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Understanding Why Crime Fell in the 1990s: Four Factors that Explain the Decline and Six that Do Not

Steven D. Levitt

Crime fell sharply in the United States in the 1990s, in all categories of crime and all parts of the nation. Homicide rates plunged 43 percent from the peak in 1991 to 2001, reaching the lowest levels in 35 years. The Federal Bureau of Investigation's (FBI) violent and property crime indexes fell 34 and 29 percent, respectively, over that same period. These declines occurred essentially without warning: leading experts were predicting an explosion in crime in the early and mid-1990s, precisely the point when crime rates began to plunge.

Although experts failed to anticipate the decline, there has been no shortage of hypotheses to explain the drop in crime after the fact. Table 1 presents a tally of a Lexis-Nexis search of the most frequently cited reasons for the crime decline in articles in major newspapers over the period 1991–2001. The single most frequent explanation given is the innovative policing strategies put into place. The crime decline is also frequently attributed to increased imprisonment, changes in the market for crack cocaine, the aging of the population, tougher gun control laws, the strong economy and increases in the number of police.

In this paper, I attempt to sort out why crime declined in the 1990s. I begin with a review of the facts. I then analyze the leading explanations for why crime fell, looking at possible determinants that changed in some substantial way in the 1990s. Most of the supposed explanations listed in Table 1 actually played little direct role in the crime decline, including the strong economy of the 1990s, changing demographics, better policing strategies, gun control laws, concealed weapons laws and increased use of the death penalty. Four factors, however, can account for virtually

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Table 1
Media Explanations for the Decline in Crime in the 1990s, Ranked by Frequency of Mention

Explanation	*Number of mentions*
Innovative policing strategies	52
Increased reliance on prisons	47
Changes in crack/other drug markets	33
Aging of the population	32
Tougher gun control laws	32
Strong economy	28
Increased number of police	26
All other explanations	34

Notes: Based on a Lexis-Nexis search of articles written about the national decline in crime in leading newspapers over the period 1991–2001. Newspapers included in the tabulation are the *New York Times, Washington Post, USA Today, Houston Chronicle, San Francisco Chronicle, Chicago Sun Times, Boston Globe, Atlanta Journal Constitution, Minneapolis Star Tribune and San Diego Union-Tribune.* These are the ten largest circulation newspapers that are included in Lexis-Nexis.

all of the observed decline in crime: increases in the number of police, the rising prison population, the waning crack epidemic and the legalization of abortion.[1] Thus, I conclude that the decline in crime does not really pose a puzzle, but rather, is readily explained by the available theories. The real puzzle that stands unanswered, I argue, is why crime rates did not start falling earlier. In the final section, I offer some tentative observations about what crime trends might be expected in the next decade.

Defining Features of the Decline in Crime in the 1990s

Several different aspects of the decline in crime are particularly noteworthy: its size, breadth and persistence across categories of crime; its universality across geographic and demographic groups; and its unexpectedness. I consider these characteristics in turn.

The Magnitude of the Decline

The most remarkable feature of the crime decline in the United States was its sheer magnitude. Figure 1 presents time series data for homicides from 1950 to

[1] Reyes (2002) offers an additional intriguing explanation for the decline in crime: the reduction in levels of lead in the blood due to the elimination of leaded gasoline and lead-based paints. Because of the highly speculative nature of the Reyes conjecture at the present time, I do not discuss this hypothesis at greater length, although it is clearly an area worthy of continued future research.

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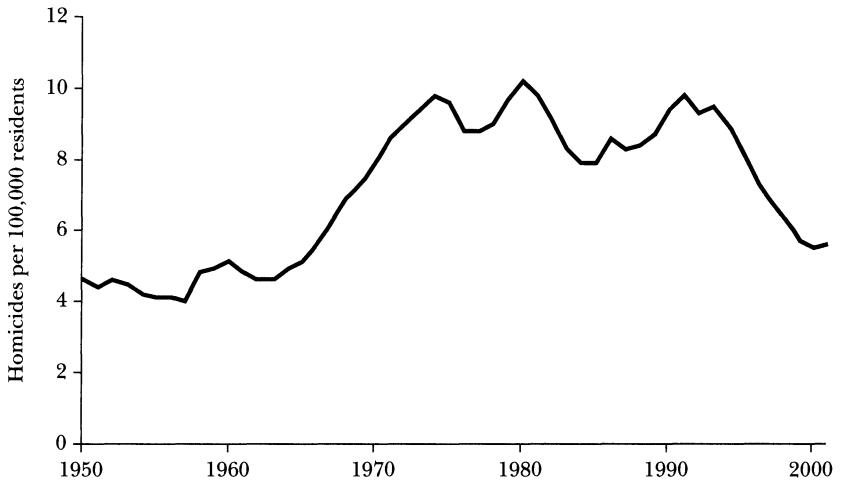
Figure 1
Homicide Rate, 1950–2001



2001. Homicide is the most accurately measured and most serious crime and thus provides a useful benchmark. Homicide rates were relatively steady at about 4–5 per 100,000 population from 1950 through the mid-1960s, at which point they started rising to a peak of 10.2 per 100,000 population in 1980. From 1980 to 1991, the homicide rate fluctuated between 8–10 per 100,000 population. After that, the homicide trend began a large, steady decline. Between 1991 and 2000, homicide rates per capita fell from 9.8 to 5.5 per 100,000, a drop of 44 percent. Since that time, homicide rates have been steady.

The same pattern observed for homicide is present for every major crime category and in both of the commonly used measures of crime in the United States: the FBI's Uniform Crime Reports (UCR), covering crimes reported to the police, and the National Crime Victimization Survey (NCVS), a large, nationally representative phone survey of Americans. Table 2 reports the percentage decline between 1991 and 2001. For purposes of comparison, the percentage change in crime rates over the period 1973–1991 is also shown (1973 is the first year of availability for NCVS). For the period 1991–2001, crimes reported to the police fell between 24 and 46 percent across the various crime categories. The reduction in criminal victimizations in NCVS is even greater, ranging from 45 to 58 percent.[2]

[2] The congruence between the UCR and NCVS data for the 1990s is heartening, given that the aggregate trends in these two data sources have failed to track closely one another historically, as evidenced in the first column of the table. Between 1973 and 1991, the UCR data suggest sharply rising crime in most categories, whereas the victimization data finds declines in crime for more than half of the categories. Boggess and Bound (1997) argue that a partial explanation for the different patterns is that the two data sets measure somewhat different crimes; for example, NCVS crimes tend to be less serious, even within a crime category.

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Table 2
National Trends in Specific Categories of Crime

Crime category and data source	*Percentage change in crime category, 1973–1991*	*Percentage change in crime category, 1991–2001*
Crimes reported to the police from UCR		
Violent crime	+82.9	−33.6
Homicide	+5.4	−42.9
Rape	+73.4	−24.8
Robbery	+50.0	−45.8
Aggravated assault	+118.1	−26.7
Property crime	+38.2	−28.8
Burglary	+3.0	−40.9
Larceny	+56.7	−23.2
Motor vehicle theft	+49.8	−34.6
Criminal victimizations from NCVS		
Violent crime	+1.6	−50.1
Rape	−20.0	−45.0
Robbery	−15.5	−53.3
Aggravated assault	−3.9	−56.9
Simple assault	+10.7	−47.0
Property crime	−32.0	−52.8
Burglary	−41.3	−55.6
Theft	−46.5	−51.6
Motor vehicle theft	+16.2	−58.6

Notes: All values in the table are percentage changes in crime rates. Entries in the top panel of the table are based on Uniform Crime Report data collected by the Federal Bureau of Investigation. These changes are defined in terms of victimization rates per capita. Entries in the bottom panel are from the National Crime Victimization Survey. For violent crime, the reported values are percentage changes in crime per person age 12 and older. For property crime, the percentage changes are per household. The calculations in the table correct for the redesign of NCVS that occurred in 1993. Uniform Crime Report data from recent years is available online at ⟨http://www.fbi.gov⟩. NCVS data is available from ⟨http://www.ojp. usdoj.gov/bjs⟩.

