Online appendix for 'Introducing the UCDP Peacemakers at Risk Dataset, sub-Saharan Africa 1989–2009'

This appendix accompanies the article 'Introducing the UCDP Peacemakers at Risk Dataset, sub-Saharan Africa 1989–2009' by Lindberg Bromley. It provides further descriptive statistics, as well as a more developed discussion regarding the limitations of the dataset, including efforts undertaken to reduce prospective sources of bias.

Limitations and prospective biases

The sections below expand on discussions in the article related to a number of prospective sources of bias that the dataset is susceptible to, as well as efforts taken to mitigate and reduce their impact.

Accounting for gaps or shortcomings in the reporting

As described in the article, data collection for the PAR Dataset largely follows the standard UCDP coding procedures.[1] News media reports form the basis of the coding, but additional sources have also been consulted in order to try to corroborate coding or provide better information based on which incident-data is produced. Consulting multiple sources in order to corroborate information that is contested or in other ways susceptible to description bias is identified as one of several 'best practices' in the collection of conflict data (Salehyan, 2015). The use of open procedures allows for reassessing coding if or as new information emerges. In other words, where better information is available it is used to form the basis of coding, also in cases where the 'equivalent' type of information is not available or accessed for all cases and over time. As such, prospective sources of bias stemming from what is actually reported become important to consider.[2]

As discussed in the article, violence involving peacekeepers is expected to be relatively better captured in news reporting than many other forms of violence in the contexts of conflict of interest, owing, for instance, to the 'newsworthiness' of peacekeeping.[3] The dataset nevertheless remains susceptible to many of the same sorts of bias that affect any effort to track violence systematically across cases and over time. The article notes a few prospective sources of such bias, including how bias over time is likely to impact datasets spanning a longer time period. Accordingly, we may expect less media coverage for peace operations deployed at the earlier end of the time period under study. This may be the case in particular for interventions deployed by regional or subregional organisations, in contrast to for instance interventions deployed by the UN or the EU. Relevant considerations in this regard may include international media interest and news selection (see Öberg & Sollenberg, 2011). Additionally, organisations differ with regards to the level and type of established procedures for collecting and disseminating information, which may ultimately impact the availability of information on particular operations.

Organisations may also display different levels of transparency. In some cases, peacekeeping leadership and/or personnel-contributing countries display reluctance to share information on casualties (their own and those they may inflict on others), even at times deliberately hiding or obfuscating such information. This tendency has been discernible in a number of interventions, such as for AMISOM, the

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[1] The article provides a brief description of the data collection procedures (in the section titled 'Data collection'). For further reading, see for instance Eck & Hultman (2007), Sundberg, Eck & Kreutz (2012) and Sundberg & Melander (2013).

[2] A more overarching point is that the record provided by this dataset (and many other similar datasets) is necessarily a convenience sample and it should as such be understood as a 'record of "newsworthy" events', rather than some objective 'truth' (Davenport & Moore, 2015: 4).

[3] Chojnacki et al. note how international media interest is likely to increase with military intervention, including UN forces (2012: 387). See, further, the section on data collection in the article.

AU's intervention to Somalia since 2007.[4] Williams's study (2015) on AMISOM specifically illustrates the prospective challenges of establishing a credible account of peacekeeping fatalities in a case where there was at the outset no record-keeping and where personnel-contributing countries have generally been reluctant to release figures related to fatalities. Another such case appears to be ECOMOG's intervention to Liberia between 1990 and 1999, during which Nigeria – which formed the backbone of the operation and deployed the bulk of personnel – consistently dissembled on casualty tolls (see e.g. Reuters, 1991). In cases such as these, it appears likely that conscious efforts to withhold information will to some extent adversely influence reporting, thus creating potential 'missingness' in the data. While difficult to account for or avoid altogether, we have in such cases sought to widen searches for news reports to capture a wider range of reporting, and taken efforts to try to find other types of source to either corroborate existing accounts or provide altogether new information.[5]

