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MEASURING HOMICIDE BY POLICE OFFICERS*

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Criminologists have long viewed homicide as the least difficult type of crime to measure.[1] The difficulty of disposing of bodies, the generally high level of agreement between the *Uniform Crime Reports* and the *Vital Statistics of the United States*,[2] and the monitoring function of coroners in recording homicide events all support the view that official statistics provide a highly accurate measure of homicide. The excellence of this official measurement, however, is confined to citizens killing other citizens. The official measurement of officials killing citizens falls far short of excellence. The widespread American belief that official killings do not constitute violence[3] is reflected by the complete absence of

such killings from the *Uniform Crime Reports*,[4] most police departments' annual reports, and the limited summary treatment they receive in the *Vital Statistics*, where no figures are published below the state level.

The paucity of official data on official killings has become more noticeable in recent years as both public and scholarly interest in police-caused homicide has intensified. Public policy debates questioning the propriety of police use of deadly force, often prompted by major protest demonstrations after specific police-homicide incidents in minority communities, have commanded the attention of the United States Civil Rights Commission, the Department of Justice, and even the White House.[5] Both legal scholarship[6] and empirical research[7] have reflected the growing public concern with this

[1] *See* Sellin, *The Significance of Records of Crime*, 67 LAW Q. REV. 489, 494 (1951) ; Wolfgang, *A Sociological Analysis of Criminal Homicide*, in CRIME IN AMERICA 53 (B. Cohen ed. 1970) (both are cited in S.F. Messner, Income Inequality and Murder Rates; Some Cross-National Findings (1978) (paper presented to the 73d Annual Meeting of the American Sociological Association)).

[2] *See* Hindelang, *The Uniform Crime Reports Revisited*, 2 J. CRIM. JUST. 1 (1974). *But see* Cantor & Cohen, Comparative Measures of Homicide Trends: Methodological and Substantive Differences In The Vital Statistics And Uniform Crime Report Time Series (1933-75) (working paper 7821, Program in Applied Social Statistics, Department of Sociology, University of Illinois at Urbana-Champaign).

[3] In a 1969 survey, for example, 57 percent of a national sample said that "police shooting looters" was not

an act of violence. M. BLUMENTHAL, L. CHADIHA, G. COLE & T. JAYARTNE, JUSTIFYING VIOLENCE 73 (1972), *cited in* Archer & Gartner, *Legal Homicide and Its Consequences*, in VIOLENCE: PERSPECTIVES ON MURDER AND AGGRESSION 221 (Kutash ed. 1978). Archer and Gartner also cite Professor Short's account of how the research staff of the National Commission on the Causes and Prevention of Violence, which had originally defined the scope of study neutrally to include all uses of force, including police killings, was influenced to narrow the scope of study to all "illegal violence"—thereby excluding most governmental use of force. Archer & Gartner, *supra* at 222-23. *See also* Short, *The National Commission on the Causes and Prevention of Violence: Reflections on the Contributions of Sociology and Sociologists*, in SOCIOLOGY AND PUBLIC POLICY: THE CASE OF PRESIDENTIAL COMMISSIONS (Komarovsky ed. 1975).

[4] *See* Takagi, *A Garrison State in "Democratic" Society*, in POLICE COMMUNITY-RELATIONS 358-71 (Cohn & Viano eds. 1976).

[5] *See* Sherman, *Restricting the License to Kill: Recent Developments In Police Use Of Deadly Force*, 14 CRIM. L. BULL. 577 (1978); U.S. Commission on Civil Rights, Police Practices and the Preservation of Civil Rights: A Consultation. (Dec. 12-13, 1978) (Washington, D.C.). *See also* Gilman, *In Washington, A New Zeal For Prosecuting Police*, POLICE MAGAZINE, November 1978, at 18.

[6] *See* Day, *Shooting the Fleeing Felon: State of the Law*, 14 CRIM. L. BULL. 285 (1978); De Roma, *Justifiable Use of Deadly Force by the Police: A Statutory Survey*, 12 WM. & MARY L. REV. 67 (1970); Finch, *Deadly Force To Arrest: Triggering Constitutional Review*, 11 HARV. C.R.-C.L. L. REV. 361 (1976); Mayhall, *Use of Deadly Force in the Arrest Process*, 31 LA. L. REV. 131 (1970); Zittler, *Policeman's Use of Deadly Force in Illinois*, 48 CHI.-KENT L. REV. 252 (1971).

category of homicide, to which the *Vital Statistics* attributes 1.77 percent of all homicides in the United States from 1971 to 1975.[8] But that figure, like many others used in this area, has yet to be examined critically through comparisons with other sources of data. Policy discussions and empirical research both require that the problems of measurement be addressed before any conclusions are drawn from the available data.

The adequacy of current methods of measuring homicide by police officers poses three important questions. A first question is whether the number of these killings occurring each year throughout the country can be measured. While the quest for an accurate count of the "absolute incidence" of any form of conduct may be futile,[9] it is not unreasonable to expect a society to know how many of its citizens are killed by officials acting under what is ruled by other officials (*i.e.*, police chiefs, prosecutors, grand juries, judges, or juries) after the fact to be proper use of the authority of the state. Without some approximation of the actual number of events that fit some consistent definition of police killings, it is difficult to address the public policy issues raised by those events at the national level.

A second question is how well the relative incidence of police killings from one police department to the next can be measured. Local public policy debates over the quality of police services often focus on specific police shooting events, but they could just as easily focus on comparisons to other cities. For example, the fact that city X has twice

[7] *See* Harding & Fahey, *Killings By Chicago Police, 1969-70: An Empirical Study*, 46 S. CAL. L. REV. 284 (1973); Jacobs & Britt, *Inequality And Police Use of Deadly Force: An Empirical Assessment Of A Conflict Hypothesis*, 26 SOC. PROB. 403 (1979); Kania & Mackey, *Police Violence as a Function of Community Characteristics*, 15 CRIMINOLOGY 27 (1977); Kobler, *Police Homicide In A Democracy*, 31 J. SOC. ISSUES 163 (1975); Takagi, note 4 *supra*; Robin, *Justifiable Homicide by Police Officers*, 54 J. CRIM. L.C. & P.S. 225 (1963); Uelman, *Varieties of Police Policy; A Study of Police Policy Regarding the Use of Deadly Force in Los Angeles County*, 6 LOY. L.A.L. REV. 1 (1973); Fyfe, Shots Fired: A Typological Examination of New York City Police Firearms Discharges (1978) (unpublished Ph. D. Dissertation, State University of New York at Albany); Milton, Police Use of Deadly Force (1977)(Washington, D.C.: The Police Foundation).

[8] During this period, there were 1,800 deaths attributed to law enforcement officers included in the 101,665 homicides from all causes. VITAL STATISTICS OF THE UNITED STATES (1965–1974).

[9] *See* Biderman & Reiss, *On Exploring The "Dark Figure" of Crime*, in 374 THE ANNALS OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE 1 (1967).

the rate of police killings as city Y, which is similar to X in other important respects, could be most relevant to the evaluation of a police chief's performance, the selection of a new firearms policy, or a decision about what size gun the police should carry. All of these decisions require accurate measurement of the relative incidence of police homicides across specific cities.

