

Iraq Body Count: A Case Study in the Uses of Incident-based Conflict Casualty Data

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Introduction

Iraq Body Count (IBC) is a nonprofit, nongovernmental organization that has systematically collated media reports of Iraqi civilian deaths from incidents of armed violence since the beginning of the Iraq war on March 20, 2003 (Dardagan et al. 2005; Iraq Body Count, 2011). The IBC method integrates data extracted from media reports on civilian deaths with data on deaths reported by hospitals, morgues, nongovernmental organizations (NGOs), and official figures, using systematic cross-checks to eliminate double-counting, with the aim of providing as complete a record as possible of individual Iraqi civilians killed by armed violence since the beginning of the war. In this chapter, we discuss the uses, merits, and limitations of incident-based casualty data, using the IBC database as our example.

We begin by describing the origins and aims of the Iraq Body Count project; the characteristics, methods, and sources of IBC's data; and examples of how IBC's incident-based data have been used in efforts to improve understanding of the effects of armed conflict on civilians, to commemorate individual deaths, and to advocate for civilian protection. We then discuss how IBC's database on Iraqi civilian deaths compares against other sources of information on violent deaths in Iraq, and we discuss the strengths and limitations of using media-based data and of using incident-based data. We end by describing our view on what improvements could be made in the incident-based recording of civilian casualties in order to support the increased protection of civilians from the violence of armed conflict.

Although we will not focus in this chapter on how specific uses of IBC's incident-based casualty data contribute to the aims and methods of strategic peacebuilding (Schirch

2008; Philpott 2010), some connections can be made here that can be kept in mind during the chapter. In keeping with the holistic, long-term goals of strategic peacebuilding, what has grown from the origins of IBC in a specific, immediate aim of ending the violence of the Iraq war, is a variety of data-based projects that share a common, wider goal of bringing the civilian impact of war into the forefront in considerations of current and future wars, with the long-term aim of ending, or at least minimizing, direct violence towards noncombatants. As we describe, IBC's data have been used in an effort to increase awareness of the impact of the war on civilians, women, and children, in the belief that increased awareness has the potential to shift attitudes and priorities of a spectrum of communities, policymakers, and actors in war toward a more civilian-protective focus, especially when data are communicated in emotionally and culturally relevant quantitative terms. We believe that the main contributions of incident-based civilian casualty data to strategic peacebuilding may be in its potential to provide data-based evidence for advocacy; its ability to highlight the importance of making civilian protection an explicit priority; and its potential to change the social and moral acceptability of tactics used by actors in war by revealing the toll of various tactics on civilians.

The Origins and Aims of Iraq Body Count

The IBC project was founded by the authors of this chapter John Sloboda and Hamit Dardagan when a U.S.-led invasion of Iraq appeared to be imminent. The founding principles of IBC are that there can be no justification for insulating ourselves from knowledge of war's effects, and it is a matter of simple humanity to record the dead. This means that, at a minimum, the basic facts about who was killed, where they were killed, and when they were killed should be established, recorded, and preserved as a matter of historical record. Whatever the practical barriers, there can be no moral justification for refusing to record war deaths by every available means, except where doing so risks further loss of life. An immediate responsibility is to preserve knowledge of those deaths already verified but lost from view because their records have been published piecemeal and become highly dispersed.

The project was based on one overarching premise: as in previous conflicts involving Western nations, civilian deaths would be reported by the international media, but each day's events would soon be forgotten as they were overtaken by the next day's news. But with new Web-based technologies for accessing, collecting, collating, and publishing data, a suitably

designed project could prevent, if not this loss of lives, then at least their becoming lost from the historical record.

Three primary factors underlie IBC's decision to focus on civilians. First, legal and moral considerations make noncombatant deaths particularly unacceptable; these considerations are embodied, for example, in international humanitarian laws and customary standards, including the Geneva Conventions of 1949 (International Committee of the Red Cross 2011). Despite this, civilians are all too often given scant attention, if any, in official recording of casualties from armed conflict. Second, coalition military and contractor deaths are relatively well-recorded by other sources, such as military and government institutions. Third, being a small, volunteer-run NGO with limited human and material resources, the IBC project team has had to focus its efforts on the systematic recording of casualties of one delineated group.

An incident-based approach to recording civilian deaths was taken for the following reasons: Immediate deaths and injuries caused by violence happen at a specific time and place, and such factual circumstances have the potential to be fully documented and verifiable. These facts provide the basis of a documentary record of the most unambiguous civilian impact of war. The only way to get consistent information in the short to medium term about the civilian or noncivilian status of victims is early incident-based reporting, derived from direct witnesses who have been in physical and temporal proximity to the victim either before or immediately after death. Similarly, reports emanating close in time and space to the incident concerned are more likely than distant respondents to be able to offer reliable information regarding the aggressor and weapons used.

The overriding purpose of the methods employed by IBC is to provide an account that is as full and as detailed as possible to describe actual, individual Iraqi civilian violent fatalities, and the circumstances of the violent incidents that killed them. This approach does not aim to provide an estimated figure for total deaths, in the sense of the term "estimate" as used by those aiming to calculate total deaths in a population by extrapolating from a sample or other inferential means. IBC ultimately seeks to compile a detailed list of every victim that is as complete as possible, open to public scrutiny, and able to be updated. There are now dozens of other organizations around the world whose work exemplifies this approach, many of whom are listed at everycasualty.org. "The Bosnian Book of the Dead," first published by the Research and Documentation Centre of Sarajevo in 2007 (Ball, Tabeau, and Verwimp 2007; Nettelfield 2010), is one of the most recent IT-based projects that embodies this ideal (Nettelfield 2010). Another is the incident-based documentation of individual fatalities

caused by Israeli and Palestinian armed forces, with civilians distinguished from combatants, and minors distinguished from adults (B'Tselem 2011). The approach taken by IBC lies within a tradition of quantitative documentary and archival historical research, in which the central activity is collecting and organizing all relevant records, whose data can then be analyzed using descriptive statistics (Tilly 1969, 1980; Grimes and Schulz 2002). IBC's priority was to provide a robust baseline of verifiably recorded civilian deaths, together with the available information about the victims and the incidents that killed them, that could be examined from any point in time from the beginning of the war. By contrast, aggregate data that cannot be broken down into its constituent parts cannot be challenged or improved because it is impossible to know which victims or incidents are, or are not, included in it.