The article also discusses how detection rates for non-fatal outcomes are expected to be lower than for fatal outcomes, with descriptive statistics featured in the article also supporting this assessment.[6] If detection rates are in fact lower than for fatal outcomes, this may be owing to a number of factors. First, outcomes such as injuries may go unnoticed to journalists. Depending on the type and severity of outcome, an injured peacekeeper may return to base or field offices undetected.[7] Injuries are, furthermore, only recently beginning to be reported by the UN in a more systematic fashion.[8] Second, as with fatalities, there may be an incentive for some interventions or individual contributing countries to withhold information on non-fatal outcomes from public view. As alluded to, non-fatal outcomes to peacekeepers may be more easily concealed than fatal outcomes. The incentive to withhold information may be particularly prevalent in cases of kidnappings or forcible detainments. In such cases there may be particular, strategic motives for secrecy, for instance if it is believed to be the best approach to negotiating the safe return of detainees or to reduce the risk of further such attacks in the future. The imposition of a 24-hour minimum criterion means that we do not seek to record detentions of short duration, which are expected to be the most difficult to detect.[9]

While users should be aware of this and other potential limitations, the inclusion also of events with non-fatal outcomes is nevertheless an important contribution. If violence involving third party actors is in fact more closely monitored and reported on than other forms of conflict-related violence, this pursuit can contribute to developing tools for future research to better capture also non-fatal outcomes systematically across cases and over time. Moreover, data on aid worker security also provide information on injuries and kidnappings, which may suggest that this feature of third-party interventions is not only recordable but also highly interesting to study.[10]

Another source of potential 'missingness' in the data stems not from reporting but from the criteria set forth for any incident to be recorded in the dataset. Information on several key dimensions is required for inclusion – timing, location, outcomes and actors.[11] If such information is not provided in accessed

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[4] Note well that while the focus here is on casualties suffered by personnel attached to a peace operation, similar challenges apply also to tracking peacekeepers' engagement in violence more generally. With regards to the latter, events recorded in the dataset correspond to incidents for which there is strong indication that peacekeepers did in fact engage in violence.

[5] The process of cross-checking PAR data against public and internal event-coded UCDP data and depositories of source materials has provided an additional quality check and has been a benefit in this regard.

[6] This assessment seems to be echoed in related work, such as by Schneider and Bussman (2013: 640) who, in relation to their efforts to record civilian victimisation, note the expectation that reporting of fatalities is 'more reliable and less severely underreported than reports on injuries'. It is however important to note that there may be reasons other than low detection rates that contribute to explaining the proportions of wounded-in-action versus killed-in-action displayed by some interventions. An operation's capacity – in terms here of access to emergency medical treatment and timely medical evacuation – is likely to impact the survival rate of peacekeepers following an attack or clash. An implication is that wounded-in-action versus killed-in-action ratios *should* look different in different missions, depending on, inter alia, mission capacity.

[7] At a general baseline, 'severity bias' leads us to expect that larger and more deadly events should be less susceptible to problems of non-detection.

[8] While the UN increasingly collects detailed information on a range of incidents related to conflict in peacekeeping contexts, such data are typically not in the public domain (see de Waal et al., 2014, and more recently Duursma 2017).

[9] For more information on the coding of non-fatal outcomes, see PAR Codebook and User Guide (Lindberg Bromley & Greek, 2016).

[10] See here in particular the Aid Worker Security Database (AWSD, 2017). Non-fatal outcomes have operationalised in line with existing guidelines in projects coding violence against aid workers (see e.g. Stoddard et al, 2009).

[11] Users closely familiar with UCDP methodology will nevertheless note that we loosen a few of the criteria set forth. In addition to recording also a set of non-fatal outcomes (as opposed to recording reported fatalities alone) we also forgo the 25-

event reports, we may not be able to include incidents that would also be of interest to potential users. For instance, a battle event with no reports of casualties would not be recorded in the dataset, even if we had good indication that peacekeepers were directly involved and used force.

