Methodological Annexe

Introduction

This annexe provides information regarding the methodology used in the *Global Burden of Armed Violence 2011* (GBAV 2011) report. Its main purpose is to describe the production and contents of the GBAV 2011 database on violent deaths, which is presented in Chapter Two (Trends and Patterns of Lethal Violence). The section on Chapter Three (Characteristics of Armed Violence) focuses on the methodology used to produce the graphs and figures on the characteristics of homicide victims and homicides. The following section explains the production of the GBAV 2011 femicide database used in Chapter Four (When the Victim Is a Woman). The final section shows the procedures followed in undertaking the statistical analysis of the relationship between armed violence and development, which forms the foundation of Chapter Five (More Armed Violence, Less Development).

For more detailed information about the databases and datasets, sources, and procedures used, please contact info@genevadeclaration.org.

Chapter One

A Unified Approach to Armed Violence

There is no methodological information for this chapter.

Chapter Two

Trends and Patterns of Lethal Violence

The GBAV 2011 report takes an integrated view of armed violence. It uses comparable national-level estimates of violent deaths and analyses available data from multiple sources to present the first aggregate overview of violent deaths across conflict-related, criminal, and interpersonal forms of violence. The information is available for the period from 2004 to 2009. Most of the data included in the GBAV 2011 database on violent deaths is derived from *incident reporting* systems. Incident reporting encompasses passive surveillance of the number of people reported to have died in violent events through hospital, mortuary, police, or criminal justice data collection.[1]

Certain factors should be taken into consideration when producing a cross-country database on lethal violence based on incident reporting. First, it is important to note that the information on lethal violence is not produced by a single institution in any country; many different data

sources provide figures on different forms of killing. The methodology was thus designed to provide a decision tree for selecting the most reliable source for each country. Second, it should be borne in mind that data on conflict and non-conflict deaths are assembled separately. The GBAV methodology therefore established two different datasets: one on intentional homicides (to cover non-conflict death) and one on direct conflict deaths:

1. **Establishment of a dataset on intentional homicides:** Information on intentional homicides typically stems from criminal justice and public health sources, as well as other national and international sources. These sources were then assembled, generating several country-specific time series from varying sources. The most reliable source for each country was then selected based on careful consideration of a decision tree in order to generate a single figure for each country and year.

2. **Establishment of a dataset on direct conflict deaths:** A single, annual direct conflict deaths figure was generated for each country affected by terrorism or 'main armed conflicts' (see below).

The figures on intentional homicides and direct conflict deaths were combined to provide a single figure on violent death rates for each country and year for the period 2004–09.

Dataset on intentional homicides

This section includes a list of the sources on intentional homicide, starting with the national institutions directly involved in recording information on intentional homicides. These primary sources are principally statistics from criminal justice and public health institutions. Secondary sources do not collect data directly; rather, they combine data received from primary institutions. Reports produced by non-governmental organizations, academic institutions, and international organizations are typical secondary sources. Finally, the United Nations Office on Drugs and Crime (UNODC) has established a cross-country compilation on intentional homicides that includes both primary and secondary sources (UNODC, n.d.a).

Primary sources

Two types of national institutions are directly involved in the production and registration of information on intentional homicides: 1) criminal justice institutions and 2) public health institutions. The first edition of the *Global Burden of Armed Violence* defines homicide as an 'unlawful death inflicted on a person by another person' (Geneva Declaration Secretariat, 2008, p. 68). It is a legal requirement in nearly all countries that every intentional homicide be certified and registered by the **criminal justice system**.

The most important sources of criminal justice data are the statistics of the national police,[2] which produces information on crimes against a person, including homicide. Records and reports from forensic institutes and legal medicine bureaus are additional major sources of information on intentional homicides within the criminal justice system. Reports from forensic institutes often provide detailed information on the context and characteristics of the victim, integrating details from criminal prosecutions. Depending on the structure of the judicial system, information can also be gathered by the ministry of justice, the attorney general, and other law enforcement institutions. In some cases such information is disseminated by the national statistical office.

Death registers of **public health institutions** are the second main category of primary sources for data on intentional homicides. Most countries legally require that every death (and birth) be certified and registered by the public health authorities. The original data for such death registers typically comes from hospitals, health clinics, emergency rooms, and mortuaries. In the best case, data is integrated into a national vital registration system that codes the causes of death according to the International Classification of Diseases (ICD), currently in its tenth revision (WHO, n.d.a). Developed by the World Health Organization (WHO), the ICD provides codes for classifying diseases, injuries, and related health problems and details about the affected individuals.

TABLE 1 ICD definitions of external causes of death (V01–Y98)

Term (ICD code)	Definition
Accident (V01–X59)	Includes transport accidents, falls, exposure to inanimate and animate mechanical forces, accidental drowning and submersion, exposure to fire and other hot substances, exposure to poisoning substances and to other and unspecified factors.
Intentional self-harm (X60–X84)	Includes purposely self-inflicted poisoning or injury, such as self-poisoning, self-harm by hanging, drowning, jumping, crashing, smoke, fire, explosive, blunt and sharp objects, and firearm discharge.
Assault (X85–Y09)	Includes assault by drugs, medicaments, and biological substances, corrosive substance, pesticides, gases and vapours, specified chemicals, and noxious substances; hanging, strangulation, and suffocation, drowning and submersion, firearm discharge, explosive material, smoke, fire and flames, steam, hot vapours and hot objects, sharp and blunt objects, pushing from high place or placing victim before moving object, crashing of motor vehicle, bodily force; sexual assault by bodily force; neglect and abandonment; and other and unspecified means.
Event of undetermined intent (Y10–Y34)	Includes events for which available information is insufficient to enable a medical or legal authority to make a distinction between accident, self-harm, and assault.
Legal interventions and operations of war (Y35–Y36)	Legal interventions include 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. Operations of war include injuries to military personnel and civilians caused by war and civil insurrection.
Complications of medical and surgical care (Y40–Y84)	Includes drugs, medicaments, and biological substances causing adverse effects in therapeutic use, misadventures to patients during surgical and medical care, medical devices associated with adverse incidents in diagnostic and therapeutic use, surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure.
Sequelae of external causes of morbidity and mortality (Y85–Y89)	Circumstances such as the cause of death, impairment, or disability from sequelae or 'late effects', which are themselves classified elsewhere. The sequelae include conditions reported as such, or occurring as 'late effects' one year or more after the originating event.
Supplementary factors related to causes of morbidity and mortality classified elsewhere (Y90–Y98)	These categories may be used, if desired, to provide supplementary information concerning causes of morbidity and mortality. They are not to be used for single-condition coding in morbidity or mortality.