The decline in crime has also been remarkable in its steady persistence. Homicide rates fell in nine of the ten years in the decade of the 1990s, with the only exception being a minor upward blip in 1992. In the previous three decades, homicide had never fallen for more than three consecutive years. Robbery, burglary and larceny each fell every year between 1991 and 2000. Prior to 1991, robbery rates had fallen in only eight of the preceding 30 years.

The drop in U.S. crime appears to be unusual among countries of the world, although definitional and reporting differences across countries, as well as the poor quality of crime statistics in most countries other than the United States, make such international comparisons difficult. Barclay, Tavares and Siddique (2001) provide one of the most careful cross-country comparisons of crime trends. That analysis reports that homicide rates fell 4 percent on average in European Union (EU) member states between 1995 and 1999, a period over which U.S. homicide rates fell 28 percent. Violent crime rose 11 percent on average in EU countries over that same time period, compared to 20 percent drops in U.S. violent crime. Burglary

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Table 3

Percentage Changes in Crime Rates for Different Population Groups, 1991–2001

	Homicide	*Violent Crime*	*Property Crime*
Entire United States	−42.9	−33.6	−28.8
Region			
Northeast	−50.0	−42.9	−41.5
South	−44.6	−27.3	−25.6
Midwest	−32.1	−31.5	−23.3
West	−42.7	−38.1	−32.0
Urban/rural			
Within MSAs	−45.0	−36.7	−31.7
Cities outside MSAs	−31.4	−18.4	−18.1
Rural	−35.0	−2.9	−11.0
City size			
>250,000	−49.2	−43.2	−36.1
50,000–250,000	−41.4	−37.5	−31.9
<50,000	−34.9	−22.7	−23.2

Source: FBI Uniform Crime Reports.
Notes: Entries in the table are the percentage changes in per capita crime reports between the years 1991 and 2001 according to the FBI Uniform Crime Reports.

and motor vehicle theft fell 14 percent and rose 7 percent, respectively, in the EU, while falling 19 and 22 percent in the United States.

The Universality of the Drop in Crime

The drop of crime in the 1990s affected all geographic areas and demographic groups. Table 3 presents the percentage decline in homicide, violent crime and property crime from 1991–2001 by region, urban/rural and city size. In each of these subgroups and for all crime categories, the trend has been downward. Crime declines in the Northeast outpaced the rest of the country, whereas the Midwest was a laggard. The greatest percentage improvements in crime occurred within metropolitan statistical areas (MSAs) and especially among large cities with populations over 250,000. Rural areas, particularly on violent and property crime, saw much smaller declines in both absolute terms and percentage terms. For instance, the homicide rate per 100,000 residents in large cities fell 12.9 per 100,000 (from 26.2 to 13.3). The decline in homicide rates for cities with populations less than 50,000 was only 1.5 (from 4.3 to 2.8).

Table 4 shows changes in homicide for the 25 most populous cities as of 1991. The first column lists the peak year for homicide by city. In almost three-fourths of the cities, the peak occurred between 1990 and 1993. The next two columns present the homicide rate per 100,000 residents in the peak year and in 2001. The final column is the percentage reduction in homicide from the peak year to 2001. The cities are ordered by the percentage decline in homicide they experienced.

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Table 4
Homicide Trends in Large U.S. Cities

City	Year that homicide peaked	Peak homicide rate (per 100,000)	2001 homicide rate (per 100,000)	Percentage decline in homicide, peak to 2001
New York City	1990	30.7	8.1	−73.6
San Diego	1991	14.7	4.0	−72.8
Austin	1985	12.8	3.9	−69.5
San Jose	1985	7.8	2.4	−69.2
Seattle	1994	12.8	4.4	−65.6
Jacksonville	1990	27.6	9.9	−64.1
Houston	1991	36.5	13.4	−63.3
San Antonio	1992	22.5	8.5	−62.2
Dallas	1991	48.6	19.7	−59.5
Denver	1992	19.3	7.9	−59.1
Honolulu	1986	5.6	2.3	−58.9
San Francisco	1993	17.5	7.7	−56.0
Boston	1990	24.9	11.0	−55.8
Washington, D.C.	1991	80.6	40.6	−49.6
Los Angeles	1993	30.5	15.6	−48.9
Columbus	1991	21.6	11.4	−47.2
Philadelphia	1990	31.7	20.4	−35.6
Detroit	1987	62.8	41.3	−34.2
Chicago	1992	33.1	22.9	−30.8
Phoenix	1994	21.5	15.3	−28.8
Indianapolis	1991	19.4	14.0	−27.8
Memphis	1993	32.0	24.1	−24.7
Las Vegas	1991	15.7	11.9	−24.2
Baltimore	1993	48.2	38.7	−19.7
Milwaukee	1991	25.6	21.1	−17.6

Notes: All cities with population greater than 500,000 in 1991 are included in the table. The peak year for homicide is defined in homicides per 100,000 residents. For San Francisco, 2001 homicide rates are not available, and the 2000 homicide rates are used instead.

New York City, which has garnered enormous attention for its success in fighting crime, leads the list with a 73.6 percent reduction in homicide. A number of other cities (San Diego, Austin, San Jose, Seattle) that have received far fewer accolades, however, nearly match the New York City experience. Even the cities near the bottom of the list have experienced homicide reductions of roughly 20 percent. The universality of these gains argues against idiosyncratic local factors as the primary source of the reduction.

In demographic terms, breakdowns of crime offending rates by race, gender and age are not directly available, because in many cases offender characteristics are unknown. In those cases where an arrest is made, however, information is gathered by the FBI in the Uniform Crime Reports. Across every crime category and every breakdown by race, gender and age, substantial declines in arrest rates have occurred.

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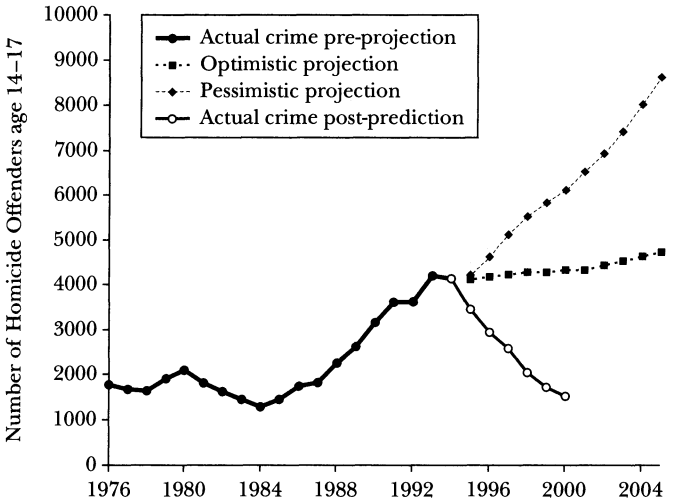
Figure 2
Expert Forecast Made by James Alan Fox in 1995 vs. Actual Teen Homicide Offenders



The Unexpectedness of the Drop in Crime

Having just lived through an enormous reduction in crime, it is hard to reconstruct just how unexpected such a decline really was. Even after the fall had begun, some of the world's most prominent criminologists dismissed the decline as a transitory blip that would quickly be reversed.