Accounting for discrepancies in event reports
Another potential source of bias is introduced by UCDP procedures for estimating fatalities. The process of consulting different sources will sometimes provide discrepant accounts of a particular incident of interest. Accounts may differ based on the report and the original source providing the information. Observers have argued that such estimation often is difficult in areas of conflict and that it opens up for bias in the data (see Raleigh et al., 2010). Discussions regarding this issue, and steps undertaken in the UCDP to minimise the potential for such bias, have been addressed elsewhere.[12] The PAR Dataset adheres here to UCDP guidelines and best practices, including the provision of best, high and low estimates for fatality tolls to reflect uncertainties concerning the incident and using, as ever, a conservative baseline.[13] It is also important to note that the salience and relatively good media coverage of peacekeeping activities also serves to lessen these and other forms of bias imposed by the coding procedures, by often providing multiple and varied accounts of incidents, as well as after-the-event accounts.

Accounting for biases from coding procedures: Inter-coder reliability testing
As noted in the article, a number of efforts have been undertaken with the aim of mitigating those forms of bias that may be introduced in the process of coding.[14] One such effort was to conduct a set of inter-coder reliability checks following the completion of the coding, based on the recognition that such efforts can allow for identifying systematic biases and ultimately lead to producing data that is of higher quality (Ruggeri, Gizelis & Dorussen, 2011; see also Salehyan, 2015). To conduct such a test, a randomly selected (auto-generated) subset of event reports was selected to be coded anew along key dimensions by two coders and in parallel.[15] The results from the two separate coding efforts were subsequently compared.

Selected were 20 event reports, yielding a total number of recorded events (i.e. rows in the dataset) equivalent to ca 2.5% of the full dataset. Note that each event report was often composed of multiple news reports (ranging from 1 to 10 unique articles/news reports per generated event report). Owing to time constraints and to the fact that the dataset in full contains a considerable number of variables, we focused on a number of key dimensions: actors (sides A and B); temporal precision of the event (start and end dates); violence outcomes (peacekeeper fatalities, injuries as well as kidnappings/forcible detainments; total event fatalities, best and high estimates).

In terms of results, the testing revealed 90% agreement on the identification of events (18/20) in event reports.[16] Calculated on the actual number of 25 congruent events (i.e. rows in the dataset) produced by coders from the generated reports, information-extraction agreement was 90.8% (227/250 measures present in agreed-upon events). While completed only in one round for this version of the dataset, and rather limited in scope, the results are taken to indicate a fairly high level of reliability stemming from the coding process, with each dimension resulting in an 80–100% overlap in terms of information-extraction (median: 92%), and should strengthen confidence in the coding process.

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fatalities criterion and include in the data also actors that are less organised or unknown (or unidentified). See the PAR Codebook and User Guide for information on each dimension noted here.
[12] See Sundberg & Melander (2013), including discussions in the technical, online appendix to the article.
[13] For non-fatal outcomes recorded to peacekeepers, only best estimates are provided. High and low estimates, further, do not differentiate between categories of victims.
[14] See the 'Data collection' section in the article.
[15] Thanks to Mihai Croicu, UCDP, for providing support in organising the tests and analysing the results.
[16] Notably, this particular discrepancy resulted from how the task was devised. Event reports generated sometimes contained information on separate, unique events, coded elsewhere. One coder partaking in the tests took the assignment to mean that *all* potential information from the event reports should be coded; the other that the main event in the report should be coded, including e.g. split as relevant. This type of selection-error would thus be unlikely, in a true coding scenario, where one person tracks the same intervention over time and is thus closely familiar with events coded to date. Moreover, all events have been checked and verified by the project manager prior to release.

Compatibility with other sources of peacekeeping data

As noted in the article, a key contribution of the PAR Dataset is its compatibility with other UCDP datasets on organised violence. This feature opens numerous possibilities for studying questions related to the interlinkages between different types of conflict-related violence, in terms of, for instance, sequence or location. For other questions, characteristics related to the intervention itself are likely important. Scholars may in this regard benefit from information provided in other data-gathering efforts with similar coverage to complement PAR data. Mullenbach (2013), notably, provides detailed information on a number of features of potential interest, such as contributing states, authorising documents and force strength.[17] For users who opt to use a UN-subset of interventions coded for the PAR Dataset further options are available. Kathman (2013), for instance, provides data on UN peacekeeping personnel, including monthly data on the number and type of peacekeeping personnel by member country, to UN operations deployed in the 1990–2011 time period. Ruggeri, Dorussen and Gizelis provide a series of sets of disaggregated data supporting the analysis of peacekeeping events, focusing on a subset of UN operations, mainly covering interventions to Africa in the 1989–2006 time period.[18] Articles in a recent special issue on peacekeeping data provide a good overview of available data, including for use alongside data provided in the PAR Dataset (see Clayton, 2017).

