

A COMPARISON OF PRIMARY AND SECONDARY HOMICIDES IN THE UNITED STATES

JANINE JASON,¹ LILO T. STRAUSS² AND CARL W. TYLER, JR.¹

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In 1979, over 20,000 people in the United States were victims of homicide, but public health agencies have not yet defined their role in its prevention. Role definition might begin with differentiating various forms of homicide, so the authors used data on all homicides reported by law enforcement agencies for 1976-1979 to determine whether homicides that did not occur during the perpetration of another crime (primary homicides) differ from those that occurred during the perpetration of another crime (secondary homicides). Primary and secondary homicide rates were highest in the South and West, respectively. The relative risk for Standard Metropolitan Statistical Areas (SMSAs) compared with non-SMSAs was 2.4 for secondary homicide but only 1.3 for primary homicide. It was found that 17% of primary homicides and 3% of secondary homicides had a female offender. Primary homicides were more frequently intersexual and intraracial than were secondary homicides. Victim and offender ages were similar to one another in primary homicides and dissimilar in secondary ones. Over 75% of primary homicides involved family members or acquaintances, compared to only 24% of secondary homicides. The authors conclude that primary and secondary homicides are epidemiologically dissimilar, and they suggest that public health concern should focus on primary homicide. Prevention and intervention measures should concentrate on discussed target populations. Techniques might include stress reduction and conflict avoidance.

homicide; public health; violence

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Abbreviations: CDC, Centers for Disease Control; FBI-UCR, Federal Bureau of Investigations-Uniform Crime Reporting Program; SMSA, Standard Metropolitan Statistical Area.

¹ Center for Health Promotion and Education, CDC, Atlanta, GA 30333.

² Family Planning Evaluation Division, Center for Health Promotion and Education, CDC, Atlanta, GA 30333

Send reprint requests to: Dr. Janine Jason, Office of the Director, Center for Health Promotion and Education, CDC, Atlanta, GA 30333.

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Homicide ranks among the five leading causes of death in the United States for all persons between 1 and 44 years of age (1). Fifty-two per cent of these victims were acquainted with their assailant, leading the Federal Bureau of Investigations-Uniform Crime Reporting Program (FBI-UCR) to note that "murder is largely a societal problem beyond the control of the law enforcement community" (2). Because of its complexity, resolving this problem will require the cooperation of persons in a variety of fields. Persons concerned with public health in the United States are beginning to realize that they should help in defining and reducing the morbidity and mortality that result from violence in the US society (3, 4).

Investigators from non-public health areas have provided background work in this area. Criminologists and sociologists have suggested that homicides may be categorized on the basis of the victim-offender relationship or the precipitating circumstances (5). Smith and Parker (5) looked at 1973 regional homicide rates for two categories of homicide, defined by them as "primary" and "non-primary" homicide. These categories were based on a mixture of relationship/circumstance information collected by the FBI-UCR prior to 1976. Primary homicide loosely represented cases of brawls, arguments, and intrafamilial violence. Non-primary homicide included gangland slayings, institutional homicides, felony homicides (those committed in the course of another crime), and suspected felony homicides (5). Current FBI-UCR coding now permits the separation of relationship and circumstance information.

To help identify the task of public health agencies in the area of violence, we chose to separate homicides on the basis of their associated circumstances, and we compared those that occurred during the perpetration of some other crime (secondary homicides), those that did not occur during the perpetration of some other crime (primary homicides), and those that occurred in undetermined circumstances. This was done using national homicide data from the FBI-UCR computer file for 1976–1979.

The decision to separate homicides on their association/non-association with another crime was based on two assumptions. First, the motivations of an offender involved in other criminal activity at the time of the homicide differ from those of an offender not directing his efforts toward other criminal activity. Second, the victim's involvement in, and control of, a potentially homicidal situation differ in these two situations. We chose not to use relationship classifications as our discriminating factor on the basis of two

further assumptions. 1) Optimal prevention and intervention schema would be directed toward altering patterns of interaction, not terminating specific relations. 2) It is unlikely that an individual who is violent in one relationship is non-violent in other relationships.