Another guiding principle for IBC is that all information about war-related deaths belongs in the public domain. People can only make informed decisions about the use of military force when they are fully aware of its consequences, assisted by detailed information of high quality. There is no more serious consequence of war than the killing of civilians, and the public deserves and needs to know all it can about it. Making a large store of information accessible on the Internet is currently the most cost-effective way of providing global public access to it. Resources permitting, all of IBC's output is intended for open, and timely, access. Continuous publication of cross-checked civilian casualty data as close as possible to the time of the incident causing violent death brings the further benefit of allowing trends and patterns to be tracked in real time.

This public access allows citizens to inspect the particulars of IBC's data and submit corrections or missing information, a capacity that is being increased with an expansion program IBC is undergoing to provide its entire website in Arabic. At the time of writing, public access to the IBC archive of each incident and of each Iraqi civilian who could be identified (identities of most of the civilian dead have not yet been reported) is at this page of the IBC website: <http://www.iraqbodycount.org/database/>. To facilitate the ability of public viewers to analyze the IBC database directly, IBC also provides continually updated, interactive graphing systems at its website, where public users can pull up and view summary data trends on violent deaths or violent incidents in Iraq or in Baghdad plotted over time (<http://www.iraqbodycount.org/analysis/numbers/2010/>). For example, users can select data according to variables including date range, weapon (any, explosive, gunfire, suicide attack), perpetrator (any, Coalition and Iraqi state forces, anti-occupation forces, unknown), number

of deaths caused (1 or more killed, 5 or more killed, 20 or more killed), and can graph comparisons between deaths, or incidents, associated with different variables.

The Characteristics and Sources of IBC Data

Characteristics

IBC's database has five key characteristics:

- It lists documented deaths of individuals
- It does not provide estimates of total deaths in Iraq
- It includes only violent deaths (no deaths from nonviolent causes such as disease)
- It includes only civilian (i.e., noncombatant) deaths
- It is constantly updated and revised as new data come in.

A civilian "casualty" of armed violence is defined as a civilian who has been either killed or wounded. IBC data on civilian casualties include only those civilians who were reported killed by armed violence, and those civilians who were reported injured in incidents that also killed at least one civilian. Thus, any incidents that resulted in civilian injuries but not in civilian deaths are absent from the IBC dataset.

If an incident occurs in which civilians are killed, media reports of the event will almost invariably contain a specific number of deaths, the date (often with time of day), and the place, whatever other information may or may not be present. Depending on the level of additional detail that can be extracted from reports, IBC systematically records data relating to some twenty or more variables for each lethal incident. At a bare minimum, IBC records the date of the incident (which includes incidents in which bodies were found), its location, and the number of civilian dead. Further variables recorded by IBC for incidents include time, target, minimum deaths, maximum deaths, minimum injuries, maximum injuries, weapons used, perpetrators, media sources, and primary witnesses. Variables recorded by IBC relating directly to individuals include name, age, sex, marital status, parental status, and occupation.

IBC defines Iraqi "civilians" to include all noncombatants, all children, most women, and police in normal, civil, nonparamilitary roles (e.g., local and traffic police). While police are a Coalition-associated target for insurgent forces in Iraq, this is not incompatible with their civilian status, in the same way that a government administrator or fireman killed in an attack on the Iraqi government (i.e., Coalition-associated) infrastructure retains their civilian

status. A child is anyone under the age of eighteen, based on the Convention on the Rights of the Child (Convention on the Rights of the Child 1989) and Iraqi law that stipulates that eighteen is the voting age and age of consent (Dardagan et al. 2005). Age is determined based on reported age in years, or reported age category as “child: or “adult,” or adult occupation.

When entering details in the IBC database, IBC staff draw some logical deductions from the information provided in reports. For example, if the victim is described as a “policeman,” the process can assign the victim to the category “adult” and the category “male” even though the victim’s age and gender are not explicitly stated in the report. When accounts from independent sources differ, variables are extracted from reports with the most detail or best-placed primary sources (e.g., medical personnel attending to victims). Most frequent sources for reported violent deaths are morgue and hospital medics, police and other Iraqi official sources, eyewitnesses, and relatives. When equally credible reports differ, minimum and maximum civilian deaths are recorded for the incident. Similarly, media reports may disagree, or be uncertain, about the combatant vs. non-combatant status of some of the dead. This is another situation in which IBC publishes a range covering both possibilities. A final form of uncertainty revolves around the integration of media-reported, incident-level data with aggregate data (e.g., from monthly morgue or hospital reports); where the two kinds of data do not coincide, IBC gives a range. Entries are independently reviewed and systematically error-checked by three IBC members before data are published on IBC’s open website. Data are updated as newly reported information emerges, which may add detail to described variables about victims or incidents, or add deaths as additional bodies are discovered (e.g., as building rubble is removed after a bomb blast) or as victims die from injuries.

Sources

Press and media organizations are the most consistent gatherers of (relatively) detailed casualty data worldwide. Their data are not limited to their own investigations. The media also publish information provided by governments, official agencies, and NGOs. Media sources taken as a whole, and integrated with data from other sources in the manner developed by IBC, can thus be used as an “aggregator” for all public-domain information on known casualties. The Iraq war has attracted persistent, continuous effort by international and local media organizations to capture stories about violence, which has resulted in detailed reports on tens of thousands of incidents causing civilian death in Iraq’s armed conflict.

On a daily basis, IBC systematically identifies reports of armed violence in Iraq directly resulting in civilian death by using search engines and subscription-based press and media collation services (e.g. LexisNexis) to scan reports from over two hundred separate press and media outlets meeting IBC’s criteria of producing original material under professional editorial control. Sources include Arabic-language news media that report conflict-related violent incidents in English (e.g., Voices of Iraq, National Iraqi News Agency, and Al Jazeera English) and the output of translation services such as the BBC Monitoring Unit. Coverage of non-English-language reports is currently limited to those that are available from proficient translators.

Figure 1 shows the results of an IBC analysis of the per source coverage of all incidents and deaths in the IBC database from January 2006 to September 2008, a period of about one thousand days, for the top twelve contributing media among the more than two hundred independent media sources tracked by IBC. No single media source covered more than 43 percent of the incidents and 60 percent of the civilian deaths of the combined output of the media collated by IBC. Most contributed only a small fraction of the total.

