Policy Analysis

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Executive Summary

This paper presents a statistical analysis of the relations between crime rates and the level of public safety resources, controlling for the major conditions that affect each variable. Major findings include the following.

- Crime in the United States is much higher than that reported to police but has probably not increased over the past 20 years.
- An increase in police appears to have no significant effect on the actual rate of violent crime and a roughly proportionate negative effect on the actual rate of property crime.
- An increase in corrections employees appears to have no significant effect on the violent crime rate and a small positive effect on the property crime rate.
- Crime rates are strongly affected by economic conditions. For example, an increase in per capita income appears to reduce both violent and property crime rates by a roughly proportionate amount.
- Crime rates are also affected by demographic and cultural conditions. For example, the violent crime rate increases with the share of births to single mothers.
- The demand for police and corrections employees is a negative function of the average salary of public employees, a positive function of per capita income and federal aid, and a positive function of the crime rates.

The major policy implication of this study is that, because we have so little knowledge of how to reduce crime, we should decentralize decisions on crime prevention and control, beginning with repeal of the 1994 federal crime law.

> It could probably be shown by facts and figures that there is no distinctly native American criminal class except Congress.
>
> -- *Mark Twain*

Congress, in a frenzy of competitive machoism and with little regard for the Constitution or common sense, recently

passed another election-year crime bill. The Violent Crime Control and Law Enforcement Act of 1994 substantially federalized criminal law, increased sentences for a wide range of crimes, banned some semiautomatic rifles, and authorized about $30 billion in additional spending for police, prisons, and a range of exotic social programs. A major premise of the act, for which there is surprisingly little evidence, is that more police and prisons would reduce crime. A minor premise, for which there is even less evidence, is that federal grants for everything from sensitivity training to midnight basketball would also reduce crime!

The act is an outrage. Let me count the ways:

1. Some of its provisions are inconsistent with the Constitution and the historical limits on the powers of the federal government. A major recent federal publication summarizes the constitutional perspective:

The U.S. Constitution reserves general police powers to the States. By act of Congress, Federal offenses include only offenses against the U.S. Government and against or by its employees while engaged in their official duties, and offenses which involve the crossing of State lines or an interference with interstate commerce.[1]

This act, however, establishes federal penalties for most murders and for a wide range of other crimes already subject to state law. Moreover, the act substantially reduces the discretion of state judicial officers by making the new grants for prisons conditional on a state law that violent criminals serve at least 85 percent of their sentence and by establishing a mandatory life sentence for those convicted of three serious violent crimes or drug offenses. The premise on which Congress asserted those powers is that crime is a nationwide problem and that guns, drugs, and criminals move across state lines. On that premise, no area of American life is immune to a similar assertion of federal powers.

2. Some provisions are an abuse of civil liberties. In cases involving sexual assault or child molestation, the rules of evidence are changed to permit evidence on the defendant's prior behavior. Juveniles convicted of violent crimes or serious drug offenses are to be subject to an additional sentence of up to 10 years if they are also members of street gangs. Aliens convicted of an "aggravated felony" are to be denied a deportation hearing.

3. Some provisions are counterproductive. A federal death penalty is established for four crimes not involving murder (that may be unconstitutional). A third conviction for a serious offense not involving murder is punishable by life imprisonment, a longer sentence than for most murders. Such increases in the penalties for less heinous crimes reduce the incremental penalty for more heinous crimes.

4. The ban of 19 types of semiautomatic rifles is purely symbolic (and may also be unconstitutional). The banned rifles are not functionally different from hundreds of still-legal rifles, the aggregate of which is used in about 1 percent of crimes involving a gun. No one contends that this ban will reduce the crime rate. The ban is hotly contended, primarily because its supporters hope and its critics fear that it will serve as precedent for a broader ban of semiautomatic rifles.

5. Most of the social programs financed by the act (about one-third of the total funding) are likely to be worth less than their cost. Few, if any, of those programs would be approved if subject to a stand-alone vote, and most of the funds are to be spent for activities with only a token relation to crime prevention. Larry Sherman, president of the Crime Control Institute, describes the programs as "untested drugs. Nobody has evaluated any of these ideas to see whether they are safe and effective."[2] Advocates of these programs should explain why an explosion of similar programs since 1960 has not reduced the crime rate.