Our use of the terms "primary" and "secondary" is intended to parallel their usage in diagnoses and causes of death. Specifically, a homicide was "primary" when it was the main reason for the offender's assault; it was "secondary" when the offender's primary intent was to commit some other crime and the homicide occurred secondary to this activity.

MATERIALS AND METHODS

We obtained computerized data concerning murder and nonnegligent manslaughter from the FBI-UCR for the years 1976–1979. Details of this reporting program are described elsewhere (2). Briefly, law enforcement agencies across the United States voluntarily contribute case information on a monthly basis to the FBI-UCR for eight Crime Index offenses. Murder and nonnegligent manslaughter together constitute one of these eight reportable offenses. The FBI-UCR estimates that it receives reports on 96–98 per cent of all police recorded homicides (Return A Reports). Over 96 per cent of these reports are accompanied by supplementary data concerning details about the victim, offender, and event (Supplementary Homicide Reports). We assume that these supplementary data are representative of all offenses.

The term "homicide" in this paper refers only to those offenses reported to the FBI-UCR as "murder and nonnegligent manslaughter." This category is outlined by the FBI-UCR as follows:

The willful (nonnegligent) killing of one human being by another.

The classification of this offense, as in all other Crime Index offenses, is based solely on police investigation as opposed to the determination of a court, medical examiner, coroner,

jury, or other judicial body. Not included in the count for this offense classification are deaths caused by negligence, suicide, or accident; justifiable homicides, which are the killings of felons by law enforcement officers in the line of duty or by private citizens; and attempts to murder or assaults to murder, which are scored as aggravated assaults (2, p. 6).

Separation into primary, secondary, and undetermined categories is based upon the FBI-UCR variable concerning circumstance. The term "primary homicide" refers to those homicides identified as definitely not having occurred during the perpetration of another criminal act. Secondary homicides are those specified as having occurred during another criminal act, and undetermined homicides are those in which the circumstances were uncertain. Racial comparisons will be made for only the two predominant racial categories, i.e., white and black.

In incidents involving more than one victim or offender, only the relationships between each offender and the first-specified victim are recorded in this data set. In incidents involving multiple victims and/or offenders, these are not specified in any predetermined order (personal communication, FBI-UCR, 1981). Two per cent of primary homicide incidents involved multiple victims; 6 per cent of primary homicide incidents in which the offender was known involved multiple offenders. Six per cent of secondary homicide incidents involved multiple victims; 34 per cent of secondary homicide incidents in which the offender was known involved multiple offenders.

Incidence figures using all listed victims for each homicide incident as the numerator and per cent distributions using all listed victims for each homicide incident will be referred to as "victim-specific." Incidence figures using all listed offenders for each homicide incident as the numerator and per cent distributions using all listed offenders for each homicide incident will be referred to as

"offender-specific." Numerators for national incidence figures presented here were calculated as follows: (Number of all Supplementary Homicide Report cases that have the described characteristics) \times 1.04. This factor is based on the FBI-UCR estimate that approximately 96 per cent of all homicide records are listed in the Supplementary Homicide Reports data file. Incidence figures for Standard Metropolitan Statistical Area (SMSA), non-SMSA, and region are based on data from the Return A Reports and given in tables 1 and 3 of the FBI-UCR report for 1979 (2). Relationship-specific rates are approximations, based on 1979 homicide rates, broken down by the relationship distribution of United States homicides or of homicides in the specified demographic area. Population estimates were obtained from the US Bureau of the Census. All rates are per 100,000 population per year.

Statistical analyses were done using Mantel-Haenszel chi-square techniques (6) or a test for the difference of means of two large samples from a normal population (7). Differences were considered significant with $p < 0.05$. Confidence intervals and standard deviations are given to aid in assessment of significance, although we acknowledge that their meaning in a nonsample, near total-population situation is debatable (8).

