EVIDENCE-BASED PEACEKEEPING:

Exploring the Epidemiology of Lethal Violence in Darfur

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INTRODUCTION[1]

Assessments of the efficacy of peacekeeping operations have hitherto focused on whether the presence of a peacekeeping mission reduces the chances of a return to war (Doyle and Sambanis 2006; Fortna 2008). With the expansion of peace mission mandates to include the protection of civilians and other operations conducted during ongoing hostilities, additional questions arise. In particular, if the aim of a peace support mission is to reduce violence against civilians, it will be important to develop metrics for monitoring and analyzing such violence. This in turn opens up the wider question of the nature and scale of violence in civil conflicts, a matter on which there is both empirical controversy (Valentino, Huth and Balch-Lindsay 2004; Davenport and Stam 2007; Obermeyer, Murray and Gakidou 2008; Spagat et al. 2009; Human Security Report 2010) and analytical debate (Kalyvas 2006; Bohorquez et al. 2009). With growing awareness that there are continua of violence between "war" and "peace," including post-ceasefire fighting and the mutation of political into criminal violence, these questions gain an additional dimension (Suhrke 2010).

This working paper seeks to analyze the nature and scale of violence in Darfur in a way that is both directly useful in the design of peace support missions and policies, while also more broadly demonstrating the importance of rigorous data collection before and throughout these missions in order to arrive at evidence-based conclusions about the nature of violence and effectiveness of applied responses. Toward this end, we use an original dataset

based on data gathered by the Joint Mission Analysis Centre (JMAC) of the UN-African Union hybrid operation in Darfur (UNAMID), combined with data generated through careful aggregation of reports from open-source venues. The data relate to the period 1 January 2008-31 July 2009, corresponding to the first nineteen months of the deployment of UNAMID.

The question of the extent and nature of violence in Darfur has been a matter of controversy. This dataset, appropriately analyzed, should be able to shed light on this question while uncovering aspects of the violence relevant to the design of effective responses, and demonstrating areas in which current data collection processes utilized by UN-AMID could be improved. This analysis has important limitations which must be borne in mind. First, due to limited reporting, our dataset covers only violent, direct mortality – that is, fatalities which could be immediately linked to violent events. However, it is clear that this is only a relatively small part of the overall mortality in the Darfur crisis, the greater part of which is due to hunger and disease (U.S. Government Accountability Office 2006; Degomme and Guha-Sapir 2010). Second, since only lethal violence is covered, our dataset excludes other forms of harm against persons such as sexual violence, robbery and forced displacement. The incidents covered here thus do not indicate the sum total of harm inflicted on the population as a result of the conflict. Finally, the data relate to a time period after the intense hostilities and associated extremely high rate of mortality, mostly associated

UNDERSTANDING POLITICAL VIOLENCE

Data Approaches, Sources and Methods

with the years 2003-04, had declined, so they cannot be taken as an indication of the overall death toll.

Another major caveat is that there are some significant questions over the accuracy and comprehensiveness of both the JMAC data and the open-source data. These will be discussed in more detail below. Despite these drawbacks, however, analysis of the merged dataset provides important insight into the nature of the conflict. The data and its analysis are illustrative of the challenges that face the exercise in developing evidence-based peace support operations, and especially evidence-based civilian protection missions.

As scholars have become interested in identifying, analyzing and understanding political violence, useful tools to collect relevant data have been developed. Some studies used national newspapers (normally the dominant commercial press), and sources were later expanded to regional and/or international newspapers (Sommer and Scarritt 1999) as well as NGO and government reports (Poe and Tate 1994). Monitoring data from UN peace missions have rarely been available.

These studies have also evolved with regard to the way the sources were used. For example, earlier efforts to document and analyze political violence employed single sources whereas over time it has become standard to extract information from as many different sources as possible, integrating them into one database. This approach is limited however because homogenization obscures understanding of what each source has to contribute (Davenport 2010). Source-specific information is crucial because it is possible that different sources relate differently to various parts of a conflict in a systematic manner (i.e., to specific actors, actions and/or locales). In this context, it is crucial to compare source types. In short, behavioral generation (in this case political violence) must be explored along with data generation (in this case source coverage of political violence).