SOURCE: WHO (n.d.a)

The ICD system allows every health condition to be assigned a category and code. When an individual dies, the classification is used to code causes of death in the death certificate. The ICD differentiates between 'natural' and 'external' causes of death; for the latter, it distinguishes among 'accidents', 'intentional self-harm', 'assault', 'collective', 'undetermined intent' and other external causes of death (see Table 1).[3] Intentional homicide is coded in the ICD classification as 'assault' (X85–Y09). In most countries, the national statistical offices collect and disseminate public health information as vital registration statistics.

The quality and coverage of these two primary sources—criminal justice and public health data—vary widely around the world. Sophisticated and comprehensive data recording systems are available in all high-income regions and several low- and middle-income regions; yet in several parts of the world, including many countries in Sub-Saharan Africa, primary source data may not exist at all.

Secondary sources

Various institutions are involved in measuring and monitoring armed violence at the global and local levels, including think tanks, human rights organizations, and crime and violence observatories. These institutions provide analysis and information on intentional homicides at the international and national levels. In most cases, their reports rely on information from primary sources, whose data may not be publicly available. This section describes the main secondary sources included in the dataset on intentional homicides.

Since the early 1970s UNODC has been conducting the United Nations Surveys on Crime Trends and the Operations of Criminal Justice Systems (CTS), which collects information on crime (such as intentional homicides) for all member states

of the UN system. The CTS is the broadest source of information on intentional homicides based on criminal justice data at the international level.[4] Its objective is 'to collect data on the incidence of reported crime and the operations of criminal justice systems with a view to improving the analysis and dissemination of that information globally' (UNODC, n.d.a).

The WHO collects information on deaths that have been registered by national vital registration systems and categorized according to the ICD system. This information is centralized in the WHO Mortality Database, which is the largest single repository of international data on causes of death reported by vital registration systems (WHO, n.d.b). Regional WHO offices also disseminate statistics on external causes of deaths, including assaults; such statistics are maintained in the European Health for All Database and the Pan American Health Organization Regional Core Health Data Initiative (WHO-Europe. n.d.; PAHO, n.d.).

To compensate for data gaps, WHO developed statistical models to estimate broad cause-of-death patterns. These WHO Disease and Injury Country Estimates provide country-level estimates of 'violence' (interpersonal) and 'war' (collective violence). They serve as the starting point for estimating mortality stemming from a comprehensive list of causes, including deaths due to suicide, homicide, and collective violence. In 2004, WHO provided an estimate of violence-related mortality, which it updated in 2008 for all WHO members states (WHO, n.d.c).

In addition to UNODC and the WHO, the Statistical Office of the European Union (Eurostat), UNICEF, and the World Bank have also produced cross-country compilations of homicide information from public health and criminal justice sources.

Eurostat[5] has information on member states of the European Union (EU), EU candidate countries (Croatia, The Former Yugoslav Republic of Macedonia, Turkey), selected EU potential candidate countries (Albania, Montenegro, Serbia), European Free Trade Association/European Economic Area countries (Iceland, Liechtenstein, Norway, Switzerland), and selected other countries (Australia, Canada, Japan, New Zealand, the Russian Federation, South Africa, and the United States) (Eurostat, n.d.a). The TransMONEE Database compiles information on social and economic issues, including homicide rates of Central and Eastern Europe and the Commonwealth of Independent States (UNICEF, 2011). The World Bank Conflict, Crime and Violence database compiles information from both primary and secondary sources (World Bank, 2010).

For Latin America, the Centro en el Instituto de Investigaciones y Desarrollo en Prevención de Violencia y Promoción de la Convivencia Social (CISALVA), the Observatorio Centroamericano sobre Violencia (OCAVI), and the Organization of American States (OAS) have produced products that are useful in the dissemination and analysis of homicide data. Based at the Universidad del Valle in Colombia, CISALVA has developed the Regional System of Standardized Indicators in Peaceful Coexistence and Citizen Security with information from primary sources in Argentina, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, and Uruguay (CISALVA, n.d.). The OAS Observatory on Citizen Security compiles information on homicides registered by the police and other national agencies for OAS members (OAS, n.d.). OCAVI compiles and analyses information from criminal justice sources from the Sistema de la Integración Centroamericana: Belize, Costa Rica,

the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama (OCAVI, n.d.).

Additional information was gathered from national secondary sources, including the Paz Ciudadana Foundation in Chile;[6] the Mexican Instituto Ciudadano de Estudios sobre la Inseguridad, which analyses information from criminal justice sources (ICESI, n.d.); the Centre for Law Enforcement Education in Nigeria, which publishes information from national police annual reports (CLEEN, n.d.); and the Programa Venezolano de Educación–Acción en Derechos Humanos, which analyses information from the annual reports of the ministry of the interior (PROVEA, 2010).

The Global Burden of Diseases Injury Expert Group provided the Small Arms Survey with additional information on death registers (Bhalla et al., 2011). The expert group unites:

> experts and leaders in epidemiology and other areas of public health research from around the world to measure current levels and recent trends in all major diseases, injuries, and risk factors, and to produce new and comprehensive sets of estimates and easy-to-use tools for research and teaching. It is led by a consortium including Harvard University, the Institute for Health Metrics and Evaluation at the University of Washington, Johns Hopkins University, the University of Queensland, and the World Health Organization (GBD Injury Expert Group, n.d.).