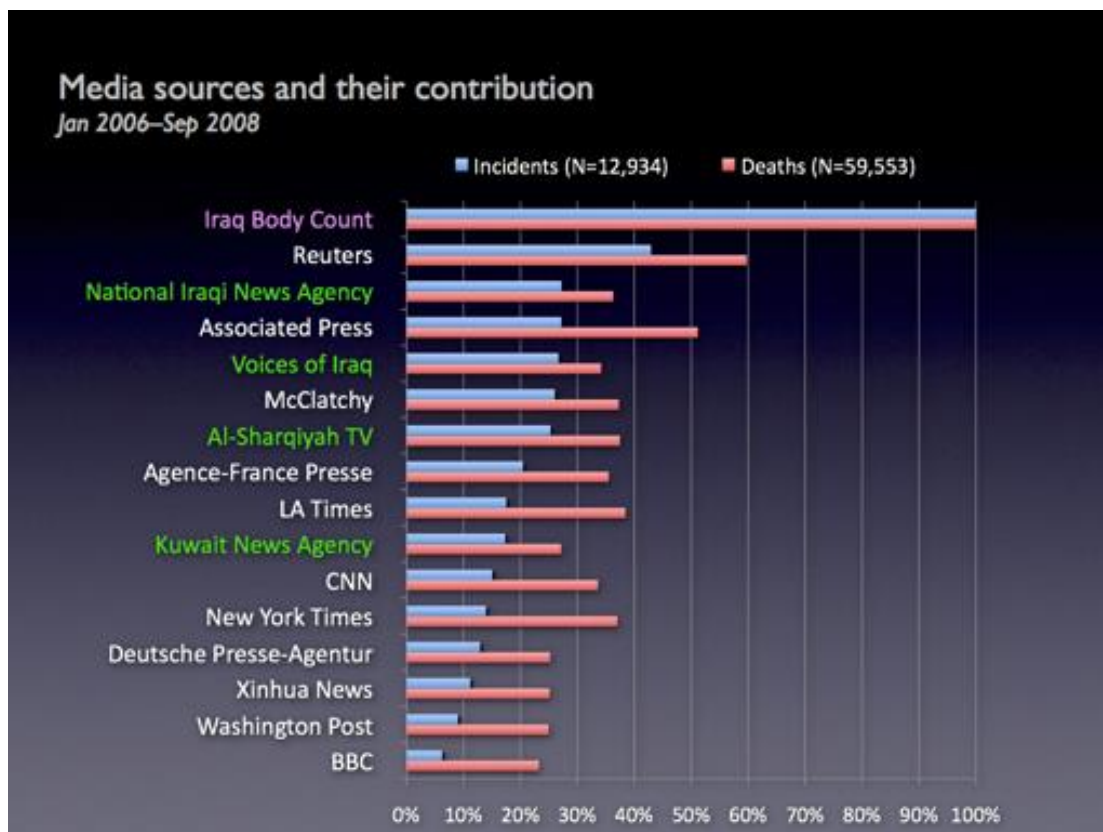


Figure 1. Per Source Coverage of Incidents and Deaths in the IBC database, January 2006–September 2008

IBC assumes that any agency that has attained a respected international status operates its own veracity checks before publishing stories (including from eye-witness and confidential sources). However, IBC throws a wide net so as not to be reliant on any single agency for its data collection, and is therefore largely unaffected by vagaries in reporting by any one organization. IBC operates across commercial boundaries, meaning that no primary data source is considered proprietary by IBC or given preference over others. Media outlets are competitive and proactive, and are reliant on their ability to increase their access and reach in covering a conflict. In Iraq, most Western agencies have Iraqi stringers, informants, and correspondents across the country. As described by a Reuters' bureau chief, "We have people in 19 or 20 cities — ideally a cameraman, photographer and reporter — although in some places one or two people will cover more than one specialisation" (Reuters 2006). Journalists intensively monitor each others' outputs. IBC has rarely found medium-sized incidents (i.e., involving four or more deaths) in the Iraqi press (whether in Arabic or English) that are not also reported by one or more Western media agencies present in Iraq. The linkage that IBC retains in its database between the data and their media sources provides the potential to assess media coverage by different agencies over time and space.

IBC's systematic data collection makes it possible to obtain far more data than would be apparent to most news consumers that access only a few major sources, whose coverage is dominated by occasional stories of large incidents killing numerous Iraqis, and which rarely report the death of a single, anonymous Iraqi, or even two or three. IBC gives equal prominence to, and archives, every incident it finds, including those relegated to newswires and back pages or buried deep within other articles. Nearly half (45 percent) of IBC's incident records involve the death of a single individual, and 75 percent involve an incident in which three or fewer civilians were killed (Iraq Body Count 2007b).

The integration of aggregate data from morgues (primarily the Baghdad morgue), hospitals (from the Iraqi Ministry of Health), other official sources, and NGOs supplement the casualty data extracted from incident-based reporting. For deaths recorded from aggregate data, the incident causing death will not have been reported or known (e.g. bodies of the executed delivered upon their discovery to morgues). Data from aggregate reports are included only if sufficient detail on time and location allows cross-checking of casualties against casualties already recorded in the IBC database in order to avoid double-counting.

Additional sources of detailed, incident-based data have been obtained by a series of

Freedom of Information Act requests to the U.S. and British governments, and by analyzing a probability sample of incidents from the Iraq War Logs SIGACT data released by Wikileaks (Iraq Body Count 2010a, 2010b, 2010c, 2010d). Since 2007, data obtained by Freedom of Information Act requests to the U.S. military have resulted in nearly four hundred incidents resulting in nearly five hundred civilian deaths being added to the IBC dataset (Iraq Body Count 2010e). In 2010, analysis by IBC of the data released by WikiLeaks suggested that an additional fifteen thousand previously unidentified civilian deaths may be present in these logs, and available to be added to the IBC database (see the discussion later in this chapter).

Putting IBC Data to Use

On most days, there are thousands of individual visitors to the IBC website. This is our primary indicator of the level of continuing public concern about Iraqi deaths. The detailed, incident-based and victim-centric data produced by IBC have both “essential value,” for capturing the social and cultural meaning of individual casualties, and “instrumental value,” for relating patterns of casualties to possible causes, trends, and effects (Fischhoff, Atran, and Fischhoff 2007). So far, IBC data have mainly been used for two primarily instrumental purposes: to inform analysis, commentary, and advocacy in relation to the conflict in Iraq; and to contribute to discussions about the ethical, legal, and methodological aspects of monitoring casualties of all conflicts, not just the conflict in Iraq. The essential value of IBC data (e.g., to memorialize and identify the dead) may significantly rise as the Arabic translation of IBC’s website increases access to the data by Iraqis who have been affected directly by the Iraq war.

Some features of the IBC dataset facilitate certain types of uses, such as the identification of trends and patterns. These include trends over time, the geographical distribution of violence, the age and sex of those killed, the comparative lethality of different weapons and of different categories of perpetrators, and the efficacy (or otherwise) of changes in military tactics designed (or at least purported) to protect civilians. Additionally, credible information empowers people to act. When reliable information is organized and put into the public domain, it becomes possible for individuals and organizations to put it to multiple uses, whether educational, political, or humanitarian. IBC invites, and where feasible, assists any not-for-profit use of its data, particularly when its purpose is to benefit war’s casualties, whether actual or potential.