In line with the best practices identified above, in our examination of violence in Darfur, two datasets were created, compared, and eventually merged. The first was based on JMAC reports, henceforth referred to as the "JMAC dataset," though

it was compiled by our research team rather than the JMAC itself. This dataset is based on reports submitted to UNAMID, from a combination of sources, including UNAMID itself, UN agencies, international NGOs (excepting the ICRC), and others including Sudanese police reports. In the early months of UNAMID, many JMAC reports were vague and cursory, for example referring to "numerous" casualties, failing to distinguish between fatalities and casualties, and often giving round number figures. During the second and third quarters of 2008, the number and specificity of reports increased substantially. Towards the end of 2008 and more significantly in the first half of 2009, the reports are interspersed with additional reports from investigations, usually undertaken by teams from UNAMID Civil Affairs Department and Human Rights Department. These investigations sometimes found that the initial reports featured exaggerated figures. Given that earlier reports have not been withdrawn from the JMAC dataset, this can give rise to the duplication of incident reports and to incident reports which have subsequently been falsified or amended remaining part of the record. In the third quarter of 2009, JMAC introduced a more rigorous reporting system, including all incidents considered to be credible by UNAMID in its dataset. This coincided with the expulsion of 13 international NGOs, who had until then been a major source of information especially from more remote rural areas and IDP camps. The data show a marked decline in incidents from March 2009 and it is not clear to what extent this can be attributed to these two changes in reporting procedures.

The second dataset compiled was the result of an open-source search in the (English language) public realm, henceforth referred to as the "open source dataset". This integrated reports from sources such as NGOs active in the rebel-held areas, journalists, and spokesmen for the government of Sudan and armed movements, which may have been missed by UNAMID, as well as civil society reports, and public statements by UN agencies. Duplicates were eliminated from the merged dataset by comparing reports that cited similar dates, locations, and content to determine which were likely to be variants on the same events. In some cases, clarification from field research and consultation with the JMAC helped to determine which events were distinct.

The conservative figures from the open source data indicate a higher figure than the JMAC data by approximately 10-15%, but the two converge on the same spatial and temporal patterns, although there is greater discrepancy concerning the identity of those involved in perpetrating violence. An earlier version of the open-source approach was used by the Genocide Intervention Network (GI-NET) to estimate levels of fatalities in Darfur for January-September 2008 (GI-NET, 2009).

In both datasets, reports referring to fatalities due to violence were extracted. Instances of motor vehicle accidents and suicides were removed, though cases of accidental deaths due to gunshots or ordnance (e.g. accidental discharge of weapons, landmines and unexploded ordnance, or shots fired at weddings) remain in the dataset. For

those incidents in which a later report revised the fatality figure, the numbers were adjusted according to the later report.

The two datasets were then merged and where divergent reports existed of the same event, the source of the divergence was painstakingly tracked down. The resulting dataset (henceforth referred to as the "merged dataset") represents the best available estimate on the nature and scale of fatal violence in Darfur from January 2008 to July 2009.

There is a good match between the two datasets, and hence merging produced few changes. The majority of incidents are reported in similar or identical ways in each one. The UNAMID dataset contains 2,112 fatalities during the 19 months reference period. Merging the JMAC dataset with the open-source dataset to add any additional (unique) fatalities identified, the figure rises by 124 to 2,246. In addition there are incidents in which both datasets contain a clear indication of fatalities, with no number given. These are readily identifiable as incidents of combat between the Sudanese Government and the armed movements, in which one or both of the parties did not provide a report on the fatalities among their combatants. Where differences are significant to the analysis and conclusions, they are reported below.

The data were analyzed for (a) overall numbers of people killed, (b) the identity of the victims, (c) the identity of the perpetrators/combatants, (d) the nature of the violence (e.g. combat versus one-sided attacks), (e) the geographical breakdown of fatalities for each of the Darfur states, and (f) trends in fatalities over time and across the dimensions listed above.