In countries with limited governmental capacity, where primary source data may not exist, randomized household surveys are often used to provide data on mortality, morbidity, and other indicators.[7] Data stemming from household surveys is *not* incident reporting; only in unusual cases is comparable survey data available within or across selected countries. Rather, household

survey data often provides a narrow cross-sectional snapshot of a given situation. Trends in armed violence are thus more difficult to evaluate and data is seldom developed in ways that allow practitioners to design—or measure the impact of—armed violence prevention and reduction efforts. Nevertheless, household surveys may fill gaps in the absence of primary sources.

Compilation of sources

The UNODC homicide statistics provide data on homicide levels, trends, and contextual characteristics drawn from a variety of national and international sources relating to homicide. Stemming from primary and secondary sources, they cover 207 countries and territories (UNODC, n.d.b). The Small Arms Survey used the UNODC homicide statistics as a starting point to develop a cross-national dataset on intentional homicides for the GBAV 2011 report.[8]

The Small Arms Survey supplemented the UNODC homicide statistics with additional primary and secondary sources. Additional information was gathered from media articles, academic reports, and other documents available online. The Small Arms Survey also contacted numerous country representatives and national institutions, such as national police and statistical offices, which provided essential clarifications and contributions regarding data from primary sources on intentional homicides. Such contacts were made with institutions in Anguilla, Antigua and Barbuda, Australia, Chile, France, Liberia, Mexico, Nauru, Peru, the Seychelles, Spain, Suriname, and the United Kingdom, among other countries.

Overall, the Small Arms Survey gathered a total of 2,437 figures for 199 countries for the six-year period 2004–09. Table 2 lists the number of primary and secondary sources of information on intentional homicide.

TABLE 2 Sources on intentional homicides

Primary sources	
National police	247
National statistical office	191
Ministry of the interior	23
Ministry of justice	22
Ministry of health	8
Attorney general	13
Total primary sources	**504**
Secondary sources	
CTS	513
WHO	311
Global Burden of Diseases Injury Expert Group	305
WHO–Health for All Database	233
Pan American Health Organization	155
Eurostat	86
TransMONEE	66
Academic reports and media reports	59
INTERPOL (data provided to UNODC)	53
CTS persons killed	46
OAS	42
Non-governmental and academic organizations	64
Total secondary sources	**1,933**
Total sources	**2,437**

Determination of a single figure per year for each country

Once all the sources had been compiled in the dataset on intentional homicides, a single homicide figure needed to be identified for each country for every year under review. For the majority of

countries, several time series from different sources were available; in those cases, the most appropriate source per country was selected in one of four ways:

1. **Single source:** Whenever only a single source was available for a country, it was automatically selected. Efforts were then made to identify complementary sources for triangulation purposes. Only one source was available for 32 countries (16 per cent of the total). In most of the cases (28), the available figures were drawn from WHO estimates (WHO, n.d.c); the remaining four came from national statistical offices or UNODC's CTS.

2. **Longest time series:** If more than one source was available, the source with the longest time series was selected in the interest of consistency. To be selected, a source needed to cover at least five of the six years under review. This procedure was carried out with respect to 96 countries (48 per cent of the cases).

3. **Best of several long time series:** Several long time series were available for 24 countries (12 per cent of the total); in these cases, preference was given to one source based on the following criteria:

   - clarity: definitions of what includes homicide are clear;
   - consistency: time series are characterized by regular reporting; consistent scoring methods; up-to-date reporting; and disaggregation of data; and
   - accessibility: data is publicly available and sources are transparent.

4. **Combination of sources:** No long time series were available for the remaining 47 countries (23 per cent of the total). In these cases, several sources were combined.

Confidence in final intentional homicides figures

The sources of data on intentional homicides vary significantly. Many of the countries exhibiting the most severe variations in reporting—or no variation at all if only a single source is available—are in Sub-Saharan Africa. In Côte d'Ivoire, for example, the average reported violent death rate for 2008—the year in which the homicide rate peaked—ranges from 0.38 (according to the CTS) to 52.46 (estimated by WHO) per 100,000. Such variation can be attributed to the poor quality and coverage of incident reporting and wider service delivery systems.

Administrative data in many Sub-Saharan African countries is unreliable or non-existent. Public health and criminal justice specialists frequently assume a high level of undercounting in such settings. As noted by UNODC:

> Due to problems related to access to justice, only a fraction of the crime experienced in Africa is reported to the police, and, looking particularly at serious crimes, African countries have some of the lowest reporting rates when compared internationally (UNODC, 2005, p. xi).

This still holds true today.[9] Countries with extreme variations in reported intentional homicides were treated with caution. In the absence of a comprehensive dataset for these countries, available sources were usually combined to generate a final estimate. In spite of these efforts, confidence in some country estimates remains low. Map 1 shows the confidence level in the final estimate of the countries' intentional homicide rates. The confidence index was calculated based on a points system, using the following criteria:

■ **Variation among sources:** The lower the variation among sources, the higher the confidence level. If only a single source was available, rendering comparisons impossible, the confidence level of the final figure was low.

■ **Number of sources:** The more sources, the higher the confidence level.

■ **Length of time series:** Countries with long time series were assigned a higher confidence level than countries whose estimate was based on data that only covered a few years.

■ **Source quality:** Sources that publish internationally comparable data, and that provide clear definitions of what is monitored, were accorded higher confidence levels than estimates from WHO.

If a country was accorded a very low or low overall confidence level on the basis of the points system above, contextual information was consulted to gain a more nuanced understanding of its levels of lethal violence. If that information confirmed the approximate level of the final estimate of intentional homicides, country confidence levels were adjusted.