For example, in 1995 the U.S. Attorney General commissioned a report on crime trends from Northeastern professor James Alan Fox, one of the most widely quoted criminologists in the popular press. Figure 2 reproduces and extends one of the figures from that report. The line in Figure 2 up until 1994 reflects the observed number of homicides by 14–17-year-olds. The two dotted lines represent Fox's (1996) optimistic and pessimistic future projections. In the optimistic case, youth homicides were projected to rise by about 15 percent. In the pessimistic scenario, youth homicide was going to more than double over the next decade, prompting Fox to say in a 1996 *Scientific American* article, "the next crime wave will get so bad that it will make 1995 look like the good old days." The dashed line shows what actually happened: juvenile homicide rates fell by more than 50 percent in the ensuing six years.[3]

Fox was not alone in predicting that the 1990s would be a dire decade with respect to crime. James Q. Wilson (1995, p. 507) wrote, "Just beyond the horizon, there lurks a cloud that the winds will soon bring over us. The population will start

[3] Two years after his initial report, in spite of sharply declining juvenile crime rates in the intervening years, Fox (1997) continued to project large increases in juvenile homicide over the next decade. No further reports were commissioned.

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getting younger again . . . .Get ready." In a symposium on crime published in *Journal of Economic Perspectives* in 1996, John DiIulio (1996, p. 8) wrote, "It is not inconceivable that the demographic surge of the next 10 years will bring with it young male criminals who make the . . . Bloods and Crips look tame by comparison." Even President Clinton got into the act, stating: "We've got about six years to turn this juvenile crime thing around, or our country is going to be living with chaos" (Allpolitics, 1997). In short, the crime decline was so unanticipated that it was widely dismissed as temporary or illusory long after it had begun.

Six Factors that Played Little or No Role in the Crime Decline

The list of explanations offered as to why crime has fallen is a lengthy one. Here, I begin with six commonly suggested and plausible theories that in practice do not appear important in explaining the decline of crime rates.

1) The Strong Economy of the 1990s

The decade of the 1990s saw sustained economic growth. Real GDP per capita grew by almost 30 percent between 1991 and 2001. The annual unemployment rate fell from 6.8 in 1991 to 4.8 percent in 2001. If macroeconomic performance is an important determinant of crime rates, then the economy could explain falling crime.

In economic models of crime such as Becker (1968), improvements in legitimate labor market opportunities make crime relatively less attractive. This prediction is likely to be more relevant for crimes involving direct financial motivation such as burglary, robbery and auto theft, but less important for homicide, assaults and rape. On the other hand, to the extent that activities that are associated with increased levels of either offending or victimization are normal goods—like alcohol consumption, frequenting nightclubs and owning a car—the link between economic activity and crime is theoretically ambiguous.

Empirical estimates of the impact of macroeconomic variables on crime have been generally consistent across studies: Freeman (1995) surveys earlier research, and more recent studies include Machin and Meghir (2000), Gould, Weinberg and Mustard (1997), Donohue and Levitt (2001) and Raphael and Winter-Ebmer (2001). Controlling for other factors, almost all of these studies report a statistically significant but substantively small relationship between unemployment rates and property crime. A typical estimate would be that a one percentage point increase in the unemployment rate is associated with a one percent increase in property crime. Violent crime, however, does not vary systematically with the unemployment rate. Studies that have used other measures of macroeconomic performance like wages of low-income workers come to similar conclusions (Machin and Meghir, 2000;

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Gould, Weinberg and Mustard, 1997).[4] Based on these estimates, the observed 2 percentage point decline in the U.S unemployment rate between 1991 and 2001 can explain an estimated 2 percent decline in property crime (out of an observed drop of almost 30 percent), but no change in violent crime or homicide. The sharp increases in crime in the 1960s—a decade of strong economic growth—further corroborate the weak link between macroeconomics and crime.

If the economy has a major impact on crime, the likely channel is not through the direct effect estimated in the studies noted above, but rather, indirectly through state and local government budgets. Two of the factors that I identify as most important in reducing crime are increased spending on police and prisons. To the extent that these budget items are affected by macroeconomic performance, one would expect to observe a stronger link between the economy and crime than is found in the studies above, which control for criminal justice variables when estimating the link between economic variables and crime.

2) Changing Demographics

The aging of the baby boomers represents a profound demographic shift. The elderly have extremely low rates of both offending and criminal victimization. In 2001, people over the age of 65 had per capita arrest rates approximately one-fiftieth the level of 15–19 year-olds. Perkins (1997), using NCVS data, reports that those over the age of 65 experience victimization rates for serious violent crime that are less than one-tenth of those of teenagers. Given that the share of the elderly population increased during the 1990s, a purely demographically driven decline in crime might be expected.

Two other concurrent demographic changes, however, counterbalance the crime-related benefits of an aging population. First, between 1990 and 2000, the black population rose from 12.1 percent to 12.9 percent. For reasons that are only partly understood (Sampson and Lauritsen, 1997), blacks have elevated victimization and offending rates relative to other Americans, particularly for homicide, where the differences across races are almost an order of magnitude.[5] Second, in spite of the overall aging of the population, the echo of the baby boom is leading to a temporary increase in the number of teenagers and young adults. Between 1995 and 2010, the number of 15–24 year-olds is projected to increase by roughly 20 percent, and the share of the population between the ages of 15 and 24 will increase from 13.7 percent to 14.6 percent. (In comparison, 15–24 year-olds represented 18.7 percent of the population in 1980.) This age group has a greatly elevated involvement in crime. Indeed, many of the dire predictions for increased

[4] The studies cited in this paragraph use U.S. data, except for one study that focuses on the United Kingdom. Cross-county estimates also fail to show a consistent relationship between GDP per capita and crime, although high levels of income inequality are correlated with high crime, as in Soares (1999).
[5] The growth in the Hispanic population was even greater (from 9.0 percent to 12.5 percent of the population between 1990 and 2000). For the most part, however, Hispanic offending and victimization rates are only slightly above those of whites.

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crime rates in the 1990s were based in part on the increasing number of adolescents.

Overall, these various demographic shifts probably had a slight ameliorating effect on crime. The estimates of Levitt (1999), using an Oaxaca-decomposition approach, suggest that overall changes in the age distribution may have reduced homicide and violent crime by a few percent and property crime by as much as 5–6 percent. Changes in racial composition largely offset the age-distribution benefits for homicide and reduce the estimate somewhat for violent crime, but the property crime benefit largely remains. Thus, demographic shifts may account for a little more than one-sixth of the observed decline in property crime in the 1990s, but are not an important factor in the drop in violent crime.

3) Better Policing Strategies

An enormous amount of media attention has focused on the policing strategies instituted in New York City under the leadership of Police Commissioner William Bratton and Mayor Rudy Guiliani. Their crime-fighting approach involved increased enforcement of nuisance activities like aggressive panhandling and better use of technology in identifying crime "hot spots." Other changes in policing strategy such as "community policing," in which the police attempt to work more closely as allies with communities rather than simply responding to emergency calls, were widely adopted in many other cities in the 1990s. In Boston, an innovative multiagency collaboration targeted gang violence (Kennedy, Piehl and Braga, 1996).

There have been very few rigorous academic studies of the impact of policing strategies. A number of early quasi-randomized studies, discussed in Wilson (1985), provided little evidence that community policing strategies lowered crime. Indeed, it is often difficult to identify which police departments have adopted particular practices, when the adoptions occurred and why. In the 1990s, federal funds were available to police departments that implemented community policing initiatives, leading many departments to advertise themselves as doing community policing, whether or not they actually changed policing practices. Due to such difficulties, no compelling cross-city comparisons of policing practices have been performed.