RESULTS

The data provide estimates for total fatalities between January 2008 and July 2009 in the range 2,112-2,429. A large number of incidents, including many of those with the highest numbers of fatalities, occurred in clashes between armed tribesmen, which could only be coded as "inter-tribal fighting". The majority of these incidents occurred in South Darfur, with almost all of these events involving tribes aligned with the Sudanese Government. Most of these are conflicts among Arab tribes, but they also include the Fellata, in addition to about 100 fatalities attributable to internal strife within the Gimir tribe. The reports of most of these incidents do not distinguish between combatants and civilians, and indeed the distinction may be difficult to draw in these cases. The category "those killed in inter-tribal fighting" refers to these incidents. It does not include any incidents in which there were armed clashes between militia and non-Arab tribes such as the Fur or Masalit.

The level of violence in South Darfur dropped after April 2009, though there are indications that it picked up again in September of that year, after the end of this study's reference period. There were comparatively fewer incidents in West Darfur and North Darfur. The data from these two states exhibit a declining trend of mostly armed engagements between the Sudanese Government and the armed movements.

The pattern of violence changed during the 19 month period under review. The graphs indicate a discernible decrease in lethal violence. We have not undertaken tests of statistical significance for these observed trends but plan to do so using a variety of statistical techniques.

The overall pattern of violence increasingly shows a multi-sided conflict. Regular and irregular Government forces fought one another, "signatory" armed movements fought each other, and pro-Government forces fought the "non-signatory" armed movements. The frequency and deadly effects of inter-tribal clashes was also pronounced, especially in South Darfur. There were few cases of violence between or within the "non-signatory" movements during this period, though these have unfortunately become more common subsequently, and few between government forces and "signatory" forces.

However, this multiplicity of warring factions does not mean that the conflict is one of featureless chaos; thus, the Hobbesian notion is inappropriate. Lethal violence, including the killing of civilians, varies greatly by time, location, type of fighting, and parties involved. The data reveal that some parties kill far more civilians than others and a surprising amount of this violence is does not appear to be merely "collateral damage" during multi-sided skirmishes, but rather occurs during apparently one-sided attacks. This has important (and very differing) consequences for the design of civilian protection missions, peacekeeping, and peace-enforcement operations.

The JMAC incident database contains reports of 2,112 fatalities from violence. Excluding incidents in which the categories for the victims could not be precisely identified, they were coded into the following categories:

Overall Numbers

Civilians (excluding inter-tribal)	585 deaths
Of which, IDP	90
Victims of common crimes	51
Combatants	675
Of which, Sudan Government regular forces	333
Policemen killed by bandits	16
Irregular militia	153
Armed Movements (signatory)	98
Armed Movements (non-signatory)	91
Those killed in inter-tribal fights	635
Criminals	14
Unidentified	203

Note that "common crimes" excludes any crime committed by an individual in uniform or suspected to be a militia member—it is solely civilians killing other civilians. An additional 60 killings by uniformed individuals could have possibly been classed as "common crimes," as the motives appeared from the reports to have been individual.