The third question, and the one most relevant to criminological theory, is whether the pattern of differences across police departments in police homicide rates can be measured to explain that pattern with theoretical and public policy variables. This question is related to, but distinct from, the question of how accurately specific cities can be compared. For as it will be shown in this article, available measures contain too much error either to estimate the national incidence of police killings or to make reliable comparisons of specific cities, but not too much error to compute apparently valid statistical relationships between police homicide rates and other characteristics of police departments and the communities they serve.

AVAILABLE SOURCES OF DATA

Three basic sources of data on homicides by police officers are generally available: death certificates, police department internal affairs records, and newspaper stories. A fourth source, the supplemental homicide reports filed by police departments with the Uniform Crime Reporting Section of the FBI, is not generally available to researchers because of the FBI's reservations about the quality of those data.[10] Each of the available data sources has substantial limitations.

DEATH CERTIFICATES

If the American system of vital statistics actually worked in the manner its federal overseers intend it to, then death certificates would provide a nearly perfect count of official homicides by police officers throughout the country. Assuming that the system works as intended, most of the empirical studies of police homicides have made some use of the national and state level tabulations of the death certificates reporting the cause of death published

[10] Many police agencies fail to provide some or all of the descriptive information on those forms that is necessary to discriminate justifiable homicides by police from other forms of homicide. Interview with Paul M. Zolbe, Chief, Uniform Crime Reporting Section, FBI (July 5, 1978).

by the National Center for Health Statistics.[11] Unfortunately, at least six major flaws in the system cause it to grossly underestimate the number of "deaths by legal intervention-police," defined by the International Classification of Diseases as "injuries inflicted by the police or other law-enforcing agents, including military on duty, in the course of arresting or attempting to arrest lawbreakers, suppressing disturbances, maintaining order and other legal action."[12]

American vital statistics are part of a world health statistics system in which causes of death are defined and agreed upon by the periodic Geneva conventions that revise and promulgate the International Classification of Diseases (ICD). Membership in the system and use of the ICD at all levels is voluntary, and within the United States it extends down the federal ladder to each county's chief medico-legal officer (usually either an elected coroner or an appointed medical examiner). The system employs a standard death certificate (or a variant which contains the same information) which each state must use in order to participate in the national death registration system.[13] "Natural" or usual deaths may be certified by any licensed medical doctor. Medico-legal officers must fill out the death certificates on violent and other unusual deaths (their usual jurisdiction amounting to about 20 percent of all death certifications nationally),[14] ideally supplying all the information necessary for classification of the cause of death according to the ICD categories. The death certificate then goes to the funeral director, who in turn secures a burial permit from the local registrar, who then records the death and forwards the death certificate to the state registrar. The state registrar records the death and sends an official copy of the death certificate to the National Center for Health Statistics (NCHS), where coders assign each case

to one of the ICD categories and enter them into the national mortality data published in the annual *Vital Statistics of the United States*[15]

Almost every step of this system is vulnerable to serious flaws. The first flaw is the often poor quality of the medical diagnoses of the causes of death. Two studies conducted in the early 1950's showed high rates of error by either attending physicians or coroners' physicians. One study found 39 percent of a Pennsylvania sample of death certificates to be based on "sketchy" diagnostic information, with 18 percent having an equally likely or preferred diagnosis.[16] More relevant was an independent study of 1,889 autopsied deaths in Albany, New York, in which the medical researchers concluded from their own evaluation of the recorded clinical information, autopsy protocols (reports), and laboratory reports that 57 percent of the homicide and suicide deaths in the sample could have been misclassified as to the circumstances of death.[17]

No matter how accurate the diagnosis, however, a second flaw in the system seriously hinders accurate data collection: the apparently widespread lack of the coroners' awareness of, support for, and legal obligation to comply with the system's request for the full information necessary to code the causes of death according to ICD categories. One leading medical examiner has claimed that his colleagues around the country are generally "turned off" by the ICD categories, particularly where any stigma to the victim or his family may result from the use of the categories.[18] A board-certified forensic pathologist (a level of technical qualification only some medico-legal officers attain) observed that those with her qualification may be more likely to be aware of the ICD categories, but not necessarily more likely to employ them or provide information consistent with them.[19] Even the Model State Vital Statistics Act published by the NCHS fails to make

[11] *See, e.g.,* Goldkamp, *Minorities as Victims of Police Shootings: Interpretations of Racial Disproportionality and Police Use of Deadly Force,* 2 Just. Sys. J. 169 (1976); Jacobs & Britt, note 7 *supra*; Kania & Mackey, note 7 *supra*; Kobler, note 7 *supra*; Takagi, note 4 *supra*; Milton, note 7 *supra*.

[12] NATIONAL CENTER FOR HEALTH STATISTICS, INTERNATIONAL CLASSIFICATION OF DISEASES, ADAPTED FOR USE IN THE UNITED STATES 501 (8th rev. 1967).

[13] 2 VITAL STATISTICS OF THE UNITED STATES (Part A) 6–9 (1973).

[14] *See* I. Wayne, Suicide Statistics in the United States: An Exploration of Some Factors affecting the Quality of Data (1969) (terminal Progress Report MH-15104), *cited in* Bradshaw, The Social Construction of Suicide Rates 52 (1973) (unpublished Ph. D. Dissertation, Department of Sociology, Syracuse University).

[15] For a description of the system, see NATIONAL CENTER FOR HEALTH STATISTICS, MEDICAL EXAMINERS' AND CORONERS' HANDBOOK ON DEATH AND FETAL DEATH REGISTRATION (1971).

[16] *See* Moriyama, Baum, Haenszel & Mattison, *Inquiry Into Diagnostic Evidence Supporting Medical Certifications of Death,* 48 AM. J. PUB. HEALTH 1376–87 (1958).

[17] *See* James, Patton & Heslin, *Accuracy of Cause of Death Statements on Death Certificates,* 70 PUB. HEALTH REP. 39–51 (1955).

[18] Telephone Interview with Michael Baden, M.D., then chief medical examiner of New York City (July 17, 1978).

[19] Interview with Sydney Katz, M.D. (December 19, 1978).

any mention of the ICD categories, let alone require compliance with them.[20]

The lack of concern for the ICD categories exacerbates a third flaw in the system: the vagueness of the instructions for completing the Standard Death Certificate. This vagueness facilitates the omission of the information necessary to distinguish a civilian-caused homicide from a death by legal intervention of police. This is especially true since the critical information is supplied in item 20d of the certificate, "How Injury Occurred," which has a very small space with room for only five or six words. The NCHS handbook on death registration for medico-legal officers paradoxically urges both "complete reporting" and the use of "as few words as possible [to] describe the injury-producing situation."[21]

The latter principle is clearly evident in one of the handbook's examples that might be relevant to police-caused homicide. In the example, a pulmonary hemorrhage due to stab wounds is described in item 20d as "stabbed by a sharp instrument."[22] No mention is made of *who* did the stabbing; it could have been either a criminal assailant or a police officer defending himself when attacked during a family fight. Since there are known instances of facts being omitted,[23] it is likely that critical information about police officers is omitted from the responses to the vague question of "How Injury Occurred."[24]

