

HOMICIDE: EPIDEMIOLOGIC ANALYSIS AT THE NATIONAL LEVEL*

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HOMICIDE and assaultive violence are public health problems, a fact with three clear implications. First, public health professionals should address these problems. In the past, interpersonal violence in the United States has been considered the concern of the criminal justice system alone, and control strategies have relied almost exclusively on the capabilities and resources of law enforcement and judicial and penal institutions. These strategies focus on deterrence through punishment and imprisonment, but have not reduced homicide rates or rates of nonfatal assaults. In fact, the past 30 years have witnessed dramatic increases in homicide rates in the United States: in 1980 the homicide rate reached its highest recorded level of the century.¹ We believe that public health, with its focus on epidemiologic analysis and prevention, can make a substantial contribution to solving the problems of interpersonal violence.

Second, the public health community should give high priority to this problem because it exacts such a high toll in illness, death and quality of life. As of 1980 homicide was the 11th leading cause of death in the United States and ranked as the fourth leading cause of premature mortality. For certain minority groups, the burden of homicide is particularly great. For an American, the lifetime chance of becoming a homicide victim is about one in 240 for whites and one in 47 for blacks and other minorities.² Nonfatal assaults may be an even more important problem than homicide. The ratio of actual assaults to homicide is probably far greater than 100:1.

Finally, defining homicide as a public health problem suggests that homi-

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cide is a concern to be addressed and remedied, not an inalterable fact of life.

The new public health approach to homicide prevention must be based on understanding the patterns and precursors of interpersonal violence. Assaultive violence, both fatal and nonfatal, can be divided into different "types" based on characteristics such as the victim-offender relationship, setting and circumstance. Each type may have different causes and manifestations. Furthermore, because the types of homicide and assault cover so wide a range, from domestic disputes to gang warfare to robbery and other illegal activities, their incidence and character depend on the unique characteristics of local areas and their populations.

This paper presents an epidemiologic assessment of homicide and assaultive victimization in the United States. Epidemiology is that branch of science that examines patterns in human populations to clarify the distribution, impact and costs of morbidity and mortality from various causes (descriptive epidemiology) the causes and consequences of morbidity and mortality (analytic epidemiology) and effective measures for preventing diseases and controlling health problems.³

In this paper, more emphasis is placed on homicide than on nonfatal assaultive behavior. Discussions and presentation of information on nonfatal assaultive behaviors are included because nonfatal assaults are frequent precursors of homicide, may be viewed as a risk factor for homicide victimization or perpetration, occur more frequently than homicides and are outcomes of situations and circumstances similar to those that lead to homicide. For these reasons, it may be possible, by studying nonfatal assaults, to learn a great deal about ways to prevent homicide.

DEFINITIONS

Violence is the use of physical force with the intent of causing harm, injury or death. Homicide is death due to injuries inflicted by another person with intent to injure or kill, by any means. Homicide may be further classified as either criminal or noncriminal. The latter category includes justifiable or excusable homicides, those committed in self-defense or in the line of duty by a police officer.

In this paper we use the term assaultive violence to include both nonfatal and fatal interpersonal violence where physical force by one person is used with the intent of causing harm, injury or death to another.

Legally, aggravated assault is either an attack with a weapon, whether or not there is injury, an attack without a weapon resulting either in serious

TABLE I. NUMBER OF REPORTED CASES OF ROBBERY, AGGRAVATED ASSAULT, RAPE AND ASSOCIATED HOMICIDES, UNITED STATES, 1980

<i>Type of crime</i>	<i>Number of cases</i>	<i>Number of associated homicides</i>	<i>Rate** of associated homicides</i>
Robbery	24,000,000	2,700	11.3
Aggravated assault	1,700,000	15,700	923.5
Rape	170,000	200	117.6

Numbers of cases are rounded to two significant digits; numbers of associated homicides are rounded to the nearest 100.

*Robbery category includes robbery, burglary, larceny and auto theft.

**Rate/100,000 crimes

Sources: 1) Number of cases for rape, robbery, and aggravated assault from 1980 National Crime survey 2) Homicides from 1980 FBI-Uniform Crime Report Supplementary Homicide Report Data Tape

TABLE II. HOMICIDE DEATH RATES/100,000 PERSONS, BY RACE, SEX AND RELATIONSHIP*

<i>Victim/offender Relationship</i>	<i>Black and other</i>		<i>White</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
Family	5.2	2.9	1.1	1.0
Friend	17.7	3.5	3.0	0.7
Stranger	5.0	0.5	1.6	0.3
Unknown	13.8	2.8	3.7	1.0
Justifiable	2.7	0.0	0.4	0.0

*Source: FBI-Uniform Crime Reports, U.S., 1980.

injury (e.g., broken bones, loss of teeth, internal injuries, loss of consciousness) or in undetermined injury requiring two or more days of hospitalization or an attempted assault with a weapon. It is important to remember that, as legally defined, aggravated assault represents only one category of assault. Thus, the data on aggravated assault in existing data sets represent a narrowly defined sector of all assaults and are restricted by a definition which may not be the most useful to the health sector. Research literature generally presents aggravated assault and homicide as similar categories of behavior, and considers homicide as a "completed" aggravated assault. Most strategies that would reduce aggravated assault are also generally presumed to reduce homicides. In addition, it is important to realize that homicide represents the final common outcome of assaultive behaviors, which are both very diverse in their characteristics and many times more common than homicide (Table I).

Current research usually categorizes homicides by the nature of the victim-

offender relationship: family, friend or acquaintance or stranger (Table II).*

Family homicides are fatal injuries inflicted by one member of a family upon another. They are the most severe form of domestic violence, a set of destructive behaviors within a family or household, or among intimates, that may range from neglect to assault to murder of a child (all included in the term child abuse) and from assaultive behavior to murder of a spouse or partner (spouse abuse and "battering").** Wife battering tends to involve ongoing and escalating violence accompanied by sexual assaults and frequent threats. Abuse of one's elders or siblings also falls in the category of domestic violence.