After removal of duplicate events and reports which were later discounted, the open-source dataset contains 124 additional fatalities from four major incidents. Of these, 83 occurred in West Darfur during the first six months of UNAMID deployment, 20 in the following six months, and 21 in the first six months of 2009. Violent incidents involving Darfurian groups operating outside the geographical boundaries of Darfur were excluded, including internecine conflict in Chad (32-125 fatalities reported) and the JEM attack on Omdurman (297 fatalities reported).
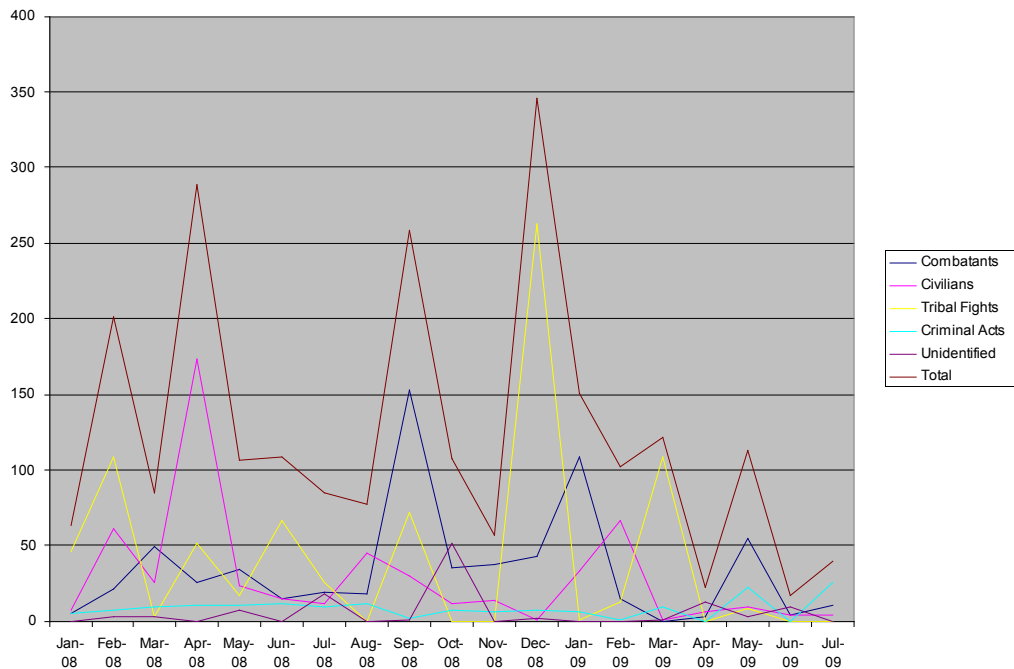
The discrepancies between the datasets can be attributed to the following factors: (a) UNAMID reporting in the first half of 2008 had several gaps, including civilian and combatant fatalities in incidents in West Darfur; (b) some UNAMID reports contain indications of combatant deaths but lack figures; and (c) there are some individual homicides not included in the JMAC data. The chief source of discrepancies, eliminated during the analysis, was that the open source data included initial

reports that were subsequently discounted by UNAMID investigations, which revised the figures downward. For example, specific incidents of inter-tribal fighting in South Darfur in March 2009 were revised downwards after later investigation by UNAMID Civil Affairs Department

Trends Over Time

The following graph shows the overall trend in fatalities over the period of interest up to March 2009. There is a discernible shift from fatalities associated with armed clashes between the Armed Movements and the Sudan Government, with related civilian fatalities, towards inter-tribal clashes. Several points are worthy of note. First, the overall conflict (i.e., the total) is "spikey" – that is, there are periods of intense bloodshed over relatively short periods (February 2008, April 2008, September 2008 and December 2008) followed

by significant and persistent decreases in violence. Second, when disaggregated by targets, many of the spikes are found across types of violence. Thus, in February tribal-related as well as civilian deaths occur; in April we see precipitous increases in civilian and tribal clashes; in September there are increases in combatant and (again) tribal deaths and in December 2008 there are increases in tribal-related deaths alone. Third, when disaggregated we see different victimization in periods of lower lethality. For example, after the peak in February 2008 there is an increase in combatant deaths. After the peak in April, there is an increase in tribal deaths followed by later civilian ones. And, after the peak in December, there is an increase in civilian and tribal-related fatalities.

In fact, the increase in fatalities due to events classified as tribal is a major important feature of the change in violence over this period. As shown below, tribal violence begins the period at a much lower level than other types of violence, but accounts for the majority of fatalities due to several concentrated events near the end of the period. The end results is that tribal violence accounts for 48% of the total violence during the reporting period. It is thus a major type of violence with which peacekeepers and policymakers should be concerned.

Spatially, the data reveals important patterns as well. For example, the majority of fatalities (68%) occurred in South Darfur, with West Darfur seeing 14% and North Darfur as the location of the remaining 18%.This is clearly evident in the graph below, as the level of violence in South Darfur exceeds those of North and West Darfur in almost every period.

Furthermore, there are clear difference in the timing and trending of events in these states, though in general they indicate that