Few of the countries with low or very low confidence levels provide any data at all; in 27 cases, rates of lethal violence are based exclusively on WHO estimates. Of the nine countries in

MAP1 Confidence levels of intentional homicide rates

Very low
Low
Medium
High
No information
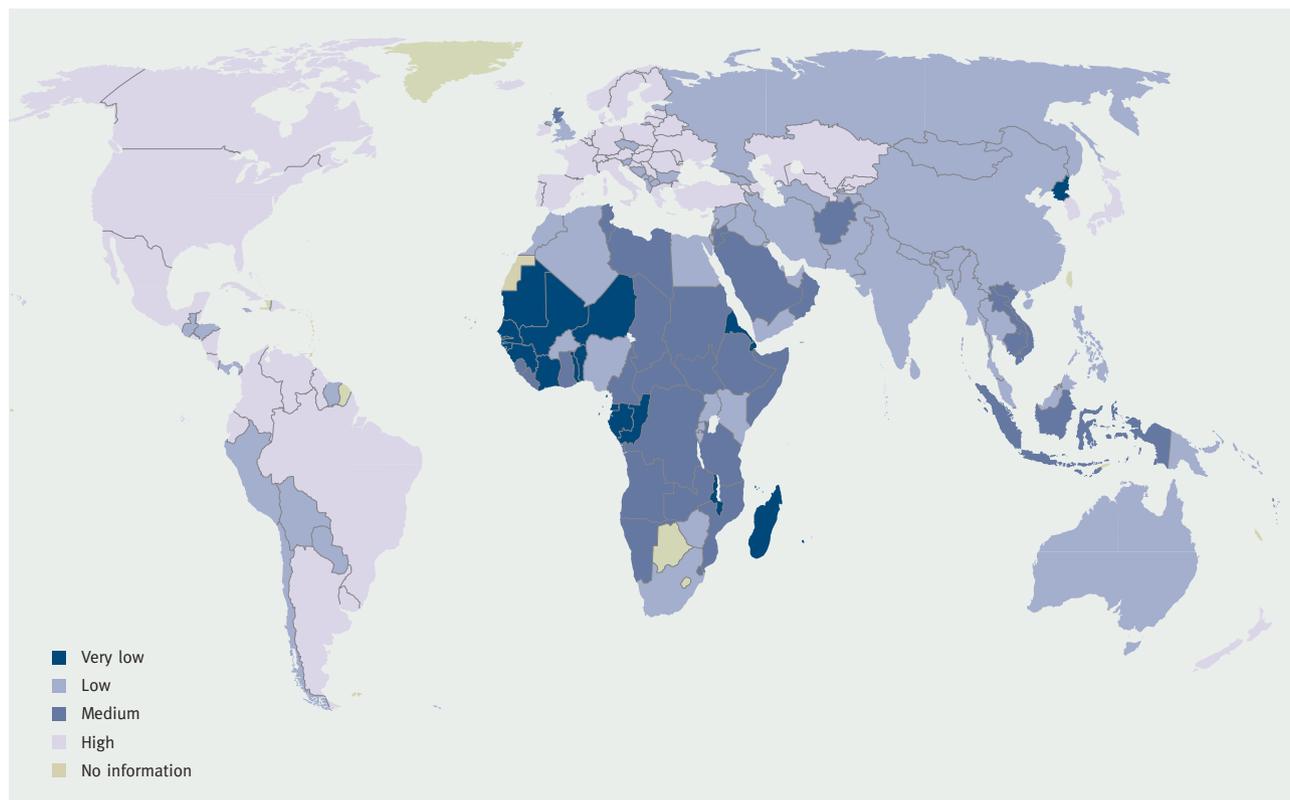
'Middle Africa' (Angola, Central African Republic, Cameroon, Chad, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Republic of the Congo, and São Tomé and Príncipe), seven do not provide any administrative data at all. Six of the seven provided data based on WHO estimates; the remaining one relied on information from the Ibrahim Index of African Governance 2008 (Rotberg and Gisselquist, 2008). This data must therefore be interpreted with caution, especially wherever it appears to undercount incidents of lethal violence.

Dataset on direct conflict deaths

The dataset on direct conflict deaths is also based on incident reporting. It does not feature other approaches to measuring direct conflict deaths, such as victimization and epidemiological surveys and multiple systems estimation, which are methodologies that seek to provide more complete estimates of the death toll by the implementation of advanced demographic and statistical techniques (Geneva Declaration Secretariat, 2008, p. 11).

The GBAV 2011 suffers from limitations with regard to estimating levels of violence in countries affected by armed conflict; the level of coverage is sparse and data is often censored. Factions taking part in armed conflicts are also likely to apply political pressure to distort information and encourage underreporting to minimize the perceived scale of fighting and human suffering. In many contemporary war zones, such as Somalia or northern Pakistan, media and NGO coverage is sparse and limited, official statistics are not kept, and survival takes priority over data gathering.[10]

Main armed conflict

In creating the dataset on direct conflict deaths, the first step was to select 'main armed conflicts' based on two criteria:

- ■ the average intensity of the armed conflict exceeds a direct conflict death rate of 1 per 100,000 or 100 direct conflict deaths per year for the period 2004–09; and
- ■ the conflict appears in at least five of the following 15 datasets or reports on armed conflicts and country instability:

1. the Armed Conflict Database of the International Institute for Strategic Studies (IISS, n.d.);

2. the *Armed Conflicts Report* of Project Ploughshares (Project Ploughshares, n.d.);

3. the Battle Deaths Dataset version 3.0 of the Peace Research Institute Oslo (Lacina and Gleditsch, 2005);

4. the *Conflict Barometer 2009*: 'High-Intensity Violent Conflicts in 2009' of the Heidelberg Institute for International Conflict Research (HIIK, 2009);

5. 'Crisis Watch No. 81' (ICG, 2010);

6. the *Global Peace Index 2009*, identifying 20 countries with the lowest rank (Vision of Humanity, 2009, pp. 10–11, table 2);

7. the 'Highest Estimated Risk for Instability 2008–2010' (Hewitt, Wilkenfeld, and Gurr, 2010, p. 8, table 2.1);

8. the *Index of State Weakness in the Developing World 2008*: 28 countries at the bottom quintile (Rice and Patrick, 2008, pp. 10–11, table 2);

9. *Kriege und bewaffnete Konflikte 2009* (Wars and Armed Conflicts of 2009) of the Institut für Friedenspädagogik (Schreiber, 2009);

10. Major Episodes of Political Violence, 1946–2011 (CSP, n.d.);

11. Political Terror Scale Ratings 1976–2010 (PTS, n.d.);

12. 'State Failure: Internal Wars and Failures of Governance, 1955–Most Recent Year' of the Political Instability Task Force (PITF, n.d.);

13. the *State Fragility Index and Matrix 2008*: countries with a state fragility score higher than 15 (Marshall, Goldstone, and Cole, 2009, pp. 1–2);

14. the state, non-state, and one-sided violence databases of the Uppsala Conflict Data Program (UCDP, n.d.a; n.d.b.; n.d.c.); and

15. *Stockholm International Peace Research Institute Yearbook 2009*: 'Patterns of Major Armed Conflicts, 1999–2008' (SIPRI, 2009).