Homicides involving friends and acquaintances denote a known, non-familial relationship. This type of homicide and assaultive violence has received relatively little attention even though it accounts for a large part of all homicides and assaults.

Stranger homicides are murders in which the victim and killer are known not to have had a prior relationship. Murders in which the relationship between the victim and perpetrator is unknown are not included in this category.

DIMENSIONS

Of the homicides committed in the United States in 1980 and reported to the FBI, 32.9% involved friends and acquaintances, 15.8% were within families and 12.8% were between strangers (Figure 1).⁴ The largest category, "relationship unknown," accounted for 34.4% of homicides. However, data suggest that many homicides classified as "relationship unknown" are really murders of strangers because murders that occur between intimates are usually cleared (i.e., an arrest is made) and appropriately classified. Firearms were used in 63.7% of all homicides (Figure 2).

Most family homicides include spouses and occur in the home. They progress through a series of stages and frequently occur after many assaultive incidents.^{6,7} The median age of victims is 33 and of offenders, 32. In 40% of the cases, a handgun is used, followed by other guns (24%), knives (17%) and other means (18%).

*The description of these types is based on material from the 1980 Uniform Crime Reports,⁴ a recently completed national study on *The Nature and Patterns of American Homicide*,⁵ and a survey of studies done on each category of homicide.

**We frequently refer to victims as women or "wives," since women are more vulnerable to injury than men, constitute the large majority of victims seen in emergency rooms, and, when they use violence usually use it in self-defense. This is not to say that violence against men by their partners or spouses is not serious. In addition, much of what is referred to as "spouse abuse" actually occurs between people who are not married, but are, or have been, engaged in an intimate relationship.

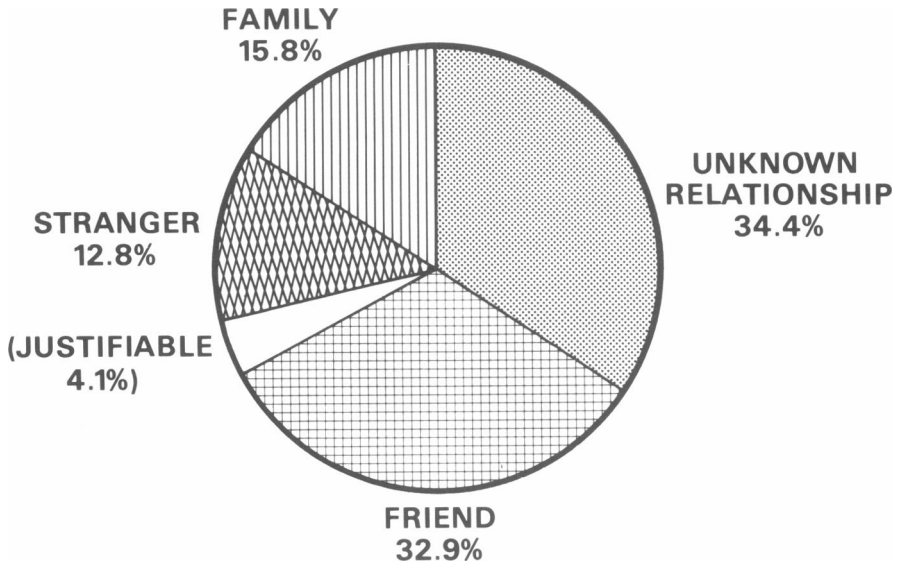


Fig. 1. Percentage of homicides by relationship of victim to offender, 1980. Source: 1980 FBI-UCR data tape.

Victims of acquaintance homicide are typically younger than the victims of family homicide and much more likely to be male and black. Acquaintance homicide is more prevalent among blacks (53.3% of the victims in 1978) than among whites (45.2% in 1978). Offenders (median age 23) are usually younger than their victims. Handguns are again the weapon of choice; they are used in 48.6% of the cases, knives in 19.6%. Homicides involving friends are most likely to occur within a private residence, although one third occur on the street, and a higher percentage occurs in bars than is true for other types of killings.⁵

In stranger homicides, the victims and offenders are predominantly male, and the median age of the victim (31 years) is higher than that of the offender (25 years). Most such killings are with firearms (53% with handguns, 13.9% with another type of gun). Nationally, 43.2% of such killings are associated with another crime, often robbery (32%). In cities, most stranger killings (57%) are associated with another crime, most frequently robbery.⁵ Despite such figures and the fact that robbery murders increased in the 1970s,^{8,9} the chance of being killed during a robbery remains small (Table I shows the rates of homicide associated with robbery, aggravated assault and rape).

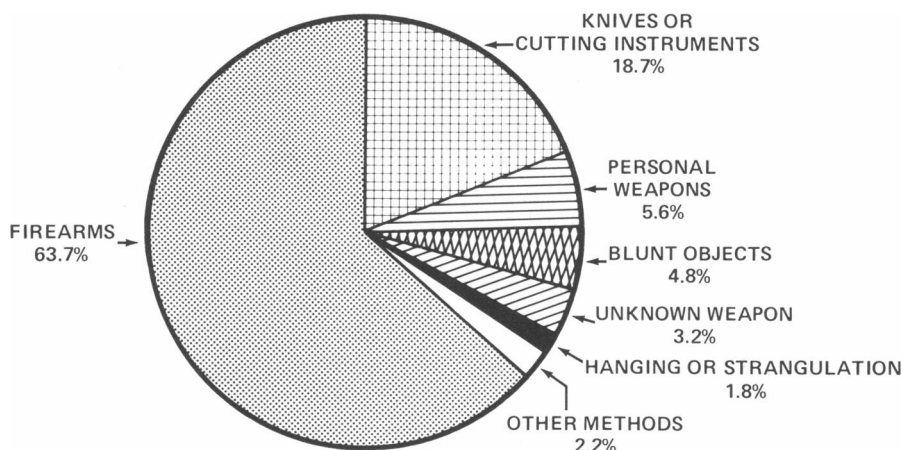


Fig. 2. Percentage of homicides by weapon or method used, 1980. Source: 1980 FBI-UCR data tape.