6. And finally, the 1994 act is unnecessary. Crime is a nationwide problem but does not require a national solution. More police in California, for example, do not reduce the crime rate in New York. More likely, to the extent that criminals are mobile, state and local governments may have too strong an incentive to spend on public safety activities, reducing the local crime rate at the expense of increasing the crime rate in other jurisdictions. Moreover, the large high-crime states such as California, New York, Illinois, and Florida will receive a smaller share of the $9 billion in earmarked funds than their proportionate share of federal taxes.[3]

The report of the conference committee concludes that "individual states and localities find it impossible to handle the problem by themselves" and that "the Congress finds that it is necessary and proper to assist the States in controlling

crime."[4] Crime is a serious problem in much of the United States. The federal government, however, lacks the constitutional authority, the incentive, and the information to address the problem of local crime and has no more resources than are available to the states. Moreover, to the extent that the best combination of measures to reduce crime is unknown or differs among jurisdictions, it is especially important to decentralize decisions on the crime problem. For those reasons, the Violent Crime Control and Law Enforcement Act of 1994 is wrong on all counts.

Some Common Questions

Most of us have become inured to Congress's making law without a factual basis. In drafting the recent crime bill, however, Congress had little to work with: there are reams of data that document the daily tragedies of crime in America but surprisingly little evidence on what changes in government policy would reduce the crime rate.

In 1991 state and local governments spent $75.5 billion on public safety. That sum financed about 700 thousand police, the incarceration of 1.1 million people, and the associated legal and judicial system. The numbers of police and prisoners per capita have both somewhat more than doubled since 1960, primarily in the past 15 years. That about exhausts the hard data on the subject.

One might hope that the record would provide evidence bearing on the following types of questions:

* Has the substantial increase in the number of police and prisons since 1960 significantly reduced the crime rate?

* Will the small increase in the number of police and prisons authorized by the 1994 crime bill significantly reduce the crime rate?

* What conditions, other than the public safety system, most affect the crime rate?

As it turns out, there is surprisingly little evidence that bears on those questions. In approving the 1994 crime bill, members of Congress were talking tough, but they were flying blind.

This paper summarizes a statistical analysis that provides some tentative answers to those questions.

Measuring Crime

The U.S. Department of Justice provides two measures of the level and composition of crime in the United States. The Uniform Crime Report (UCR) summarizes the number of index crimes reported to (and recorded by) police. The index violent crimes are murder, rape, robbery, and aggravated assault. The index property crimes are burglary, larceny, and auto theft. The data on reported crimes are based on reports by local law enforcement agencies (those reports now cover 98 percent of the population), are summarized by political jurisdiction and the nation, and have been prepared on a consistent basis since 1960.

The National Criminal Victimization Survey (NCVS) reports estimates of the numbers of victims of major crimes. The estimates of violent crimes include rape, robbery, aggravated assault, and simple assault. The estimates of property crimes include larceny (theft) from individuals (with or without contact), household burglary, household larceny, and auto theft. Those estimates are based on an annual survey of 66 thousand households (with a 96 percent participation rate); are summarized by type of locality, major census region, and the nation; and have been prepared on a consistent basis since 1973.

It is important to understand the difference between those two measures. The UCR reports the number of reported incidents of crime; the NCVS reports the estimated number of victims of crime. Moreover, the coverage is quite different. For example, the NCVS includes an estimate of simple assault but does not include estimates of murders, crimes against commercial property, or crimes of which the victim was less than 12 years old. The primary reason, however, that the number of reported crimes is much smaller than the number of estimated crimes is that a large share of the estimated crimes is not reported to the police. The NCVS estimates are probably a more accurate measure of the level of crime, but those estimates, unfortunately, have limited value as a data base for analysis because they are not reported at a jurisdictional level for which data on public safety activities and other conditions are also available. For

that reason, most studies of crime, as well as media reports, are based on the reported crime data--with an understanding, it is to be hoped, that crime reporting rates are not constant over time or across jurisdictions.

Has the Crime Rate Increased?