IBC’s research has been explicitly referenced in informed assessments of civil security by leading institutions concerned with Iraq, including the United Nations (OCHA),

ReliefWeb, UNHCR, the WHO, the IMF, World Bank, the International Criminal Court, the Brookings Institute, the U.S. Council on Foreign Relations, the U.S. Congressional Research Service, among others (see IBC 2007a for a fuller list). Some research groups have also commissioned specific analyses from IBC; one such entity is the Empirical Studies of Conflict Group, involving the Universities of Princeton, Stanford, and California (Condra et al. 2010).

Numerous academic and scholarly analyses have drawn on IBC data. For example, Alvarez-Ramirez et al. (2010) used IBC's time-specific data to study the dynamics of civilian fatalities over different periods of the Iraq war marked by major military and political events, to examine mathematical methods that could provide insights into ways to design better policies and strategies to reduce the adverse effects of violence on civilians. Boyle (2009) used IBC geographic and time variables to study the localization of violence in Iraq as a product of interactions between perpetrators of violence in Iraq involving bargaining, fear, and denial. An innovative analysis of IBC's data, along with other data from a wide range of high-quality datasets for modern wars, was used by Bohorquez et al. (2009) to develop the first unified model of insurgency, explaining the ecology of modern wars and predicting general patterns of insurgent groups and of large- and small-sized incidents of insurgent violence over time and space. Mubareka et al. (2005) used IBC's media-reported temporal, geographic, and fatality data from violent incidents to identify levels of violence and "security events" to create dynamic maps to depict the working situation on-the-ground in crisis-affected regions for donors and humanitarian aid agencies planning to deploy personnel.

Direct Uses of IBC in the Medical Literature

One use of IBC's incident-based data with which the authors of this chapter have been directly involved is research designed to improve understanding of the impact of violence on Iraqi public health in general and on vulnerable demographic subgroups, and to support efforts to develop civilian-protective, preventive policies in future conflicts. This work has consisted so far of two analyses: one of the impact of different weapon-types on Iraqi civilians (Hicks et al, 2009), and one of the main perpetrators of violence in Iraq's armed conflict (Hicks et al., 2011).

Our 2009 study analyzed 14,196 violent incidents contained within the IBC database detailing 60,481 civilian deaths that occurred in the first five years following the invasion of

Iraq. These were incidents confined to a single time and place, and where only one type of weapon was used. This provided a uniquely comprehensive overview of the relative harm that different weapons — from low- to high-tech —brought to Iraq's civilian population. The average number killed per incident (for incidents in which a civilian was killed) was 4, but the average number killed per incident involving air-launched bombs or combined air and ground attacks was 17, and the average number killed by suicide bombers traveling on foot was 16.

We also analyzed the demographic characteristics of noncombatants killed by different forms of violence. Execution after abduction or capture was the single most common form of death overall, with 95 percent of execution victims being male. For Iraqi females, and children, incidents involving air attacks and mortar fire were the most dangerous. In air attacks causing civilian deaths, 46% of victims of known sex were female, and 39% of victims of known age were children. Mortar attacks caused similarly high proportions of female and child victims (44% and 42%). We considered this compelling evidence that these weapons should not be directed at populated areas because of their indiscriminate nature. Such weapon-specific findings have implications for a wide range of conflicts, because the patterns found in this study are likely to be replicated for these weapons whenever they are used.

Our 2011 study analyzed civilian deaths caused by different types of weapons as used by the main perpetrators of violence in Iraq. Of the 92,614 Iraqi civilians reported killed by armed violence during the five-year period of the study, 74 percent were killed by unidentified (i.e., un-uniformed) perpetrators who were directly targeting civilians in the absence of any military or Coalition-associated target; 11 percent were killed by anti-coalition forces during attacks on Coalition-associated targets; and 12 percent were killed by Coalition forces. Incident-based analysis showed that the highest average number of civilians killed per event in which a civilian died were from unidentified perpetrator suicide bombings targeting civilians (19 per lethal event) and from Coalition aerial bombings (17 per lethal event).

Because IBC's incident-based database interlinks specific violent events with their perpetrators, civilian deaths can be examined not only as an important public health outcome, but also as an indicator of combatants' compliance with international humanitarian laws and customary standards (e.g., the Geneva Conventions) protecting civilians (Hicks and Spagat 2008; International Committee of the Red Cross 2011). We therefore measured proportional rates at which perpetrators in Iraq killed women and children by using a Woman and Child

“Dirty War Index” (DWI) (Hicks and Spagat 2008) to indicate indiscriminate harm. We found that compared with anti-coalition forces, Coalition forces caused a higher total Woman and Child DWI for 2003–8, with no evidence of a significant decrease over time. We also examined small arms deaths caused by Coalition and anti-coalition forces, and found that relatively indiscriminate effects from Coalition gunfire persisted over five years post-invasion, with the clear implication that Coalition efforts to minimize civilian casualties need to be coupled with systematic quantitative monitoring of civilian casualties in order to assess and strengthen civilian protection.

A temporal analysis of Coalition weapon-effects showed that numbers of woman and child deaths, and numbers of civilian deaths from air attacks, peaked during the U.S.-led invasion of March 20, 2003 to May 1, 2003, when the Coalition used heavy air power. These findings, combined with findings of high Woman and Child DWI outcomes from air attacks, suggested that heavy reliance on air power during the invasion may have been particularly costly for Iraqi civilians—and especially for women and children—in terms of deaths and injuries. Our findings on temporal and victim demographic patterns from Coalition air attacks supported the position taken by Landmine Action (2009), the United Nations Security Council (2009), and the United Nations Institute for Disarmament Research (2010), that indiscriminate lethal effects of explosive aerial weapons on civilians need to be addressed through changed practice and policy on the use of air power in armed conflict, with air attacks on populated areas prohibited or systematically monitored to demonstrate civilian protection.

Overall, our 2009 and 2011 findings using IBC incident-based data illustrate the feasibility as well as the public health and humanitarian potential of detailed tracking of war’s effects on a civilian population. Military efforts to minimize civilian casualties need to be coupled with systematic monitoring of casualties, of which this is an example, in order to assess and strengthen civilian protection.

How Do IBC Data Compare with Other Sources of Data?

One way to test the validity of IBC’s trends and overall numbers of civilian violent deaths is to look at alternative sources that are not journalistically based (and thus unlikely to be affected by reporting restrictions), and see if they follow the same trends.

