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Studies in the Epidemiology of Murder—A Proposed Classification System

The Medical Examiner's Office of Dade County has investigated 3282 homicides during the years 1956 through 1975. Forty-one percent (1340) of the homicides occurred in the last five years, 25% of the time period. The overall homicide rate has risen from 11.2 per 100 000 population during 1956-1960 to 20.0 per 100 000 population during 1970-1975. The 1975 homicide rate was 20.9 per 100 000 population.

In 1956-1960, 81.7 per 100 000 nonwhite males, 21.7 nonwhite females, 6.7 white males, and 2.5 white females were killed. During 1970-1975 this rate was 122.0 per 100 000 nonwhite males, 26.0 nonwhite females, 16.3 white males, and 5.1 white females. For nonwhites, being intentionally killed by another person exceeds deaths caused by infectious disease, endocrine disease, blood disease, mental disease, brain disease, lung disease, and digestive system disease combined. There are more than one half as many deaths by being intentionally killed by another person as deaths by cancer.

Obviously there is an epidemic of homicide! The overall homicide rate has nearly doubled in 20 years. It seems appropriate to apply the techniques of epidemiology in studying this epidemic. Epidemiology, in the words of Kenneth Maxcy [1, p. 459], is "the field of science dealing with the relationships of the various factors which determine the frequencies and distributions of an infectious process, a disease, or a physiologic state." Disease is "A definite morbid process having a characteristic train of symptoms" [1, p. 393].

Historically the great epidemic diseases of man have been controlled by identification and modification of the causative factors. This technique has nearly eliminated deaths from infectious disease in the United States. However, an accurate classification system is required before the search for causative factors can be successful. The common cold and lung cancer are each a respiratory disease. Only by independent analysis can any hope be held for the eradication of either.

An epidemiological homicide classification system has not been developed. Dissimilar categories are usually lumped together in meaningless general terms. This situation is exemplified by a headline in a Miami newspaper, 22 Jan. 1975, "Even jurors afraid of

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crime wave" [2]. Obviously these good citizens fear being robbed and killed. They do not fear that they will be set upon by their wife, husband, next-door neighbor, or drinking companion on the way to the courthouse parking lot. Yet the news article does not differentiate that which is of importance to reducing such fear and that which is not. A classification system is required that will separate homicides into categories having causative factors in common and a significant relationship to the fears and needs of our citizens.

Historically the legislatures have tried to come to grips with this problem of classification. They have subdivided homicides into as many as seven subclassifications. These vary by jurisdiction but may include first-degree murder, second-degree murder, third-degree murder, voluntary manslaughter, involuntary manslaughter, excusable homicide, and justifiable homicide. In practice there is a fine line between these categories quite easily crossed by the prosecuting attorney, the jury, or the defendant in the process of plea bargain justice. This classification, as applied by the courts, is grossly inadequate [3].

Currently many experts in the field use a classification scheme based on the previous relationship between the victim and the killer [4,5]. This scheme, although a step in the right direction, lacks specificity. It is the relationship, or interaction, between the victim and the killer at or about the time of lethal assault that is most important. For example, two strangers are in a bar and argue over an order of french fries. This exchange escalates until a battle ensues and one is killed. Although this affair involves a homicide committed by a stranger, it is not what the jurors fear in walking through the darkened streets from the courthouse to the parking lot.

We have developed a classification scheme and have used it to examine two causative factors, the availability of firearms and the decline in severity and inevitability of punishment.

This is a preliminary report. Having developed a classification system, we will expand the data base to include court and prison records to determine what precisely is the role of other causative factors in the current homicide epidemic.

Materials and Methods

The records of the Dade County Medical Examiner's Office form the data base for this study. These consist of the police reports and autopsy protocols of all 3282 homicides from 1956 through 1975, inclusive. Additional material such as the criminal record of the deceased, court records, and records of the assailant are not uniformly present in the current files and have not been incorporated into this preliminary study.

The population figures used in this study are primarily those of the United States Census of Population. Where required, these figures have been augmented by population figures supplied by the Dade County Health Department. Data manipulations were performed on a Hewlett-Packard 2100-S minicomputer, which is a portion of our gas chromatograph-mass spectrophotometer system.