RESULTS

Victims

From 1976 through 1979, 63 per cent of victims were involved in primary homicides; 17 per cent were involved in secondary homicides (table 1). When we excluded undetermined circumstances, the relative proportion of primary and secondary cases did not change appreciably over this time period. However, an increasing number of cases had undetermined circumstances. Overall victim-specific homicide rates increased by 21 per cent, with primary homicide increas-

TABLE 1

Homicides by year: victim-specific per cent distributions by homicide type, and incidence per 100,000 population, United States, 1976-1979

Homicide type	Year				Total
	1976	1977	1978	1979	
Primary*	67	63	64	60	63
Secondary†	18	17	17	17	17
Undetermined	15	20	19	23	20
Total	100	100	100	100	100
Victim-specific incidence‡	8.0	8.7	8.9	9.7	8.8
Victim <i>N</i>	16,601	18,025	18,714	20,591	73,931

* Primary homicides are defined as those that did not occur during the perpetration of another crime.

† Secondary homicides are defined as those that occurred during the perpetration of another crime.

‡ Incidence is calculated as follows: (no. of Supplementary Homicide Reports victims reported \times 1.04)/(US population).

TABLE 2

Victim-specific homicide rates per 100,000 population, by region and homicide type, United States, 1979*

Region	Homicide type		
	Primary†	Secondary†	Undetermined
Northeast	3.1	1.3	3.1
North			
Central	4.5	1.3	1.8
South	9.1	1.9	1.7
West	5.5	2.0	2.7

* Rates were calculated using the estimated total case numbers derived from the Return A report and given in "Crime in the United States, 1979" (2). Total rates were then separated into that region's proportionate component of each homicide type.

† See footnotes to table 1 for definitions of terms.

ing by 9 per cent, secondary by 14 per cent, and undetermined by 86 per cent.

For 1979, victim-specific homicide rates varied regionally. The total rate for the South was highest, followed by that for the West (table 2). The rate of primary homicides for the South was 1.7 to almost three times that of the other regions ($p < 0.001$). The West had the highest rate for secondary homicide, but this rate was not significantly higher than that of the South. The Northeast had the highest rate of undetermined homicides ($p < 0.001$ for difference between the Northeast and West). Regional ranking remained unchanged when rates were age-

adjusted; however, it varied with the race of the victim. In 1979, for whites, the South led in primary homicide (5.4) and the West led in secondary homicide (1.7). For blacks, the West led in both primary homicide (27.6) and secondary homicide (7.9).

Victim-specific rates also differed for SMSAs and non-SMSAs in 1979. SMSA rates were 6.2 for primary homicide, 1.9 for secondary homicide, and 2.7 for undetermined homicide. Non-SMSA rates were 4.9 for primary homicide, 0.8 for secondary homicide, and 0.9 for undetermined homicide. Thus, the relative difference between SMSA and non-SMSA rates was smallest for primary homicide, with a relative risk of 1.3 (95 per cent confidence interval, 1.2-1.3) for SMSAs compared with non-SMSAs. The relative risk of secondary homicide was 2.4 (confidence interval, 2.2-2.6), and of undetermined homicide, 3.0 (confidence interval, 2.7-3.3), for SMSAs compared with non-SMSAs.

Some victim characteristics differed for primary and secondary homicide (table 3). Secondary homicide victims were predominantly white, while 49 per cent of primary homicide victims were white and 49 per cent were black. This difference is reflected in the fact that while victim-specific rates for both primary and secondary homicide were higher for blacks

TABLE 3

Victim-specific per cent distributions of homicide types, by characteristics of the victim, and victim age by homicide type, United States, 1976-1979

Characteristic	Homicide type		
	Primary*	Secondary*	Undetermined
Sex			
Female	23	25	26
Male	77	75	74
Unknown	0	0	0
Total	100	100	100
Race			
White	49	63	57
Black	49	34	40
Other	2	3	2
Unknown	0	0	1
Total	100	100	100
Victim <i>N</i>	46,820	12,546	14,565
Median age (years)	31	37	30
Mean age (years)	33.1	40.9	34.2
Victim <i>N</i> †	46,377	12,405	14,072

* See footnotes to table 1 for definitions of terms.