Figures 2 and 3 compare trends in IBC’s data on civilian violent deaths against those of the Iraqi Ministry of Health and of the U.S. Department of Defense over extended periods

of the conflict. IBC's figures on civilian deaths have historically been higher than from these official sources, but are seen to have closely matching trends over time.

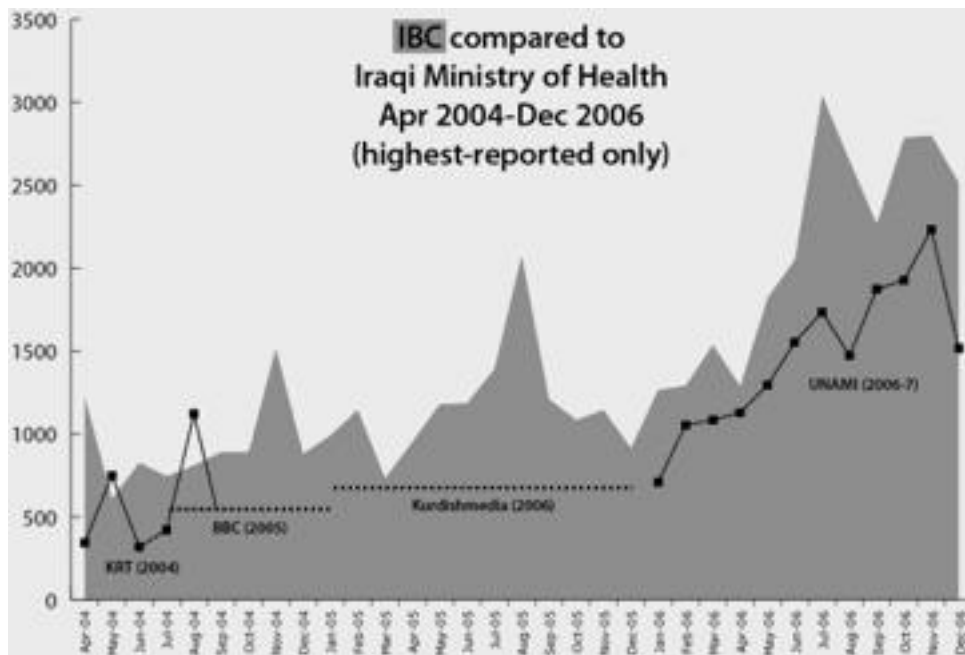
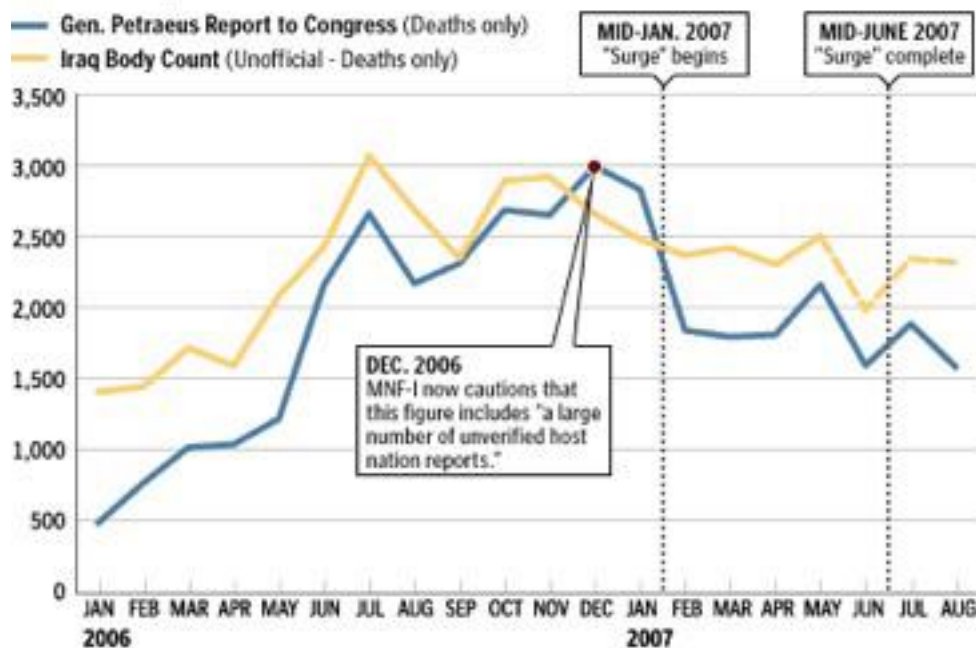


Figure 2, IBC Trends against Figures from the Iraqi Ministry of Health, April 2004–December 2006

Civilian Casualties in Iraq: Two Different Estimates

Jan. 2006 - August 2007



Notes: Iraq Body Count numbers from May - August 2007 are estimates.

Figure 3. IBC trends against figures from the U.S. Department of Defense, January 2006–August 2007 (Source: IBC/DoD chart credit: Washington Post, Dobbs (2007))

In the second half of 2010, a unique opportunity to compare media-reported data with government-collected data became possible through the public release by the WikiLeaks organization of what they and others describe as the Iraq War Logs (www.iraqwarlogs.com). These logs are a near-complete run from the U.S. Department of Defence (DoD) SIGACTS (Significant Activities) database for 2004-2009 (missing only two months, May 2004 and March 2009), and contain over 54,000 reports of incidents in which violent deaths occurred. This constitutes by far the largest database of individual conflict-related incidents ever released for a single conflict. It appears that these logs are the primary source of the composite figures publicly released by DoD from time to time.

A preliminary sampling and detailed cross-checking method undertaken between August and October 2010 (IBC, 2010a, 2010d) allowed us to determine that there is significant but not complete overlap between IBC and the Iraq War Logs. We estimated that 64,000 deaths are recorded in both IBC and the logs, 15,000 are unique to the logs (i.e., not in IBC), and 27,000 are unique to IBC (i.e., not in the logs).

As of this writing, further analysis is being conducted, but preliminary findings clearly indicate two of the chief reasons for the differences between the Iraq War Logs and the IBC. First, deaths uniquely reported in the Iraq War Logs arise predominantly from incidents in which one or two individuals were killed. These are precisely the types of incident known to receive less extensive coverage by commercial media (<http://www.iraqbodycount.org/analysis/beyond/put-to-work/4>). Second, deaths uniquely reported in IBC include some for which on-the-ground sources identify civilian casualties, whereas DoD sources code the casualties as predominantly combatant. This is particularly noticeable in major air-led military actions (Iraq Body Count 2010a). Despite these differences, however, the overall trends (in terms of violence over time and by governorate) revealed by the two datasets closely match.

