

TITLE: FIREARM INJURY IN A GLOBAL SOCIETY: INTERPRETING INTERNATIONAL FIREARM MORTALITY DATA

PROBLEM UNDER STUDY: A recent The World Health Organization (WHO) report on violence invokes member nations to scientifically and comprehensively adopt tactics to address this global health problem.¹ An important contributor to injury from violent causes is the firearm, yet the global burden of firearm death is not completely known. Firearm injury has impact through mortality, morbidity, and long-term physical and psychological disability and broader family, community, and societal consequences. Firearms and their use are modifiable risk factors,² which if recognized and addressed, could help decrease the burden of violent death. Understanding the magnitude and distribution of firearm deaths should be part of a global public health approach, but this is hindered by inadequate data availability, quality, and comparability.

OBJECTIVES: The purpose was to determine the global nature of firearm violence. To ascertain this, we sought to answer the following questions: 1) Are adequate mortality data available; 2) Can we estimate a global level of global firearm mortality?; 3) Do populations with firearm mortality data differ from those without data? and 4) Are populations without adequate firearm mortality data also affected by firearm violence?

METHODS: A dataset of countries, populations, economic development level, and crude firearm death rates was constructed from public data sources. Available data for the total number of firearm deaths, and homicides, suicides, unintentional, and undetermined were compiled as were crude firearm death rates for each category. The WHO data includes government-reported national vital statistics data regularly reported from 45 participating countries. Data from the United Nations International Study on Firearm Regulations survey³ of 69 member nations were separated into two categories: 1) UNSFR1 if the data were based on vital statistics and all survey categories were completed and 2) UNSFR2 if all survey categories were not complete. For data accessed from more than one source, the order of priority for data use were the WHO vital statistics data, the UNSFR1, then the UNSFR2.

Countries not included in these datasets were assessed, when possible, for other evidence of firearm mortality. Country and population data were obtained from the United Nations year 2000 World Population.⁴ Firearm deaths were accrued at the country level for the most recent year available between 1994 and 2000. Countries were aggregated into seven regions utilizing the World Bank categorization of regions for the year 2000.⁵ Each region was ordered into economic subgroups as classified by the World Bank:⁶ low income, lower-middle income, upper-middle income, and high income.

RESULTS: Data were available for less than 50% of the world's population. A composite, one year estimate of 120,000 reported firearm deaths were found from 65 reporting countries, representing only 35% (65/187) of the possible reporting entities. This is a global minimum of yearly firearm deaths. Significant regional variation was found with reported firearm mortalities highest in Latin America (n=63,895), followed by North America (n=31,452). We found that populations with available firearm mortality data differed from those without. Virtually 100% of populations in the high and upper middle income countries in North America, East Asia and Europe reported firearm mortality data. Populations in other regions and other income levels were poorly represented by firearm mortality statistics. Non-governmental sources of data, such as mortuary statistics, indicated that some populations for whom no systematic data are available do have firearm injury problems. Countries with well reported firearm mortality data differed from those without in a number of demographic elements.

CONCLUSION: Care should be taken when interpreting available international firearm death data as these data are obtained from a limited subset of countries with good data. The absence of data does not indicate the absence of a firearm injury problem. To offset this bias, the use and development of hospital and mortuary statistics in addition to more established surveillance systems is important. Additionally, considering the implications of population differentials and data is necessary to better understand levels and trends of firearm injury globally.

1. Krug EG et al., (eds). (2002). *World report on violence and health*. Geneva: World Health Organization.

2. United Nations (1998). *United Nations International Study on Firearm Regulation*. New York: United Nations.
3. United Nations (1998). *United Nations International Study on Firearm Regulation*. New York: United Nations.
4. United Nations (2000). <http://www.un.org/esa/population/publications/wpp2000/annex-tables.xls>. Table 1. Total population by sex and sex ratio, by country, 2000 (medium-variant).
5. World Bank (2003). List of Economies. <http://www.worldbank.org/data/countryclass/history.htm> [accessed 4/10/03].
6. World Bank (2002). *World Development Report 2003: Sustainable development in a dynamic world*. Oxford University Press.