The following classifications were devised: "Robbery-Rape Homicides" are those deaths where the details of scene investigation or witnesses testimony reveal that the homicide was an integral part of a robbery or rape.

"Criminals Killed Homicide" has three subcategories: killing of a criminal by a police officer in the lawful performance of his duties, the killing of a criminal by a citizen in defense of the citizen's life or property, and the "gangland style" killing of one criminal by another. The latter category includes deaths that are part of the business of crime and thus are criminal business executions. All of these categories have in common the death of a victim actively involved in crime.

The largest category is "Victim Participated Homicide." Marvin Wolfgang [4] described "Victim Precipitated Homicide" as one in which the victim was the first to show or use a deadly weapon or the first to strike a blow. Victim Participated Homicide expands this classification to include any participation by the victim in an affray, close enough in time and space to be considered an integral part of the act, which typically includes an exchange of insults, threats of violence, and finally lethal attack. When the victim was afforded the opportunity of "flight or fight" and he elected to fight, then he participated in the homicide.

The final category is that of "Other Homicide." This includes the definitely recognizable, although numerically small, categories of child abuse, the innocent bystander to another fight, and the victim of truly preplanned murder. This category also contains some cases which should be in one of the other categories but are not for lack of adequate investigation or records.

Results and Discussion

The rates for the four major categories of homicide are shown in Table 1. Although numerically the largest increase is in the Victim Participated category, the most striking percentage increase is in the category of Criminals Killed and Robbery-Rape.

TABLE 1—*Homicides in Dade County, Florida, from 1956 through 1975, in deaths per 100 000 people.*

| Period | Robbery-Rape | Criminals Killed | Victim Participated | Other |
|-----------|------------------|------------------|---------------------|------------------|
| 1956-1960 | 0.5 | 0.8 | 5.4 ^a | 4.4 |
| 1961-1965 | 0.5 | 0.6 | 6.9 ^a | 3.8 |
| 1966-1970 | 1.6 | 1.5 | 10.7 ^a | 4.8 ^a |
| 1971-1975 | 2.2 | 2.2 | 10.2 ^a | 4.4 ^a |
| 1975 | 3.4 ^a | 2.8 ^a | 10.2 ^a | 4.4 ^a |

^aCalculated on a detailed analysis of a single year in the period.

Table 2 shows the rates following subcategorization within the category of Criminals Killed. The most startling increase in the overall rate is due to criminals killing criminals. Almost all of these killings involve individuals engaged in the importation and sale of narcotics. This probably reflects Dade County's increasing importance as a center for drug traffic. Of note is the lack of change in the rate of criminals killed by police and criminals killed by citizens.

Table 3 displays the change in the pattern of Robbery-Rape murder over 20 years. The popular fear, as expressed in the previously quoted newspaper headline, appears justified by the facts. The overall rate of this category of murder has increased 340%. The role of

TABLE 2—*Criminal Killed Homicides in Dade County, Florida, from 1956 through 1975, in deaths per 100 000 people.*

| Period | By Police | By Citizens | By Criminals | Total |
|-----------|-----------|-------------|------------------|-------|
| 1956-1960 | 0.5 | 0.3 | 0 ^a | 0.8 |
| 1961-1965 | 0.4 | 0.2 | 0 ^a | 0.6 |
| 1966-1970 | 0.8 | 0.4 | 0.2 ^a | 1.5 |
| 1971-1975 | 0.6 | 0.5 | 1.0 ^a | 2.2 |

^aCalculated on a detailed analysis of a single year in the period.