The press, public opinion polls, and politicians regularly reflect the perception that crime, especially violent crime, has increased rapidly. That perception may be correct, and it is consistent with the time series on reported crime. The more surprising finding is that the estimated rates of both violent and property crime have declined over the past 20 years. Table 1 summarizes the long-term trends in both the reported and the estimated crime rates.[5]

Table 1
Crime Rates: Long-Term Trends (crimes per 100,000 residents)

	Violent		Property	
Year	Reported(a)	Estimated(a	Reported	Estimated(b)
1960	160		967	
1973	417	1,391	3,737	14,341
1980	597	1,371	5,353	15,016
1991	758	1,202	5,140	11,465

Sources: Statistical Abstract of the United States, various years (Washington: Government Printing Office); Historical Statistics of the United States: Colonial Times to 1970 (Washington, Government Printing Office, 1984); and Criminal Victimization in the United States, 1992 (Washington: Bureau of Justice Statistics, 1994).

a Includes reported murders; excludes simple assaults.
b Excludes commercial burglaries and larcenies.

The two aggregate measures of crime in the United States tell very different stories. The reported crime rates support the perception that crime has increased rapidly. The aggregate reported crime rate more than doubled in the 1960s and more than doubled again in the 1970s. Since 1980 the reported violent crime rate has increased more slowly, and the reported property crime rate has declined slightly.

The estimated crime rates, in contrast, are a bad news, good news story. The bad news is that the total crime rate in the United States is much higher than the crimes reported to police. The good news is that the estimated violent crime rate has declined slightly for 20 years and the estimated property crime rate has declined sharply since 1980. Moreover, that pattern is more consistent with the reported murder rate (not shown), a crime for which the reporting is most accurate and a consistent series is available for many decades. The reported murder rate has been roughly stable for 20 years and is now about the same as it was in the 1920s and 1930s.

By any measure, American crime rates are much higher than those of other high-income countries. Has the actual crime rate increased substantially in the past 20 years? Maybe so, but probably not. Either answer has some very awkward implications. If popular perceptions and the reported crime rates are more accurate indicators of changes in actual crime rates, something is dreadfully wrong with the large, careful survey of victimization--possibly an increased reluctance to report crimes on the government survey. If the estimated crime rates are more accurate, the increase in reported crime rates reflects an increase in reporting rates, not in actual crime rates, and the popular perception of increasing crime appears more like mass hysteria created by or reenforced by the press and politicians.

Do Police Cause Crime?

The most perplexing problem with any study of the determinants of crime is that there is a strong positive relation between the reported crime rates and the number of police per capita, both over time and across jurisdictions. Figure 1 illustrates that relation based on data for the 50 states in 1991.[6]

The observed relation might suggest that police cause crime. There are three reasons, however, why the observed relation is misleading:

1. The number of police may be correlated with other conditions that have a stronger effect on crime than the (presumed) negative effect of police.

2. The number of police demanded in a jurisdiction may be a function of the crime rate; in technical terms, the crime rate and the number of police are jointly determined.

3. The percentage of crimes reported to the police may be a positive function of the number of police.

Figure 1
Relation between Crime and Police
[Graph Omitted]

Conventional statistical techniques are sufficient to address the first two of those effects. If data on the actual crime rates were available by jurisdiction, that would be sufficient to identify the effect on crime of increased police. Only reported crime rates are available by jurisdiction, however, and a strong assumption about the relation between the reporting rate and the number of police is necessary to estimate the effect on actual crime of increased police, an issue addressed in the next section of this paper.

Do police cause crime? That question is too important to be left dangling. The analysis reported in the next section, as anticipated, concludes that more police would reduce the actual crime rate. The positive effect of more police on the reporting rate, however, appears stronger than the negative effect on the actual crime rate over a wide range of numbers of police. For most jurisdictions, more police would probably increase the reported crime rate even if they reduced the actual crime rate. That result suggests why most increases in the public safety system are perceived to be futile.

The Supply of Crimes

About 25 years ago economists began to formalize a model of the economics of crime. The major early contributors to the literature were Gary Becker (1968), now a Nobel laureate, and Isaac Erlich (1973). More recent contributors to the empirical literature on the economics of crime include Steven Craig (1987); William Trumbull (1989); and Helen Tauchen, Ann Dryden Witte, and Harriet Griesinger (1993).[7] In retrospect, the central hypothesis of the model seems intuitive: the crime rate is expected to be a negative function of the probability and expected severity of criminal sanctions, a positive function of returns to criminal activity, a negative function of returns to legal activity, and a positive function of the share of the population that may have a relative tolerance of or preference for criminal activity.