A relatively small proportion of homicides is committed during the perpetration of another crime. Only 17% of homicides that occurred in the United States during the period 1976-1979 were committed during the course of another crime such as robbery or burglary.¹⁰ According to data on homicides for which the offender could be identified, non-crime-related homicides occurred overwhelmingly among people of the same race and sex.

Homicide death rates vary greatly among countries that report homicide statistics to the World Health Organization (Table III).¹¹ In comparing homicide rates from different countries, it must be noted that reporting methods may differ and that domestic and international wars may affect homicide rates in some areas. It would be important to understand the specific populations at highest risk of homicide in different countries, patterns of relationships among perpetrators and victims and the role of drugs, alcohol, and firearms in these homicide rates. In addition, international comparisons of changes in homicide rates over time might help to clarify the effect of social and economic changes on homicide rates.^{12,13}

DATA SOURCES

This section describes available sources of data on various aspects of homicide and assaultive violence. For each source, we review the types of data collected, their strengths and limitations and some aspects of the quality of the data. The data currently available for nonfatal interpersonal violence are neither very complete nor accurate.

TABLE III. DEATHS FROM HOMICIDE AND INJURY PURPOSEFULLY
INFLICTED BY OTHER PERSONS. RATE PER 100,000 POPULATION,
BY COUNTRY, 1980

<i>Country</i>	<i>Both sexes all ages</i>	<i>Males 14-24</i>	<i>Males 25-34</i>	<i>Absolute number</i>
Guatemala	63.0	280.5	431.0	4,572
Thailand	25.1	54.7	83.3	11,652
Puerto Rico	15.1	42.2	62.7	483
Brazil	11.7	19.9	46.5**	13,887
United States	10.5	24.0	31.6	23,967
Paraguay	9.1	16.6	47.4	159
Costa Rica	5.8	12.6	17.5	130
Northern Ireland	4.2	6.8	11.7	65
Barbados	4.0	10.2	10.2	10
Surinam	3.6	9.4	8.5	14
Hungary	2.6	1.9	3.7	276
Chile	2.6	4.2	5.6	286
Bulgaria	2.5	4.0	6.2	222
Singapore	2.3	5.0	3.0	56
Panama	2.2	4.6	5.9	41
Canada	2.1	2.2	4.5	495
Australia	1.9	2.1	3.9	280
Luxembourg	1.9	3.5	—	7
Italy	1.9	3.2	5.2	1,067
Israel	1.8	4.1	5.5	69
Yugoslavia	1.7	2.2	3.5	386
Hong Kong	1.6	1.6	3.4	83
Scotland	1.6	3.9	2.8	80
Mauritius*	1.6	2.8	2.8	15
New Zealand	1.3	2.3	3.0	40
Denmark*	1.3	1.3	1.7	67
Austria	1.2	1.1	1.9	91
Switzerland*	1.0	0.4	0.8	60
Republic of Germany, Federal	1.2	1.0	1.9	709
Sweden*	1.2	1.0	2.2	97
Norway*	1.1	1.6	2.2	46
Japan	1.0	0.3	1.1	1,113
France	1.0	1.4	1.5	545
Kuwait	0.9	—	1.9	12
Iceland*	0.9	0.9	8.8	2
Netherlands	0.8	1.4	1.4	111
England and Wales	0.8	1.1	1.4	400
Greece	0.7	0.7	2.1	65
Ireland	0.7	1.0	2.1	23
Syrian Arab Republic	0	—	—	2

*Deaths classified by 8th version of International Classification of Diseases (ICD); all other countries used 9th version of ICD.

**Age group 20-29

Source: World Health Organization Statistics Annuals, 1982, 1983 and 1984

Federal Bureau of Investigation Uniform Crime Reports. This program receives information monthly from over 15,000 city, county and state law enforcement agencies. This is a voluntary program intended to generate reliable criminal statistics for use in law enforcement administration. During 1983 the law enforcement agencies active in the program held jurisdiction over 97% of the American population.¹⁴ These law enforcement agencies report the number of "actual offenses known" for murder and non-negligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft and arson and for justifiable homicide and negligent manslaughter.

For all reported homicides, the program uses a Supplementary Homicide Report to collect information on the age, race and sex of the victim; the relationship of the offender to the victim; and other victim and offender information. These reports are completed and forwarded to the FBI from local, county and state law enforcement agencies at the end of each month. For cases "unsolved" at the time of reporting, the relationship between perpetrator and victim is listed as unknown. Although this relationship may subsequently be clarified by the reporting agency, the initial report ("relationship unknown"), unless specifically amended, stands and is counted in the final statistics for the year. Each year, data are incomplete for approximately 5% to 10% of the total murder and non-negligent manslaughter cases because either the reporting agencies do not submit Supplementary Homicide Reports for cases initially listed on the summary report of actual offenses known or the agencies do not submit reports to the program for all or part of the year.

Program data on aggravated assault, robbery and rape present several limitations to epidemiologic research and surveillance. First, these data represent only those assaults known to the police. Most assaults, in fact, do not come to the attention of law enforcement agencies. In a study of injuries treated in emergency rooms in the Cleveland and Lorain-Elyria Standard Metropolitan Statistical Area, Barancik et al. found that hospitals record approximately four times more cases of nonfatal assault than do local police.¹⁵ Second, the program does not collect information on victim and offender characteristics or relationships for aggravated assaults, robberies or rapes. Third, police officers have a tremendous amount of discretion in filing offense reports. They decide first whether to file a report at all, and then, if they do choose to file, they decide whether to categorize the incident as aggravated assault, robbery, rape or some other offense category. Consequently, crimes which actually meet the definitional criteria of an aggravated

assault, robbery or rape may be reported and counted as a different type of offense (e.g., simple assault or public disturbance). Fourth, the program data on assault are affected by the crime hierarchy that this system uses. If a criminal incident includes several different acts, only the most "serious" act is counted. The Uniform Crime Reports rank homicide as most serious, followed by rape, robbery, aggravated assault, burglary, larceny and motor vehicle theft. Thus, a person who was robbed *and* assaulted would be classified as a robbery victim, and the incident would be classified as a robbery in the reports.