Since New York City is held up as the clear innovator in policing practices, and since it enjoyed the greatest crime declines of any large city, an analysis of that city's experience represents a logical starting point.[6] In my opinion, there are reasons for skepticism regarding the claim that New York City's policing strategy is the key to its decline in crime. First, the drop in crime in New York began in 1990. Crime

[6] In a recent working paper, Corman and Mocan (2002) analyze the New York City case using monthly time-series data. They find that aggressive policing tactics (as proxied by the number of misdemeanor arrests) are negatively associated with robbery and motor vehicle thefts, but do not have a statistically significant impact on other crimes. One difficulty with the Corman and Mocan approach, however, is that they are not able to include reliable controls for the extent of the crack epidemic, which was steadily waning at the same time that aggressive policing tactics were put into place.

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declines of roughly 10 percent across a wide range of offenses occurred in 1991 and 1992. Guiliani, however, did not take office until 1993, at which point Bratton was moved from the New York City Transit Police, where he had been using the same approaches, and appointed police commissioner. With the exception of homicide, which does decline sharply in 1993, the trend in crime shows no obvious break after Bratton is appointed. Second, the change in policing strategies was accompanied by enormous growth in the size of the police force. Between 1991 and 2001, the New York City police force grew 45 percent—an increase three times greater than the national average. I argue later in this paper that increases in the number of police are effective in reducing crime. By my estimates, the unusually large expansion of the police force in New York City would be expected to reduce crime there by 18 percent more than the national average, even without any change in policing strategy. If one adds 18 percent to New York City's crime homicide experience in Table 2 (changing the decline from 73.6 percent to 55.6 percent), New York City is about average among large cities. Third, given that few other cities in Table 2 instituted New York City–type policing approaches, and certainly none with the enthusiasm of New York City itself, it is difficult to attribute the widespread declines in crime to policing strategy. Even Los Angeles and Washington, D.C., two cities notorious for the problems they have experienced with their police forces (Los Angeles Police Commission, 1996; Thompson, 1997), achieved declines in crime on par with New York City once the growth in the size of New York City's police force is accounted for. Fourth, New York City has had abortion rates among the highest of anywhere in the nation since abortion was legalized there in 1970, three years before the Supreme Court decision in *Roe v. Wade* (410 U.S. 113 [1973]) made abortion legal nationwide. If one believes my arguments later in this paper that a link exists between rates of abortion and later rates of crime, this connection provides further evidence against the argument that there is an unexplained crime decline in New York City that can be attributed to policing strategy.

Thus, while the impact of policing strategies on crime is an issue on which reasonable people might disagree given the lack of hard evidence, my reading of the limited data that are available leads me to the conclusion that the impact of policing strategies on New York City crime are exaggerated, and that the impact on national crime is likely to be minor.

4) Gun Control Laws

There are more than 200 million firearms in private hands in the United States—more than the number of adults (Cook and Ludwig, 1996). Almost two-thirds of homicides in the United States involve a firearm, a fraction far greater than other industrialized countries. Combining those two facts, one might conjecture that easy access to guns in the U.S. may be part of the explanation for our unusually high homicide rates. Indeed, the most careful study on the subject finds that higher rates of handgun ownership, which represent about one-third of all firearms, may be a causal factor in violent crime rates (Duggan, 2001).

There is, however, little or no evidence that changes in gun control laws in the

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1990s can account for falling crime. For example, the Brady Handgun Violence Prevention Act of 1993 instituted stricter requirements for background checks before a gun is sold. However, Ludwig and Cook (2000) report no difference in homicide trends after the passage of the Brady Act in states affected by the law and states that already had policies in place that were at least as stringent as those in the Brady Act. Given the realities of an active black market in guns (Cook, Molliconi and Cole, 1995), the apparent ineffectiveness of gun control laws should not come as a great surprise to economists. Even in the late 1980s, prior to the Brady Act, only about one-fifth of prisoners reported obtaining their guns through licensed gun dealers (Wright and Rossi, 1994).

Gun buy-back programs are another form of public policy instituted in the 1990s that is largely ineffective in reducing crime. First, the guns that are typically surrendered in gun buy-backs are those guns that are least likely to be used in criminal activities. The guns turned in will be, by definition, those for which the owners derive little value from the possession of the guns. In contrast, those who are using guns in crimes are unlikely to participate in such programs. Second, because replacement guns are relatively easily obtained, the decline in the number of guns on the street may be smaller than the number of guns that are turned in. Third, the likelihood that any particular gun will be used in a crime in a given year is low. In 1999, approximately 6,500 homicides were committed with handguns. There are approximately 65 million handguns in the United States. Thus, if a different handgun were used in each homicide, the likelihood that a particular handgun would be used to kill an individual in a particular year is one in 10,000. The typical gun buy-back program yields fewer than 1,000 guns. Thus, it is not surprising that research evaluations have consistently failed to document any link between gun buy-back programs and reductions in gun violence (Callahan, Rivera and Koepsell, 1994; Kennedy, Piehl and Braga, 1996; Rosenfeld, 1996; Reuter and Mouzos, 2003).

More stringent gun-control policies such as bans on handgun acquisition passed in Washington, D.C., in 1976 and the ban on handgun ownership in Chicago in 1982 do not seem to have reduced crime, either. While initial research suggested a beneficial impact of the D.C. gun ban (Loftin, McDowall, Weirsema and Cottey, 1991), when the city of Baltimore is used as a control group, rather than the affluent Washington suburbs, the apparent benefits of the gun ban disappear (Britt, Kleck and Bordua, 1996). Although no careful analysis of Chicago's gun ban has been carried out, the fact that Chicago has been a laggard in the nationwide homicide decline argues against any large impact of the law. From a theoretical perspective, policies that raise the costs of using guns in the commission of actual crimes, as opposed to targeting ownership, would appear to be a more effective approach to reducing gun crime (for instance, Kessler and Levitt, 1999). The most prominent of these programs, Project Exile, which provides prison sentence enhancements for gun offenders, however, has been convincingly demonstrated to be ineffective by Raphael and Ludwig (2003), apparently in part because of the small scale on which it was carried out.

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5) Laws Allowing the Carrying of Concealed Weapons

The highly publicized work of Lott and Mustard (1997) claimed enormous reductions in violent crime due to concealed weapons laws. The theory behind this claim is straightforward: armed victims raise the costs faced by a potential offender.

The empirical work in support of this hypothesis, however, has proven to be fragile along a number of dimensions (Black and Nagin, 1998; Ludwig, 1998; Duggan, 2001; Ayres and Donohue, 2003). First, allowing concealed weapons should have the greatest impact on crimes that involve face-to-face contact and occur outside the home where the law might affect gun carrying. Robbery is the crime category that most clearly fits this description, yet Ayres and Donohue (2003) demonstrate that empirically the passage of these laws is, if anything, positively related to the robbery rate. More generally, Duggan (2001) finds that for crimes that appear to decline with the law change, the declines in crime actually predate the passage of the laws, arguing against a causal impact of the law. Finally, when the original Lott and Mustard (1997) data set is extended forward in time to encompass a large number of additional law enactments, the results disappear (Ayres and Donohue, 2003). Ultimately, there appears to be little basis for believing that concealed weapons laws have had an appreciable impact on crime.

6) Increased Use of Capital Punishment

In the 1980s, a total of 117 prisoners were put to death in the United States. That number more than quadrupled to 478 in the 1990s. The debate over the effectiveness of the death penalty as a deterrent has been ongoing for three decades. Ehrlich (1975, 1977) presented early evidence arguing in favor of a deterrent effect. A number of critics demonstrated the sensitivity of the Ehrlich findings to seemingly minor changes in specification (Forst, Filatov and Klein, 1978; Passell and Taylor, 1977; Leamer, 1983; Cameron, 1994). A series of more recent studies that incorporate data from the 1990s, however, have tended to once again find a deterrent effect (Dezhbakhah, Rubin and Shepherd, 2002; Mocan and Gittings, 2003).

