*Article: New Data Set or Data Collection*

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# UN fatalities 1948–2015: A new dataset

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**Abstract**
This article presents a new dataset on UN peacekeeping fatalities that occurred during 1948–2015. The data includes five types of fatality counts: total fatalities, fatalities caused by accidents, illness, malicious acts (i.e. hostile deaths) and a fourth category marked "other incident types." For every UN operation during 1948–2015, data on the number of these four types of UN fatalities are coded at the *yearly* as well as *monthly* level. The monthly data also indicate the nationality as well as the appointment type (troop, police, observer, local or international staff) of the deceased. This dataset is the first of its kind. It offers new opportunities for research on important aspects of UN peacekeeping. Herein, I introduce the data, provide details on the coding process and present trends and an empirical application.

**Keywords**
Dataset, UN fatalities, United Nations, UN peacekeeping

One common assumption and widespread concern among United Nations (UN) Member States is that UN peacekeeping has become an increasingly dangerous undertaking. UN peacekeepers get carjacked, kidnapped and ambushed. They get injured or killed because of improvised explosive devices, suicide bombings and rocket-propelled grenades. They die in helicopter crashes, artillery fire or landmines. Many observers attribute these violent developments to rather recent changes to the UN peacekeeping doctrine.[1] Prior to the 1990s, three operational principles guided UN deployments: host state consent, impartiality, and the limited use of force. Nevertheless, today UN operations sometimes deploy in circumstances in which host state consent is uncertain or fragile (e.g. Côte d'Ivoire, Darfur and Eritrea). UN operations also more frequently "take sides," supporting government forces over rebel groups (e.g. in the Democratic Republic of Congo (DRC)) or opposition forces against the *de facto* government (e.g. in Haiti or Côte d'Ivoire), thereby using heavy weaponry, offensive tactics, and considerable firepower (Diehl, 2008). In the DRC, for instance, the UN mission (MONUSCO) was mandated to "neutralize armed groups," while the UN mission in Mali (MINUSMA) was asked "to deter threats and take active steps to prevent

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the return of armed elements," especially in the north of Mali.[2] In the latter mission, 109 peacekeepers have died since its deployment in July 2013, putting it on track to become the most fatal mission ever for UN peacekeepers.[3] So how dangerous is UN peacekeeping? Have UN fatalities increased over the past decades? What factors influence UN fatality rates? Who dies, when, and why?

Thus far, very few scholars have attempted to answer these questions.[4] While research on UN peacekeeping has seen enormous growth over the last decades, its focus has not been on UN fatalities. One reason for this lack of research is certainly the dearth of data. Both the SIPRI *Multilateral Peace Operations Database* and the UN database on peacekeeping fatalities[5] provide UN fatality numbers, but the data available from these sources is limited to *yearly* fatality figures. Both data sources also do not provide data that lists fatality numbers alongside the causes of death of the peacekeepers, their nationality and appointment types. The SIPRI dataset only provides data on incident types per UN mission/year while the UN database chops up its yearly data into nine different spreadsheets which cannot be easily combined because of the lack of a common identifier for each observation.[6] As a result, thus far no data source exists that provides joint *monthly* UN fatality data by UN mission, nationality of the deceased, incident type, and appointment type.

The dataset this article introduces remedies this significant shortcoming. Consequently, it facilitates research on a range of important topics. For example, monthly fatality data can shed new light on the question of whether UN peacekeeping has become more deadly in recent years. Most scholars agree that to answer this question, we need to calculate fatality ratios, i.e. UN fatality numbers relative to UN deployment levels (Van der Lijn and Smit, 2015). UN deployment numbers are available at the monthly level (Kathman, 2013). Nevertheless, thus far, UN fatality numbers have only been available at the *yearly* level. As a result, studies attempting to calculate fatality ratios have used yearly UN deployment averages (i.e. the average number of UN peacekeepers deployed across all UN peace operations per month; e.g. Van de Lijn and Smit, 2015). Why is this problematic? Most importantly, UN deployment numbers often fluctuate quite dramatically in one calendar year. These fluctuations need to be taken into account when calculating UN fatality ratios. One UN mission can start with 500 troops in January and end with 5000 in December. If five troops die in January, the monthly fatality ratio amounts to 5/500. If five troops die in December serving in the same mission, the monthly ratio is 5/5000. Using average deployment numbers across these two months[7] yields a fatality ratio of 10/2750 ($=0.004$). Nevertheless, a more accurate number would be to calculate the mean of the individual monthly ratios which yields in the example above a ratio of 55/10,000 ($= 0.006$).[8] In addition to fatality ratios, monthly fatality data can also improve research on how UN fatalities interact with other conflict processes and how exactly UN peacekeepers die—to name just a few examples. Most importantly, monthly fatality numbers can be merged with other conflict variables at the *monthly* level (e.g. civilian and battlefield deaths), thus obtaining more precise correlation coefficients when compared to working with yearly averages.