The final list includes 29 main armed conflicts for the period 2004–09:

1. Afghanistan
2. Algeria
3. Burundi
4. Central African Republic
5. Chad
6. Colombia
7. Côte d'Ivoire
8. Democratic Republic of the Congo
9. Ethiopia
10. Georgia
11. India
12. Indonesia
13. Iraq
14. Kenya
15. Lebanon
16. Myanmar
17. Nepal
18. Nigeria
19. Pakistan
20. Palestine
21. Philippines
22. Russian Federation
23. Somalia
24. Sri Lanka
25. Sudan
26. Thailand
27. Turkey
28. Uganda
29. Yemen

Data on direct conflict deaths

Data on direct conflict deaths was compiled for the above-mentioned 29 countries that suffer from a main armed conflict as well as for an additional 37 countries. These countries feature among the following **cross-country datasets**, which contain information on direct conflict deaths:

- the Armed Conflict Database of the International Institute for Strategic Studies (IISS, n.d.);

- the *Armed Conflicts Report* of Project Ploughshares (Project Ploughshares, n.d.);

- the Battle Deaths Dataset version 3.0 of the Peace Research Institute Oslo (Lacina and Gleditsch, 2005);

- 'State Failure: Internal Wars and Failures of Governance, 1955–Most Recent Year' of the Political Instability Task Force (PITF, n.d.); and

- the state, non-state, and one-sided violence databases of the Uppsala Conflict Data Program (UCDP, n.d.a; n.d.b; n.d.c).

Once all the data had been entered into the dataset on direct conflict deaths—which now contained a total of 66 countries for the time period 2004–09—one single time series had to be identified per country. This step involved comparing different data sources with regard to the number of

direct conflict deaths for each country and year.[11] In addition, research was undertaken to include figures from the following national datasets, which record the number of direct conflict deaths in specific countries:

- Afghanistan and Iraq (iCasualties, n.d.a; n.d.b);
- Colombia (CERAC, 2011);
- Iraq (Iraq Body Count, 2008; 2009);
- Nepal (INSEC, n.d.);
- Palestine (B'Tselem, n.d.);
- Somalia: Elman Peace Center (n.d.); and
- South Asia: India, Nepal, Pakistan, and Sri Lanka (SATP, n.d.a; n.d.b; n.d.c; n.d.d).

The best estimate of direct conflict deaths for each country and year was determined based on a combination of data from cross-country data-sets and national datasets. If the differences between the maximum and minimum figures from these datasets were relatively small, the average of these two numbers was taken to pro-duce the final estimate on direct conflict deaths for a country. If figures varied widely across the datasets, one figure was selected based on con-textual information about the levels of violence in each conflict. Such contextual information was retrieved from the following human rights reports, media accounts, and academic publications:

- Afghanistan: Bohannon (2011), Livingston, Messera, and O'Hanlon (2010), IRIN (2010), ISAF (2011), UNAMA (2010);
- Chad: AlertNet (2010), BBC (2009), Kaya (2009);
- China: Reuters (2009);
- Democratic Republic of the Congo: Global Security.org (n.d.);

- Iraq: Tavernise and Lehren (2010), Iraq Body Count (n.d.);
- Somalia: Reuters (2007); and
- Country profiles:

  - Amnesty International reports (AI, 2009; 2010);
  - British Broadcasting Company country profiles (BBC News, n.d.);
  - *Economist* country briefings (*Economist*, n.d.);
  - Human Rights Watch reports (HRW, 2009; 2010; 2011);
  - US Central Intelligence Agency World Factbook (CIA, n.d.); and
  - US Department of State country profiles (USDoS, 2009; 2010; 2011).

Data on victims of terrorism

A number of datasets on direct conflict deaths also provide annual estimates of terrorist victims, which tend to vary widely.[12] A review of three main datasets that record victims of terrorism—the Global Terrorism Database (GTD), the National Counterterrorism Center (NCTC), and UCDP's one-sided violence datasets—finds that the vast majority of casualties of terrorism are killed in conflict settings in one of the 29 countries suf-fering from a 'main armed conflict'. As the GBAV 2011 report notes, '98.2 per cent of all victims of terrorism reported by NCTC for the period 2004–09 were attacked in a main armed conflict' (Geneva Declaration Secretariat, 2011, p. 47). In order to avoid double counting, terrorism victims listed in these three datasets were not added to the 29 countries in the dataset on direct con-flict deaths.

Outside main armed conflicts, victims of terror-ism are included on the basis of a review of the

information provided by the GTD, NCTC, and UCDP. They include, for example, the 191 people killed in the Madrid bombings in 2004; the 88 victims in Sharm el-Sheikh in 2005; and the 60 people killed in Amman in 2005 (Povey et al., 2009, p. 10). In all, information on terrorism victims in 58 countries was added to the dataset on direct conflict deaths.

GBAV 2011 database on violent deaths

In order to generate a comprehensive database on violent deaths, the two datasets on intentional homicides and on direct conflict deaths were merged. In other words, the number of intentional homicides and the number of direct conflict deaths were combined. In a first step, the intentional homicide rates were transformed into numbers. In a second step, the number of direct conflict deaths was added. In a last step, the final numbers of violent deaths for the years 2004–09 were transformed into violent death rates. Population data from the UN Population Division was used to produce these violent death rates (UN, 2010).