IBC data correlate closely, too, with the results produced by two surveys of samples of the Iraqi population. The Iraq Family Health Survey shows similar trends and distribution of violent deaths by region (Iraq Family Health Survey Group 2008). The Iraq Living Conditions Survey data (Government of Iraq 2005a, 2005b) for war-related deaths by governorate (Guerrero Serdán, 2009) likewise correlate closely with IBC findings. In both

cases, some differences do exist, but these are at least partly attributable to the fact that the surveys did not differentiate between the combatant and civilian status of adult male victims.

The validity of IBC data on civilian violent deaths in Iraq can also be assessed by comparing demographic patterns in IBC data against demographic patterns in civilian violent death data issued by the Government of Iraq. Demographic data released by the Government of Iraq for 2009 (the only full year for which the government has released demographic data) shows that 4,068 civilian violent deaths occurred in 2009, of which 80 percent were men, 11 percent were women, and 9 percent were children (United Nations Assistance Mission for Iraq 2010). IBC's database documents 4,691 civilian violent deaths for 2009, and of those that are demographically identifiable, 77 percent were men, 11 percent were women, and 12 percent were children.

Strengths and Limitations of IBC's Methodology

All methods of counting casualties have their advantages and disadvantages. In this section, we describe the strengths and limitations of using incident- and media-based casualty data (with IBC as the example), and of using survey-based data. We also discuss how conflict circumstances may make one method more feasible or valid than another. In many cases, including the Iraq conflict, data derived from different methods can complement one another and produce a more comprehensive picture of the civilian impact of war.

Media coverage of casualty information and the ability to quickly integrate that information have been significantly enhanced by recent technological developments. The IBC project exploits these developments and points to what may be possible as they evolve further. Press and media reports are too rich and valuable a source of information on violence to be disregarded. The IBC method for compiling a database of civilian deaths from reported incidents of armed violence is premised not only on the existence of active press coverage of armed violence and media access to reliable information on violent incidents, but also on reasonably robust information networks across the country that support the rapid dissemination of reports. In Iraq, details of incidents in remote regions of the country almost always reach the newswire services within twenty-four hours. The rapid production of media reports, as opposed to the publication of monthly or yearly aggregate reports from official sources, allows IBC to continually update its database by incorporating new reports of violent deaths as soon as they emerge.

In contrast, a survey is based on retrospectively gathered data and cannot be updated once the survey ends. Therefore, although surveys have the advantage of providing an

estimate of the *total* number of deaths (whereas the methods employed by IBC tally only recorded deaths), a survey's estimate is limited by the fact that it is static. Surveys cannot be used to track trends unless similar surveys are repeated at multiple points over time. Periodic surveys of conflict-associated violent deaths are difficult to implement because of the logistical difficulties, high cost, and danger involved in carrying out surveys in conflict settings (Thoms and Ron 2007). Epidemiological surveys in armed conflicts can be affected by recall bias, reporting bias, survival bias, sampling bias, and difficulties in implementation (Murray et al. 2002; Daponte 2007; Thoms and Ron, 2007; Johnson et al. 2008). IBC's methodology minimizes recall bias—99 percent of events being investigated are reported within twenty-four hours (Iraq Body Count 2007b)—and permits surveillance over time of traceable events. These characteristics have been described as valuable attributes for monitoring and analyzing conflict mortality trends (Murray et al. 2002; Daponte 2007; Geneva Declaration Secretariat 2008; Iraq Family Health Survey Study Group 2008).

The kind of reporting environment that exists in Iraq is not found everywhere, but elements of it are appearing in more and more conflict zones. Examples include the Ushahidi system (<http://www.ushahidi.com/>), which maps international crises in real time, and initiatives such as United Nations' Office for the Coordination of Humanitarian Affairs Libya Crisis Map (<http://libyacrisismap.net/>), which collated reports on the unfolding crisis in Libya in 2011. Modern information infrastructures can evidently be quickly established, and can be robust. The Internet is the prime example, but other examples include cellular telephone networks, which afford nonprofessional individuals greater access and mobility than the Internet for documenting and reporting violent casualties from the midst of armed conflict. Barriers to reporting conflict casualties that existed ten or even just five years ago are disappearing.

In addition, the professional media are themselves resourceful, adaptive organizations that can be agents in developing informational and technical infrastructure. In Iraq, Western news agencies have given training and substantial support to some new Iraqi media. Aswat Al-Iraq ("Voices of Iraq"), for instance, was set up with the support of the Reuters Foundation (Reuters Foundation 2006). Because of the importance of media interest to its methodology, the IBC approach in its current form is particularly well-suited for conflicts in which major powers with multiple, independent commercial media agencies are engaged intensively and over the long term, because this ensures a high level of interest and involvement in reporting the conflict by the best-resourced and most technologically

advanced media.

There is widespread agreement that media reports can provide systematic, meaningful data on conflict casualties (Taback and Coupland 2005; Coupland 2007; Daponte 2007; Geneva Declaration Secretariat 2008; Harbom and Sundberg 2008; Urlacher 2009). However, in some conflicts, the frequency, coverage, and quality of media-reported data may be degraded by difficulties of data gathering, censorship, or other limitations imposed on the media's monitoring effort. The net effect may be that little or no casualty data can be obtained. The considerations specific to each conflict require examination to assess the advantages and disadvantages of using media-reported data on that conflict. The media-based approach is ill-suited for describing casualties that occur during periods of conflict where major military powers impose "lock-downs" or information blackouts on a particular town or region. In Iraq, the U.S. military has imposed some effective temporary, localized lock-downs but has not been able to sustain them. As a consequence, U.S. forces have prevented reporting of many individual incidents but not, ultimately, of their overall resulting casualty totals, which are relayed to the media by local hospitals and medics. These casualty totals, however, remain relatively uncertain in comparison to incident-based records, and lack many of the factual details that typically accompany incident-based data (IBC 2004a, IBC 2004b). The enforcement of such lock-downs—which have included attempts to muzzle medics—has itself been an immediate and unflattering source of media attention; given that the purpose of lock-downs is to control negative publicity, media criticism of them may act as a check on them (<http://newstandardnews.net/content/index.cfm/items/1208>).