† Excludes 1077 victims of unknown age.

than whites, the racial difference was greater for primary homicide. The average yearly victim-specific rate of secondary homicide was 4.4 for blacks and 1.1 for whites (relative risk, 4:1). The average yearly victim-specific rate of primary homicide was 23.6 for blacks and 3.2 for whites (relative risk, 7:1).

The median and mean ages of victims were younger for primary homicide than for secondary ($p < 0.001$) (table 3). Both the incidence and type of homicide varied with the age of the victim. Elderly victims had the highest proportion of secondary homicides and the majority of homicides at all other victim ages were primary in type (figure 1).

Offenders

For 1976-1979, 62 per cent of offenders were involved in primary homicides and 19 per cent were involved in secondary homicides. Offender-specific homicide rates increased by 11 per cent for primary homicides, 16 per cent for secondary homicides, and 79 per cent for undetermined homicides. Offender characteris-

tics differed for primary and secondary homicide (table 4). Seventeen per cent of primary homicide offenders and only 5 per cent of secondary homicide offenders were female ($p < 0.001$). When offenders of unknown races were excluded from the analysis, 47 per cent of primary homicide offenders of known race were white, while only 43 per cent of secondary homicide offenders of known race were white ($p < 0.001$). The median and mean ages of primary homicide offenders were greater than of secondary homicide offenders ($p < 0.001$). Offenders in their teens and early twenties had the highest proportion of secondary homicides. For all but those in the early teens, the offender-specific rate of primary homicide was over twice the rate of secondary homicide (figure 2).

Information associated with both victim and offender

When the offender could be identified, primary homicides were more often intersexual ($p < 0.001$) and less often interracial than were secondary homicides ($p < 0.001$) (table 5). Victims' and offenders'