The major contribution of that literature has been an accumulation of careful empirical studies that reflect a recognition that the crime rate, the percentage of crimes reported, and the level of public safety activities are jointly determined. Those studies provide useful estimates of the effects of increased police effectiveness--arrest rates, conviction rates, and expected sentences--but they do not provide useful estimates of the effects of increased public safety resources. The early empirical studies were all based on data aggregated at the level of a political jurisdiction. Most of the later studies are based on large special samples of individual data. The two types of data provide somewhat different perspectives on the determinants of crime and are subject to different problems of interpretation. The study summarized in this paper is similar to the body of early studies based on aggregate data and is new primarily in that it is based on the most recently available data.

The Data

The sample for this study is the set of conditions in the 50 states plus the District of Columbia. All data are for 1991 and are from the Statistical Abstract of the United States (1992 and 1993) unless otherwise noted. The supply of crimes, the variable to be explained by the first part of this study, is measured by the logarithm of the reported violent crime rate and the logarithm of the reported property crime rate (both per 100,000 residents). The level of public safety resources is measured by the logarithm of the number of police and the logarithm of the number of corrections

employees (both per 10,000 residents). Economic conditions are measured by the logarithm of the average annual income, the male unemployment rate, the employment rate, and the poverty rate (1989). Demographic and cultural conditions are measured by the percentage of the state population living in metropolitan areas, the percentage of births to single mothers, the percentage of church members, and the percentage of blacks or Hispanics (all for 1990). Table 2 presents the average level and range of those variables.

Table 2
Crime and Related Conditions by State, 1991

	Minimum	Average	Maximum
Reported crimes per 100,000 residents			
Violent	65	758	2,453
Property	2,472	5,140	8,315
Public safety employees per 10,000 residents			
Police	16.3	28.0	89.0
Corrections	7.5	20.7	77.6
Economic conditions			
Average annual income	$13,318	$19,091	$25,968
Male unemployment rate	2.7	7.0	11.5
Employment rate	49.5	61.6	69.5
Poverty rate (1989)	6.4	13.1	25.2
Demographic and cultural conditions (1990)			
Percent metropolitan	23.9	79.4	100.0
Percent births to single mothers	13.5	28.0	64.9
Percent church members	32.6	57.4	80.0
Percent minority	1.0	21.0	71.3

Source: Statistical Abstract of the United States, 1992 and 1993.

The Statistical Technique

The effects of the level of public safety resources and other conditions on the reported crime rates are estimated by a weighted two-stage least-squares regression. All variables are weighted by the relative population of the state; this increases the relative effect of conditions in the larger states and makes the estimates more representative of average conditions in the nation. The two-stage technique is used to reflect the recognition that crime rates and the level of public safety resources are jointly determined. The instrumental variables include the other independent variables in both crime regressions and in the two regressions on the demand for police and corrections employees (to be described later). It is important to recognize that the estimates from these regressions reflect the sum of the effect of conditions on the actual crime rates and the effect on the reporting rates. Given that only reported crime rates are available by jurisdiction, no statistical technique, by itself, can estimate the separate effects. Table 3 summarizes the results of the two regressions on the supply of crimes.

Table 3
The Supply of Crimes

	Type of Crime	
Condition	Violent	Property
	Effects of a 1 Percent Change	

Police	.77 (.32)	.53 (.25)
Corrections employees	.08 (.20)	.29 (.12)
Average annual income	-1.05 (.41)	-1.01 (.34)
	Effects of a 1 Percentage Point Change	
Male unemployment rate	9.11(2.78)	
	Type of Crime	
Condition	Violent	Property
Employment rate		3.12 (.57)
Poverty rate		2.58 (1.05)
Percent metropolitan	.91 (.36)	.94 (.23)
Percent births to single mothers	1.73 (.51)	
Percent church membership		-.51 (.20)
Percent minority	1.83 (.38)	

Note: Numbers in parentheses are standard errors of coefficients.