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[17] Mullenbach provides global data spanning the 1946–2012 time period, thus subsuming the time period and countries recorded for PAR. While in large part congruent, the data projects draw on slightly different definitions of peacekeeping interventions, with impacts for particular coverage and inclusion. See PAR Codebook and User Guide for further discussion (pp. 8-9).

[18] For a description of the PKOLED, PKODEP and PKOGOV datasets and further references, see Dorussen and Ruggeri (2017).

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Table I. Fatalities recorded for the PAR Dataset, aggregated by peace operation[a]

Peace Operation	Country of deployment	Duration recorded[b]	Peacekeeper fatalities	Other fatalities[c]	Contributing countries with greatest losses, two highest recorded[d]
AMIB	Burundi	2003–2004	-	20	-
AMIS	Sudan	2004–2007	42	21	Nigeria; Senegal
AMISOM	Somalia	2007–2009*	48	839	Uganda; Burundi
ECOMOG (Liberia)	Liberia	1990–1999	157	371	Nigeria; Guinea
ECOMOG (Sierra Leone)	Sierra Leone	1997–2000	1 518	4 713	Nigeria; Mali
EUFOR Tchad/RCA	Chad	2008–2009	1	2	France
FOMUC	CAR	2002–2008	3	52	Chad
MAES	Comoros	2007–2008	-	3	-
MISAB	CAR	1997–1998	6	117	Senegal; Chad
MONUA	Angola	1997–1999	11	16	Angola; Namibia; Russia; Philippines
MONUC	DRC	1999–2009*	32	271	Bangladesh; Guatemala
OMIB	Burundi	1994–1996	-	1	-
ONUB	Burundi	2004–2006	2	1	South Africa
ONUMOZ	Mozambique	1992–1994	1	2	Mozambique
Operation Artemis	DRC	2003–2003	-	9	-
Operation Licorne	Côte d'Ivoire	2002–2009*	12	107	France
SAPSD	Burundi	2001–2003	1	29	South Africa
UNAMID	Sudan	2007–2009*	25	-	Rwanda; Nigeria
UNAMIR	Rwanda	1993–1996	12	-	Belgium; Uruguay; Ghana
UNAMSIL	Sierra Leone	1999–2005	16	79	Nigeria; India; Jordan; Kenya
UNAVEM III	Angola	1995–1997	4	1	Argentina; Brazil; Jordan; Zimbabwe
UNITAF	Somalia	1992–1993	2	85	USA
UNMIL	Liberia	2003–2009*	1	5	Nepal
UNMIS	Sudan	2005–2009*	3	8	Egypt; India
UNOCI	Côte d'Ivoire	2004–2009*	1	26	Morocco
UNOSOM I	Somalia	1992–1993	-	6	-
UNOSOM II	Somalia	1993–1995	113	857	Pakistan; USA[e]

[a] While the dataset provides also low and high estimates for fatalities in recorded events, the table displays fatalities recorded in the best estimate. Peace operations recording only fatalities in the high estimate, non-fatal outcomes alone (i.e. injuries or kidnappings recorded for peacekeepers), or no casualties at all are thus not featured in this table. For a list of all peace operations included see the PAR Dataset supplement.
[b] Mission close is marked by asterisk in those cases where deployment extends beyond the dataset's coverage. For PAR v.1.0-2016 this is 31 December 2009.
[c] This category may include fatalities recorded in clashes with peacekeepers (alongside a collaborating actor or not), as well as civilian victims and bystanders to violence directly involving the denoted peacekeeping actor.
[d] More than two countries are listed in cases where additional countries are recorded as suffering the same number of fatalities. See the PAR Codebook and User Guide for more details regarding the coding of nationalities.
[e] US Rangers deployed in support of peacekeeping operations in Somalia following the close of UNITAF are recorded for UNOSOM II.