TABLE 3—*Robbery-Rape Homicides in Dade County, Florida, from 1956 through 1975, in deaths per 100 000 people.*

| Period | White | | Nonwhite | | Total | Percent In- toxicated |
|-----------|-------|--------|----------|--------|-------|--------------------------|
| | Male | Female | Male | Female | | |
| 1956-1960 | 0.9 | 0 | 0 | 0 | 0.5 | 0 |
| 1961-1965 | 0.9 | 0.1 | 0.2 | 0.2 | 0.5 | 4 |
| 1966-1970 | 2.4 | 0.4 | 4.7 | 0.4 | 1.6 | 4 |
| 1971-1975 | 4.6 | 0.9 | 2.8 | 0.7 | 2.2 | 4 |
| 1975 | 5.3 | 0.4 | 4.8 | 0.8 | 3.4 | 5 |

alcohol intoxication of the victim of Robbery-Rape murder is negligible. A level in excess of 0.09% (w/v) blood alcohol is found in 50 to 60% of all homicide victims, but such intoxication is seen in only 4% of Robbery-Rape murder victims. This parallels the estimated incidence of alcoholism in the general population.

Our records show that in those cases where the assailant is described, Robbery-Rape murders are generally committed on white victims by young nonwhite males. A study of the population figures fails to show a significant increase in the percentage of 19 to 29-year-old nonwhite males over the past 20 years compared to the rest of the population. Some factor, or factors, other than an increase in the population of nonwhite males must be invoked as causative. A possible factor may be a change in the perception by criminals of punishment. Figure 1 shows the rate change, by year, of Robbery-Rape murders during the past 20 years. In 1965 the rate was the highest it had been in the past 10 years. Since 1965 the rate has quadrupled.

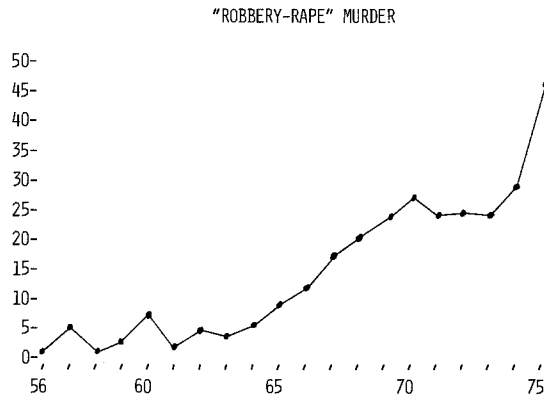


FIG. 1—Rate change, by year, of Robbery-Rape Homicides during the past 20 years in Dade County, Florida.

A number of social changes occurred in the late 1960s. Of importance were several United States Supreme Court decisions regarding rules of police-suspect interaction. Concurrently capital punishment was discontinued. In the mid-19th century, Jeremy Bentham [6] stated that "Man avoids criminal behavior if that behavior elicits swift, severe and certain punishment." In the popular mind the inevitability and severity of punishment for murder declined in the late 1960s. We are certain that this change was perceived by criminals.

People fear murder! A popular definition of murder is being killed during a robbery

or rape, probably the most significant form of homicide. In spite of this almost all studies on the effect of judicial execution measure changes in the overall homicide rate, an inaccurate approach. It is generally accepted that "crimes of passion" are not affected by external restraints such as fear of punishment. It is also generally accepted that most homicides are crimes of passion [4]. Analysis of Dade County's Robbery-Rape murder rate reveals that a marked increase occurred precisely concurrently with a change in the severity and certainty of punishment of murderers. This fact supports a causal relationship between these two events.

The effect of banning the importation and sale of firearms will have little effect on the Criminals Killed homicides. Disarming the citizens would probably eliminate those homicides where a citizen kills a criminal in defense of the citizen's life or property. Unfortunately, this may have the effect of a concomitant increase in the number of Robbery-Rape murders. It is assumed that the police would still be armed so that the rate of Police Who Kill Criminals subcategory would not be expected to change. Also, the professional criminal execution would be expected to continue.

A ban on civilian-held firearms, for the purposes of this discussion assumed to be 100% effective, would probably have minimal effect on the Robbery-Rape murder rate. Currently (1970-1975) 75% of those murders committed by robber-rapists are done using firearms. Analysis of the Dade County data reveals that more than two thirds of the Robbery-Rape murders are apparently committed for the primary purpose of destroying the witness or witnesses to the crime. Thus the difference between firearms and other weapons, the hypothetical increased lethality of firearms over other weapons, becomes significant in only 25% (1/3 of 75%) of these murders. The amount of potential decrease in the rate of Robbery-Rape murders by disarming criminals is nearly matched by the potential increase produced by disarming citizens (0.8/100 000 versus 0.5/100 00).