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[20] *See* NATIONAL CENTER FOR HEALTH STATISTICS, MODEL STATE VITAL STATISTICS ACT AND MODEL STATE VITAL STATISTICS REGULATIONS, 1977, at 78-115 (1978).
[21] *Id.* at 8.
[22] *Id.* at 18.
[23] For example, almost 17 percent of the 1973 death certificates reporting that an autopsy had been performed failed to complete a simple yes-no question about the autopsy. 2 VITAL STATISTICS OF THE UNITED STATES (Part A) 6-18 (1973).
[24] Even when the police officer's role is described, there may be insufficient information to discriminate between legal and illegal actions of the police. While the ICD definition of this cause of death implies that the death certificate is filled out after the proper officials have determined whether or not a police homicide was justified, in practice that is probably not the case. The necessary review procedures can go on for months after a killing, but the death certificate typically must be completed before a burial is possible. Since burials usually occur within a week after a death, it seems virtually impossible for a death certificate to be based on a final ruling on the justifiability of the death. If a police officer is convicted of murder for an on-duty homicide a year after the fact, there seems to be no provision in the vital statistics system for changing the cause of death from legal intervention to homicide. Since officers are convicted so rarely for on-duty murder, however, this issue

In fact, omission of the police role in a killing may often be quite probable given a fourth flaw in the system: the close relationship between the local police and the medico-legal office. A case study of a rural coroner's office found that

> [t]he coroner is enmeshed in the legal-political structure of the county in which he practices. This immersion places upon him certain informal controls which can be exercised to insure continuing cooperation between the Coroner, Sheriff, Prosecuting Attorney and the medical community. These informal restrictions may be as significant as the law in determining cause of death procedures.[25]

This relationship may well lead medico-legal officials to omit police involvement from the information they provide on how the injury occurred. One forensic pathologist observed:

> The ease of doing the job and serving the public in a medical examiner's or coroner's office largely depends upon the cooperation of the police. So it doesn't help to antagonize the police unnecessarily. On the other hand, the doctors won't pull a cover-up job. When you sign the certificate, you have to put down homicide. You just may not put down the full background circumstances of death.[26]

The relationship between the doctors and the police may be as much individual as it is organizational, which exposes a fifth flaw in the system: diversity of procedures used (and completeness of information supplied on the death certificate) among different coroners, even within the same office. In the New York City Medical Examiner's office, for example, the older examiners rarely indicate that police effected a homicide because they feel it places an "unnecessary onus" on the police. A recent chief medical examiner in New York City encouraged his colleagues to indicate police in-

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may have little impact on the system's data. Kobler found that only 3 of 1,500 officers in his sample of police killings were convicted on criminal charges related to the killing. Kobler, *supra* note 7, at 164. The first conviction of an officer for on-duty criminal homicide charges in the history of the New York City Police (since 1844) did not occur until the mid-1970's. *See* Hoffman, *The Man Who Defends Killer Cops*, 10 N. Y. MAGAZINE 76 (1977).
[25] Bradshaw, *supra* note 14, at 53. What is true for rural coroners may also be true for big city medical examiners as well. One line of speculation over the reason for the dismissal of New York City Medical Examiner Michael Baden, for example, was that he had failed to be sufficiently responsive to the wishes of the New York County prosecutor. *See Baden Planning to Sue the City Over His Ouster*, N. Y. Times, Aug. 8, 1979, at B4.
[26] Katz interview, note 19 *supra*.

volvement, a policy contrary to that of his predecessors. But each examiner still makes his own decisions about how to fill out the death certificate.[27]

The sixth flaw in the system is that the transmission and coding of the data suffers both mechanical and conceptual errors. On one occasion, 6,000 death certificates were lost during transmission from Massachusetts to the NCHS.[28] More important, however, may be the complete lack of any coding instructions, other than the ICD definition quoted above,[29] for death by legal intervention of the police. Thus, while NCHS is able to say publicly how it would code borderline situations such as an off-duty police officer killing his wife in self-defense,[30] it is not clear that the coding would always follow the publicly provided interpretations. Ambiguity of the coding rules is further suggested by the disagreement between the tabulations of the New York City Health Department (equivalent to a state-level death registrar reporting directly to NCHS) and those of NCHS. In 1971, the NYCHD counted thirty-three police homicides while NCHS counted thirty-two; in 1972, the respective figures were thirty-four and twenty-four; in 1973, thirty-seven and forty-one; in 1974, twenty-three and twenty-five; and in 1975, eighteen and twenty.[31] Since the differences vary in direction from year to year, one may infer that the differences in coding decisions are arbitrary rather than systematic.

POLICE INTERNAL AFFAIRS RECORDS

In large, bureaucratized police departments, specialized internal affairs units are usually responsible for all investigations of possible serious criminal misconduct by police officers.[32] This often includes investigations of police use of deadly force, although other units occasionally investigate such incidents. Even when homicides by police are investigated by other units, records of the investigations and the incidents may be stored at the internal affairs unit. These records provide the basis for the counts of homicides by police that some, but not all, police departments supply on request to the news media and social scientists.

In the opinion of several police researchers, these records usually provide fairly accurate counts of deaths caused by specific police departments. As the basis for national data collection on the incidence of police homicides, however, these records are limited, for they are generally not kept in smaller police departments where police homicides also occur.[33] While some states (California, Oregon, Minnesota, and others) now require all police agencies to report these data as part of their general homicide statistics to a state level crime statistics unit, this practice is far from universal.

Although police records are not gathered for the purpose of comparative analysis across large cities, they have been used in that manner.[34] These data have at least four limitations as a basis for comparative analysis. One is that many police departments refuse to make the data available to the public or to researchers. Another limitation is that the figures that are released sometimes are different from figures obtained from other sources. Responding to a request from the New York City Police Department, for example, the Dallas, Texas, police department reported a lower count than had been reported in a study of that department's records done by a local university.[35] A third limitation is the considerable cost involved in obtaining data from hundreds or thousands of separate police departments. A fourth limitation arises even when figures can be obtained, as differences in definitions may undermine the comparability of the data from one department to the next. Some departments, for example, may omit accidental deaths, police officer suicides, off-duty killings, or killings taking place outside the city limits, while others may include them. In short, police records seem to be as problematic as death certificates for both nationwide and cross-city measurement.

NEWSPAPER STORIES

In some cities, newspaper stories may provide the most accurate count of police homicides. This will be true only where a newspaper's editorial policy defines all homicides as newsworthy. An exhaustive reading of the back issues of such a newspaper, while highly labor-intensive, should yield a complete annual count of such incidents.

[27] Baden interview, note 18 supra.

[28] 2 VITAL STATISTICS OF THE UNITED STATES (part A) 6-19 (1973).

[29] See text accompanying note 12 supra.

[30] Such a situation would not be coded as death by legal intervention. Letter from Harry Rosenberg, Chief, Mortality Branch, National Center for Health Statistics (July 27, 1978).

[31] NCHS Micro-data Detail Tape (Mortality); File figures, New York City Department of Health.

[32] L. SHERMAN, SCANDAL AND REFORM: CONTROLLING POLICE CORRUPTION 146-49 (1978).

[33] In Fort Lupton, Colorado, for example, a 10-officer police department shot and killed three citizens in one year. See generally Greeley Tribune, 1977-78.

[34] See, e.g., Milton, note 7 supra.