Geographical Patterns

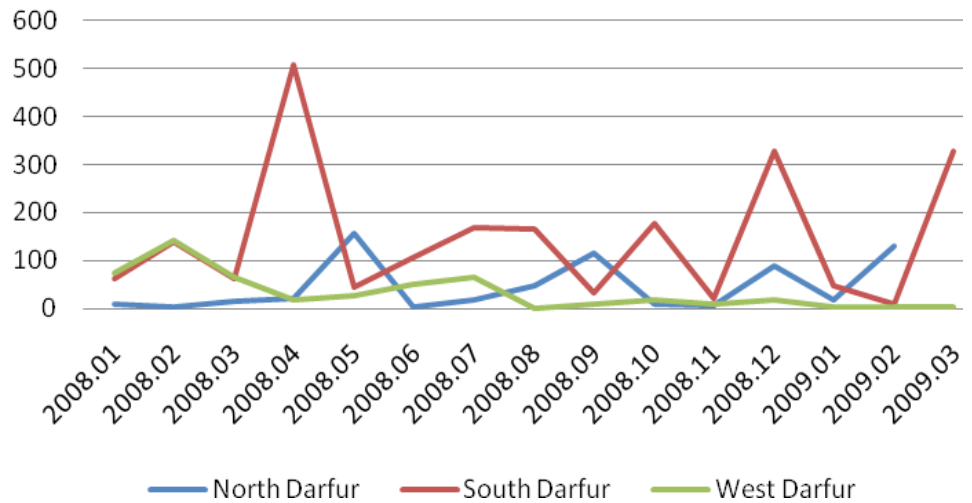### Evolution of Fatalities by Tribal vs. Other Types of Events
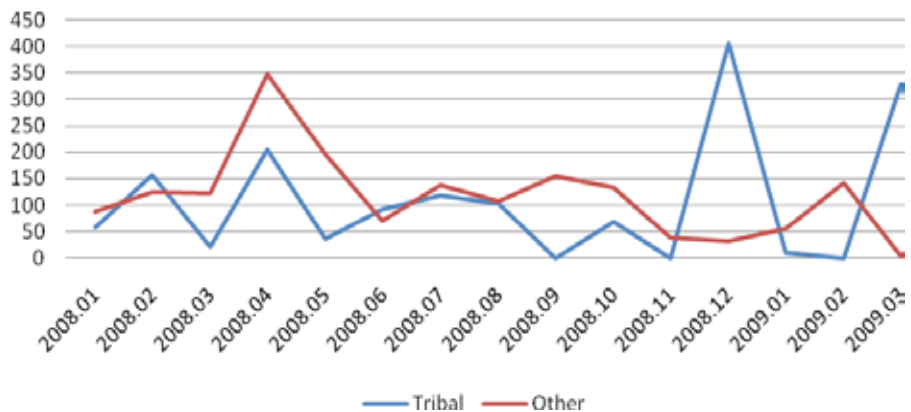
violence is not equally distributed over the time period but rather is disproportionately attributable to a relatively small number of incidents which cause large numbers of fatalities. Indeed, this is found for many other conflicts (Bohorquez et al. 2009), an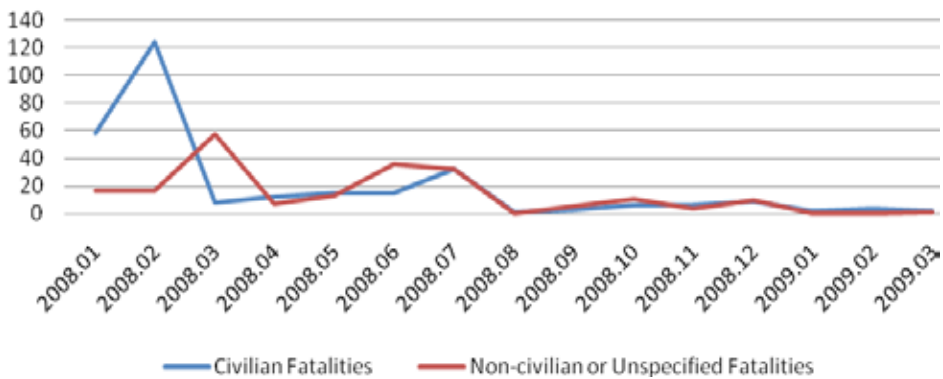d for some non-conflict events such as earthquakes, the fatalities tabulated in our study appear to follow a power-law distribution.

The first graph below, for West Darfur, shows early peaks followed by a downward trend leading to few incidents

Total Fatalities by State

involving fatalities in late 2008 and early 2009. The seemingly clear drop in violence in West Darfur over the reporting period is one of the clearest features of the data.

West Darfur Fatalities by Week

North Darfur (below) shows a different pattern, with an apparently unpredictable oscillation in violence. One type of violence (against civilians) generally decreased throughout the period, while another (against non-civilian/unspecified) increased significantly in the final months of reporting.