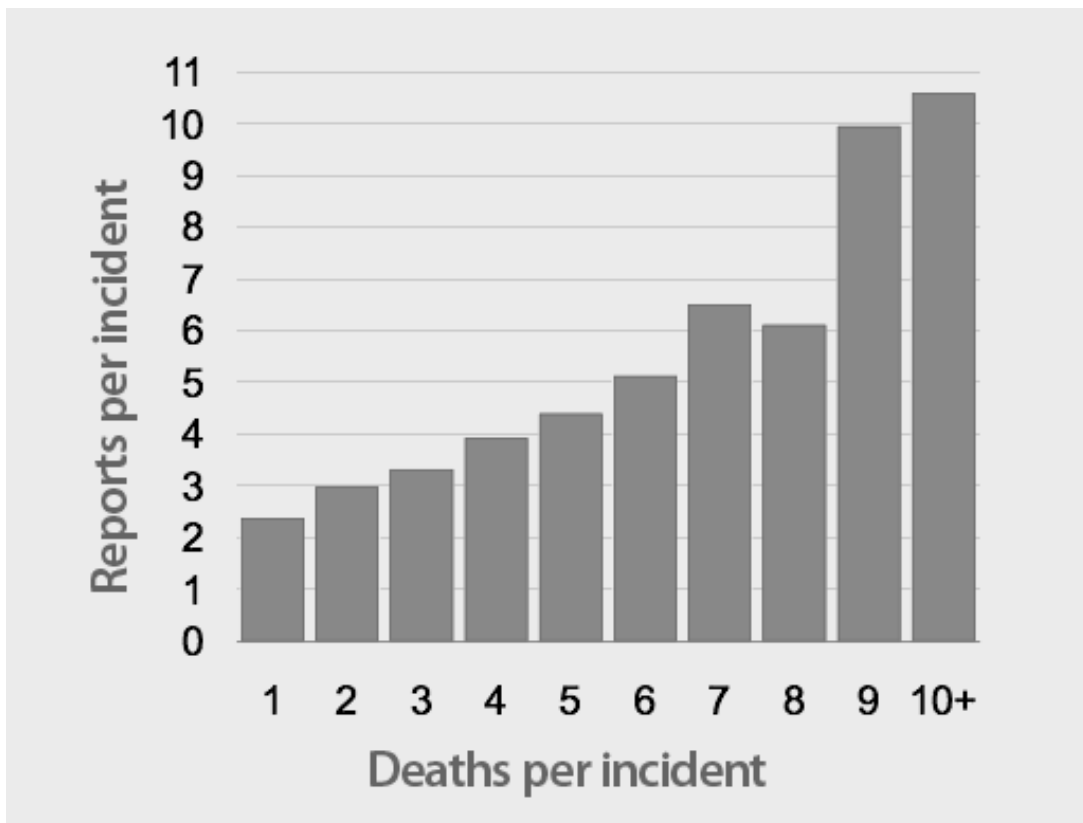
Carefully designed quantitative and qualitative studies are needed to determine what biases may affect media reporting on casualties of armed conflict, in Iraq and elsewhere. In the case of IBC, we have speculated that media reports may identify women and children more readily than men civilians among the dead, perhaps for human interest or from a normative assumption that a victim of armed violence is a man unless stated otherwise (Hicks et al. 2011). If such a bias existed, it could affect proportional findings of women and children among civilian deaths of men, women, and children. Another possibility that we have considered is that the media may underreport injuries relative to deaths. IBC records casualties only from events that caused at least one civilian death. This automatically leads to an under-detection of civilians injured by armed violence in the conflict. In addition, generally speaking, deaths are reported more consistently than injuries by the media in nearly all reporting on armed violence (Coupland and Meddings 1999). This is a second factor lowering the detection of injuries by IBC's media-reported data (and one reason why IBC

uses its injuries data only rarely). For these reasons, IBC injury data may be considered a minimum that can be useful for analyzing trends (e.g., over time) and for performing comparisons (e.g., between different weapon effects), but should not be considered an accounting of total injuries. Determining the degree to which the media underreport injuries relative to deaths would allow statistical adjustment for a more accurate picture of the impact of armed violence on civilians. The establishment of standards for reporting victim information could improve the contribution of media reports to understanding violence.

A general limitation of using media reports to study armed conflict is that journalists collect and report information for purposes other than systematic inquiry. IBC has found that all media, and especially most of the Western media, are significantly more likely to report larger incidents (over five deaths) than incidents that killed one or two Iraqi civilians. Above ten deaths there tends to be blanket coverage by a wide range of media, both Iraqi and Western. If most of the deaths in Iraq were of this sort, then one would not need to monitor more than a few of these sources. However, below three deaths the coverage begins to become patchier, even within the local press, which is why IBC has had to monitor all relevant media and to supplement it with aggregate data to piece together the most comprehensive picture possible. These efforts result in nearly half (45 percent) of the incidents in the IBC database having involved the killing of a single individual.

As shown in figure 4, incidents that kill a greater number of individuals attract a greater number of media reports. One implication of this is that incidents that kill few individuals are more likely to be missed than incidents that kill many individuals. Another implication is that above a certain casualty threshold for an incident, it becomes highly unlikely the incident will go completely unreported. The smaller incidents coded by IBC (e.g., those that caused a single death) are the most likely to be missed in direct reporting by any one media source, but appear to some extent in aggregate form in the IBC database in reported morgue and hospital figures. (Iraq Body Count 2007b).

A strength of IBC's incident-based approach is its capacity to provide verifiable data on a very high number of actual civilian deaths from armed violence, with data on over 110,000 individual deaths as of May 2011 (Iraq Body Count 2011). Surveys extrapolate from relatively few actual violent deaths (e.g. the Iraq Family Health Survey of 9,345 households recorded 164 violent deaths [Iraq Family Health Survey Group 2008]), and numbers of violent deaths at this scale preclude the meaningful extrapolation of a survey's even smaller raw numbers of different demographic groups killed by different weapons.



Governments and other significant official and unofficial sources announce aggregate casualty totals and trends from time to time. Detailed incident-level data such as that provided by IBC offers an opportunity to evaluate such announcements. For instance, on December 31, 2007, figures from Iraq's Ministries of Interior, Health, and Defense were published, claiming that there were 16,232 civilian deaths and 1,300 police deaths in 2007. Despite their lack of detail, these figures were considerably lower than the IBC totals for the comparable period (as they had been in earlier years). IBC's documented civilian death toll for 2007 lies in the range 22,586 to 24,159, and each of these deaths is associated with a published report tying that death to a specific date and location. Therefore, the onus is on those who have provided lower aggregate figures to explain which of the specific IBC-recorded incidents are not included in their 2007 civilian death toll and why (IBC 2008).