Effects of Police and Corrections

Back to square one. The most disturbing result of these regressions is that a 1 percent increase in police appears to increase the reported violent crime rate by about 0.8 percent and the reported property crime rate by about 0.5 percent, even when corrected for other conditions and for the joint determination of crime rates and public safety resources. The most plausible explanation of that result is that the presumed negative effect of more police on actual crime is outweighed by a positive effect of more police on the reporting rate. A strong assumption about the form of the relation between the reporting rate and the number of police and an estimate of the average reporting rate, however, is necessary to separate those effects.

Consider the following model:

$C = a P[-b] X[c]$, (1)

$RC = rC$, and (2)

$r = (1 - dP[-1])$, (3)

where

C = the actual crime rate,

P = the number of police,

X = the set of other conditions that affect the actual crime rate,

RC = reported crime rate, and

r = the reporting rate.

In this case, the estimated elasticity of reported crime in response to the number of police is

E = -b + (d/P-d). (4)

Since the regression yields an estimate of the elasticity of the reported crime rate on the number of police, an independent estimate of parameter d is sufficient to estimate parameter b. Now for the strong assumption: if equation 3 is a rough approximation of the relation between the reporting rate and the number of police and the reporting rate is independent of the several X variables, then parameter d can be derived from an estimate of the average reporting rate.

The NCVS provides estimates of the reporting rate for all major crimes except murder. For 1991 the estimated reporting rates for violent crimes were 59 percent for rape, 55 percent for robbery, and 58 percent for aggravated assault. Assuming that all murders were reported, the weighted average reporting rate for the index violent crimes was 57.2 percent. Similarly, the estimated reporting rates for property crime were 50 percent for burglary, 28 percent for larceny, and 74 percent for auto theft. The weighted average reporting rate for the index property crimes was 34.4 percent. Equation 3 can then be used to derive parameter d from those average reporting rates.

The elasticity of the actual crime rate with respect to the number of police, thus, is the elasticity of the reported crime rate presented in Table 3 minus the reporting bias (d/P-d). For violent crime, this yields a net effect that is not significantly different from zero. The elasticity of property crime, however, is -1.37 and is strongly significant. This indirect approach to estimating the effect of police on actual crime rates, thus, yields no significant effect on violent crime and a strong negative effect on property crime.[8] More police do make a difference, at least for property crime. The observed positive relation of the reported crime rate and the number of police is misleading, however, in that it reflects primarily a strong positive effect on the percentage of crimes reported.

An increase in the number of corrections employees appears to have no significant effect on violent crime and a small but significant positive effect on property crime. Both of those results are disturbing because there is no reason to expect the number of corrections employees to affect the reporting rate. More prison spaces are expected to have three effects: a deterrent effect on those never incarcerated, a sequestering effect on those in prison, and some effect on postincarceration behavior. The first two of those effects should have a combined negative effect on crime. The expected sign of the third effect is less clear. The early prison reform movement expected a prison term to have a negative effect on future criminal behavior, wishfully calling juvenile jails reform schools and adult prisons penitentiaries. The older, more cynical, perspective regarded prisons as schools for crime. Whatever the combination of those effects, the disturbing evidence of this study is that more prison spaces and more corrections employees do not appear to reduce the reported crime rates.[9] The reasons for this result are not clear. One plausible explanation is that the rapid increase in the number of people imprisoned for drug offenses has led to reduced sentences for those likely to commit more serious crimes.[10]

Economic Conditions

In general, as expected, an increase in legal economic opportunities reduces the crime rate. An increase in average annual income appears to reduce both violent crime and property crime by a roughly proportionate amount. An increase of 1 percentage point in the male unemployment rate appears to increase the violent crime rate by about 9 percent. A 1 percentage point increase in the poverty rate appears to increase the property crime rate by about 3 percent. The one surprising finding is that a 1 percentage point increase in the employment rate appears to increase the property crime rate by about 3 percent; a plausible explanation is that more homes are vulnerable to burglary and more people vulnerable to theft when more women work outside the home, but more analysis is necessary to explain this strong unexpected finding.