North Darfur Fatalities by Month
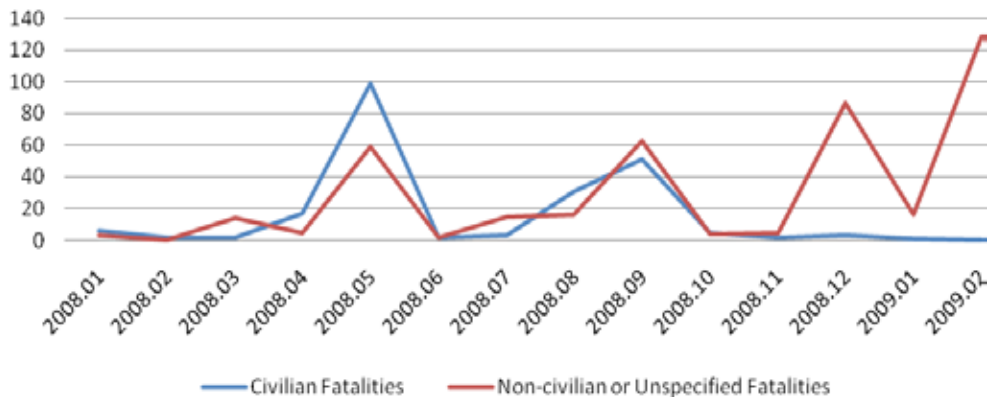
For South Darfur, the pattern is different. In this case, there is no clear change in the rate of non-civilian/unspecified fatalities. However there does appear to be a general decline in civilian fatalities.

South Darfur Fatalities by Month
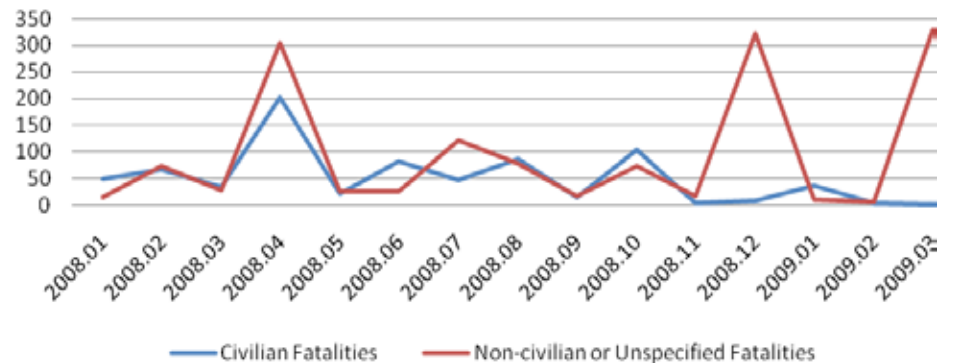
Perpetrators and Victims

We not only have information on the incidence of violence over space and time but also information about who perpetrated the violence as well as against whom. Toward this end, the dataset can be broken down to provide an analysis of who are the perpetrators and who are the victims. The following is based on the coding of the JMAC reports excluding those incidents in which the group responsible for killing could not be identified. As a result the following figures represent about 85% of the incidents.

There is a difficulty in coding some of the incidents because on many occasions regular and irregular Sudanese Government forces conducted joint operations (in which case the figures are attributed to the regular forces) and on one occasion a combined force of signatory and non-sig-natory groups fought jointly against the Sudanese Government (in this instance the figures are put in the "non-signatory" row). Several results are worthy of attention.

The level of fatalities due to inter-tribal conflicts is striking. These are almost exclusively in South Darfur and are mostly among Arab tribes aligned with the Sudanese Government. One implication of this is that more Arabs than non-Arabs were killed in Darfur during the reference period.

