for those events often are not recalled to the interviewer (Turner, 1972).

The resistance of unreported crimes to solution (had they in fact been reported to police) is suggested by the explanations citizens give for not reporting incidents to the police. The most frequent reason is that "nothing can be done" and the second most frequent rationale is that "the police wouldn't want to be bothered." Both of these responses suggest citizen awareness that less serious offenses that lack clear evidence as to the identity of the perpetrator are very unlikely to be solved. For further discussion of the nonreporting phenomenon see Skogan (1976*a*).

However, it should be noted that even if the probability of arrest for any given criminal act is low, if one commits such acts regularly, the probability of being arrested at least once is much higher. Take as a starting point Greenwood's finding (1970:24) that New York police solved by arrest four of every one hundred burglaries; this is a fairly low (but not unusual) probability of apprehension. Repetto (1974:21) found in his sample of burglars that it was common for them to make at least two hits per week. If we allow a burglar two weeks off for vacation, this would still amount to one hundred burglaries per year. Applying the appropriate formula (Owen, 1970:229), we find that the probability of no arrest (if the probability of arrest is 0.04 and one hundred burglaries are committed during a year) is 0.016; subtracting from 1.0 we find that the probability of being arrested *at least once* during the year is 0.984! This implies that while the police do not solve many burglaries, they eventually catch most burglars.

Our suspicion is that this estimate is far too high for professional burglars. Nationally, the median age of those arrested for burglary is 17. If, as Repetto suggests (1974:24), professional burglars are older (25+) and more skilled than burglars below the age of 18, then the probability of arrest is not likely to be uniform across all classes of burglars. We believe that the probability of arrest is higher for younger, less experienced burglars, and much lower for experienced professionals. This would mean that the probability of a professional being arrested in any given year would be substantially lower than the 0.984 computed in our example.

For a thorough review of the substantive findings and methodological questions raised by the research literature on the deterrent effect of criminal sanctions see Blumstein, Cohen, and Nagin, 1978.

[10] We examine rape separately here because of the relatively large amount of "at home" crime it accounts for.

[11] A study of the Los Angeles Police Department estimated that, by chance, every police patrol officer would pass the scene of a burglary about once every three months, and that of a robbery in progress about once every fourteen years (Institute for Defense Analysis, 1967:12). However, due to the fact that most burglaries (particularly of residences) offer few tangible clues that might alert passing officers, the likelihood of detection and intervention for that crime is low.

[12] In addition, the use of alarms may effectively convert many crimes not occurring in public places from "inside" crimes to "outside" crimes for which police officers can be held accountable. Early Robbery Warning systems (Eliot, Strack, and Witter, 1975), for example, link silent alarms in commercial establishments directly to patrol cars, thus decreasing response time while effectively moving the crime "outdoors." Traditional burglar alarm systems also may reduce response time and increase arrest rates (Conklin and Bittner, 1973), and they surely have the same effect as preventive patrol—to scatter intruders.

[13] A specialized unit in the Kansas City Department that spent most of its time staked out at locations thought to be likely robbery or burglary targets did somewhat better, but even it managed only one felony conviction per work year (Pate, Bowers, and Parks, 1976:98).

[14] Computed by the authors from data presented by the Institute for Law and Social Research (1977:10).

[15] Cannavale and Falcon (1976) also found that the major determinant of successful prosecution was the number of prosecution witnesses. This implies that in cases where there are multiple witnesses, a loss of witnesses that is insufficient to justify dropping the case may seriously jeopardize chances of obtaining a conviction. Conversely, retaining all possible witnesses maximizes the probability of a guilty plea or conviction.

[16] As Garn et al., (1976) point out, co-productivity is a general feature in the production of all social services; it should not be construed as somehow unique to the provision of police services.

[17] Citizens may also be thought of as sharing with offenders responsibility for the production of crime. Many citizen actions, such as leaving the keys in a car, encourage crime, while other actions, such as getting and using good locks in a home, discourage crime.

[18] It should be noted that, at least in Kansas City, police response time is very good; obviously, this may not be true of departments in other communities. According to data collected in the response-time study (Kansas City Police Department, 1977) the average time to receive a call and dispatch a patrol unit is under three minutes. More importantly, the study revealed that the amount of time consumed in this process is primarily determined by the reporting style of those calling the police; there is little likelihood that this time can be reduced significantly. Once a patrol unit is dispatched, the amount of time it takes to reach the scene of a crime is almost entirely a function of the physical distance between the scene of the crime and the location of the patrol unit at the time of dispatch. This time could be reduced somewhat by increasing the number of patrol units, thus reducing the average distance to be traveled, but this would sharply escalate costs. (In departments staffing patrol cars with two officers, this could be accomplished by switching to one-officer patrol units.) In general, however, because of citizen delay in reporting, police in Kansas City are racing to the scene of a crime long after there is any reasonable chance of making an arrest at or near the scene of the crime. Unless some way can be found to substantially reduce the time between the conclusion of a victimization incident and notification of police, the speed of police response will have only a limited effect on arrest productivity. If citizen delay in reporting could be reduced, the generally rapid police response time in Kansas City means that there is at least some hope of effecting an on-scene arrest. In other jurisdictions increased arrest productivity may require improvement in both the citizen and the police components of response time.

[19] For a general overview of the innovation and police productivity literature, see the report of the Advisory Group on Productivity in Law Enforcement (1973). Many of the proposals it reviews have to do with productivity in areas other than the identification and apprehension of offenders (e.g., non-crime related calls for service, preventive patrol, etc.), but others clearly bear on the question of arrest productivity.

[20] For a discussion of a variety of specific techniques intended to improve the information gathering activities of patrol officers conducting investigations see Gay, Schell, and Schack (1977:117–19).

[21] Not all innovations produce such felicitous results. A demonstration program in Wilmington intended to enhance patrol productivity by separating calls for service from deterrence-oriented patrol succeeded in raising the arrest productivity of patrol officers, but it had such a negative effect on detective investigations that the overall arrest productivity of the force declined (Tien, Simon, and Larson, 1978).

[22] This notion of deciding on the basis of a set of objective criteria that a case is unlikely to be solved by follow-up investigation and should be dropped was pioneered by Greenberg, Yu, and Lang (1973) in their work on burglary investigation.

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