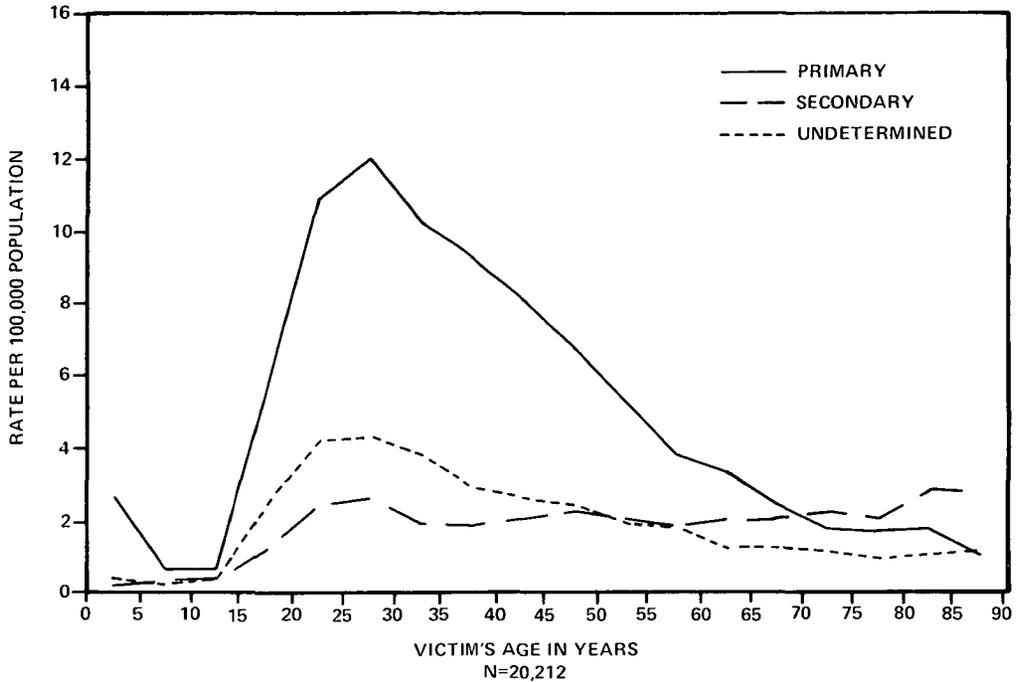


FIGURE 1. Victim-specific homicide rates, by age of victim and type of homicide, United States, 1979. Rates are calculated as (no. of Supplementary Homicide Reports victims reported \times 1.04)/(US population). Primary homicides are defined as those that did not occur during the perpetration of another crime. Secondary homicides are defined as those that occurred during the perpetration of another crime. Undetermined homicides are those for which circumstances could not be determined. Excludes 379 victims of unknown age.

TABLE 4

Offender-specific per cent distributions of homicide types, by characteristics of the offender, and offender age by homicide type, United States, 1976-1979

Characteristic	Homicide type		
	Primary*	Secondary*	Undetermined
Sex			
Female	17	5	3
Male	76	68	30
Unknown	6	27	67
Total†	100	100	100
Race			
White	44	31	18
Black	47	40	14
Other	2	1	1
Unknown	7	28	67
Total	100	100	100
Offender <i>N</i>	49,295	15,454	14,782
Median age (years)	29	23	26
Mean age (years)	32.4	24.4	28.8
Offender <i>N</i> ‡	45,159	10,436	4487

* See footnotes to table 1 for definitions of terms.

† Totals may not equal sums because of rounding.

‡ Excludes 19,449 offenders of unknown age.

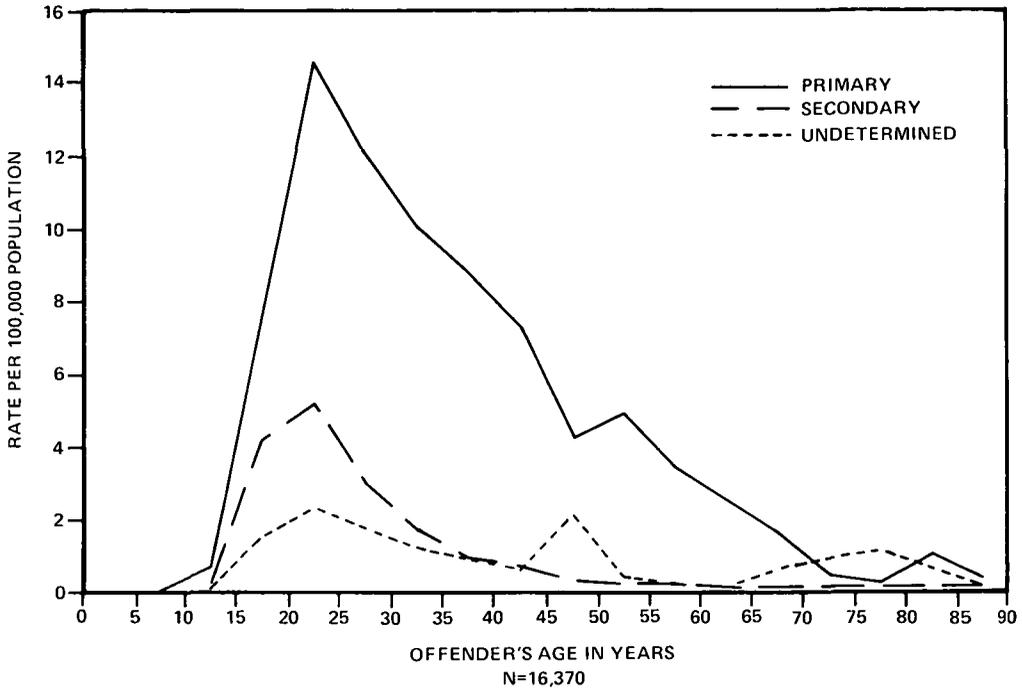


FIGURE 2. Offender-specific homicide rates, by age of offender and type of homicide, United States, 1979. Rates are calculated as (no. of Supplementary Homicide Reports offenders reported × 1.04)/(US population). See legend to figure 1 for definitions of terms. Excludes 5876 offenders of unknown age.