In total, the GBAV 2011 database contains 199 countries and territories. It includes 189 of the 193 UN member states (UN, n.d.); it excludes San Marino and Tuvalu (due to a lack of data) as well as South Sudan, which had not yet declared independence when the database was compiled. Consequently the figures on Sudan also refer to the territory of South Sudan. The UK is not included as a single country but rather as three territories. Ten non-UN members were added (Anguilla, Bermuda, Guam, Hong Kong, Palestine, Puerto Rico, Reunion, and the three UK territories: England and Wales, Northern Ireland, and Scotland). In the final database, 15 small countries were split into two regions: the Lesser Antilles Region and the Micronesia Region.[13] The final data-

base contains the violent death rate for an average year between 2004 and 2009 for each country.

The composition of macro-geographical (continental) regions and geographical sub-regions is based on the categorization of the United Nations Statistics Division (UNSD, n.d.b).

Chapter Three

Characteristics of Armed Violence

Collection and analysis of homicide typology data

Data on the context of homicides was collected through direct communication with national authorities and from publicly available information released by national police, ministries of justice and the interior, crime and violence observatories, and national statistical offices. The definitions for 'organized crime', 'gangs', 'intimate partner or family', and 'robbery' provided in Chapter Three were finalized in the course of direct communication with national authorities. Publicly available data using national terms was included in calculations as long as such terms fell within these definitions.

If more than 50 per cent of a country's data on intentional homicides corresponded to any or all three identified typology categories—'intimate partner or family', 'robbery or theft', and 'gangs or organized crime'—then that country was included in the pie charts presented in Figure 3.1.[14] Data for all countries in the figure corresponds to 2010 or the latest available year (but not prior to 2002). Wherever possible, data on homicide typology was collected in the form of homicide counts. Data provided according to national terminologies was assigned to the three categories of 'intimate partner or family'', 'robbery or theft', 'gangs or

organized crime' as appropriate, and data under all other national terms not falling within any of these categories was assigned to the 'other' category. The 'unknown' category was constructed from data specifically reported as unknown, or as the difference between the sum of all categories and the total number of homicides on a country-by-country basis.[15]

The pie charts presented in Figure 3.1 correspond to the mean (non-population-weighted) of country homicide percentages for each of the five categories ('intimate partner or family', 'robbery or theft', 'gangs or organized crime', 'other', and 'unknown').

Collection and analysis of firearm homicide data

Data on homicides committed with firearms was collected through direct communication with national authorities, from publicly available data released by national sources, and from the 11th and 12th CTS, covering the years 2003 to 2009 (UNODC, n.d.a). Wherever possible, data on firearm homicides was collected in the form of homicide counts and calculated as a percentage of the total known number of homicides. Data consistency criteria were set in terms of time-series consistency and regional patterns; country data that did not meet such requirements was excluded from the analysis, if a valid explanation for deviations was not available.

Figures 3.7, 3.8, and 3.9 reflect firearm homicide figures from 2009 or the latest available year (but not prior to 2000). Firearm homicide data used in Chapter Three was consolidated and published by UNODC in its 2011 *Global Study on Homicide* and the 2011 homicide statistics update available on the UNODC website (UNODC, 2011; n.d.b).[16]

Collection and analysis of data on homicide case attrition

Data on homicide case attrition was drawn from the 11th and 12th CTS (UNODC, n.d.a). Data reported on the number of intentional homicide offences, persons suspected, persons prosecuted, and persons convicted was extracted by country and averaged for the latest available minimum two-year period between 2003 and 2009. The latest two-year average number of recorded homicide offences was set to '100' for each country and the percentage of suspects of offences calculated. Persons prosecuted and persons convicted, as a percentage of suspects, were subsequently calculated. Non-population-weighted means were calculated for each relevant percentage from all countries, by region.

The countries included in Figure 3.11 are: Canada, Costa Rica, Guatemala, and Mexico (Americas); Armenia, Azerbaijan, Cyprus, India, Israel, Kyrgyzstan, and Mongolia (Asia); Belarus, Bulgaria, Czech Republic, Finland, Hungary, Italy, Latvia, Lithuania, Moldova, Norway, Portugal, Romania, Slovenia, and Sweden (Europe).[17]

Chapter Four

When the Victim is a Woman

Levels and characteristics of femicide, discussed in Chapter Four, were based on detailed information on the mortality of women and girls due to violence in the period 2004–09. This section describes how the GBAV 2011 femicide database was compiled, identifies the sources used, and presents the methodology employed to produce estimates of femicide numbers and rates at the regional and the global levels. This section also includes the procedure followed to calculate the female population by country.

Datasets and sources

In order to capture all the manifestations of femicide, the analysis undertaken for Chapter Four drew on information stemming from three independent international datasets established at the Small Arms Survey. These datasets provide detailed information on the characteristics of the female victims, the context of femicides, and the events themselves, including information about the perpetrators of violence and the instrument used to inflict injury and death. These three datasets are:

■ **Female homicides dataset:** This dataset contains absolute values and rates for 111 countries, covering most world regions (no data was found for Middle or Western Africa). Data from countries or territories in the Caribbean region were grouped into the Lesser Antilles region (see endnote 13). The total number of countries and territories in this dataset was therefore 104. This dataset is based on the sources and methodologies described for the 'GBAV 2011 intentional homicide dataset'; it was completed with extra sources at the national level as well as large cross-country databases that account for levels and rates of violence against women in the world, including the database developed by the Homicide Advisory Group at Harvard University,[18] a study on femicide carried out by the Queen Sofía Center in Spain,[19] and the United Nations Economic Commission for Europe database on gender statistics.[20] Femicide rates represent an average for the period 2004–09. This 'smoothing' of data reduces extreme high and low points as well as the distortions resulting from gaps in data series. Wherever possible, country data from a single source was used for the period 2004–09. In some cases, different sources may provide data for different years for the same country. For some countries it was possible to identify data for only one year during the observed period.

■ **Intimate partner violence-related femicides dataset:** This database includes information on 54 countries or territories. The broad category of intimate partners includes all sexual partners—such as current and former spouses or partners—as well as other close family members if involved in an intimate relationship with the victim. Sanmartín et al. (2010) served as a major international source of information and was supplemented by other sources at the national level. The data represents an average of the period 2004–09.