Demographic and Cultural Conditions

Crime rates are especially high in metropolitan areas. A 1 percentage point increase in the share of a state's population that lives in metropolitan areas appears to increase both the violent and property crime rates by about 0.9 percent, even when controlled for other characteristics of the population. The reason for this effect is less clear; the effect probably reflects a higher productivity of criminal behavior relative to that of police in metropolitan areas, rather than a higher relative propensity for criminal behavior of urban residents.

The violent crime rate, in turn, appears to be strongly dependent on the composition of the population. A 1 percentage point increase in births to single mothers appears to increase the violent crime rate by about 1.7 percent. This effect, of course, is a proxy for more general patterns of social behavior, not the direct effect, at least for a decade or so, of a current increase in births to single mothers. Similarly, a 1 percentage point increase in the minority (black or Hispanic) population appears to increase the violent crime rate by about 1.8 percent.

Property crime, in contrast, appears to be related to only one significant behavioral condition. A 1 percentage point increase in church membership appears to reduce the property crime rate by about 0.5 percent. Controlling for economic conditions and church membership, there do not appear to be any racial or other cultural effects on property crime.

Omitted Variables

Several conditions that are believed to affect crime rates or reporting rates were not included in the final regressions summarized in Table 3. A high proportion of crime, for example, is committed by young men. The percentage of the state population aged 18 to 24, however, has no significant effect on either the violent crime rate or the property crime rate. The NCVS reports that the reporting rate is unusually high among homeowners and unusually low among Hispanic victims. Those variables also had no significant effect in either regression. "But you didn't test my favorite explanation!" Yes, you are right. There is bound to be some condition that affects the crime rate or the reporting rate that I did not test. For the moment, that will continue to be the case.

The Test of Time

Do the conditions that explain the variation of crime rates among the states in 1991 help explain the changes in crime rates over time? Not much, is the simple answer. First, it is not obvious that actual crime rates have changed very much, at least since 1973 when the victimization survey was first collected. Most of the increase in the reported crime rate may reflect an increase in the reporting rate. Police per capita and real personal income per capita have roughly doubled since 1960, conditions that should have substantially reduced the actual crime rate. The male unemployment rate, the poverty rate, and the percentage of church members are about the same. The employment rate, the percentage metropolitan, and the percentage minority have each increased a few percentage points but not by an amount that would explain a substantial increase in the crime rate. The one condition that has changed substantially is the percentage of births to single mothers, increasing from 5 percent in 1960 to 28 percent in 1991. If the actual crime rate has increased, that increase appears to reflect some groups' increased tolerance of or propensity for crime, not a reduction in public safety resources or the returns to legal activity.

The Demand for Police and Corrections Employees

The other side of the "market for crime" is the demand for public safety resources. The numbers of police and corrections employees per capita, for example, are expected to be a negative function of their salary, a positive function of the average income in and average federal aid to the jurisdiction, and a positive function of the crime rate.

Again, the sample for this test is the 50 states and the District of Columbia. All data are for 1991. The average monthly salary of local government employees in the state is used as a proxy for the salary of police and corrections employees. All variables are weighted by the relative population of the state. Again, because public safety resources and the crime rate are jointly determined, the two-stage least-squares regression technique is used with the same instrumental variables as in the regressions on the supply of crimes. In this case, the estimates are based on linear regressions on the original levels of each included variable. Table 4 summarizes the results of these tests of the demand for police and corrections employees.

Table 4 Effect of a 100-Unit Change on the Demand for Police and Corrections Employees		
	Police	Corrections
Average monthly earnings	-.77 (.09)	-.28 (.16)
Average annual income	.20 (.02)	.05 (.03)
Average annual federal aid	.54 (.20)	1.72 (.40)
Violent crime rate	1.02 (.13)	1.02 (.36)
Property crime rate		.23 (.09)
R[2]		
Weighted	.994	.978
Unweighted	.72	.836

Note: Numbers in parentheses are standard errors of the coefficients.

Effects of Fiscal Conditions

As expected, state and local governments economize on public safety employees in response to higher salaries. An increase of $100 in average monthly earnings leads to a reduction of about 0.8 police and 0.3 corrections employees per 10,000 residents. At the sample means, the corresponding earnings elasticity is -0.67 for police and -0.33 for corrections employees, both about equal (with sign reversed) to the payroll share of total costs.