Largely lost in this debate, however, are two important facts (Katz, Levitt and Shustorovich, 2003). First, given the rarity with which executions are carried out in this country and the long delays in doing so, a rational criminal should not be deterred by the threat of execution. Despite increases in capital punishment in recent years, the likelihood of being executed conditional on committing murder is still less than 1 in 200. Even among those on death row, the annual execution rate is only 2 percent, or twice the death rate from accidents and violence among all American men. Among the subsample of individuals engaged in illegal activities, the death rates are likely to be much higher. Levitt and Venkatesh (2000) report a death rate of 7 percent annually for street-level drug sellers in the gang they analyze. Kennedy, Piehl and Braga (1996) estimate violent death rates to be 1–2 percent annually among all gang members in Boston. It is hard to believe the fear of execution would be a driving force in a rational criminal's calculus in modern America. Second, even taking as given very large empirical estimates of the

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deterrent impact of the death penalty—such as Ehrlich's (1975) classic estimate of seven murders deterred per execution or Mocan and Gittings (2003) estimate of six murders deterred per execution—the observed increase in the death penalty from 14 executions in 1991 to 66 in 2001 would eliminate between 300 and 400 homicides, for a reduction of 1.5 percent in the homicide rate, or less than one-twenty-fifth of the observed decline in the homicide rate over this time period. Moreover, any deterrent effect from such executions cannot explain the decline in other crimes. Given the way the death penalty is currently practiced in the United States, it is extremely unlikely that it exerts significant influence on crime rates.

Four Factors That Explain the Decline in Crime

Having argued that many common explanations for the decline in crime are unlikely to hold the true answers, I now turn to four factors that did, in my reading of the evidence, play a critical role in the crime reduction of the 1990s: the increasing number of police, the skyrocketing number of prisoners, the ebbing of the crack epidemic and legalization of abortion in the 1970s.

1) Increases in the Number of Police

Police are the first line of defense against crime. More than $60 billion is spent each year on policing. Studies on the connection between the number of police and crime in the 1970s and 1980s, as surveyed by Cameron (1988), tended to find an insignificant or negative correlation, because these studies typically failed to account for the endogeneity problem. The political response to rising crime is to hire more police, so the number of police affect the amount of crime, but the amount of crime also affects the number of police. A number of recent studies have addressed this endogeneity problem with a wide variety of identification strategies and reached the conclusion that more police are associated with reductions in crime.

Marvell and Moody (1996), using a "Granger-causality" approach on panel data for U.S. states and large U.S. cities demonstrate that increases in the number of police are associated with reductions in crime in the future. They estimate elasticities of crime with respect to the number of police of approximately −0.30. Corman and Mocan (2000) use high-frequency time-series data to reduce the endogeneity problem. They argue that the government response to rising crime occurs only with a lag of a number of months, so that endogeneity will be less important when analyzing monthly data than annual data. Using time-series data for New York City, Corman and Mocan find elasticities ranging from −0.29 to −1.385 across crime categories, with a median value of −0.452. Levitt (1997) uses the timing of mayoral and gubernatorial elections as an instrument for police hiring. Politicians disproportionately increase the size of the police force in advance of elections, but elections are unlikely to impact crime directly, making elections a plausible instrumental variable. Using this identification strategy,

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elasticity estimates range between −0.05 and −1.98 across crime categories, with a median value of −0.79 (although see McCrary, 2002, which points out that correctly computed standard errors make those point estimates statistically insignificant). Levitt (2002) finds much more precisely estimated elasticities of −0.43 to −0.50 when using changes in the number of firefighters as an instrument for changes in the number of police. Firefighters are a logical instrument for police because spending on these two types of protective services tend to be similarly affected by local budgets and preferences, but firefighters are unlikely to exert any direct influence on crime rates.

The number of police officers per capita, which is tracked by the FBI and reported annually in the Uniform Crime Reports, increased by 50,000–60,000 officers, or roughly 14 percent, in the 1990s. Although this increase was greater than in previous decades, it was smaller than might have been expected given the 1994 omnibus crime bill, which, by itself, had promised an extra 100,000 new police officers on the streets. Using an elasticity of crime with respect to the number of police of −0.40, the increase in police between 1991 and 2001 can account for a crime reduction of 5–6 percent across the board. The increase in police can thus explain somewhere between one-fifth and one-tenth of the overall decline in crime.

Whether this investment in police has been a cost-effective approach to reducing crime is a different question. As noted above, annual expenditures on police are approximately $60 billion, so the cost of the 14 percent increase in police (assuming marginal cost is equal to average cost, which is likely to be a reasonable approximation) is $8.4 billion a year. The benefits of crime reduction are more difficult to quantify. The most commonly used estimates of the cost of crime to victims (for example, Miller, Cohen and Rossman, 1993) places the costs of crime at roughly $500 billion annually in the early 1990s. Given the sharp declines in crime, today's estimates would likely be substantially lower—perhaps $400 billion in current dollars. If the increase in police reduced crime by 5–6 percent, then the corresponding benefit of crime reduction is $20–25 billion, well above the estimated cost. Thus, at least to a crude first approximation, the investment in police appears to have been attractive from a cost-benefit perspective.

2) The Rising Prison Population

The 1990s was a period of enormous growth in the number of people behind bars, as demonstrated in Figure 3. After many decades of relatively stable imprisonment rates, the prison population began to expand in the mid-1970s. By 2000, more than two million individuals were incarcerated at any point in time, roughly four times the number locked up in 1972. Of that prison population growth, more than half took place in the 1990s. The increase in prisoners can be attributed to a number of factors, the most important of which were the sharp rise in incarceration for drug-related offenses, increased parole revocation and longer sentences for those convicted of crimes (Kuziemko and Levitt, 2003).

The theory linking increased imprisonment to reduced crime works through two channels. First, by locking up offenders, they are removed from the streets and

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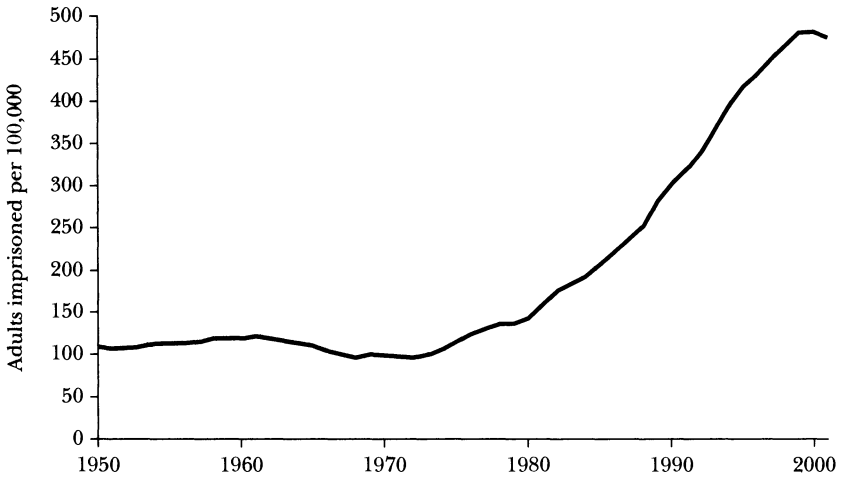
Figure 3
Adult Incarceration Rate, 1950–2001



unable to commit further crimes while incarcerated. This reduction in crime is known as the incapacitation effect. The other reason prisons reduce crime is deterrence—the increased threat of punishment induces forward-looking criminals not to commit crimes they otherwise would find attractive. Empirical estimates of the impact of incarceration on crime capture both of these effects.

