

Trends in Mortality Due to Legal Intervention in the United States, 1979 Through 1997

Andrew G. Sikora, MD, PhD, and Michael Mulvihill, DrPH

There were an estimated 14 528 000 arrests in the United States in 1998.¹ While occasional injury and death are predictable consequences of these interactions between police and private citizens, few studies have systematically examined patterns of morbidity or mortality due to law enforcement actions.

The present study examines US mortality due to legal intervention for the years 1979 through 1997. (Throughout this report, the term “legal intervention” is used to denote the relevant *International Classification of Diseases, Ninth Revision [ICD-9]*, category describing deaths due to law enforcement actions, regardless of their legality.²) We attempted to answer 3 questions: (1) How frequent are deaths due to legal intervention? (2) Did death rates due to legal intervention rise, decline, or remain stable from 1979 through 1997? (3) Are deaths due to legal intervention evenly distributed throughout the population, or does incidence vary by age, sex, or race?

METHODS

This study examines deaths of US citizens aged 10 years and older during the period 1979 through 1997. Data for this study were obtained from the Compressed Mortality File administered by the Office of Analysis, Epidemiology, and Health Promotion of the National Center for Health Statistics, Centers for Disease Control and Prevention (CDC), Hyattsville, Md. This database was searched with the Internet-based CDC WONDER search tool (<http://wonder.cdc.gov>). Race-specific data for Whites and Blacks include both Hispanic and non-Hispanic individuals. Data not stratified by race include records of individuals classified as “White,” “Black,” and “other” (including Asian Americans and Native Americans). The Compressed Mortality File includes all

Objectives. This report identifies trends in the number and rate of deaths due to law enforcement actions (*International Classification of Diseases, Ninth Revision*, category “legal intervention”) in the United States.

Methods. The Centers for Disease Control and Prevention’s Compressed Mortality File was used to determine age-, race-, and sex-specific death rates due to legal intervention for the years 1979 through 1997.

Results. Males account for nearly all deaths, with the death rate for Black males several times that of White males. For both Whites and Blacks, the highest rates of death were observed for ages 20 to 34. Death rates declined significantly from 1979 to 1988 and remained stable thereafter.

Conclusions. While legal intervention is an uncommon cause of death, some sub-populations experience rates of death many times that of the US population as a whole. (*Am J Public Health*. 2002;92:841–843)

homicides of US citizens occurring in the United States. Cause of death is coded according to *ICD-9* category.² All reported death rates are per 100 000 individuals per year.

For this study, the category “all homicides” was defined as *ICD-9* E (external cause of injury) codes E960 through E977. The *ICD-9* definition of legal intervention (E970–E977) includes “Injuries inflicted by the police or other law-enforcing agents . . . in the course of arresting or attempting to arrest lawbreakers, suppressing disturbances, maintaining order, and other legal action.”

Trends in death rates and absolute numbers of deaths over time were plotted on a linear scale. Visual analysis of death rate trends over time suggested that, for each category, 2 separate trend lines should be fitted for homicide rates from 1979 to 1988 and from 1988 to 1997. Linear regression was used to fit trend lines to the death rates for each period and to determine whether the slopes differed significantly from zero. The average annual percentage change in death rate for a given period of time was calculated as $100(e^{b-1})$, where b is the estimated slope for the regression line through a plot of the natural logarithms of the death rates.

RESULTS

Overall Trends

From 1979 to 1997, the absolute annual number of homicides due to legal intervention was as high as 349 and as low as 237, averaging 289. From 1979 to 1988, there was a statistically significant decrease in the number of deaths due to legal intervention, with an average annual change of -4.5% (Table 1). During the period 1988 to 1997, the number of deaths due to legal intervention rose by an average of 0.7% per year, but this increase was not statistically significant.

The proportion of deaths due to legal intervention averaged 1.3% of all homicides from 1979 to 1997 (range = 0.9% – 1.6%). The death rate due to legal intervention for all US citizens averaged 0.14 from 1979 to 1997 (Table 1). When deaths due to legal intervention were stratified by *ICD-9* code according to cause of death, of the 3233 total deaths occurring from 1988 to 1997, the vast majority (3126, or 97%) were caused by firearms. Unspecified or other causes, including physical force, accounted for the remainder. This pattern differs somewhat from the observed distribution of weapons used when homicide from all causes is examined, in which case firearms

TABLE 1—Annual Percentage Change in Incidence of US Deaths Due to Legal Intervention, 1979–1997