Overall, if all firearms in the hands of citizens and criminals disappeared, no significant decline in the number of Robbery-Rape murders should occur, but there would be a 20% drop in the number of Criminals Killed category.

It is appropriate to employ the Victim Participated Homicide category in assessing the firearm question. The difference between firearms and other weapons may become important in this group of homicides. The argument that in the heat of passion the presence of a firearm can turn a fight into a killing certainly has some merit. Table 4

TABLE 4—*Victim Participated Homicides in Dade County, Florida, from 1957 through 1975, in deaths per 100 000 people.*

| Period | Firearms | | | Other | | |
|--------|------------------|-------|-------|------------------|-------|-------|
| | Intoxi- cated | Sober | Total | Intoxi- cated | Sober | Total |
| 1957 | 2.0 | 0.9 | 3.3 | 2.7 | 0.5 | 3.6 |
| 1960 | 1.3 | 1.0 | 2.7 | 1.3 | 0.6 | 2.4 |
| 1965 | 2.0 | 1.8 | 4.3 | 1.3 | 0.6 | 2.3 |
| 1970 | 2.5 | 3.8 | 7.6 | 1.3 | 0.9 | 3.1 |
| 1975 | 2.9 | 3.8 | 7.4 | 1.4 | 0.8 | 2.7 |

shows the weapon-type experience in Dade County during a period of 20 years. Racial differences in regard to weapon and intoxication have not changed significantly during this time. The overall changes reported in the table are the same for whites as for non-whites.

Firearm use in Victim Participated Homicides has doubled, while the use of other

weapons has remained constant. The major change has been an increase in the use of firearms in homicides in which the victim is sober. Two basic possibilities explain this phenomenon. The change may represent either an increased attack rate with an increased number of guns or a stable attack rate with an increased number of guns. The latter possibility would clearly place the blame for the increased rate of this type of homicide on firearms. The former possibility would place the blame on a change in the behavior of people. Possible permutations between the two extremes, of course, exist. In determining the solution to this problem of causality it is possible to resolve the question as to whether there is a real difference in the lethality of firearms as opposed to other weapons. A study published in 1965 [7] showed that there is a near identity between homicides and aggravated assaults. The data in the study show that the only significant difference between an aggravated assault and a homicide is the death of the victim. As this study was based on homicides prior to 1965, we feel that the failure to separate and exclude Robbery-Rape murder did not invalidate the study.

A comparison of the incidence of firearms and other weapons in aggravated assaults compared to the use of these weapons in homicides would allow solution for the lethality factor for firearms compared to other weapons. Such a study was carried out in 1970 as part of a study in Dade County preliminary to an attempted increase in local firearm restrictions. In this study 30% of aggravated assaults were with firearms [8]. In 1970, 71% of the Victim Participated Homicides were with firearms. If firearms were no more lethal than other weapons, only 30% of the Victim Participated Homicides would be committed with firearms. The 240% increase represents the lethality factor of firearms over other weapons.

Unfortunately the problem of nonreporting of aggravated assaults may influence these data. However, ignoring this problem, if firearms were completely eliminated the Victim Participated Homicide rate would drop at the most from 10.1 per 100 000 people in Dade County to 5.9 per 100 000, or 42%. Obviously Victim Participated Homicides are not what the jurors fear in walking to the parking lot.

Conclusion

There is an epidemic of homicides. A system of epidemiologic classification was used on the 3282 homicides occurring in Dade County, Florida, during the past 20 years. By the use of the categories of Robbery-Rape murder, Criminals Killed homicide, Victim Participated homicide, and Other homicides, we were able to approach questions as to why this epidemic has occurred. Having developed a classification system based on causality that clearly delineates those murders which people fear from those homicides which they do not, we are prepared to accumulate the additional data required to approach expanded considerations of causality.

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