The evidence linking increased punishment to lower crime rates is very strong. Typical estimates of elasticities of crime with respect to expected punishment range from −.10 to −.40, with estimates of the impact on violent crime generally larger than those for property crime (Marvell and Moody, 1994; Spelman, 1994; Levitt, 1996; Donohue and Siegelman, 1998). But most of these estimates are based on simple correlations. Given the clear endogeneity between crime and imprisonment (when crime is rising, the prison population will also rise if expected punishment per crime is held constant), one might suspect that such correlations estimates would understate the true impact of imprisonment on crime. Indeed, Levitt (1996) obtains estimates at the high end of the range when using prison overcrowding litigation as an instrument for the size of the prison population. Court decisions in prison overcrowding lawsuits are a plausible instrument for the prison population because these decisions have a large impact on the growth rates in state prison inmates, but there is little reason to believe that such litigation affects crime rates, except through the impact on the number of people incarcerated. Surveys of prison inmates yield estimates of reductions in crimes due to incarceration that are consistent with the econometric studies (DiIulio and Piehl, 1991).

Using an estimate of the elasticity of crime with respect to punishment of −.30 for homicide and violent crime and −.20 for property crime, the increase in incarceration over the 1990s can account for a reduction in crime of approximately

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12 percent for the first two categories and 8 percent for property crime, or about one-third of the observed decline in crime.[7]

Annual expenditures on incarceration total roughly $50 billion annually. Combining this spending figure with the cost of crime to victims and elasticities noted above, expenditures on prisons appear to have benefits that outweigh the direct costs of housing prisoners, subject to three important caveats. First, a dollar spent on prisons yields an estimated crime reduction that is 20 percent less than a dollar spent on police, suggesting that on the margin, substitution toward increased police might be the efficient policy. Second, it seems quite plausible that substantial indirect costs are associated with the current scale of imprisonment, such as the adverse societal implications of imprisoning such a large fraction of young African American males. Finally, given the wide divergence in the frequency and severity of offending across criminals, sharply declining marginal benefits of incarceration are a possibility. In other words, the two-millionth criminal imprisoned is likely to impose a much smaller crime burden on society than the first prisoner. Although the elasticity of crime with respect to imprisonment builds in some declining marginal returns, the actual drop off may be much greater. We do not have good evidence on this point. These caveats suggest that further increases in imprisonment may be less attractive than the naïve cost benefit analysis would suggest.

3) The Receding Crack Epidemic

Beginning in 1985, the market for crack cocaine grew rapidly. Crack cocaine is produced by heating a mix of powder cocaine and baking soda. The resulting precipitate takes the form of airy nuggets. Extremely small quantities of this compound, when smoked, produce an intense, short-lived high. The emergence of crack cocaine represented an important development both because it facilitated the sale of cocaine by the dose for a retail price of $5–$10 and because the extreme high associated with crack proved to be popular among consumers. Crack frequently sold in open-air markets with youth gangs controlling the retail distribution. The crack cocaine trade proved highly lucrative for gangs, leading to violence as rival gangs competed to sell the drug (Levitt and Venkatesh, 2000).

A number of authors have highlighted the extreme patterns in violence that strongly suggest an important role for crack (most notably, Blumstein and Rosenfeld, 1998; Cook and Laub, 1998). Figure 4, for instance, presents homicide rates by age and race for the period 1976–2000. Beginning in 1985, homicide rates for black males under the age of 25 began a steep ascent, more than tripling in less than a decade, before once again falling dramatically to levels slightly above those

[7] In the light of the estimates linking increased incarceration to lower crime, it is perhaps surprising that the rising prison population of the 1980s did not induce a commensurate decline in crime in that period. Among adults, crime rates were in fact steadily falling throughout the 1980s. These declines, however, were masked by sharply rising youth crime in the 1980s. These increases in juvenile crime appear to be due in part to the crack epidemic (discussed below), as well as to falling punishments in the juvenile justice system over this same time period (Levitt, 1998).

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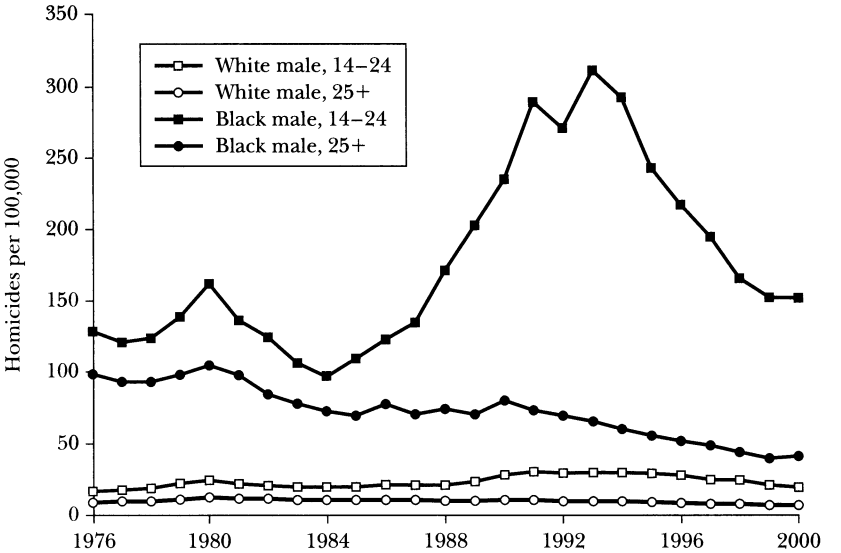
Figure 4
Homicide Offending Rates by Race and Age



of the pre-crack era. In stark contrast, the homicide rates of older black males continued on a long-term secular decline. Young white males also experienced a short-run increase in homicide in the late 1980s, but both the base rates and the increases for whites are much lower. The concentration and timing of the homicide spike among the young black males, which coincides with the rise and fall of the crack market, is suggestive of crack cocaine playing a critical role.

Despite the seeming importance of crack in explaining the crime fluctuations since 1985, remarkably little quantitative research on the subject goes beyond pictures like Figure 4. Goldstein, Brownstein, Ryan and Bellucci (1997) carried out in-depth analysis of homicides in New York City in 1988. They classify over 25 percent of these homicides as crack-related. Almost all of these homicides involved crack distribution, rather than homicides induced by the psychopharmological effects of crack or the need of drug users to obtain money. The lack of clear indicators of the importance of crack markets across time and space has made it difficult to study the possible links to crime. I have not seen a study that links the ebbing of the crack epidemic to falling crime, and I am aware of only two studies that attempt to relate the rise of crack cocaine to increased crime. Cork (1999), using city-level data, finds that sharp increases in juvenile crack arrest rates happen coincident with or shortly in advance of similarly sharp increases in juvenile gun homicides. Grogger and Willis (2000) use cocaine-related emergency room visits and a survey of police chiefs in an attempt to identify when crack first enters a city. They then use differences-in-differences between the central city and the surrounding suburbs to identify the impact of crack. They conclude that crime rates in a

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broad range of categories are elevated about 10 percent in these central cities due to the arrival of crack, although their study is not particularly useful for calculating the contribution of the waning crack epidemic on crime in the 1990s.[8]

Although the research is limited, I nonetheless believe that crack has quite likely played an important role in the decline in homicide in the 1990s, at least for homicide. Figure 4 suggests an alternative strategy for estimating that number, which is probably inferior to Grogger and Willis (2000), but more relevant to the question at hand. Under the assumption that the spike in homicide by young black males is driven primarily by crack, then one can use older black males, young white males or even all people except young black males as potential control groups. Since crack was not wholly confined to young black males, one would expect that any of these estimates would likely represent a lower bound. Alternatively, one can calculate the differences-in-differences between young and old blacks and whites. As crack ebbed from 1991 to 2001, young black males experienced a homicide decline of 48 percent, compared with 30 percent for older black males, 42 percent for young white males and 30 percent for older white males. Depending on which control group one views as most reasonable, the estimated impact of crack on homicides committed by young black males ranges from 6 to 18 percent. Given that young black males commit about one-third of homicides, this translates into a reduction of 2–6 percent in overall homicides in the 1990s due to crack receding. Based on strong prior beliefs and the likelihood that these estimates represent lower bounds, I view the 6 percent number as plausible, which would mean that the decline of crack explains about 15 percent of the fall of homicide. With respect to crimes other than homicide, however, my priors suggest smaller impacts: perhaps 3 percent (10 percent of the observed decline) for violent crime and no impact on property crime.