A second striking thing about this table is that the forces identified as members of the Sudanese regular forces have taken part in incidents against all other identified actor. There have been incidents in which regular forces clashed

| Killing (L)	Dying (R)	Regular forces	Irregular forces	Signatory movements	Non-sig. movements	Tribes	Bandits	Civilians	Total
Regular forces		15	24	26	76	8	14	131	294
Irregular forces		27	84	2	1			85	199
Signatory movements		8	9	48	12			203	280
Non-sig. movements		259	35	19	2	13		36	364
Tribes		4		3		614			621
Bandits		16						81	97
Civilians		4	1					51	56
Total		333	153	98	91	635	14	585	1909

with regular forces (e.g. Sudan Armed Forces against Border Intelligence); cases of regular forces fighting irregular forces (e.g. SAF against militia); clashes between regular forces and "signatory" armed movements; as well as armed clashes between Sudanese Government forces and "non signatory" armed movements. The "signatory" movements also fought against one another. Of the total fatalities in this table, 253 (13%) occurred in clashes among forces formally aligned with the Sudan government.

It is notable that the non-signatory armed movements did not fight one another and both of the fatalities in this category were extra-judicial executions within a single group. This discounts one major incident in which JEM killed deserters or dissenters which is excluded because it occurred inside Chad, as well as the growing internal strife within the SLA which is excluded due to its occurrence after the reference period. The fragmentation of the armed movements did not lead to major internecine bloodshed inside Darfur during this time period.

The number of fatalities due to fighting between the Sudanese Government regular and irregular forces, and the armed movements, including all violence by these groups against the civilian population, is 637 or 33% of the total. This indicates that a ceasefire between the Government and armed movements would not, in itself, eliminate fatalities.

An overlap exists between the cat-

egories of crime, inter-tribal fighting, and attacks by irregular forces and signatory movements. The category "bandit" is a residual category which refers to individual attacks in which the sole motive appears to be crime. It is worth knowing that only about 5% of fatalities during this time period could be classified as such crime in comparison to events with political or community causes such as tribal clashes. Since fatalities among civilians are of particular interest in this analysis, the figure below shows the number killed by each category of perpetrator:

Civilian Deaths

Civilians 9%
Regular forces 24%
Irregular forces 15%
Signatory movements 37%
Non-signatory Movements 0%
Bandits 15%
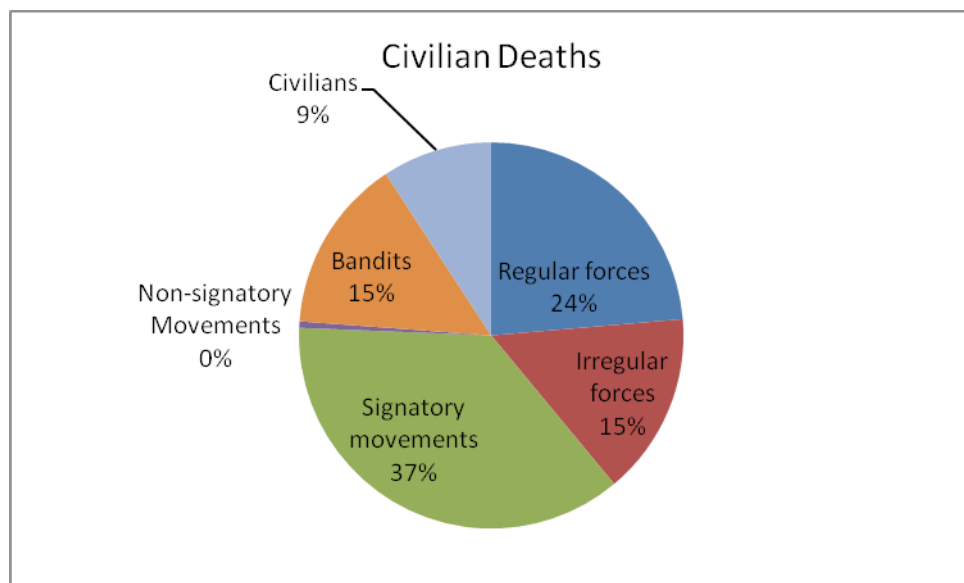
During the 19 months, 90 IDPs were killed. Thirty eight of these deaths occurred as the result of a single incident in Kalma camp in August 2008.

Aerial bombardment was responsible for 70 deaths during the period, including 29 civilians, ten combatants and an unspecified remainder. Thus, while aerial bombardments are certainly a source of terror among populations, presently they do not necessarily kill large numbers of civilians, a significant finding for debates regarding the utility of no-fly zones as a protective measure.