A summary of the data collected through this program is published annually in *Crime in the United States*.¹⁴ More detailed discussions of the strengths and limitations of this data source can be found elsewhere.¹⁶⁻²³ Plans for significant revisions in the program are currently being formulated. Changes contemplated include collecting more detailed data on victim/offender characteristics in crimes other than homicide and eliminating the "crime hierarchy."

National Crime Survey. In the literature on assaultive violence, many estimates of the impact of violence are based on the U.S. Department of Justice's Annual National Crime Survey. This survey was developed by the Bureau of Justice Statistics of the U.S. Department of Justice to provide detailed information about the victims and consequences of crime, to estimate the numbers and types of crimes not reported to police and to establish uniform measures for selected types of crimes to permit reliable comparisons over time and between areas.²⁴ These surveys focus on personal and household victimization for six selected crimes: rape, robbery, assault, burglary, larceny and motor vehicle theft. Survey estimates are obtained from a stratified, multistage cluster sample of approximately 62,000 households. All people aged 12 or over within each selected household are eligible to be interviewed. Information on each personal and household victimization is recorded. Since homicide victims cannot be interviewed, no information on homicides is collected. Data collected include information on physical injury, medical treatment, property loss, characteristics of the victim, relationship of the victim to the offender and whether the police were notified.

This survey is an excellent source of information about victimization outside the home and its consequences because it is based upon interviews with victims and not dependent on official law enforcement records. However, the accuracy of this survey's information on injuries and victimizations due to crimes such as spouse-, child- and elder-abuse is questionable because in-

interviews with household members are not conducted privately and subjects may be reluctant to provide information about family victims or to speak openly in the presence of the person who victimized them. Moreover, the survey solicits information about criminal assaults, and respondents may not perceive and report assaults by family members as criminal assaults. In addition, estimates derived from this survey employ the "crime hierarchy" system used in the Uniform Crime Reports, so that the more serious crimes will be more accurately estimated than crimes lower in the hierarchy. Findings of this survey are published in annual summaries and in periodic reports on particular subjects by the Bureau of Justice Statistics.

National Center for Health Statistics Data Systems. The Vital Statistics Program collects records of all deaths in the United States from death certificates filed in state vital statistics offices. Data are limited to fatal outcomes and no information is available on nonfatal violence. National coverage has been complete since 1933. This system produces annual data on homicide for the nation and for individual states, counties and other local areas and monthly provisional data for the nation and each state. The findings are published in the Monthly Vital Statistics Report, annual Vital Statistics of the United States, and Series 20 and 21 of the Vital and Health Statistics Series. Rates and numbers, gender and geographic detail for all deaths are published monthly, but there is considerable delay in the publication of detailed reports on specific causes of death such as homicide.

Data are collected based on the International Classification of Diseases codes.²⁵ The Supplementary External Cause (E) code for "homicide" includes deaths from injuries purposely inflicted by other people (ICD-9, codes E960-E969), deaths from injuries resulting from intervention by law enforcement officers (ICD-9, codes E970-977), and deaths caused by legal execution (ICD-9, code E978). There are limitations with the current coding system for homicide. For example, the E-codes and the death certificate information for homicide do not include such essential information as the victim-offender relationship (e.g., family member, friend or acquaintance, stranger, etc.), nor do they permit the distinction between criminal homicides and homicides perpetrated in self-defense.

The National Health Interview Survey collects data on the relationship between demographic and socioeconomic characteristics and health characteristics, as well as data on new cases of illness and injuries, prevalence of chronic diseases and impairments, disability, physician and dental visits, hospitalizations and other health topics. The reports are based on interviews conducted

in about 42,000 households sampled to be representative of the noninstitutionalized civilian population. Conducted annually since 1957, the Survey is published in Series 10 of the Vital and Health Statistics Series.

Each year several questions are asked concerning injuries. However, various factors limit the value of these data in examining intentional injuries. First, the information on injuries cannot be broken down by the cause of the injury (e.g., interpersonal assault, self-inflicted, unintentional). Second, there is considerable ambiguity in the way questions are asked. For example, it is often unclear as to whether they ask about all injuries, regardless of intent, or just about "accidents." Third, the interview uses a two-week "window" period in inquiring about injury occurrence. This limits the ability to get good estimates of specific causes because of their rarity. Correcting these limitations would make this data base more useful in studying assault-related injuries.

The National Hospital Discharge Survey collects data from a sample of non-federal short-stay hospitals by discharge diagnosis and type of surgical procedures performed. This survey has been conducted annually since 1965 and is based on data abstracted from approximately 200,000 records from a sample of about 400 hospitals. Its findings are published in Series 13 of the Vital and Health Statistics Series. Data tapes are available for special analyses. Data are available on hospital visits due to traumatic injury. However, these data are of limited value because data on the cause of injury are not completely reported and vary greatly by the type of injury, and the sample of hospitals is based only on hospitals that agree to cooperate with the survey. If these limitations are remedied, data from such sources could be of tremendous value in research and surveillance of intentionally inflicted injuries.

OUTCOMES: MORTALITY

In 1980 alone, homicides in the United States took at least 23,970 lives (Table IV). This represents more than 690,000 potential years of life lost, an index in which homicide ranked fourth among all causes of death. Overall, homicide was the 11th leading cause of death for Americans; for young people (15 to 34 years old) who were black or members of other minorities, homicide was *the* leading cause of death. It is not known how many additional homicide deaths are misclassified as accidents or listed as "cause of death unknown."