4) The Legalization of Abortion

The U.S. Supreme Court's *Roe v. Wade* decision in 1973 may seem like an unlikely source of the decline in crime in the 1990s, but a growing body of evidence suggests an important role for legalized abortion in explaining falling crime rates two decades later. The underlying theory rests on two premises: 1) unwanted

[8] Although the Grogger and Willis (2000) identification strategy is clever and the best work to date on the subject, I remain skeptical of the estimates for a number of reasons. First, central cities and suburbs have very different baseline levels of crime, which makes the differences-in-differences approach more difficult to justify (although the authors do their best to address this issue in the paper). Second, the assumption that crack only influenced central cities and not suburbs is unlikely to be accurate. In percentage terms, homicide rates of suburban blacks increased as much as central city blacks during the time period when crack was emerging (the same is true for whites in suburbs and central cities). Thus, the identification in this method is coming primarily from differences in the racial composition of central cities and suburbs, rather than through differences between blacks in cities and suburbs, which would seem to be a more plausible source of variation under the assumption that crack is only in central cities.

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children are at greater risk for crime, and 2) legalized abortion leads to a reduction in the number of unwanted births.

With respect to the first premise, the negative impact of adverse home environments generally on eventual criminality, the evidence is quite clear (Loeber and Stouthamer-Loeber, 1986; Sampson and Laub, 1993). A number of studies have looked at cases of women living in jurisdictions in which governmental approval to have an abortion was required, who sought to have an abortion, but were denied the ability to do so (Dagg, 1991; David, Dytrych, Matejcek and Schuller, 1988). For example, Dagg (1991) reports that these women overwhelmingly kept their babies, rather than giving them up for adoption, but that they often resented the unwanted children. These children who were born because their mothers were denied an abortion were substantially more likely to be involved in crime, even when controlling for the income, age, education and health of the mother.

The evidence for the second premise that legalized abortion leads to a reduction in the number of unwanted births also appears compelling. Levine, Staiger, Kane and Zimmerman (1999) find that legalization of abortion is associated with roughly a 5 percent drop in birthrates. They estimated that the drop in births was roughly twice as great for teenage and nonwhite mothers as it was for the nonteen, white population. Consistent with this finding, the number of children put up for adoption fell dramatically after abortion became legal (Stolley, 1993). Also consistent is the decline in infanticide in the United States that is documented by Sorenson, Wiebe and Berk (2002) following the legalization of abortion. Indeed, other studies have documented improvements in a wide range of outcomes for those born at a time of legalized abortion, including reduced infant mortality, childhood poverty and growing up in a single-parent household (Gruber, Levine and Staiger, 1999), as well as lower rates of drug usage (Charles and Stephens, 2002).

Donohue and Levitt (2001) report a number of pieces of evidence consistent with a causal link between legalized abortion and crime, a hypothesis that to my knowledge was first articulated in Bouza (1990). The five states that allowed abortion in 1970 (three years before *Roe v. Wade*) experienced declines in crime rates earlier than the rest of the nation. States with high and low abortion rates in the 1970s experienced similar crime trends for decades until the first cohorts exposed to legalized abortion reached the high-crime ages around 1990. At that point, the high-abortion states saw dramatic declines in crime relative to the low-abortion states over the next decade. The magnitude of the differences in the crime decline between high- and low-abortion states was over 25 percent for homicide, violent crime and property crime. For instance, homicide fell 25.9 percent in high-abortion states between 1985 and 1997 compared to an *increase* of 4.1 percent in low-abortion states. Panel data estimates confirm the strong negative relationship between lagged abortion and crime. An analysis of arrest rates by age reveal that only arrests of those born after abortion legalization are affected by the law change.

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A number of other studies confirm a link between abortion and crime.[9] Reyes (2002) reports somewhat smaller, but still substantial estimates of abortion on crime using U.S. data. Sen (2002) finds a link between abortion and crime in Canadian data that mirrors the U.S. experience. Pop-Eleches (2002) documents the effects of an unexpected abortion ban imposed in Romania in 1966. Extrapolating the conservative estimates of Donohue and Levitt (2001) to cover the period 1991–2000, legalized abortion is associated with a 10 percent reduction in homicide, violent crime and property crime rates, which would account for 25–30 percent of the observed crime decline in the 1990s.

Summarizing the Evidence

The basic conclusions of the analysis for the 1990s are summarized in Table 5. Each row of the table corresponds to a possible explanatory factor discussed in the paper. The first three columns represent my estimates of the impact that factor has had on homicide, violent crime and property crime, respectively. The final column is my assessment of how speculative the estimates in the row are. The bottom three rows of the table present the estimated cumulative impact of the listed factors and the actual decline in crime according to police reports and victimization surveys. Note that the bottom three rows match up relatively closely, particularly for the reported crime data. The declines in victimization are larger than the predicted declines. For the most part, however, the decline in crime in the 1990s is not a mystery. The observed crime patterns can be reconciled in a straightforward manner with what we know about the factors that influence crime.[10]

Extending the Analysis to the Period 1973–1991

The emphasis of this article is on explaining the decline in crime in the 1990s. It is also interesting, however, to explore the extent to which changes in the set of factors I analyze can explain the observed patterns of crime in earlier periods. The year 1973, when data from the NCVS first becomes available, serves as a logical time period in which to begin the analysis.

Table 6 summarizes the results of the analysis for the period 1973–1991. The

[9] Only one published study, Joyce (2003), has challenged the hypothesis linking abortion and crime, arguing that the link between abortion and crime is not present for the period 1985–1990. In a reply to Joyce, however, Donohue and Levitt (2003) demonstrate that for the precise cohorts that Joyce finds no reduction in crime in 1985–1990, lifetime rates of criminality are indeed reduced. Joyce's results appears to be due to the fact that crack hit the high-abortion states, in particular New York and California, earlier and harder than other states.

[10] The western European experience lends further support to a causal role of these four factors in the U.S. crime reduction. Unlike the United States, Europe has experienced relatively small increases in police and prison populations. Nor was crack ever a major factor in Europe. Although legal rules regarding abortion vary widely across Europe, no western European country has an abortion rate close to the American rate. Given the absence of these catalysts for crime reduction, it is not surprising Europe has not matched the U.S. crime decline.