Causality

There is good qualitative evidence to suggest that UNAMID has protected civilians, based on its actions in particular cases and reasonable inferences from its general activities. Perhaps the best evidence comes from the occasions on which civilians sought – and obtained – refuge from violence at UNAMID locations. For example, during the fighting in and around Muhajiriya in South Darfur in February 2009, the UNAMID presence provided physical protection to IDPs who congregated at the perimeter of the camp, and UNAMID helped negotiate a peaceful withdrawal of fighters from the Justice and Equality Movement, thereby preventing a potentially major battle. During 2009, the deployment of additional troops enabled the Mission to cover expanded territory and to increase its physical presence, including night patrols and a police presence in more than fifteen IDP camps.

However, the quantitative data for fatal incidents as they exist do not allow us to make inferences about the causes of patterns of violence or changes in them. In particular, these data do not permit us to conclude that the presence and activities of UNAMID forces have led to a decrease in violence against civilians. The pattern of violence is too complex, the confounding factors too many, and the dataset is too small to allow any such conclusions to be drawn.

Moreover, assessing the causal impact of UNAMID (or anything else) on levels of violence in Darfur is not simply a matter of having accurate data on the right indicators. Even with complete data on every violent event, inferences about questions such as the effect of UNAMID deployment would remain very difficult to assess. Qualitative comparative analyses may be fruitful in this regard, as could modeling approaches such as Markov-chain modeling to address the inherent complexities in the data. Examining where and when UNAMID deploys within Darfur may offer some insights into its impact as well. However such a method would need to account for selection problems which could shed some much needed insight on any endogenous processes. For example, the UNAMID Force Commander regularly deploys troops based on his assessment of imminent risk of increased violence, or recent violence that he considers likely to recur without pre-emptive measures. At a minimum, reasonable causal inference on this basis would require developing an effective model for such deployment decisions (i.e., making the internal process external as well as somewhat verifiable), to account for selection effects.

CONCLUSION

Developing an analytical model that can measure the impact of a peace support mission, and obtaining the data to feed such a model, are important challenges for the future.

This exercise demonstrates the usefulness of rigorous data on fatalities and the importance of data collection and analysis. The analysis provides a figure for the number of people killed in violence in Darfur during the first 19 months of UNAMID deployment. The UNAMID figures appear to have missed or under-reported some incidents, mostly in early 2008, which amount to 10-15% of the total.

The picture that emerges is one of a low-intensity and many-sided conflict, characterized by several distinct patterns of lethal violence, including combat, attacks against civilians by all parties, and inter-tribal fighting. Banditry and common crime, while an important source of insecurity entailing risks to UN and NGO vehicles and property, has caused relatively few documented fatalities. However, the dominant forces inflicting violence against civilians are the regular and irregular forces of the Sudanese Government and the Armed Movements. This finding has important implications for the deployment of UNAMID forces. It can assist the Force Commander in determining the locations, posture and activities of his forces to ensure the best outcomes in terms of reducing violence against civilians. It can help determine the kinds of forces needed including the relative strengths of infantry, armored, airborne and police forces.

It is clear that the pattern of violence is markedly different to that which prevailed during the height of the hostilities in 2003-04, when Government forces and allied militia were responsible for the overwhelming

majority of violence against civilians, and levels of lethal violence were an order of magnitude greater, or even more. This has implications for how the conflict should be described at different periods.

The exercise poses important questions about the rigor of data collection and analysis. Currently, there are no standardized protocols for collecting these data, either within UNAMID or across different peacekeeping missions. Neither are there standardized criteria for assessing or coding the reliability of reports, for coding the nature of the violence reported, or for updating estimates over a conflict as new and presumably better information becomes available. In the absence of such standardized methods, a degree of subjectivity creeps in to any analysis. Local knowledge is important to correct understanding, and patterns and categories of violence will vary from one location to another, so rigid standardization is not necessarily desirable. However, as the ongoing debate over levels of violence in civil wars illustrates, the use of common standards and replicable procedures is important for the consistency, usefulness and credibility of the data and estimates.

In conclusion, the task of constructing the evidence base for peace support operations including a mandate to protect civilians, is at an early stage. There are important methodological, analytical and policy implications of such an undertaking.

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