In the remainder of this article, I will explain in greater detail what type of questions might find answers by using the new data this article introduces. I will also provide an overview of the data, detail the coding processes, indicate interesting trends and present an empirical application of how the data might be used.

## What UN fatality data can teach us

Thus far, UN peacekeeping scholarship has focused on two principal questions: "Where do UN peacekeepers go?" (e.g. Andersson, 2000; Fortna, 2004, 2008; Gilligan and Stedman, 2003; Townsen and Reeder, 2014); and "Are UN peacekeeping operations effective in delivering on their mandate?" (e.g. Doyle and Sambanis, 2006; Fortna, 2004; Gilligan and Sergenti, 2008; Howard, 2008; Hultman et al., 2013, 2014, 2015). Very little effort has been made to understand the political, social and military dynamics that affect the UN peacekeepers themselves.[9] This dataset on UN fatalities allows these voids to be filled. In particular, it can improve our knowledge with regard to the following six questions.

### *1. How dangerous is UN peacekeeping?*

UN fatality data can help us assess the risks associated with UN peacekeeping deployments—although the measurement of risk via UN fatalities is, of course, imperfect. Some UN missions can be very "risky" but because of good force protection, force postures or pure luck, no fatalities occur. Still, given the frequent lack of such detailed force characteristics, UN fatalities might be the best risk indicator we have. Assessing such risk is indeed likely to have several important impacts: first, it affects the overall attractiveness of UN peacekeeping deployments and thus UN force recruitment more generally. Many countries in the world, in particular, wealthy Western countries, are hesitant to contribute forces to UN operations because of their perceived dangers. European countries, which two decades ago contributed more than 40% of UN peacekeepers, today provide less than 7% (Anna and Hadjicostis, 2015). Many of these countries point to reports that indicate that UN peacekeeping has become significantly more dangerous in recent years to justify their reluctance to deploy.[10] These impressions of increasing UN fatality accounts sound alarm bells in countries in which public opinion does not easily stomach the idea of soldiers dying in faraway places for reasons only remotely associated with their own immediate security concerns. Consequently, the UN is almost always in dire need of niche capabilities and force enablers that only these more developed countries can provide. As Lt Gen. Satish Nambiar, who led a UN peacekeeping mission in former Yugoslavia in the 1990s, put it: "It's one of the serious deficiencies of U.N. peacekeeping today that the developed world—the people who have the capacities—are not participating."[11] Second, a thorough UN fatality assessment will possibly affect future discussions on UN peacekeeping reimbursement rates. Developing countries, many of them serving in large numbers in UN peacekeeping operations, have argued forcefully that because peacekeeping has become an increasingly risky endeavor, UN peacekeeping reimbursements rates must be increased. Their demands were partly granted by the UN General Assembly Fifth Committee which approved in July 2014 an increase of UN reimbursement rates to US$1410 per solider per month (from US$1028) by 2018 (Nichols, 2014). Nevertheless, come 2018 (or even earlier) new discussions on this topic might ensue. Specifically, discussions on the application of a "risk premium" payment might return (i.e. special payments if troops get deployed to riskier places).

### *2. What risks do UN peacekeepers face?*

Data on UN fatality rates allow not only for an assessment of overall UN peacekeeping risks but also for a thorough analysis on what exact dangers UN peacekeepers face. Rumors

abound on why peacekeepers die. As mentioned earlier, many scholars point to changes in the UN peacekeeping doctrine and more robust mandates to explain UN fatality rates. Today, UN peacekeepers increasingly deploy to conflict theaters where there is no political agreement or peace to keep. They are also mandated to execute more ambitious tasks including the "Protection of Civilians." All of these factors are said to increase UN peacekeeping risks. "Taking sides," for instance, might compromise the acceptance of the mission by the local population (Willmot et al., 2015: 7). Operating in unpacified areas, in turn, can lead to UN peacekeepers getting into the cross-fire of the local conflict while more ambitious mandates require UN peacekeepers to fulfill tasks for which they often lack the skill set and equipment (Willmot et al., 2015: 20). Recent findings in the peacekeeping literature also suggest that larger UN deployments have greater success in protecting civilians (Hultman et al., 2013) and reducing battlefield violence (Hultman et al., 2014) as well as establishing a more sustainable peace (Hultman et al., 2015). Nevertheless, a greater number of troops might also be associated with higher fatality rates.[12] After all, the more soldiers there are on the battlefield, the greater the number of potential targets. Earlier studies of UN peacekeeping success have also found that "enforcement operations" operating under a Chapter VII mandate are more effective than other types of operations (Fortna, 2008: 114). One might imagine, however, that enforcement operations bear greater risks than other types of UN missions. So what are the tradeoffs between UN peacekeeping success and UN fatalities? Which factors increase UN risks most dramatically, such as variables related to the operational environment (e.g. host state consent, impartiality), variables related to the mission mandate and composition (e.g. a Protection of Civilians mandate) or rather variables related to the quality of the peace? Data on UN fatalities enables us to find answers to these questions. Moreover, the dataset in this article even allows for assessing the influence of these factors on the four subcategories of UN fatalities: (a) accidents, (b) malicious acts, (c) illness and (d) other causes.