[35] Fyfe, supra note 7, at 516 n.5.

The Kansas City, Missouri, police department records, for example, show the exact count of police homicides for the year 1974 as an exhaustive reading of the *Kansas City Star*.[36] Yet editorial policies are subject to change, and they vary from one city to the next. Many police homicides, in the few large cities in which they are a common occurrence, such as New York, are not reported in local newspapers. Consequently, newspaper stories are of limited use for assessing the relative incidence of police homicides across cities.

For similar reasons, news reports provide a poor basis for measuring the absolute incidence of police homicides around the nation. One study employed a national news-clipping service throughout much of the 1960's, collecting over a thousand reports of police homicides.[37] Our secondary analysis of a three-year period of these data, however, showed that they yielded substantially lower counts at the state and national levels than the NCHS statistics derived from death certificates, with 53 percent fewer deaths nationally in 1966, 41 percent fewer in 1967, and 56 percent fewer in 1968. In only six states in 1968 did the newspaper count yield a higher figure than the NCHS count. From seven to eleven states showed equal figures from the two counts each year, but all of these had either zero or one death reported per year. Not one state showed consistently higher news-based counts than NCHS counts over the full three-year period examined.

Every data source has certain problems, and what may appear on conceptual grounds to be a major flaw in the collection of data may make little difference in practice. The flaws in news-based

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[36] Even the same exact count from both data sources, however, provides no assurance that all police homicides have been counted. The following table shows how a total count of 25 deaths in one year found in both the police records and the newspapers could be found when the actual number of deaths was 50. A procedure that recorded the names of the victims could capture the deaths in Table cells b and c, thereby raising the total number of deaths counted to 35. But the cases in cell d would go unnoticed, by definition, using these two data sources, as they would in the comparisons of two data sources made in Tables 1 and 2.

Reported in Newspapers

Reported In
Police Files

	Yes		No		Total
Yes	a)	15	b)	10	25
No	c)	10	d)	15	25
Total		25		25	50

[37] *See* Kobler, note 7 *supra*.

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counts of police homicide seem to be serious enough to eliminate them from further consideration as a possibly useful data source for most purposes, and the preceding empirical analysis of those data supports that conclusion. The rest of the article subjects the other two data sources to an empirical analysis designed to answer the three central questions about the adequacy of the measurement they provide.

VITAL STATISTICS AS A NATIONAL MEASURE OF POLICE HOMICIDE

The only nationwide data collection system on police homicide is the vital statistics compilation of death certificate data. Our empirical evaluation of the adequacy of vital statistics as a national measure of police homicide consists of a comparison of a nonrandom, convenience sample of those data to police-generated data matched by place and time at the state level of the jurisdictions examined and the county level for New York City (see Table 1). The thirteen jurisdictions of the comparisons include all those at the state and county level for which we could obtain police generated statistics. In nine of the thirteen jurisdictions (not counting New York City totals) the death counts from police-generated data for the total years available exceed the counts of the vital statistics compiled by the National Center for Health Statistics. In only three of the thirteen do the NCHS figures exceed those based on police-generated data, and in one of those jurisdictions (Nebraska) the difference is only three deaths over three years. Moreover, in the two jurisdictions besides Kings County (Brooklyn) in which NCHS figures are larger, the police-generated data are derived from the supplemental homicide reports to the FBI which the FBI defines as unreliable.[38] The NCHS figure for Kings County is larger than the police figure for two apparent reasons: 1) the Brooklyn medical examiners probably provide full information on the death certificates, as their chief indicated some of his colleagues do, and 2) the Transit Authority Police, Housing Authority Police, and other law enforcement agencies in New York City also kill people, with those deaths possibly included in the NCHS count but definitely not included in the New York City Police Department count.

The most striking aspect of Table 1 is the more than 50 percent underreporting of the NCHS data relative to the police-generated data, not just overall, but also within differing elements of the data:

[38] *See* note 10 *supra*.

TABLE 1

VITAL STATISTICS* AND POLICE-GENERATED DATA ON POLICE HOMICIDES BY JURISDICTION AND YEAR

JURISDICTION	1970 VS	1970 PG	1970 % DIFF	1971 VS	1971 PG	1971 % DIFF	1972** VS	1972 PG	1972 % DIFF	1973 VS	1973 PG	1973 % DIFF	1974 VS	1974 PG	1974 % DIFF	1975 VS	1975 PG	1975 % DIFF	1976 VS	1976 PG	1976 % DIFF	TOTAL VS	TOTAL PG	TOTAL % DIFF
1. Heavily Urban Areas																								
CALIFORNIA[1]	41	46	- 11	56	93	-40	16	76	- 79	37	64	- 42	35	84	- 58	36	87	-59	36	94	-36	257	544	- 53
NEW JERSEY[2]	10	2	+400	8	NA	-	12	NA	-	3	1	+200	10	4	+150	2	NA	-	4	NA	-	23	7	+229
NEW YORK COUNTY[3]	1	NA	-	6	38	-84	0	23	-	10	25	- 60	4	18	- 78	5	23	-78	5	NA	-	25	127	- 80
BRONX COUNTY[3]	2	NA	-	5	13	-62	4	15	- 73	11	14	- 21	3	13	- 77	6	15	-60	7	NA	-	29	70	- 59
KINGS COUNTY[3]	1	NA	-	17	16	+ 6	16	20	- 20	13	12	+ 8	13	9	+ 44	8	8	0	4	NA	-	67	65	+ 3
QUEENS COUNTY[3]	3	NA	-	4	15	-73	2	8	- 75	6	8	- 25	5	6	- 17	1	4	-75	2	NA	-	18	41	- 56
STATEN ISLAND[3]	0	NA	-	0	1	-	2	1	+100	1	0	-	0	1	-	0	2	-	0	NA	-	3	5	- 40
(NEW YORK CITY TOTAL)[3]	17	NA	-	32	83	-61	24	67	- 64	41	59	- 31	25	47	- 47	20	52	-62	18	NA	-	142	308	- 54
																				SUBTOTAL		422	859	- 51
2. Less Urban and Non-Urban Areas																								
ALASKA[2]	1	NA	-	1	NA	-	0	NA	-	0	2	-	0	1	-	1	NA	-	0	NA	-	0	3	-
NEBRASKA[2]	2	NA	-	3	NA	-	2	0	-	3	0	-	3	5	- 40	1	NA	-	1	NA	-	8	5	+ 60
OREGON[1]	2	NA	-	3	NA	-	0	NA	-	2	NA	-	4	9	- 56	2	4	- 50	2	4	-50	8	17	- 53
SOUTH CAROLINA[1]	1	NA	-	5	NA	-	0	NA	-	4	NA	-	8	NA	-	2	NA	-	2	6	-66	2	6	- 66
VERMONT[2]	1	0	-	0	0	-	0	0	-	0	1	-	1	1	0	0	NA	-	0	NA	-	2	2	0
WISCONSIN[2]	1	NA	-	1	4	-75	0	3	-	3	8	- 63	3	7	- 57	4	NA	-	1	NA	-	7	22	- 68
																				SUBTOTAL		27	55	- 51
																				TOTAL		449	914	- 51

A = Not Available

S = Vital Statistics Data

G = Police-Generated Data

1 = PG Data Reported to State Statistical Analysis Center (SAC)

2 = PG Data Reported to FBI on Supplemental Homicide Forms

3 = PG Data Compiled by New York City Police

* Years 1970-73 are taken from published data; 1974-76 data are taken from computer tapes

** 1972 is a 50 percent sample

in New York City (total), in California, in the heavily urban areas grouped together, and in the less urban areas grouped together. According to NCHS national data, the jurisdictions in Table 1 accounted for 25 percent of all deaths by legal intervention of police for 1971–75. Yet these jurisdictions show a combined underreporting of 51 percent during the period 1970–76 (with some years omitted in some jurisdictions). At the very least, then, the total national incidence of police homicide in that period was probably about 26 percent higher than the NCHS data reported.