The demand for public safety employees is a positive function of both the average income in the state and the per capita federal aid to governments in that state. An in crease of $100 in average annual income leads to an increase of about 0.2 police and 0.05 corrections employees per 10,000 residents. At the sample means, the corresponding income elasticities are about 1.4 for police and 0.4 for corrections employees. Local residents apparently have a much stronger demand for police than for prisons.

An increase of $100 per capita in annual federal aid, in contrast, leads to an increase of about 0.5 police and 1.7 corrections employees per 10,000 population. The much higher marginal effect of federal aid on police and, especially, corrections employees reflects the typical "flypaper" effect of federal aid plus a higher relative demand for prisons. In summary, state and local governments will spend much more federal grant money on police and prisons than they would spend if the money came from state or local taxes. Measured by the interests of local residents, spending for police and prisons financed by federal grants is worth less than it costs.

Effects of the Crime Rate

The demand for police appears to be a function of the violent crime rate but not of the property crime rate. An increase of 1 reported violent crime per 100,000 residents leads to an increase of about 1 police officer per 10,000 residents. In this case, the coefficient on the actual crime rate is equal to the reporting rate times the estimated coefficient on the reported crime rate. At the sample mean, the elasticity of the demand for police with respect to the actual violent crime rate is about 0.16. A comparison with the supply of crime estimates suggests an interesting paradox: the demand for police appears to be a function of the violent crime rate, but more police appear to have no effect on that rate. The demand for police, in contrast, does not appear to be a function of the property crime rate, even though additional police would substantially reduce that rate. The reasons for that combination of findings are not clear.

The demand for corrections employees appears to be a function of both the violent crime rate and the property crime rate. An increase of 1 violent crime per 100,000 residents leads to an increase of about 1 corrections employee per 10,000 residents, and an increase of 1 property crime per 100,000 residents leads to an increase of about 0.2 corrections employee per 10,000 residents. Again, the effect of the actual crime rate is equal to the reporting rate times the estimated coefficient on the reported crime rate. At the sample means, the corresponding elasticities are about 0.21 for violent crime and about 0.20 for property crime.

In summary, an increase in the actual crime rate leads to a far smaller proportionate increase in public safety employees, increasing the number of crimes per police and corrections employee. That pattern, by reducing the percentage of crimes cleared by arrest and conviction and by reducing the expected sentence, appears to feed on itself. An increase in crime, by straining the resources of the public safety system, reduces the expected sanctions on criminal behavior.

Policy Implications

The major lesson of this study is how little is known about the actual level of crime, the effects of the public safety system, and the effects of other policies that affect crime.

The victimization survey provides an estimate of the actual level of crime at the national level, but the estimates based on that survey are strongly inconsistent with the data on reported crime. And estimates of actual crime are not available for state and local jurisdictions.

More police appear to increase the reported crime rate, but that observed effect is probably due to a strong effect of the number of police on the percentage of crimes reported. Controlling for that reporting rate effect, an increase in police appears to have no significant effect on the violent crime rate and a roughly proportionate negative effect on the property crime rate. More prisons and corrections employees appear to have no significant effect on the violent crime rate and a small positive effect on the property crime rate. The reason for the latter finding is not clear because there is no reason to expect that the reporting rate is a function of the number of corrections employees. There is strong popular support for a cops-and-prisons strategy to reduce crime but surprisingly little supporting evidence.

Economic growth reduces many problems. An increase in real per capita income appears to reduce both the violent and property crime rates by a roughly proportionate amount. The economic conditions of specific groups are also important. An increase in the male unemployment rate has a strong positive effect on the violent crime rate, and an increase in the poverty rate has a strong positive effect on the property crime rate. For reasons that are less clear, an increase in the general employment rate appears to increase the property crime rate. The implication of those findings is that an economic growth strategy may more effectively reduce crime than a public safety strategy, especially if it leads to higher employment and income for teenage males, minorities, and the poor.