Relationship of victim/offender. Where the relationship of the murderer

TABLE IV. NUMBER OF HOMICIDE DEATHS AND RATES PER 100,000 POPULATION BY RACE, SEX AND RELATIONSHIP—1980*

Relationship (victim/ perpetrator)	White						Black and other						Total No. (Rate)	% of Homicides**	
	Male		Female		Total		Male		Female		Total				
	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	(Rate)			
Family	1,048	(1.1)	1,002	(1.0)	2,050	(1.1)	949	(5.2)	572	(2.9)	1,521	(4.0)	36	(1.6)	15.8
Friend	2,776	(3.0)	683	(0.7)	3,459	(1.8)	3,251	(17.7)	694	(3.5)	3,945	(10.3)	100	(3.3)	32.9
Stranger	1,484	(1.6)	314	(0.3)	1,798	(1.0)	916	(5.0)	90	(0.5)	1,006	(2.6)	107	(1.3)	12.8
Unknown	3,367	(3.7)	968	(1.0)	4,335	(2.3)	2,543	(13.8)	562	(2.8)	3,105	(8.1)	398	(3.5)	34.4
Justifiable homicide	398	(0.4)	11	(0.0)	409	(2.7)	489	(2.7)	8	(0.0)	497	(1.3)	20	(0.4)	4.1
Total	9,073	(9.9)	2,978	(3.1)	12,051	(6.4)	8,148	(44.4)	1,926	(9.7)	10,074	(26.4)	661	(10.6)	

*A total of 23,970 murder and non-negligent manslaughter victims and justifiable homicide victims were estimated by the FBI-UCR program in 1980. No information was reported to the UCR on approximately 1,184 victims (4.9%).

**Percent distribution of victims for whom information was available from the UCR. Excludes above-mentioned 1,184 homicides which were estimated by the FBI.

to the victim was known, murder by a friend or acquaintance accounted for the greatest number of homicide deaths (7,504), a rate of 3.3/100,000. Murder by a member of the victim's family accounted for 3,607 deaths in 1980 (1.6/100,000) and murder by a stranger, 2,911 deaths (1.3/100,000) (Table IV). Of all the homicides committed in 1980, approximately half were committed by individuals known to their victim, and nearly one third of those were committed by family members. Justifiable homicide, by a police officer or a citizen, resulted in 926 deaths in 1980, or approximately 0.4/100,000.

Sex/race. The overall male/female homicide-victim ratio is approximately 3.5/1. For each category of victim/offender relationship, men are at higher risk. Black and other minority males have the highest death rates in each relationship category, from a high rate of 17.7/100,000 for murder by a friend or acquaintance to a low of 2.7/100,000 for justifiable homicide, a category in which blacks and other minority males constitute 54.9% of all victims. Black and other minority women, when compared with white women, consistently have higher death rates due to homicide; the rates for black and other minority women for homicide by a family member or friend are even higher than rates for white males (Table IV). It is difficult to disentangle the contribution of race from socioeconomic status in explaining the high homicide rates among black males, but several studies suggest that socioeconomic status is the more important determinant.^{26,27}

Child homicides. Child homicides (killings of individuals younger than 18 years of age) accounted for more than 93,000 potential years of life lost in 1980. Child homicide by a family member caused 501 deaths (Table V). Black and other minority males were again at highest risk: 6.8 deaths per 100,000 population, or 467 deaths in 1980. Although white males accounted for the largest number of child-homicide victims (593), their death rate of 2.3/100,000 was much less than that of black and other males (6.8 per 100,000) or black and other females (3.3 per 100,000). Homicide risk plotted against age for these children yields a U-shaped curve, with children younger than three and those older than 14 years old at greatest risk; children from ages 6 to 11 are at lowest risk. Children younger than 3 years old account for 24% of all child-homicide deaths. In 1980 419 deaths in this age group were reported as homicide (4.2/100,000).

Populations at greatest risk of homicide. Homicide takes its greatest toll among minorities, males and the young. In 1980 75.6% of homicide victims were male, and 56.6% were between the ages of 15 and 34, although

TABLE V. NUMBER OF CHILD-HOMICIDE DEATHS AND RATES PER 100,000 POPULATION BY RELATIONSHIP, RACE AND SEX-1980

<i>Race/Sex</i>	<i>Family</i>		<i>Nonfamily</i>		<i>Total</i>
	<i>No.</i>	<i>(Rate)</i>	<i>No.</i>	<i>(Rate)</i>	<i>No. (Rate)</i>
Whites	301	(0.6)	665	(1.3)	966 (1.9)
Males	165	(0.7)	428	(1.6)	593 (2.3)
Females	136	(0.6)	237	(0.9)	373 (1.5)
Black and Other	192	(1.5)	500	(3.6)	692 (5.1)
Males	112	(1.7)	355	(5.1)	467 (6.8)
Females	80	(1.2)	145	(2.1)	225 (3.3)
Unknown	8		54		62
Total	501	(0.8)	1,219	(1.9)	1,720 (2.7)
All males	1,060	(3.3)			
All females	598	(1.9)			
Unknown	62				
Total	1,720	(2.7)			

this age group constitutes only 35.1% of the population. A high percentage (44.2%) of homicide victims were blacks or members of other minority groups, although minority groups constituted only 16.9% of the population (Table I). For the average American in 1980, the lifetime probability of being murdered was 1 out of 153; for a white American woman, 1 out of 450; for a black male, 1 out of 28.² For a young black man 20-24 years old, the odds that, should he die, his death will be due to homicide are greater than 1 out of 3. For young black men 15-24 years of age, homicide is the leading cause of death.²⁸ Among children, black and other minority males were again at highest risk. Children younger than three and older than fourteen were most vulnerable.