It is always dangerous to generalize from a nonrandom sample, even when 1) the sample constitutes one-fourth of the count obtained from the entire universe; 2) the bias in much of the sample (California and New York) seems to be toward more professional (and perhaps more complete) reporting by coroners and medical examiners; and 3) the sample shows similar underreporting rates for both heavily urban and less urban areas. If such a generalization were made, however, the 51 percent underreporting rate applied nationwide would yield an estimate of 3,673 police homicides throughout the country during the period 1971–75. Dividing this estimate of police homicides by the total of 101,665 homicides from all causes throughout the country during that period[39] shows that the police may be responsible for 3.61 percent of all homicides—about one out of every twenty-eight. In New York City alone, the figure was even higher: 3.7 percent; in California, it was higher still at 4.18 percent.

Yet it must be stressed that generalizing the underreporting rate is a suspect procedure. There is no way of being certain that death certificates for police homicide are reported as incompletely in the majority of jurisdictions for which we were unable to obtain police-generated data. Moreover, as Table 2 shows, in some big cities the NCHS figures exceed those derived from other sources. Regional variations in rates of both homicide and police homicide further complicate the procedure, as well as the possiblity that regular homicides are also underreported at varying rates.

What Table 1 does suggest is that the NCHS data cannot be used to measure the national incidence of homicide by police officers. Since the police-generated data do not encompass the entire

nation, it is safe to say that this country simply does not know how many of its own citizens it kills each year under the authority of the state.

MEASURES OF RELATIVE INCIDENCE ACROSS CITIES

The second question facing the available data sources is whether they can be used to measure the relative incidence of police homicide from one police department or city to another. The method used here to evaluate the NCHS data for this purpose is to compare those data on decedent's *city of residence* (not place of death)—the only form in which city level data are available—to data obtained from a variety of alternate sources (primarily but not only police-generated data) on the number of people killed by police in each city (place of death) or by the city's main police department (agency responsible for death).[40] There are four sources of error, then, built into this comparison: the place of residence may differ from place of death, place of death may differ from agency responsible for death, place of residence may differ from agency responsible for death, and alternate data sources vary across cities and also change from year to year within cities. In some years up to three different figures from alternate data sources are averaged to obtain the comparison figure reported in Table 2. Given this mixture of both definitions and types of data, the level of agreement for each city in each year is surprisingly high.

Both NCHS and alternate data were obtained for a total of 133 city-years from thirty-six jurisdictions of over 250,000 population (counting New York's five boroughs separately). The raw death counts provided by the two sources of data show a substantial positive association ($r = .64$, $r^2 = .41$, $r_s = .62$, annual data not displayed). When the death counts are standardized by population, the strength of the correlations is reduced somewhat but the Pearson's coefficient remains substantial ($r = .53$, $r^2 = .28$, $r_s = .38$, annual data not displayed). Computations omitting California cities and 1972 data (in which year the NCHS based its statistics on only a 50 percent sample) show insignificant differences from the computations using all 133 city-years. None of the correla-

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[39] VITAL STATISTICS OF THE UNITED STATES, Annual 1971–75.

[40] A list of the alternate data sources used in each city for each year is available from the authors at One Alton Road, Albany, N.Y. 12203.

TABLE 2

MEAN ANNUAL DEATHS AND DEATH RATES FROM HOMICIDE BY POLICE OFFICERS BASED ON
VITAL STATISTICS AND ALTERNATE DATA IN 36 JURISDICTIONS FOR VARIOUS YEARS
FROM 1966 TO 1976.

CITY	NO. OF YEARS COMPARED	MEAN NO. OF DEATHS PER ANNUM		MEAN DEATHS PER 100,000 POP PER ANNUM		RATIO OF MEAN DEATHS PER ANNUM A/VS
		VS*	A**	VS	A	
1. ATLANTA	4	6.25	10.50	1.41	2.37	1.68
2. BALTIMORE	2	3.00	8.00	0.34	0.91	2.67
3. BIRMINGHAM	5	1.80	6.00	0.63	2.10	3.33
4. BOSTON	2	2.00	2.50	0.32	0.40	1.25
5. CHICAGO	7	9.29	33.00	0.29	1.03	3.55
6. CLEVELAND	2	12.50	10.50	1.84	1.55	0.84
7. COLUMBUS	2	2.50	2.00	0.46	0.37	0.80
8. DALLAS	2	10.50	7.50	1.29	0.92	0.71
9. DENVER	2	1.00	4.00	0.19	0.78	4.00
10. DETROIT	3	15.67	29.67	1.13	2.14	1.89
11. DISTRICT OF COLUMBIA	3	4.67	10.67	0.64	1.45	2.29
12. HONOLULU	2	0.00	0.50	0.00	0.07	∞
13. HOUSTON	2	0.50	15.00	0.04	1.14	30.00
14. INDIANAPOLIS	3	7.00	4.00	0.96	0.55	0.57
15. JACKSONVILLE	2	0.50	5.50	0.10	1.05	11.00
16. KANSAS CITY, MO.	3	0.00	3.33	0.00	0.94	0.00
17. LONG BEACH	4	0.50	1.75	0.14	0.50	3.50
18. LOS ANGELES	4	7.50	21.25	0.27	0.76	2.83
19. MEMPHIS	8	0.13	5.25	0.02	0.81	40.39
20. MILWAUKEE	2	1.00	3.00	0.14	0.43	3.00
21. OAKLAND	5	1.40	2.00	0.40	0.57	1.43
22. PHILADELPHIA	11	9.45	14.18	0.50	0.74	1.50
23. PHOENIX	2	0.00	1.50	0.00	0.24	∞
24. PORTLAND	4	0.75	1.00	0.20	0.27	1.33
25. SAN ANTONIO	2	1.00	3.00	0.13	0.40	3.00
26. SAN DIEGO	4	2.00	1.25	0.28	0.17	0.63
27. SAN FRANCISCO	4	2.25	3.25	0.32	0.46	1.44
28. SAN JOSE	4	2.00	1.50	0.41	0.31	0.75
29. SEATTLE	2	1.00	3.50	0.20	0.70	3.50
30. ST. LOUIS	2	4.00	6.50	0.72	1.16	1.63
31. SACRAMENTO	4	3.00	2.00	1.14	0.76	0.67
32. NEW YORK COUNTY	5	5.00	24.80	0.34	1.70	4.96
33. BRONX COUNTY	5	5.80	14.00	0.41	0.98	2.41
34. KINGS COUNTY	5	13.40	13.00	0.54	0.52	0.97
35. QUEENS COUNTY	5	3.60	8.20	0.18	0.42	2.28
36. STATEN ISLAND	5	0.60	1.00	0.19	0.32	1.67
(New York City Total)+	(5)	(28.40)	(61.60)	(0.37)	(0.80)	(2.17)

*VS = Vital Statistics
**A = Alternate Source of Data

+Not included in calculation of statistics

$\bar{x} = 3.59$
$s = 1.98$
$n = 36$

$r = .69$
$r^2 = .48$
$r_s = .67$
$\tau = .50$
$n = 36$

$r = .56$
$r^2 = .31$
$r_s = .44$
$\tau = .31$
$n = 36$

$\hat{b} = 1.66$
$n = 36$

tions, however, account for even half of the variance.