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Table 5
Summarizing the Estimated Contribution of Various Factors to the Decline in Crime in the 1990s

	Percentage change in crime that this factor accounts for over the period 1991–2001:			
Factor	*Homicide*	*Violent crime*	*Property crime*	*Certainty level of estimated impact*
Strong economy	0	0	−2	High
Changing demographics	0	−2	−5	High
Better policing strategies	−1	−1	−1	Low
Gun control laws	0	0	0	Medium
Concealed weapons laws	0	0	0	High
Increased usage of capital punishment	−1.5	0	0	Medium
Increases in the number of police	−5.5	−5.5	−5.5	Medium
Increases in the prison population	−12	−12	−8	High
The decline of crack	−6	−3	0	Low
Legalized abortion	−10	−10	−10	Medium
Total of all factors considered	−36	−33.5	−31.5	
Actual change in UCR reported crime	−43	−34	−29	
Actual change in NCVS victimization	—	−50	−53	

Notes: The estimated impacts reported in the table are based on the discussion presented throughout the text of this article. The last column of the table gives my appraisal of how speculative the estimates are for each of the factors considered.

structure of Table 6 parallels that of Table 5. The one factor that dominates all others in terms of predicted impact on crime in this earlier period is the growth in the prison population. Between 1973 and 1991, the incarceration rate more than tripled, rising from 96 to 313 inmates per 100,000 residents. By my estimates, that should have reduced violent crime and homicide by over 30 percent and property crime by more than 20 percent. Note that this predicted impact of incarceration is much larger than for the latter period.

The rise of crack cocaine served as a strong counterbalancing force to rising prison populations in this earlier period, especially for homicide. Between 1984 (roughly the date at which crack first appeared) and 1991, homicide rates of young black males nearly doubled. The growth in homicide was much smaller for other groups: 30, 40 and 7 percent increases for older black males, young white males and older white males, respectively. (Between 1973 and 1984, homicide trends across these groups were generally similar.) If homicide rates of black males had mirrored that of the rest of the population between 1984 and 1991, overall homicide rates would have been 16 percent lower in 1991, which I take as a best guess of the impact of crack over this time period. Following the same logic used earlier, the implied impact of crack on violent crime is half as large and the impact on property crime negligible.

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Table 6

Summarizing the Estimated Contribution of Various Factors to the Decline in Crime, 1973–1991

	Percentage change in crime that this factor accounts for over the period 1973–1991:		
Factor	*Homicide*	*Violent crime*	*Property crime*
Strong economy	0	0	2
Changing demographics	4	1	−6
Better policing strategies	0	0	0
Gun control laws	0	0	0
Concealed weapons laws	0	0	0
Increased usage of capital punishment	0	0	0
Increases in the number of police	−3	−3	−3
Increases in the prison population	−35	−35	−24
The rise of crack	16	8	0
Legalized abortion	−2	−2	−4
Total of all factors considered	−20	−31	−35
Actual change in UCR reported crime	5	83	38
Actual change in NCVS victimization	—	2	−32

Notes: The estimated impacts reported in the table are based on the same set of assumptions underlying Table 5, but applied to the observed changes in the factors indicated over the period 1973–1991.

The estimated impact of adding more police and legalized abortion is much smaller in the earlier decades than in the 1990s. Between 1973 and 1991, the number of police per capita grew only 7 percent (compared with 14 percent in the 1990s). By the year 1991, the proportion of the population at-risk for criminal activity that had been exposed to abortion *in utero* was still small. Abortion was legalized in most of the country in 1973, implying that abortion exposure was primarily limited to those 17 and under in 1991. Thus, while increased police and abortion exposure worked to reduce crime in the period 1973–1991, these factors played a much more limited role than was the case in the 1990s.

The factors that were unimportant in explaining crime changes in the 1990s generally also had little impact in the early period. The lone exception to this conclusion is the impact of demographic shifts, which served to increase homicide rates in the 1970s and 1980s slightly, but to reduce property crime. The differential impact of demographics on homicide and property crime is driven by two factors. First, between 1973 and 1991, there was a drop in the share of teenagers relative to young adults. Teenagers disproportionately engage in property crime, whereas young adults are at greater risk for homicide and violence. Second, increases in the fraction of the population that is black have a much larger impact on homicide than property crime since the racial gap in homicide rates is much greater than it is for property crime.

In summary, the factors I examine cumulatively predict crime declines

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between 1973 and 1991 of between 20 and 35 percent. Essentially all of this predicted reduction is attributable to increased incarceration; the other factors largely counterbalance one another. Comparing these predictions to the observed pattern in reported crime (as shown in Table 2 and also presented in the penultimate row of this table), the hypothesized crime declines failed to materialize. For all crime categories, crimes reported to the FBI actually increased between 1973–1991, in some cases sharply (reported violent crime rose 83 percent). Comparing the predictions to NCVS victimization trends, the numbers are much closer. Although a substantial gap between predicted violent crime and victimization remains, the magnitude of the gap is only one-third as large as for reported crime. For property crime, the predicted and actual victimization are nearly identical.

Thus, in contrast to the 1990s, the actual crime experience in the 1973–1991 period is not well explained by the set of factors analyzed in this paper. There appears to be a substantial unexplained rise in crime over the period 1973–1991. Because reported crime and victimization data show so little congruence prior to the 1990s, it is difficult to know the true magnitude of the residual.

Conclusions

Crime fell sharply and unexpectedly in the 1990s. Four factors appear to explain the drop in crime: increased incarceration, more police, the decline of crack and legalized abortion. Other factors often cited as important factors driving the decline do not appear to have played an important role: the strong economy, changing demographics, innovative policing strategies, gun laws and increased use of capital punishment. In stark contrast, the crime experience between 1973 and 1991 is not well explained by the factors identified in this paper. The real puzzle in my opinion, therefore, is not why crime fell in the 1990s, but why it did not start falling sooner.

An additional conclusion from this analysis is that the simplistic accounts of why crime fell offered by so-called experts to the media can be quite misleading. Of the eight reasons most frequently cited in newspapers, I conclude that only three of the factors are truly important. A fourth factor I consider important, legalized abortion, does not receive a single mention. To the extent that the allocation of resources for reducing crime is influenced by such pronouncements, the money may very well be misspent.

Does the analysis of this paper provide any guidance as to the likely fluctuations in crime rates over the next decade? Given the historical volatility in crime fluctuations and the failure of the factors examined to explain crime prior to the 1990s, the honest answer to that question may be "not much." Nonetheless, the past may shed some light on the future. Of the four factors that I believe to account for much of the recent crime decline, only rising numbers of police officers and legalized abortion are likely to be continuing contributors to future crime declines. Given that the number of police has been growing for four decades, it seems

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plausible that this trend will continue unless local government budget problems become extreme, contributing perhaps a 5 percent reduction in crime over the next decade. With respect to abortion, a substantial fraction of the criminally active population today was born prior to legalization. As that population continues to age and is replaced by new cohorts born after legalization, some ongoing reductions in crime might be expected, amounting to perhaps a 5–10 percent cumulative crime reduction over the period 2001–2010. Prison populations are unlikely to continue to grow unchecked and have stabilized in recent years. With many states facing difficult fiscal constraints, it would appear likely that prison populations may actually fall over the next decade, giving a slight impetus to crime. Crack-related violence appears to have reached a steady state, with little future crime reduction to be expected through that channel. I see little reason to believe that factors that were not influential on crime in the preceding three decades will be influential in the next ten years.

With respect to new threats looming on the horizon, one potential contributor to increased crime rates that does not appear to be adequately appreciated is the coming of age of so-called "crack babies," and more generally, those who spent their early childhood years in families and neighborhoods ravaged by crack. The evidence regarding the direct physiological impact of exposure to crack *in utero* suggests that adverse effects are short-lived, providing reason for optimism (Frank, Augstyn, Knight, Pell and Zuckerman, 2001). On the other hand, the home environment of such babies, or children raised in crack-afflicted areas more generally, may be quite difficult, inducing a criminogenic effect. Overall, however, it appears that continued crime declines over the next decade remain a realistic possibility, albeit on a scale that is likely to be much more moderate than in the recent past.

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