■ **Femicides committed with firearms dataset:** Information is available for 24 countries. The data was retrieved from all sources mentioned for the GBAV 2011 femicide database.

Estimating the global burden of femicide

As noted in the previous section, information on femicides and rates is only available for 104 countries or territories. In order to calculate regional and global estimates of the number of female victims, it was thus necessary to assign femicide numbers and rates to countries for which information was lacking or incomplete.

This was done as follows: first, average regional rates were calculated on the basis of data from available countries. Estimates for countries with missing information were calculated based on their female population by applying femicide rates for the regions to which they belonged. Values for regions with missing information were estimated using the same procedure, by applying the global femicide rate (calculated on the basis of available information) to the region population. Estimates on regional and global femicide counts and rates could thus be established.

Estimating the female population

Female population figures are not available from any single country. In order to generate cross-country comparable rates, female–male population ratios from the UN Population Division were applied to country population estimates, also available from the UN Population Division (and used for the calculation of all rates in the GBAV 2011) (UNdata, n.d.; UN, 2010). As with the GBAV 2011 database on violent deaths, the composition of macro-geographical (continental) regions and geographical sub-regions is based on the categorization of the United Nations Statistics Division (UNSD, n.d.b).

Chapter Five

More Armed Violence, Less Development

In its analysis of the relationship between armed violence and development, Chapter Five makes use of statistical information on armed violence and indicators of development. This section presents the data used as well as the statistical procedures followed in the analysis.

Databases and sources

The information used in Chapter Five can be classified in two broad groups: information on armed violence and information on development.

Armed violence data

The indicators of armed violence used in this chapter are the number of intentional homicides and direct conflict deaths. The numbers for the years 2004–09 were retrieved from two datasets—one on intentional homicides and one on direct conflict deaths, both of which are described

above. Chapter Five makes use of information on the number of intentional homicides dating back to 1986. Data for the period 1986–2003 was provided directly by UNODC; coverage varies from country to country and year to year.[21]

This study makes use of the World Bank's classification of countries by income group (World Bank, n.d.a). Countries are classified by their homicide rates according to three intervals: low homicide rates (<7.25 per 100,000 population), high homicide rates (7.25–18.57), and very high homicide rates (>18.57). These ranges correspond to the mean and the mean plus one standard deviation of the world distribution of homicide rates in 1986–2009.

Development indicators

Development information includes indicators for the achievement of the Millennium Development Goals (MDGs), World Development Indicators of the World Bank, and the Human Development Index (HDI) from United Nations Development Programme (UNDP). By January 2008, there were 60 official indicators for monitoring progress of all eight MDGs and 171 variables with disaggregated information for the 21 targets (UNSD, n.d.a; n.d.c).[22] The information is available for 232 countries, covering the period 1990 to 2008. The following 21 MDG indicators were selected from the original list in view of the availability and relevance of the information:

1. population below USD 1 per day (Purchasing Power Parity (PPP), percentage);
2. poverty gap ratio at USD 1 per day (PPP, percentage);
3. poorest quintile's share in national income or consumption (percentage);
4. employment-to-population ratio (15+, total, percentage);

5. children under five moderately or severely underweight (percentage);

6. children under five severely underweight (percentage);

7. unemployment, youth total (percentage of total labour force ages 15–24);

8. unemployment, youth male (percentage of male labour force ages 15–24);

9. unemployment, youth female (percentage of female labour force ages 15–24);

10. literacy rate (youth total, percentage of people ages 15–24);

11. total net enrolment in primary education;

12. share of women employed in the non-agricultural sector (percentage of total non-agricultural employment);

13. ratio of girls to boys in primary and secondary education (percentage);

14. mortality rate (under five, per 1,000);

15. mortality rate (infant per 1,000 live births);

16. adolescent fertility rate (births per 1,000 women ages 15–19);

17. births attended by skilled health staff (percentage of total);

18. prevalence of HIV (total, percentage of the population ages 15–49);

19. improved water source (percentage of the population with access);

20. improved sanitation facilities (percentage of the population with access); and

21. slum population (percentage of the urban population).

Three of the World Bank's World Development Indicators were used:

■ gross national income per capita, PPP, available for 178 countries for 1960–2008;

■ poverty headcount ratio at the national poverty line (as a percentage of the population), available for 91 countries for 1960–2008;

■ ratio of girls to boys in primary and secondary education (percentage), available for 189 countries for 1960–2008 (World Bank, n.d.b).

The UNDP indicator used is the Human Development Index available in the 2009 *Human Development Report* (UNDP, 2009), which provides information for 182 countries.[23]

Statistical methods used

Several methods were used to assess the relationship between armed violence and development, starting with basic scatter plots—which allow for visual comparisons of pairs of values—and continuing with statistical correlations to confirm the relationships. Econometric models allow for a more formal formulation of relationships and isolation of additional aspects that affect development.

Statistical correlations

A correlation coefficient is a descriptive measure of the strength of association between two variables. Values of the correlation coefficient are always between -1 and +1. A value closer to +1 indicates that the two variables are perfectly and directly related. Values of the correlation coefficient close to zero indicate that variables are not related.

The analysis calculated the Pearson, Spearman, and Kendall correlation coefficients. The latter two reduce the leverage of outliers (extreme values). The Pearson coefficient is parametric and departs from the assumption of a normal distribution of data. The other two coefficients—Spearman and Kendall—are non-parametric, making them more suitable for the purpose of this research.

One limitation of the correlation analysis is the potential presence of serial dependence (across countries in this case) or even time-specific dependence. In order to determine whether these factors exert an influence, a robustness check was carried out; no particular anomalies were found in assessing the regions or the exclusion of years in the sample.

It is important to stress that the correlation coefficient does not permit the identification of causal links (the direction of causation of the relationship) nor of the causal channels or mechanisms through which the relationship occurs.