Given the extreme rarity of police homicide events, much of the variation of both data sources for the 133 city-years is probably mere year-to-year statistical instability. As Table 2 shows, none of the jurisdictions in the computations exceeded a mean vital statistics count of sixteen deaths per year, and only four jurisdictions exceeded that level using the alternate data sources. Consequently, both the death counts and death rates per 100,000 are much more stable when their mean levels for all available years (from two to eleven years per city) are employed (Table 2). This procedure increases the correlations between both the death counts and the death rates per 100,000 population provided by the two data sets, but it still leaves over one-half of the variance to be accounted for.

Table 2 also shows that the absolute differences between the NCHS data and the alternate sources are much higher at the city level, or at least in certain cities, than at the state level. Contrary to the ratio of two-to-one found in Table 1, the mean ratio of NCHS to alternate data for the cities in

Table 2 is almost four-to-one. This ratio, however, is heavily influenced by two outlier cases, Houston and Memphis, and is moreover inappropriate to calculate since there are three values of infinity in the data set. A least squares estimate, however, is appropriate, and it yields a $\hat{b}$ of 1.66, which is slightly lower than the two-to-one ratio found in Table 2. Because of the differences in place of death versus place of residence present in the city level data, however, it is questionable whether this ratio or the one derived from Table 1 (which relies much less on city level data) is more appropriate.

On the other hand, eight cities (including Brooklyn) in Table 2 show higher death counts with NCHS data than with the alternate data sources. In three of the eight, the alternate sources of data contain the *Uniform Crime Report* supplementary homicide reports, for which certain cities fail to complete the section describing the circumstances of the homicide. Whatever the reason, the fact that the alternate data do not produce consistently higher death counts prevents any conclusion that the alternate data provide a "better" measure of the relative incidence of police homicides across cities.

Rather, two conclusions about measuring relative incidence are suggested by Table 2. One is that while the two data sets show roughly the same *patterns* of relative incidence, several cities, especially Kansas City, Houston, and Memphis, show radical disagreement. Figure 1 illustrates both the general similarity of the overall pattern and the wide discrepancies in particular cases. The second conclusion is, therefore, that although the data is not accurate enough to be used to compare one specific city to another, either data set might be appropriate to use as a measure of the pattern of variation in police homicide rates in relation to independent variables that might explain that variation. And as Figure 1 demonstrates, there is a great deal of variation to be explained.

MEASURES OF PATTERNED VARIATION ACROSS CITIES

The third question facing the available data sources is whether they provide a reliable measure of patterns of variation. This question is tentatively answered by the interpretations of Table 2 and Figure 1. Since both data sources show roughly the same patterns, it appears more likely that each of them is reliably measuring the true patterns.[41] The level of agreement on the patterns between the two

data sources is low enough, however, so that further empirical comparisons are necessary. Another method of comparison is to examine the correlations of the rates produced by the two data sources with the same theoretically relevant independent variables. If the data sources are both approximating the same patterns, then the rates they produce should yield similar correlations with the independent variables.

Table 3 displays the correlations of the rates from the two data sources with seventeen independent variables from three separate theoretical domains. Many other variables and theoretical domains offer possible explanations for variations in police homicide rates; these variables are offered only as illustrations. A substantive analysis of these correlations is beyond the scope of this article, but the theoretical rationales for and predicted directions of the relationships with the independent variables can be briefly summarized.

Among community characteristics, it can be predicted that population density would be positively related to police homicide rates, both because it is related to other kinds of violence which might prompt police homicide and because shots fired in denser areas are more likely to hit someone (whether or not the person hit is the intended target). Gun density would be expected to be positively related to police homicide because greater gun density should increase the frequency of defense of life situations in which police homicides occur. Unemployment and suicide, as measures of declining social cohesion, would be expected to be positively related to police homicide, given the theory that governmental social control increases as social cohesion declines. It would be expected that the violent index crime rate and the homicide rate would be positively related to the police homicide rate because these rates may increase police perceptions of danger in their work and make them more prone to use violence as a possible preemption of attacks on them. The police per 1,000 population ratio and the violent arrest rate both should be positively related to police homicide, since both of those variables provide an increased risk or exposure of citizens to police use of deadly force.

Among police organizational structure variables, it can be predicted that geographic decentralization (precincts per square mile) would be negatively related with police homicide, since it is associated with a "watchman"[42] style of low-level law enforcement. Administrative intensity (percent

[41] *See* E. WEBB, D. CAMPBELL, R. SCHWARTZ & L. SECHREST, UNOBTRUSIVE MEASURES (1966).

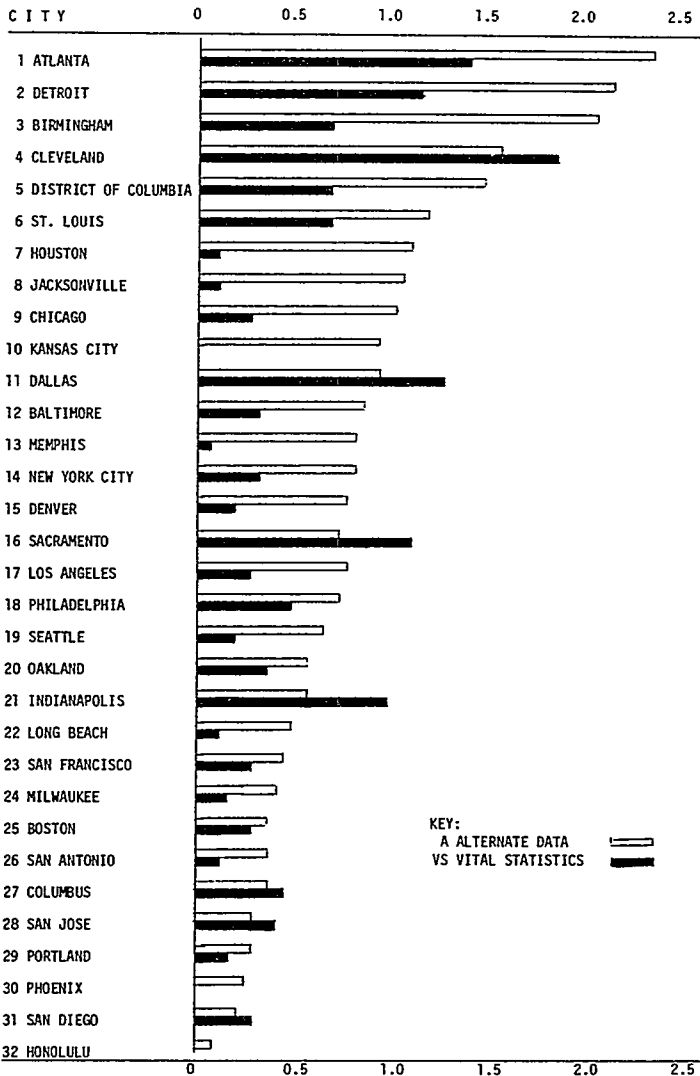[42] *See* J. WILSON, VARIETIES OF POLICE BEHAVIOR (1968).