TABLE 5
Victim-specific per cent distributions of homicide types, by sexual and racial patterns between victim and first-specified offender* United States, 1976-1979

Type of pattern	Homicide type		
	Primary†	Secondary†	Undetermined
Sexual pattern‡			
Intrasexual	63	73	66
Intersexual	37	27	34
Total	100	100	100
Victim N	43,525	8013	4273
Racial patterns§			
Intraracial	95	75	89
Interracial	5	25	11
Total	100	100	100
Victim N	42,317	7750	4144

* In incidents with more than one offender, offenders are not specified in any predetermined order (personal communication, FBI-UCR, 1981).

† See footnotes to table 1 for definitions of terms.

‡ Intrasexual is defined as a case in which the victim and the first-stated offender were of the same sex. Intersexual is defined as a case in which these persons were of opposite sexes. Excludes 18,120 instances in which the sex of the victim or offender was unknown.

§ Only the white and black races were included in this analysis. Intraracial is defined as a case in which the victim and the first-stated offender were of the same race. Interracial is defined as a case in which these persons were of opposite races. Excludes 19,720 instances in which the race of the victim or offender was unknown.

ages were similar in primary homicides (difference between means of victims' and offenders' ages: +0.7 years) but discordant in secondary homicides (difference between means of victims' and offenders' ages: +16.5 years). Firearms were the predominant weapon used in both primary and secondary homicides, but were more commonly used in primary homicides ($p < 0.001$), as were knives ($p < 0.001$) (table 6).

Seventy-nine per cent of primary homicides involved victims and offenders that knew one another, while this was true of only 24 per cent of secondary homicides (table 6). Non-stranger homicides predominated for both males and females and for whites and blacks. For both primary and secondary homicides, all relationship-specific rates were higher for males than for females and higher for blacks than for whites. For both pri-

mary and secondary homicides, compared to males, females tended to be involved in a higher proportion of familial incidents and in a lower proportion of stranger incidents. For both primary and secondary homicides, blacks tended to be involved in a higher proportion of acquaintance incidents and a lower proportion of stranger incidents than were whites.

In 1979, all relationship-specific primary homicide rates were greater than the comparable relationship-specific secondary homicide rates (table 7). This was true for all geographic regions. The relationship distributions for primary and for secondary homicide showed little regional variation. However, for both primary and secondary homicide, non-SMSAs had a higher proportion of familial incidents and a lower proportion of stranger incidents than did SMSAs.

TABLE 6

Victim-specific per cent distributions of homicide type, by weapon used, and by relation between first-specified victim and first-specified offender,† United States, 1976–1979*

	Homicide type		
	Primary‡	Secondary‡	Undetermined
Weapon used			
Firearm	67	59	57
Cutting	20	15	19
Strangulation§	1	4	5
Other§	12	22	19
Total	100	100	100
Victim N	46,820	12,546	14,565
Relation			
Family	27	2	4
Acquaintance	52	22	10
Stranger	10	36	6
Unknown	11	40	81
Total¶	100	100	100
First-specified victim N¶	45,452	11,588	13,891

* Indicates weapon used by first-specified offender. Use of more than one type of weapon in multiple offender incidents was extremely rare.

† In incidents involving more than one victim or offender, victims or offenders are not specified in any predetermined order (personal communication, FBI-UCR, 1981).

‡ See footnotes to table 1 for definitions of terms.

§ Strangulation includes deaths due to strangulation or asphyxiation; other includes deaths due to blunt objects, personal weapons, falls, poisoning, arson, drowning, unspecified weapons, and unknown weapons.

¶ Total may not equal sums because of rounding.

¶ Only the first-specified victim and the first-specified offender for each homicide incident are used in the relationship analysis.