In terms of geographic distribution, the highest homicide rates occur in a southern band of states from California on the West Coast to North and South Carolina on the East Coast (Figure 3). Homicide rates are higher in urban than in rural areas. For young, black males, the highest homicide rates occur in large, north-central, American cities.²⁸

Ethnicity also appears to be an important determinant of homicide rates. An analysis of mortality data collected for the period 1976-1980 by the health departments of five southwestern states—in which more than 60% of all Hispanics in the United States reside—showed the overall homicide rate for Hispanics (20.5/100,000) was more than two and one-half times the Anglo rate (7.9 per 100,000) (Anglos are non-Hispanic Whites). The overall homi-

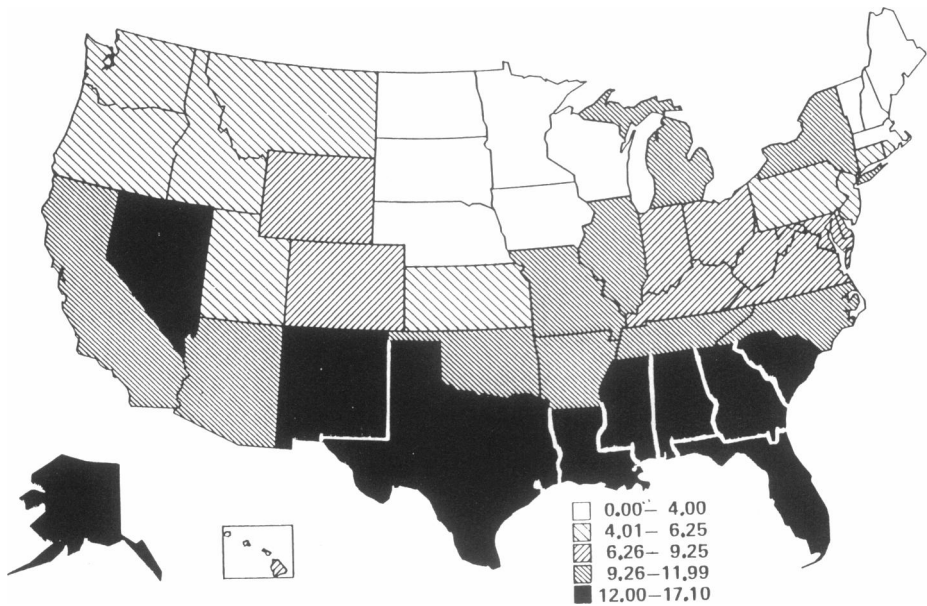


Fig. 3. Homicide rates by state of occurrence, 1978 (rate per 100,000). Sources: Bureau of the Census: *Current Population Reports*. Series P-25, Nos. 460, 799, 876. Washington, D.C., Govt. Print. Off., 1971. National Center for Health Statistics: Standardized micro-data transcripts, data on vital events, detailed mortality data tapes. Hyattsville, MD, Health Resources Administration, 1978.

cide rate for Hispanic males (36.7 per 100,000) was more than three times the rate for Anglo males (11.7 per 100,000). This difference was most striking in the younger male age groups in which the Hispanic homicide rate was almost five times that for Anglos.²⁹

In certain areas, geographic, racial and ethnic factors all contribute to higher homicide rates. Analysis of more than 4,950 homicides committed in the City of Los Angeles during 1970-1979 indicates that homicide rates increased by 84% over this period, while overall U.S. rates declined.³⁰ Rates jumped from 12.5 per 100,000 population in 1970 to 23.0 in 1979. The most dramatic increase was in the homicide rate for Hispanics, which increased more than 258.2% from 9.1 in 1970 to 32.6 in 1979. The homicide rate for blacks increased 67.7%, from 35.3 per 100,000 population in 1970 to 59.2 in 1979. Patterns in homicide rates for Anglos did not reveal a definite upward trend over time. The rise in homicide rates among blacks and Hispanics was most evident among those between the ages of 15 and 44.

The patterns of homicide victimization varied among three high-risk groups. Homicides involving black male victims were generally committed

with a handgun, associated with verbal arguments, perpetrated by friends or acquaintances and carried out in a home. Patterns were similar for black female victims, except that husbands were most likely to perpetrate the homicide; friends or acquaintances were next most likely. Among Hispanic male victims, the patterns of homicide were more varied than among black male or female victims. Homicides involving Hispanic male victims were usually committed with a handgun or cutting instrument and were generally associated with verbal arguments, physical fights, criminal activities or gang violence. The offenders were usually friends, acquaintances or strangers, and the homicide was most likely to have occurred in the street.

OUTCOMES: MORBIDITY

Data on aggravated assaults, or "incomplete homicides," provide a partial measure of the morbidity associated with assaultive violence. For Americans over the age of 12, 1.6 million incidents of aggravated assault occurred in 1980, a rate of 892 per 100,000.⁴ Males were 2.7 times more likely to be victims than females, with men aged 20 to 24 being at greatest risk (3,115.5 per 100,000). At least 355,500 victims were hospitalized, and hospital costs (for those who survived assaults plus those who eventually died as a result of aggravated assault) totaled approximately \$606 million. The cost of physician visits raised that cost to \$638 million. No data are available for the costs of emergency room treatment, pharmaceuticals, extended care after initial hospitalization or the treatment of offenders who were injured in aggravated assaults.

Aggravated assaults accounted for more than 8 million days lost from activities such as paid work, school or child-rearing; at least 4,718,200 of those were paid workdays. Because a large percentage of victims are women who are economically dependent on their husbands, it is likely that a great deal of time was lost from major nonpaying activity such as child care and house-keeping. The "costs" of assaultive violence should also include time lost by children from school or preschool because of domestic violence, child abuse and neglect, but data are not available to allow us to make these estimates.

Assaults may result in a wide range of possible disabilities, primarily psychological, sensory and musculoskeletal. The cost of these disabilities is very difficult to calculate. How should we estimate the cost of losing one's vision or of the incapacitating fear that prevents one from returning home after a life-threatening attack there?

Projections based on the National Crime Survey indicate that in 1980 there

were approximately 192,000 assaults by family members, a rate of 99.4 per 100,000 U.S. population (not the population within those families). Other estimates of the number of women beaten each year range from 1.8 million³¹ to 3-4 million.³² Assaults within families represent at least 21,000 hospitalizations, 99,800 hospital days, 28,700 emergency room visits and 39,900 physician visits. Health care costs incurred for domestic assaults totaled at least \$44,393,700.