FIGURE 1
Vital statistics and alternate data mean annual rates of homicide by police
officers per 100,000 population in 32 cities.

of personnel in support units), span of control
(number of supervisors per line officer), differentia-
tion (percent of all personnel in other units than
basic patrol), and self-regulation (percent of per-
sonnel assigned to internal investigations) would
be predicted to be positively related to the police
homicide rate, since all are rough measures of
bureaucratization and more bureaucratized law
enforcement agencies may be expected to mete out
more legal sanctions of all forms, including kill-
ings.[43]

[43] *See* D. BLACK, THE BEHAVIOR OF LAW (1976).

Among police organizational policies, it can be
predicted that the overall arrest rate would be
positively related to the police homicide rate be-
cause every arrest provides an opportunity for the
arrestee to resist arrest, a response that could lead
to a police homicide. One would expect both dis-
ciplinary formalism (the percentage of all com-
plaints of police misconduct that are investigated)
and disciplinary pressure (the percentage of the
complaints investigated that are substantiated) to
be negatively related to police homicide rates, since
police officers may be less likely to kill citizens
where they perceive a greater risk of punishment

TABLE 3

A COMPARISON OF CORRELATIONS OF SELECTED VARIABLES WITH NCHS AND POLICE-GENERATED POLICE HOMICIDE RATES FOR SELECTED YEARS AND CITIES

Independent Variable	Predicted Sign	Correlation (r) With		Matched Cities and Years, Selected Years, 1967-76	
		(1) Annual Mean NCHS Rate of Police Homicides Per 100,000 Population 1974-1976 (N)	(2) Annual Mean Alternate Data Source Rate of Police Homicides Per 100,000 Population 1974-1976 (N)	(3) Annual NCHS Rate of Police Homicides Per 100,000 Pop. (N)	(4) Alternative Data Source Annual Rate of Police Homicides Per 100,000 Pop. (N)
Community Characteristics					
1. Population Density	+	+.08 (48)	+.04 (20)	+.20 (27)	+.15 (27)
2. Gun Density	+	+.28* (48)	+.45* (16)	+.25 (27)	+.54** (27)
3. Unemployment Rate	+	-.20 (47)	-.25 (17)	-.22 (27)	-.35* (27)
4. Suicide Rate	+	-.04 (48)	-.39 (16)	-.11 (27)	-.23 (27)
5. Violent Index Crime Rate	+	+.37** (48)	+.47* (20)	+.40* (27)	+.55*** (27)
6. UCR Homicide Rate	+	+.55*** (48)	+.72*** (20)	+.60*** (27)	+.84*** (27)
7. Police Per 1,000 Population	+	+.45*** (44)	+.50*** (18)	+.31 (24)	+.55** (24)
8. Violent Arrest Rate	+	+.31* (45)	+.42* (19)	+.19 (26)	+.36* (26)
Police Organizational Structure					
9. Geographic Decentralization	-	-.02 (47)	+.08 (19)	+.09 (27)	+.12 (27)
10. Administrative Intensity	+	+.12 (42)	-.31 (17)	.00 (22)	+.08 (22)
11. Span of Control	+	-.10 (43)	+.32 (18)	+.02 (23)	+.25 (23)
12. Civilianization	+	-.23 (42)	-.39 (18)	-.33 (23)	-.48** (23)
13. Differentiation	+	-.13 (43)	-.50* (18)	+.12 (23)	+.05 (23)
14. Self-Regulation	+	+.35* (41)	+.08 (17)	+.37* (23)	+.36* (23)
Police Organizational Policies					
15. Arrests (all offenses) per 100,000 population	+	+.29* (45)	+.40* (19)	+.31 (26)	+.43* (26)
16. Disciplinary Formalism	-	+.10 (37)	+.13 (15)	+.81 (19)	+.06 (19)
17. Disciplinary Pressure	-	-.12 (36)	+.19 (14)	+.02 (18)	-.09 (18)

Key:

* = Significant at .05 level

** = Significant at .01 level

*** = Significant at .001 level

for misconduct in situations where the justifiability of the homicide may be unclear or subject to conflicting opinions.

Table 3 presents the correlations of the 1976 values[44] of most of the independent variables[45] with two sets of the measures of police homicide rates. One set (columns 1–3) is selected to match the data for the independent variables as closely in time as possible, although it uses a three-year (1974–76) annual mean rather than a one-year (1976 only) figure to stabilize year-to-year fluctuations. The consequences of that selection procedure, however, are to reduce the number of cities for which alternate data are available and to bias the alternate data sample heavily in favor of California. While the data for all of the fifty-three cities over 250,000 population for which data on the independent variables were available (up to forty-eight are used to compute the correlations reported in column 1 of Table 3), only data from a maximum of twenty (ten of which are in California) out of the 157 cities over 100,000 population were available to compute the correlations reported in column 2. It is not possible to compute the correlations of the independent variables with NCHS data using only the cities included in the calculation of the same correlations using alternate data sources since up to half of the cities included in the alternate data

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[44] The table does not include gun density and population density, which use a 1974–76 average and 1975 data, respectively. The only year for which data on most of the independent variables were available was 1976.

[45] Variables 1, 7, 9–14, 16, and 17 were computed from POLICE FOUNDATION, POLICE PRACTICES: THE GENERAL ADMINISTRATIVE SURVEY (1978) and POLICE EXECUTIVE RESEARCH FORUM, SURVEY OF POLICE OPERATIONAL AND ADMINISTRATIVE PRACTICES, 1977 (1978); variable 2 was computed from data tapes supplied by the National Center for Health Statistics using the procedure suggested by Cook, *The Effect of Gun Availability on Robbery and Robbery Murder: A Cross-Section Study of 50 Cities*, 3 POL'Y REV. ANN. 743 (1979) and is composed of the average of the proportion of suicides committed with a gun and the proportion of homicides committed with a gun; variable 3 was computed by averaging the percent of the workforce unemployed reported in the U.S. Bureau of Labor Statistics' area trends in January, April, June, September, and December 1976; variable 4 was computed from data tapes supplied by the National Center for Health Statistics; variables 5 and 6 were computed from FBI CRIME IN THE UNITED STATES 1976 (1977); and variables 8 and 15 were computed from data supplied on tape by the Federal Bureau of Investigation. All population figures used to compute 1976 rates were derived from POLICE FOUNDATION, *supra*, and POLICE EXECUTIVE RESEARCH FORUM, *supra*. A complete list of the cities and years included for each correlation is available from the authors.

sources have less than 250,000 population and NCHS figures are therefore unavailable.