Figure 4. The Relationship between Deaths per Incident and Reports per Incident

The IBC database directly links data on a violent incident (e.g., time, location, perpetrator, and weapon used) with data on the specific individuals killed or injured by the incident (e.g., occupation or age). This linkage between incident and victim data allows for

analysis of direct causes of individual Iraqi casualties. The analyses we described earlier of civilian deaths from perpetrators and their weapons during five years of the Iraq war illustrate the feasibility as well as the public health and humanitarian potential of detailed tracking of war's effects on a civilian population based on incident data. Survey data and clinical data on casualties are generally untraceable to the specific weapon or event that caused an individual casualty. Further, IBC specifically identifies civilian deaths whereas surveys mix combatant and civilian deaths (Thoms and Ron 2007; Spiegel and Salama 2000; Burnham et al. 2006), thereby limiting direct comparisons of violent death data from IBC and from surveys.

A general limitation of reported incident-based data, such as IBC's, is its tendency to provide a less than total count of conflict deaths, as not every violent death and incident is reported or officially recorded, even in relatively developed and bureaucratic societies such as Iraq. It is therefore important for efforts like IBC's not to claim otherwise, and indeed to draw attention to this limitation. However, such caveats are sometimes ignored by audiences more interested in the political capital to be made out of casualty data than in their factual accuracy.

The methods used by IBC are inappropriate for documenting indirect deaths from conflict, such as deaths from conflict-associated diseases or starvation. Indirect deaths are not reported consistently in the media or, for many conflict-affected nations, in official reports. IBC's method only tracks direct deaths from armed violence. Data derived this way are also generally ill-suited for allocating a precise place or date for secret executions or other violent incidents that have no third-party witnesses or are not recorded in publicly released, primary documentation. In the case of secret executions, which accounted for one-third of Iraqi civilian violent deaths in 2003–8 (Hicks et al. 2009), victims were typically discovered later in mass graves, floating down rivers, or dumped by roadsides. Bodies discovered after the event are delivered to morgues, hospitals, and police stations, where cumulative records are kept. Victim data from these official sources, predominantly morgues, are typically available in aggregate, monthly reports from which data can be integrated into the IBC database provided that location can be determined to the governorate level and time-frame to the monthly level, even if the exact place and time of death cannot be determined.

Another limitation of using incident-reported data from media and aggregate sources is that the coverage of data for different variables varies widely. As shown in figure 5, nearly all incidents have data on variables such as location by nearest town, target, and weapons used. However, only a quarter of perpetrators were identifiable, a phenomenon that is due in

part to the characteristics of the asymmetrical, irregular warfare being carried out in Iraq. Coalition forces were identifiable by uniforms or weapons (e.g., only Coalition forces used air attacks). Anti-coalition forces did not wear uniforms but were identifiable by their target being a Coalition or Coalition-associated target. The third, largest group consisted of “unknown” perpetrators: un-uniformed combatants and criminals who attacked purely civilian targets in the absence of any military or Coalition-associated target. IBC’s media-reported, incident-based victim variables were also subject to coverage limitations, with age and sex determined for only one-third of victims. Occupation was determined for only 13 percent of victims (Iraq Body Count 2007b).

Incident details present for extraction in % of 12,934 DB entries
Jan 2006–Sep 2008

Number Killed	100.0%
Location (by nearest-town)	99.9%
Targeted or hit	96.8%
Exact Date	94.8%
Weapon	94%
Primary sources	86.1%
Location (within-town)	82.2%
Number Injured	80.9%
Time of day	76%
Perpetrator	23.2%

Figure 5. Coverage of Key Reported Variables of Incidents Deadly to Civilians

How to Improve Incident-based Casualty Recording?

Active, daily monitoring of media reports, as IBC has shown to be feasible under the conditions of the Iraq war, has the clear potential to provide timely information that can be used to identify trends or tactics that endanger civilians and to devise measures and alternative tactics to protect civilians. In order to realize this potential fully, however,

researchers need access to various kinds of data: the commercial data streams available to major news media; the data held by governments and militaries, which tend not to release data on civilians until decades after the conflict, if at all; and data held by NGOs, which are often released in aggregate form but without public release of raw data. In all cases, raw data can and should be appropriately anonymized as part of the data processing if the release of victim or incident data might place individuals at risk.

The systematic compilation and integration of incident-based casualty data, which must be accompanied by cross-checking to avoid double-counting if it is to be useful, is highly labor-intensive. It depends on the methodical scrutiny of tens of thousands of documents for data extraction and codification, and a series of quality control checks before publication of results, on a continuing basis. If data is to be produced and disseminated on a timely basis, this process requires a sizeable workforce of highly trained, and ideally multilingual, readers. Advanced technology is also essential, in particular computerized platforms designed specifically to deal with very large, relatively unordered, and rapidly moving data streams. These platforms should be customizable for different projects but able to embody common frameworks for data entry, data management, data security, and data presentation.

As communication, innovation, and sharing of ideas, experiences, and methods are critical to moving the field of civilian casualty recording forward, a properly-resourced meeting ground is needed on which casualty recording practitioners from different conflict environments can interact and learn from each other's methods. One such venue for interaction has, in fact, recently been created: everycasualty.org is a network created by some twenty members who take incident-based approaches to casualty recording. Financial support from the United States Institute of Peace, the Federal Division of Foreign Affairs of the Swiss Government, and the "zivik" program of the Institute for Foreign Cultural Relations funded by the German Federal Foreign Office has allowed everycasualty.org to launch an initial program of networking and development activities (see http://www.oxfordresearchgroup.org.uk/projects/recording_casualties_armed_conflict). Our hope is that this effort will spur the development of the nascent professional field of conflict casualty recording, able to discuss and develop best practices and context-aware practice, support the training and development of individuals, and legitimately represent the field to governments and the public.

In the case not only of Iraq but of armed conflicts generally, no official public

mechanism exists to count, let alone identify, individual civilian victims of armed conflict in an ongoing and comprehensive manner. The IBC project is one among a number of unofficial contributions toward filling that gap. However, governments and intergovernmental agencies should as a matter of principle facilitate and support comprehensive and long-term casualty recording, not only of their soldiers but of the civilians killed in their wars. Whatever level of official support and engagement may eventually be forthcoming, the establishment of an independent and politically neutral monitoring agency would help to foster trust and engagement in the mission to record individual civilian casualties. This agency could serve either as a central organization for civilian casualty monitoring or as a looser umbrella organization promoting good practice among multiple, conflict-specific monitoring groups.

There will always be a role for autonomous groups and individuals, such as those involved in IBC and many similar NGOs, to participate on a grass-roots level in data collection, monitoring, advocacy, and innovation, holding governments to account. Citizen involvement also ensures that projects reflect local priorities. However, to rely entirely on the volunteers who staff these poorly funded groups to carry out the prolonged, extensive, and labor-intensive work of monitoring civilian casualties of war is to deny and to defer the responsibility of parties to war, the societies that support them, and the international community to assess the direct impact of war on civilians using the best systematic methods available.

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