TABLE 7

Approximate victim-specific homicide rates per 100,000 population, by homicide type,† by SMSA or non-SMSA status and relationship between first-specified victim and first-specified offender, United States, 1979*

	Primary‡	Secondary‡
SMSA		
Family	1.5	0.0
Acquaintance	3.0	0.4
Stranger	0.7	0.6
Unknown	1.0	0.9
Non-SMSA		
Family	1.6	0.3
Acquaintance	2.6	0.0
Stranger	0.4	0.3
Unknown	0.2	0.2
Total		
Family	1.5	0.0
Acquaintance	2.9	0.3
Stranger	0.6	0.5
Unknown	0.8	0.7

* Approximation done using 1979 victim-specific homicide rates and the 1979 relationship distribution for each category.

† Undetermined category excluded from this analysis.

‡ See footnotes to table 1 for definitions of terms.

Rates of familial homicide were higher in non-SMSAs than in SMSAs, the only category in which non-SMSA rates exceeded SMSA rates.

DISCUSSION

Homicides in many countries predominantly involve family members or acquaintances (9–12) and do not happen during the perpetration of another crime (9, 10). Despite widespread publicity emphasizing crime-related violence in the United States, homicides in the United States are apparently no exception to this phenomenon. During the period we studied, only 17 per cent of homicides in the United States were known to be related to another crime (secondary homicides), while the majority were known *not* to be related to another crime (primary homicides).

Several general points can be made

concerning the primary, secondary, and undetermined homicides that occurred in 1976–1979.

Police officers appear to be increasingly unable to determine the perpetrator and circumstances of homicide events. This inability is more prevalent in SMSAs and in the Northeast than in non-SMSAs and in the other regions, which may reflect differences in police staffing, investigational procedures, community structure, or the nature of the assaults.

When circumstances were known, the ratio of primary to secondary homicide events was constant during this time period. Both primary and secondary homicide rates were increasing, thus whatever the cause of increasing lethal violence in US society, it is affecting social interactions as much as criminal interactions.

The South led dramatically in primary homicide rates, but when race was taken into account, this lead diminished or disappeared. The South did not lead in rates for other types of homicide.

Rates of homicide involving black victims exceeded those involving white victims. This racial difference was almost two times greater for primary than for secondary homicide. Ecologic analyses have been done to correlate race, economic indicators, and cultural factors with homicide rates (5, 13, 14). These types of analyses are technically and theoretically limited, and results have been mixed. They do, however, tend to suggest that when economic indicators are taken into consideration, race and regional cultural factors drop out, leaving poverty as the most significant correlate of homicide (5, 13). This may be particularly true in the case of primary homicide (5).

Primary and secondary homicides differed in a number of important ways. First, although female offenders are a minority in both types of homicide, they are extremely rare in secondary homicides. Second, primary homicides were

more often intersexual and intraracial than were secondary homicides. Third, offenders and victims tended to be of similar ages in primary homicides and of dissimilar ages in secondary homicides. Fourth, although the relative risk of secondary homicide was 2.4:1 for SMSAs compared with non-SMSAs, the relative risk of primary homicide for SMSAs compared with non-SMSAs was only 1.3:1. Increasing urban crime and social isolation clearly do not account for increasing primary homicide rates, although they may account somewhat for the higher stranger homicide component in SMSA, compared to non-SMSA, primary homicide rates. Fifth, firearms or knives were more commonly used in primary than in secondary homicides. Sixth, primary homicides largely involved persons who knew one another, and secondary homicides involved a high proportion of strangers.

We can make several general recommendations on the basis of these data.

The public should be alerted to the fact that the majority of homicides do not occur during the perpetration of another crime. Despite widespread concern about crime-related violence, an individual is at greater risk of homicide from his or her social interactions than from criminally motivated assault. Public fear of crime should be put into a more appropriate perspective. Funding for violence prevention and intervention should have an increased orientation toward primary violence.

Primary violence should be examined separately from secondary violence. Primary violence largely represents violent interactions between family members or acquaintances and thus extends beyond the scope of law enforcement expertise. Law enforcement agencies acknowledge this fact willingly (2), although they have attempted to compensate for the sparsity of non-police involvement by organizing "domestic quarrel teams" and "family crisis intervention units" (15).