	1979–1988		1988–1997	
	Avg Death Rate	Avg % Change	Avg Death Rate	Avg % Change
All of US	0.14	-4.5*	0.13	+0.7
All females	<0.01	... ^a	<0.01	... ^a
All males	0.27	-4.7*	0.27	+0.5
All White males	0.08	-2.8*	0.09	+1.3
All Black males	0.38	-7.6*	0.29	-1.9
White males aged 20–35	0.35	-4.8*	0.36	+2.3
Black males aged 20–35	1.74	-13.9*	1.36	-1.3

Note. Death rates are per 100 000 individuals.
^aNumber is too small for statistical stability.
 *P ≤ .02 for trend.

account for about 65% to 70% of all deaths.³

Differentials by Sex, Race, and Age

Of the 5486 total deaths due to legal intervention during the 19-year period 1979 to 1997, 5330 decedents (97%) were male. Whites accounted for 3447 deaths (63%), Blacks for 1885 deaths (34%), and “others” for 154 deaths (3%). When rates of death due to legal intervention were examined, striking variations by race and sex became apparent (Table 1). The average annual rates of death due to legal intervention were more than 27 times higher for men than for women. When mortality was stratified by race and sex, death rates of Black males on average were 4.7 times those of White males from 1979 to 1988 and averaged 3.2 times higher from 1988 to 1997 (ranges=3.4–6.7 times and 2.6–5.0 times, respectively).

When age-specific death rates for the period 1988 to 1997 were examined, mortality rates for both White and Black males were highest in the 20- to 24-year-old age group (Figure 1). This pattern roughly parallels the age distribution of death rates for homicides due to all causes, which peaks at 15 to 24 years.³ Age-specific death rates among males for the period 1979 to 1989 exhibited similar trends.

Trends Over Time in Rates of Death Due to Legal Intervention

For all categories examined, rates of death due to legal intervention declined significantly

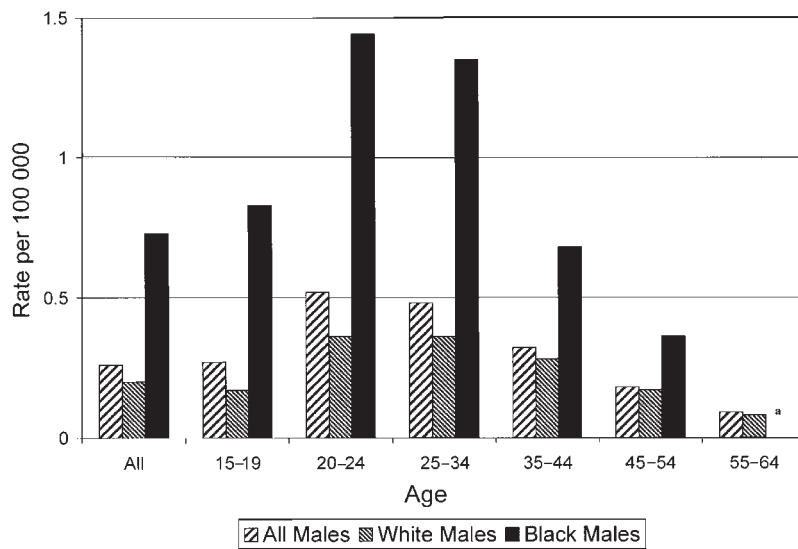
from 1979 to 1988 (Figure 2; Table 1), with the greatest annual decrease observed for Black males aged 20 to 35 years (by 13.9% per year), followed by the decrease observed for all Blacks (by 7.6% per year). From 1988 to 1997, legal intervention death rates remained essentially stable for both White and Black males, with no statistically significant increases or decreases observed in any category. During this same period, the rate of death from homicides *unrelated* to legal intervention

decreased by 17% (from 9 to 7.5) (determined from the Compressed Mortality File).

DISCUSSION

Our analysis of national mortality data supports 3 main conclusions. (1) Legal intervention is an uncommon external cause of death, accounting for roughly 1% to 2% of all homicides. (2) Absolute numbers of yearly deaths due to legal intervention, as well as rates of death for all age- and race-specific categories examined, decreased significantly from 1979 to 1988 and did not display statistically significant trends thereafter. This decline roughly parallels a concurrent decline in the overall homicide rate during this period.⁴ (3) Rates of death due to legal intervention showed clear patterns of variation according to race, sex, and age. Young (<35 years old) adult males experienced the highest death rates and accounted for the majority of deaths. Rates of death for Black males were from 3 to 5 times greater than those for White males.