Assaults within families accounted for at least 175,500 days lost from paid work in 1980. Although the injuries suffered by abused women do not typically result in hospitalization, many of them do. More important than the cost of hospitalization, however, is the enormous drain on medical resources. Battered women frequently use medical services in lieu of other refuge, present myriad complaints lacking evidence of specific disease, and, during a lifetime, may make hundreds of visits because of abuse. Of all the emergency room visits made by women seeking treatment for injury, 19% involve battering. Battered women use medical and psychiatric services many times more frequently than other women, and visits motivated by battering may be even more common at such primary care sites as the maternity clinic or ambulatory care service.³²

OUTCOMES: QUALITY OF LIFE

Interpersonal violence adversely affects the victims, their families and society as a whole. An assault may result in only a minor physical injury, but may have a devastating impact upon the victim's life in terms of fear, anxiety and subsequent restrictions in activities and movements. Victims of actual attacks and victims of fear may become quite isolated, and the changes they make in job, home or pattern of activities may markedly constrict their freedom and lower the quality of their lives. The changes they make in their jobs or homes to increase the sense of personal security constantly remind them of the new fears and restrictions that have become part of their lives. Homicide can have a crippling effect on surviving family members that affects several generations.

Research indicates that children who are victims of violence suffer delays in physical, social and emotional development. Many children who witness violence suffer from post-traumatic stress disorders, conditions frequently made worse when they must participate as an official witness in court.³³

Battered women are at greatly elevated risk of alcoholism, drug abuse,

attempted suicide, fear of child abuse, rape and mental health problems, including severe depression and even psychosis.³²

Family violence is one of the four most common reasons cited for divorce, and, although it may solve the immediate problem, divorce may also result in increased economic deprivation for women and children. There is also considerable evidence that being divorced or single, in itself, does not protect women from subsequent battering. At one large metropolitan hospital 72% of the women who had battering injuries were single, separated or divorced.³²

The threat of violent attack may be as damaging as the attack itself. Battered spouses and children may focus all their energies on reducing the chance that a partner or parent will explode in violent rage, and it is impossible to calculate the potential achievements and creativity lost in such situations.

The physical abuse of women may lead to child abuse, although the relationship of the two problems remains unclear. The health care system may contribute to volatile family situations by giving battered women unnecessary medications, inferior care and labels that stigmatize.

Interpersonal violence lowers the quality of life in society as a whole by contributing to days lost from work and by exacting financial expenditures for police and criminal justice intervention, social service intervention, and emergency room and trauma center services. In addition, school systems must cope with children with academic and social problems from maltreatment at home. In families where battering occurs, the children, even if not physically abused, commonly suffer inordinate fear and anxiety, have frequent nightmares and enuresis, and "act out" (boys) or become passive (girls).

CONCLUSION

The epidemiologic analysis of homicide has as its ultimate goal the development of programs which will contribute to reducing the burden of homicide in our society. Analyses to date show that most homicides occur among persons already acquainted or related, not as part of another crime, but as an outgrowth of an argument. The antecedents and patterns of homicide—different among different racial and ethnic groups—need further study to help define effective preventive strategies. Priority areas for epidemiologic research include strategies to reduce firearm injuries, clarification of the role of alcohol, the development of educational interventions to promote nonvio-

lent conflict resolution and the identification of groups and individuals at high risk for homicide victimization and perpetration. Research efforts must include program evaluation as well as more basic research.

SUMMARY

Homicide ranks 11th among leading causes of death in the United States, but homicide is the fourth leading cause of potential years of life lost in the United States, and the leading cause of death for black men aged 15-34. Non-fatal assaults may be an even more important problem. The ratio of reported assaults to homicides may be far greater than 100:1. Homicide is the final common endpoint of many quite different behavioral pathways (such as arguments between acquaintances, escalating "domestic" violence between spouses or robberies perpetrated by strangers). We need to characterize and understand each of these behaviors and the settings and circumstances in which they occur to be able to prevent homicides effectively.

Homicide data are available at the national level from both police and health statistics. Reports on all crimes known to police are forwarded to the Federal Bureau of Investigation and compiled each year with more detailed information submitted on all homicides, including information about victim/perpetrator relationship and circumstances of the homicide. The National Center for Health Statistics compiles homicide statistics based on data from death certificates which list homicide as the cause of death. National data on nonfatal assaults are not as complete or accurate, but sources include both police and health reports.

Homicide accounts for approximately 23,000 deaths each year in the United States, taking its greatest toll among minorities, males and the young. Young black men have homicide rates five to 10 times higher than young white men. Young Hispanic men and black women also have disproportionately high rates. Almost half of all homicides occur among persons who know each other; in two thirds of these instances the perpetrator and victim are friends or acquaintances; in one third they are family members. Homicide rates are highest in a southern band of states from California to the Carolinas; rates are higher in urban than in rural areas. In addition to lives lost prematurely to homicide, nonfatal assaultive violence exacts a high toll in terms of physical injuries, disabilities, health care costs and quality of life. Firearms are used in approximately 60% of all homicides.

Questions and Answers

DR. READER: We have time for a few questions at this point. If you have questions, Dr. Rosenberg would be glad to respond or comment.

DR. RONALD LANGEVIN (University of Chicago): To what extent do social class variables interact with race in your findings? And if we could identify assaultive families, would we be able to distinguish "normal" discipline from those behaviors which place people at risk for more serious injury?

DR. ROSENBERG: I assume that your first question asks how important socioeconomic factors compare to race as determinants of high homicide rates. If one controls for socioeconomic status, many differences in homicide rates among racial groups disappear. Many authorities have reported that poverty itself is very strongly associated with high homicide rates. Lack of education may also be a very important factor. If homicide rates for young black men were compared with rates for white males of the same socioeconomic status, homicide rates for the groups would be quite similar.

DR. TARDIFF: Stephen Messner and I analyzed the data for 1981 and looked at neighborhoods as units of analysis in New York City. Many of the studies used huge geographic areas and had conflicting results. With regard to relative poverty versus absolute poverty in terms of race, we found that race was not a factor. Rather, it was absolute poverty when we looked at neighborhoods, in relation to homicide rates, and marital disruption. It was absolute poverty and marital disruption related to homicide rate.