The extensive work now being done in

the area of family violence (16–20) should be extended to include the full spectrum of primary violence. Intrafamily violence should be compared with extrafamily or extended-family primary violence. Violence toward friends and acquaintances may prove to be related to intrafamily violence; the target of the offender's violence may reflect the social context of that offender's life-style. This could account for the sexual and racial differences we found in relationship distributions. The offender's violence may be felt by family or friend, depending upon the quantity and nature of time spent with each.

Responsibility for the prevention of violence in our society does not lie solely in the hands of law enforcement personnel. Public health and other human service agencies should assist in preventing primary violence as they have helped prevent other major causes of morbidity and mortality. Target populations include those in the South and West. Family crisis centers should be instituted in rural areas in a manner acceptable to that population. Programs should be initiated in urban areas directed toward decreasing the violence of interactions between acquaintances or strangers. These could be oriented toward stress reduction and conflict avoidance, but may not be effective unless impoverished, young males cease to associate peer violence with masculinity. Finally, the role of weapons in producing violence has been a matter of research and debate. Results are still inconclusive (21). Our data indicate that guns and knives are more commonly used in primary homicides than in secondary homicides. Decreasing the male population's enhancement with aggression and the public's fear of criminal violence may also decrease their perceived need to carry and use a deadly weapon.

REFERENCES

1. National Center for Health Statistics. Monthly vital statistics report, Vol. 29. September 17, 1980. Rockville, MD: US GPO, 1980.

2. Federal Bureau of Investigations-Uniform Crime Reports. *Crime in the United States 1979*. Washington, DC: US Department of Justice, 1980.
3. Promoting health and preventing disease: objectives for the Nation. US Public Health Service. US Department of Health and Human Services. Washington, DC: US GPO, 1980.
4. Ogden H. Violence as a public health issue. *Public Relations Rev* 1982;8:40-4.
5. Smith MD, Parker RN. Type of homicide and variation in regional rates. *Social Forces* 1980;59:136-47.
6. Mantel N, Haenszel W. Statistical aspects of the analysis of data from retrospective studies of disease. *JNCI* 1959;22:719-48.
7. WJ Dixon, Massey FJ, Jr., eds. *Introduction to statistical analysis*. Chapter 8. New York, McGraw-Hill, 1969.
8. Nachmias D, Nachmias C. *Research methods in the social sciences*. New York: St. Martin's Press, 1979.
9. Bluglass R. The psychiatric assessment of homicide. *Br J Hosp Med* 1979;22:366-77.
10. Emovon AC. Survey of criminal homicide in Nigeria. *Scand J Soc Med* 1978;6:55-8.
11. Cantoni A. Examination of 41 cases of homicide in the provinces of Novara and Vercelli, Italy. *Rassegna di Criminologia* 1977;8:151-80.
12. Singh A. A study of personality and adjustment of murderers. *Indian J Clin Psychol* 1979;6: 201-4.
13. Loftin C, Hill RH. Regional subculture and homicide: an examination of the Gastil-Hackney thesis. *Am Soc Rev* 1974;39:714-24.
14. Gastil RD. Homicide and a regional subculture of violence. *Am Soc Rev* 1971;36:412-27.
15. Curtis LA. *Criminal violence: national patterns and behavior*. Lexington, MA: Lexington Books, 1974.
16. Berardo FM, ed. *Symposium: violence and the family*. *Journal of Marriage and the Family* 1971;33:623-731.
17. Gelles RJ. Violence in the family: a review of research in the 70's. *Journal of Marriage and the Family* 1980;42:873-85.
18. Gibbons TCN. Violence in the family. *Med Leg J* 1975;43:76-88.
19. Goode WJ. Force and violence in the family. *Journal of Marriage and the Family* 1971;33: 624-36.
20. Straus MA. Social stress and marital violence in a national sample of American families. *Ann NY Acad Sci* 1980;347:229-50.
21. Wright JD, Rossi PH. *Weapons, crime, and violence in America*. Washington, DC: US Department of Justice, National Institute of Justice, 1981.