Both the perpetrators and the victims of crime are increasingly concentrated among minority groups in the inner cities. Over time, the two conditions most strongly correlated with the increase in reported crime are the unemployment rate for teenage males and the percentage of infants born to single mothers. And the results of this study, based on state data for 1991, are roughly consistent with the effects of those conditions over time. Both of those conditions have increased sharply. As of 1954 (the first year for which such data were collected), the black teenage unemployment rate was about the same as the rate for white teenage males; since then, the black rate has increased to more than twice the white rate. The increase in the percentage of births to single mothers is a more general condition. Since 1960 that rate has increased from 2 percent to 22 percent for whites and from 22 percent to 68 percent for blacks. The reasons for the increase in those two conditions are not clear, and the policy changes that would reduce those conditions are even less clear. But those two conditions should be the focus of any targeted crime prevention program. Economists may not have the best judgment on these issues, because they appear to reflect a substantial change in cultural values across generations.

The most important policy advice, given the surprising paucity of evidence about what works, is to decentralize decisions on the public safety system and on crime prevention programs. Our federal system provides a continuous natural policy experiment if the federal government stays out of the way. If you don't know where the fish are, cast your net broadly. If you don't know what works, don't do the same thing everywhere. Experiment with a variety of

policies and be prepared to learn from the experiments in other jurisdictions. Most important, local governments should experiment with different ways of deploying police and state governments with different types of sanctions for nonviolent crimes. Moreover, for those who still care, that approach would be more consistent with the letter and spirit of the Constitution. That is why the next step on crime should be to repeal the Violent Crime Control and Law Enforcement Act of 1994.

Notes

[1] Statistical Abstract of the United States, 1993 (Washington: Government Printing Office, 1994), p. 189.

[2] Quoted in "Crime Bill Is Target of GOP Attack," Miami Herald, August 10, 1994.

[3] "Crime Bill Losers," Wall Street Journal, August 19, 1994. Calculation by Stephen Moore of the Cato Institute.

[4] Conference Report on the Violent Crime Control and Law Enforcement Act of 1994 (Washington: Government Printing Office, 1994), p. 391.

[5] The estimated violent crime rate reported in Table 1 has been revised from the published rate by adding the reported murder rate and subtracting the estimated rate of simple assaults; that makes the coverage identical to the reported rate. The estimated property crime rate has not been re vised, and the coverage is smaller than that of the reported property crime rate by the amount of commercial property crime.

[6] The observation for the District of Columbia, with the nation's highest murder rate and 89 police per 10,000 residents in 1991, is literally off the chart. A similar relation between the reported crime rate and the number of corrections employees is even stronger and tighter.

[7] Gary Becker, "Crime and Punishment: An Economic Ap proach," Journal of Political Economy, March-April 1968; Isaac Erlich, "Participation in Illegitimate Activities: A Theoretical and Empirical Investigation," Journal of Political Economy, May-June 1973, pp. 521-67; Steven Craig, "The Deterrent Impact of Police: An Examination of a Locally Provided Public Service," Journal of Urban Economics 21 (1987): 298-311; William N. Trumbull, "Estimations of the Economic Model of Crime Using Aggregate and Individual Level of Data," Southern Economic Journal 26, no. 2 (October 1989): 423-39; and Helen Tauchen, Ann Dryden Witte, and Harriet Griesinger, "Criminal Deterrence: Revisiting the Issue with a Birth Cohort," National Bureau of Economic Research Working Paper no. 4277, February 1993.

[8] Two other statistical approaches were tried in an attempt to estimate the effect of police on the actual (but unknown) crime rates. One approach was to use a weighted nonlinear regression with the logarithm of the reporting rate equation (1 - dP[-1]) as an independent variable. The other approach was to estimate the actual crime rate by dividing the reported rate by (1 - dP[-1]) and then using a weighted two-stage regression on the estimated actual rate. Those two approaches yielded small negative but insignificant estimates of the effect of police on violent crime, with an estimated elasticity of -0.2 and little change in the other coefficients. Those two approaches yielded strongly negative and significant estimates of the effect of police on property crime, with estimated elasticities of -1 and -1.5 and some changes in the other coefficients. In the absence of data on actual crime rates, there is no one best way to estimate this relation, but the general consistency of the results of the three approaches is encouraging.

[9] The number of prisoners per capita and the number of corrections employees per capita are closely correlated and essentially interchangeable in statistical analysis.

[10] David Kopel, "Prison Blues: How America's Foolish Sentencing Policies Endanger Public Safety," Cato Institute Policy Analysis no. 208, May 17, 1994.