DR. ROSENBERG: The second part of Dr. Langevin's question asked how can one distinguish between behaviors that constitute "normal discipline" and behaviors that are truly "assaults." Let me ask Dr. Langevin to explain his question a little more.

DR. LANGEVIN: As an example, how many parents would find it acceptable to hit their children as discipline? I think that a very high proportion will agree that it is acceptable to hit children. Where does one draw the line where hitting that becomes a danger point or becomes assaultive? I think that a lot of murders, for example, may be accidents, death was not intended. Assault was intended, but the murder is perhaps a misfortune in that there isn't a good surgeon available, or they are far from a hospital, or . . .

DR. ROSENBERG: . . . Or they were "disciplined" with a gun.

DR. LANGEVIN: Yes, guns are available. But the question is, where is the

line? What can we identify as a danger point? Should one not hit one's children at all? How many people would accept that, as a starter?

DR. ROSENBERG: You bring up a very good point. Violent behavior can be scaled on a continuum. There is a wide range of opinion in this country as to whether or not one should discipline one's own children by hitting them. However, that is a far cry from saying that someone should be able to shoot at his wife—which is aggravated assault—as part of normal discipline. While there are grey areas of disagreement, we can probably get a very high degree of consensus as to certain behaviors that should not be accepted or tolerated.

MISS PAZ PETERSON (New York City Police Academy): I want to know, when you say "homicide," are you talking of people who are killed other than by natural causes, or legal homicide, a murder? If a person is killed in a war, is that a homicide? Is that counted?

DR. ROSENBERG: No. In this country, we do not include people killed in wars. The data on and definitions of homicide we have used in this analysis come from two sources. Data from the F.B.I. Uniform Crime Reports are based on the determination of homicide by local police organizations, who count the number of homicides in their own jurisdictions and submit their reports. Other data come from the National Center for Health Statistics which analyzes the information on the death certificate of everyone who dies in this country. They use the medical examiner's or coroner's definition of homicide, which are legal or medical-legal determinants. There may also be some geographic and case-to-case variation in how deaths are determined to be homicide. There may be some disagreement as to how even experts might classify a particular death.

MISS PETERSON: Would that include manslaughter, or is that a separate thing? Do the homicide statistics you cite include people whose deaths are called manslaughter and not homicide?

DR. ROSENBERG: Most of these do include non-negligent manslaughter. Negligent manslaughter—sometimes thought of as "accidents"—is not included.

DR. WOLFGANG: I do not want to be too technical but an accident is an accident, not a crime. If it is negligent manslaughter, it is a crime. But more than 90% of negligent manslaughter is automobile deaths. Those are not included in the homicide statistics Dr. Rosenberg mentioned.

DR. CURTIS: Would you comment on rural and urban differences and regional differences within the United States, north and south?

DR. ROSENBERG: Homicide victimization rates seem to be much higher in urban centers. In looking at homicide rates by state, there seems to be a "homicide belt" that runs across the southern part of the country from southern California to the Carolinas. Among young black men, the highest homicide victimization rates are found in north central urban centers. Los Angeles also has particularly high rates for black and Hispanic men.

KEVIN BERRILL (Coordinator of the National Task Force on Violence Project): Virtually every week I get articles that cross my desk involving murders. In some cases they are opportunistic crimes in which sexual orientation was a factor. Other cases were victims of serial murders and often sex-related. Are any data available to clarify just how widespread the problem is and whether any research has been done in this area?

DR. ROSENBERG: I am glad you raised this issue. I am not personally aware of any data sets or controlled studies designed to address it. It is a hard question to study. First of all, information on sexual identity is not part of the death certificate, so that at a national level we cannot analyse that, and such information is frequently not included in police records. This is clearly an area where data are inadequate. You might want to describe the kinds of research that might be done in specific categories or specific areas. Are there specific questions most important to address?

MR. BERRILL: I think the bottom line is that there hasn't been any research. The National Task Force has conducted a survey, replicated around the country, indicating enormously high rates of violence based on sexual orientation, but we have no data on homicide. I would encourage people interested in this area to contact us. We shall provide whatever assistance we can in providing guidance on the direction and planning of that research.

DR. ROSENBERG: Another area where sexual identity is a very important question is the area of suicide, another type of violence, self-directed violence. A number of studies suggest that sexual identity questions may be a very important contributing factor in suicides. For example, the highest suicide rates are among young men, where rates are five times the rates among young women. Does this difference in rates reflect, in some way, the increasing attention to sexual identity questions by some young men? How can we study this question? The suicide victim is gone. We cannot ask him. Frequently he might be the only one who knows whether sexual identity was a question or a significant factor in his suicide. It is an important question that needs to be addressed, but the techniques need to be developed at the same time to look at it.

DR. MURRAY STRAUS (University of New Hampshire): I think Ann Burgess, University of Pennsylvania, has some data on sexual orientation and homicide.

I wanted to return to the question about physical punishment. That is an extremely difficult issue. At one extreme Sweden has a law that makes all physical punishment illegal. I do not think we are ready for that in this country or in Canada, but it does indicate a direction. It sort of slipped through Parliament, as much legislation does. But year by year, the public opinion polls show in Sweden it is more widely accepted. Acceptance rate is now over 75%—I have forgotten the exact figure—from a minority before.

I think that is a very important kind of step, if not to eliminate, somehow to reduce the level of physical punishment. The use of physical force, violence, in bringing up children, has wide-ranging repercussions. It sets a pattern. Data from our studies have shown this consistently. For example, children who have been physically punished in the high quartile of our national survey have several times the rate of later in life of spouse hitting. In childhood they carry out more assaults outside the family, assaults of other kids as well as of their brothers and sisters.

There is a direct correlation. Unfortunately, these are not prospective studies. But there is a strong correlation between the amount of physical punishment that is administered and the amount of violence a child carries out both inside the family and outside. It seems to me that this is one primary prevention step that could be high on our agenda.

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