The second set of the measures of police homicide rates (columns 3 and 4) provides direct comparisons of the two when correlated with independent variables matched by both year and city for all of the nonrandom convenience sample for which alternate data on police homicide rates were available through the period 1967–76. The consequence of this procedure is to move the data on police homicide rates further away in time from the data on the independent variables, and inconsistently so from one city to the next. Whatever problems this consequence may pose for a substantive analysis, however, it should not be a great hindrance to achieving the present objective of determining whether the two data sources yield similar correlations.

Considering the diversity of procedures employed, the results are remarkably consistent. Overall, the two data sources and data sets tend to yield similar results, with the alternate data sources producing stronger correlations and with most of the correlations in the theoretically predicted directions. When "agreement" is defined as the correlations from both data sets showing the same sign and statistical significance at at least the .05 level, or showing both correlations as not significant regardless of sign, then a comparison of columns 1 and 2 shows 88 percent agreement, and a comparison of columns 3 and 4 shows 65 percent agreement. The level of agreement between columns 3 and 4 would have been even higher if the significance level of the correlations of variables twelve and fifteen with the NCHS data (column 3) had been greater by 1/100th. The generally high level of agreement suggests that both data sources are indeed tapping similar patterns of variation.

The alternate data sources produce stronger correlations more than three times out of four. When only statistically significant correlations are compared, the correlations using alternate data sources reported in column 2 are larger than those using NCHS data reported in column 1 for 87.5 percent of the comparisons; when the nonsignificant correlations are included, the results are almost identical (88.2 percent higher). For columns 3 and 4, the correlations with alternate data sources are greater for 89 percent of the comparisons of statistically significant correlations and for 77 percent of the compaisons of all correlations.

Contrary to the findings on the strength of the correlations, however, the alternate data sources do not produce correlations that are more often in the

theoretically predicted direction. For the significant correlations, 100 percent of those derived from NCHS data are in the predicted direction, while only 86 percent of those in column 2 and 78 percent of those in column 4 (derived from alternate data sources) are as predicted. For all correlations, however, the findings are mixed: a higher percentage of NCHS correlations are as predicted in the first data set (65 percent of column 1 versus 53 percent of column 2), while a higher percentage of the alternate data source correlations are as predicted in the second data set (71 percent in column 4 versus 59 percent in column 3).

The modest degree of overall success of the theoretical predictions (for 89 percent of all the significant correlations and 62 percent of all the correlations), whatever it may say about the adequacy of the theories, lends further support to the conclusion that the data sources measure similar patterns and perhaps that they both measure an actual pattern of variation.

To the extent that these procedures are able to answer the question of whether available data sources adequately measure patterns of variation in police homicide rates, then, the answer seems to be affirmative. Other independent variables, of course, might have been selected that possibly could produce different results. On the basis of the correlations with the variables that were selected, however, the similarity of results between the two data sources suggests that either source might be appropriate for cross-city analysis of patterns. Since the NCHS data are consistently available (though unfortunately only on tape) for all large cities since 1967, this finding is particularly important since it means that at least one complete data set on police homicide can be matched by year to the corresponding data on independent variables. The matching will allow multivariate analysis and other more sophisticated analytic approaches.

CONCLUSIONS

This analysis provides tentative answers to three central questions about the adequacy of current measurement of homicide by police officers in the United States. First, it suggests that the national incidence of police homicide is substantially underreported, possibly by around 50 percent and that the police may account for closer to 3.6 percent of all homicides rather than to 1.8 percent, as previously had been reported. Even these figures, however, are largely speculative. In any case, the analysis strongly suggests that there is no adequate basis for arriving at accurate national estimates of the number of citizens killed by police officers each year.

Second, the analysis reveals many instances in which the *Vital Statistics* data and data from other sources on the number of police homicides in specific cities are in substantial disagreement. This finding suggests the conclusion that none of the available data sources should be used to compare police homicide rates from one particular city to another. Since in any particular city there is a substantial likelihood that the number of police homicides derived from any one data source is in error, comparisons of specific cities are likely to be dangerously misleading.

The most encouraging finding of this analysis is its answer to the third question. Judging from the similarity of the correlations of police homicide rates derived from the *Vital Statistics* and from alternate data sources with theoretically relevant independent variables, both of these data sources seem to be producing the same total patterns of variation across cities. Either data source may therefore be appropriate to use for correlational analysis of the factors associated with those patterns. While the alternate data sources tend to produce stronger correlations, they are only available on a haphazard basis. The *Vital Statistics* data may therefore be preferable for those analytic purposes for which a more complete data set is required.

These three conclusions place previous research on police homicides in a new light. The conclusions of those studies that have employed NCHS data on the national incidence and trends of police homicide[46] should be reevaluated now and treated with great caution. Similarly, those studies of police homicide that have made specific comparisons from one city to another or among a small group of cities also should be used with great caution.[47] Those studies that have focused solely on correlational analysis, however,[48] now can be viewed with greater confidence from the standpoint of measurement, whatever the theoretical quality of the analysis.

The overwhelming implication of this analysis is that our present procedures for measuring homicide by police officers should be improved. Since both the *Uniform Crime Report* system and the *Vital*

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[46] *See, e.g.,* Goldkamp, note 11 *supra*; Takagi, note 4 *supra.*

[47] *See, e.g.,* Harding & Fahey, note 7 *supra*; Milton, note 7 *supra.*

[48] *See, e.g.,* Jacobs & Britt, note 7 *supra*; Kania & Mackey, note 7 *supra*; Uelman, note 7 *supra.*

Statistics system are voluntary, there may be little that can be done with them to improve our national measurement of the absolute incidence of these events. Reporting systems at the state level, required by state law,[49] however, show a great deal of promise, and would probably be the best long-term way to improve the measurement of both the absolute and relative incidence of police homicide across states and cities.

Finally, it is worth noting the irony in this analysis: while the police may have the most to gain by undercounting the number of citizens they kill and while it is true that many police departments fail to undertake any count at all, it is the police that have provided the largest figures on the numbers of citizens killed. For whatever reasons, the source of the undercounting of police homicides is not the police, but rather the local medico-legal officers and the national system of vital statistics. If any general fault or blame is to be assessed on any group for the demonstrably shoddy state of the official measurement of police homicides, the medico-legal officers may be a more appropriate target than the police.

Rather than assessing blame, however, a more useful response would be for all institutions concerned to improve the quality of their data. If the National Center for Health Statistics, the United States Public Health Service, and the American Association for Vital Records and Public Health Statistics revised the Standard Death Certificate to include a check box for police homicide; if the National Center for Health Statistics compiled mortality data by city of occurrence rather than by decedent's city of residence; if police departments published in their annual reports the number of citizens they killed each year; if the Uniform Crime Statistics published the numbers of citizens killed as reported in the supplemental homicide reports supplied by local police departments; and if all state legislatures required local police departments to file a report with a state agency whenever a citizen is killed, it would be much easier to monitor trends and differences in the use and possible abuse of police power. Since some democracies require a written report to the national government every time a police officer draws a weapon,[50] these improvements in the American system for reporting the taking of life would appear feasible.

[49] *See, e.g.,* Minn. Stat. § 626.533(2) (1976), which requires that a report of all firearms discharges by police officers in the line of duty be filed with the Minnesota Department of Public Safety.

[50] *See* Baun, *The Danish Police System,* 1 Police Stud. 53 (1978).