Econometric models

Econometric models were implemented in order to provide more formal conclusions regarding the relationship between armed violence and development. For more information on these econometric models, please contact info@ genevadeclaration.org.

Logit model: This 'binary outcome model' makes it possible to capture the size and statistical importance of factors that potentially affect the likelihood of HDI change. Its dependent or left-hand side variable is dichotomous, taking the value of 1 if a country shows an improvement in the indicator during the 2000–09 period.

The logit model does not assume that the response probability is linear in a set of parameters; instead, it specifies a different functional form for this probability as a function of regressors, which is a cumulative distribution function for a standard logistic random variable.

Zero-score regression analysis: It is useful to gauge whether the normalized homicide level has an effect on the normalized HDI level after controlling for other influences. A zero-score regression was used with a normalized HDI level as an independent variable, and the level of lethal violence, measured in quintiles, as a dependent variable.

Abbreviations

CISALVA	Centro en el Instituto de Investigaciones y Desarrollo en Prevención de Violencia y Promoción de la Convivencia Social
CTS	United Nations Surveys on Crime Trends and the Operations of Criminal Justice Systems
EU	European Union
EUROSTAT	Statistical Office of the European Union
GBAV 2011	*Global Burden of Armed Violence 2011*
GTD	Global Terrorism Database
HDI	Human Development Index
ICD	International Statistical Classification of Diseases and Related Health Problems
IISS	International Institute for Strategic Studies
MDG	Millennium Development Goal
NCTC	National Counterterrorism Center
OAS	Organization of American States
OCAVI	Observatorio Centroamericano sobre Violencia
PAHO	Pan American Health Organization
PPP	Purchasing Power Parity
UCDP	Uppsala Conflict Data Program
UNDP	United Nations Development Programme
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization

Endnotes

1   See Geneva Declaration Secretariat (2011, p. 48, figure 2.2).

2   Depending on the structure of the security system of each country, police can comprise different components, such as gendarmerie, judicial police, federal police, or national guard.

3   'Collective' external causes of death include legal interventions and operations of war.

4   The CTS also provides information on the number of persons killed, rather than just on events.

5   Eurostat 'received a mandate under the 2004 Hague Program to develop comparable statistics on crime and criminal justice'; the organization provides data on intentional homicides for many of the EU member countries (and beyond) (Eurostat, n.d.b).

6   The Paz Ciudadana Foundation produces yearly reports on crime, which includes information from the attorney

general and the ministry of the interior (Fundación Paz Ciudadana, 2011).

7 See, for example, Pézard and de Tessières (2008).

8 The information is presented in the 2011 *Global Study on Homicide* (UNODC, 2011); data used in the report, as well as a selection of sources listed by country, is available on UNODC's website (UNODC, n.d.b). The Small Arms Survey had access to this UNODC information before the 2011 *Global Study on Homicide* was published.

9 In this context, any available administrative data usually suffers from significant underreporting as well. For Cameroon, for example, the CTS reports a homicide rate of 5.36 in 2006 and 2.28 in 2007, while WHO estimates a rate of 19.40 in 2008.

10 For a discussion of the challenges and limitations of methodologies used to measure the death toll in conflict zones, consult the Geneva Declaration Secretariat (2008, pp. 9–30) and Wille and Krause (2005).

11 This process included a comparison of figures for intra-state conflicts; in the case of India, for example, the process yielded an estimated yearly number of deaths linked to the Maoists (Naxalites) as well as the conflicts in Assam, Manipur, Nagaland, and Tripura.

12 See Geneva Declaration Secretariat (2011, p. 47, table 2.1).

13 The Lesser Antilles region includes Anguilla, Antigua and Barbuda, Barbados, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago. The Micronesia Region is composed of the Federated States of Micronesia, Guam, Kiribati, the Marshall Islands, Nauru, and Palau.

14 See Geneva Declaration Secretariat (2011, p. 91).

15 Countries included in the analysis were: Belize, Canada, Colombia, the Dominican Republic, Honduras, Jamaica, Nicaragua, Panama, St. Kitts and Nevis, Trinidad and Tobago, and the United States (Americas); the Hong Kong Special Administrative Region of China, Japan, Kyrgyzstan, the Republic of Korea, Sri Lanka, and Vietnam (Asia); Belarus, Finland, France, Germany, Italy, Latvia, the Netherlands, The Former Yugoslav Republic of Macedonia, and the United Kingdom (England and Wales) (Europe).

16 The countries included in Figure 3.7 are: Bahamas, Barbados, the Dominican Republic, Grenada, Jamaica, Puerto Rico, St. Kitts and Nevis, St. Vincent and the Grenadines, Trinidad and Tobago (Caribbean); Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama (Central America); Canada and the United States (North America); Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Uruguay, Venezuela (South America); Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan (Central Asia); the Hong Kong Special Administrative

Region of China, Japan, Mongolia, the Republic of Korea (Eastern Asia); Cambodia, Malaysia, the Philippines, Singapore, Vietnam (South-eastern Asia); Bangladesh, India, Maldives, Nepal, Sri Lanka (Southern Asia); Armenia, Azerbaijan, Cyprus, Georgia, Israel, Jordan, Lebanon, Occupied Palestinian Territories, Qatar, Turkey (Western Asia); Belarus, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Slovakia, Ukraine (Eastern Europe); Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Norway, Sweden (Northern Europe); Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Portugal, Serbia, Slovenia, Spain, The Former Yugoslav Republic of Macedonia (Southern Europe); Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland (Western Europe); Australia, New Zealand, Solomon Islands (Oceania).

17 See Geneva Declaration Secretariat (2011, p. 105, figure 3.11).

18 The database covers 86 countries and provides public health data on violent deaths disaggregated by age and sex (Bhalla et al., 2011, p. 6).

19 The study covers 44 countries (Sanmartín et al., 2010, p. 111).

20 The database covers 29 countries, mostly from the European Union (UNECE, n.d.).

21 Unpublished data. For information on homicide statistics by UNODC, see UNODC (n.d.b).

22 The complete database is available online at UNSD (n.d.c).

23 For HDI definitions and methodology, see UNDP (n.d.)

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