These conclusions are subject to 2 important limitations. First, we do not know what proportion of decedents coded as “White,” “Black,” or “other” are Hispanic, and thus we



^aNumber of records inadequate to calculate.

FIGURE 1—Age- and race-specific rates of death due to legal intervention for males.

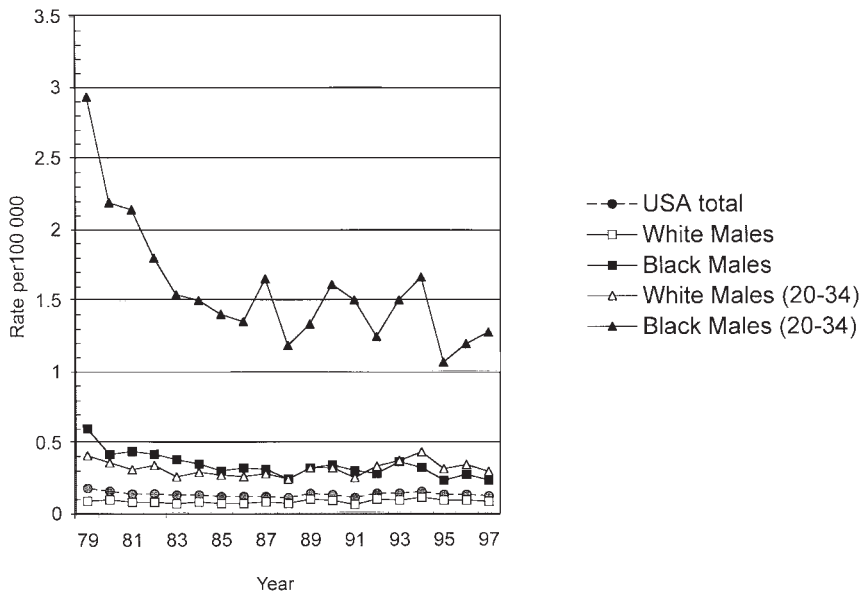


FIGURE 2—Trends in US rates of death due to legal intervention, 1979 through 1997.

cannot determine ethnicity-specific mortality rates. Second, we may underestimate the number of deaths due to legal intervention if the records of some decedents killed through legal intervention fail to indicate this aspect of the cause of death. In particular, deaths due to delayed effects of legal intervention may not be recognized and coded appropriately on death certificates.

It is unclear why death rates for Black males are several times higher than those for White males, although it is consistent with data showing that overall homicide rates for Blacks are substantially higher than those for Whites.^{3,5} This may reflect more frequent contact between Blacks and the police: Blacks experience both higher rates of victimization by violent crime⁶ and higher arrest rates than Whites,⁷ thus providing increased opportunities for interaction. In support of this explanation, deaths due to legal intervention exhibit a distribution by race (63% White, 34% Black) similar to that of all US arrests (67% White, 31% Black).¹ Alternatively, members of some police departments may differ in how they approach White and Black suspects: non-Whites are more likely to report physical or other mistreatment by the police in surveys,^{8,9} and data from the US Department of Justice suggests that in interactions between police officers and citizens, Blacks

are up to 3 times more likely than Whites to experience “force or the threat of force.”¹⁰ Further study focusing on the circumstances leading to fatal interactions with the police may help explain disparities in death rates between Whites and Blacks and may suggest potential interventions to reduce deaths due to legal intervention.

According to our analysis, legal intervention is a rare cause of death. However, extrapolation from other studies of intentional injury suggests that each death due to legal intervention may represent other nonlethal injuries. For example, one large study examining deaths due to assaults with firearms found that for every gunshot fatality, there were 4 nonlethal injuries, of which 10% led to permanent disability.¹¹ In addition, deaths due to legal intervention occur disproportionately among young adults, an age group that contributes substantially to the workforce and whose members have decades of potentially useful life ahead of them. Thus, it is likely that the true impact of deaths due to legal intervention, measured by years of productive life lost, is greater than that suggested by an analysis of death rates alone. ■

About the Authors

Andrew G. Sikora is with the Department of Otolaryngology/Head and Neck Surgery, New York University Medical

Center, New York, NY. Michael Mulvihill is with the Department of Family Medicine and Community Health, Albert Einstein College of Medicine, Bronx, NY.

Requests for reprints should be sent to Michael Mulvihill, DrPH, 1300 Morris Park Ave, Room 906 Belfer, Bronx, NY 10461.

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Contributors

A. G. Sikora planned the study, analyzed the data, and wrote the paper. M. Mulvihill participated in the writing of the paper and reviewed the data analysis.

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