## 3. Who dies in UN missions?

As mentioned above, certain UN member states are more likely to participate in UN operations than others. Over the last decades, countries such as Pakistan, Bangladesh, India and Nigeria have contributed the largest numbers of UN peacekeeping troops (Cunliffe, 2013: 19). Do these states also suffer the greatest number of UN fatalities? Or do other factors influence national contingent fatality rates (e.g. their location of deployment, strategy of deployment or the equipment the individual contingents use)? Ricks (2006) and Saideman and Auerswald (2012) have observed with regard to the military interventions in Iraq and Afghanistan that national contingents vary greatly in how they interpret their mandates and what types of restrictions (i.e. caveats) they follow. For example, Ricks (2006: 34) writes: "The Dutch did good patrols, on foot. The Italians only patrolled by vehicle … The Japanese didn't patrol at all … [U]nder their rules of engagement which provided only for self-defense, the Japanese weren't permitted to secure their own perimeter and had to rely on the Dutch to do it … The Thai battalion's rules didn't even allow them to leave their camp near Karbala." While UN contingents deployed in one UN mission usually all follow the same Rules of Engagement, one might imagine that how these Rules of Engagement are interpreted still depends on individual nationalities, thus potentially affecting contingent performance in the field. In addition, UN peacekeeping contingents might also vary with regard to their own interests in a specific UN deployment (Bellamy and Williams, 2013), which might further impact their level of risk acceptance. Finally, UN peacekeeping contingents

might react differently to specific health risks in the host countries of the UN operations. These eventual sensitivities might affect their likelihood of sickness during the deployment. This dataset allows us to find answers to these questions. It enables us to track UN fatality rates per mission contributor, appointment type, mission, and fatality type.

### 4. When do fatalities occur?

This dataset on UN fatalities also allows us to understand when exactly UN peacekeeping casualties are most likely to occur. Fjelde et al. (2012) find that rebel groups are most likely to fight against UN peacekeepers when they are losing on the battle field. This dataset allows for the expansion of this thesis and also for estimating the success of these rebels in weakening UN forces. In addition, one can imagine a study that examines whether specific periods (i.e. early or late in the UN deployment) increase peacekeeping fatality rates. Are peacekeepers more likely to die when they are still new to the conflict environment or rather are UN fatalities the result of deployment fatigue? Also, how do political developments in the host state (or even global developments) correlate with UN fatalities? Do UN mandate changes increase fatality rates?

### 5. What political impact do UN fatalities have?

MONUA withdrew in February 1999 after roughly two years in operation when two UN aircraft were shot down, resulting in several UN fatalities. The incident led UN Secretary General Kofi Annan to declare that because of "the steadily worsening security situation … the conditions for a meaningful United Nations peacekeeping role in Angola have ceased to exist."[13] Similar political reactions occurred after the death of Belgian peacekeepers in Rwanda. Overall, however, we know very little about the political impact of UN fatalities. Do peacekeeping fatalities generally lead to changes in UN mandates? Do they lead to increases or decreases in the number of troops, police or observers deployed? Do they shorten or lengthen the overall peacekeeping mission? Various scholars have looked at how UN mandates change (Wright and Greig, 2012). This dataset can contribute to advancing this research agenda.

### 6. How do UN fatalities interact with other conflict processes?

Lastly, this dataset can help us understand how UN fatalities interact with other broader conflict processes. Do UN fatalities impact the course of the local conflict? Do they accelerate or slow down developments toward peace in host states? Salverda (2013) embarked on this research agenda by analyzing why rebel groups fight against peacekeepers in some cases but not in others. One potential explanation might be that UN peacekeepers appear weak after an increase in their own fatality rates and thus constitute an "easier" target for rebel groups. This dataset allows for the examination of this hypothesis in a rigorous way. In addition, it enables researchers to assess when in the development of a particular local conflict UN fatalities occur and why. For instance, do UN fatalities correlate with civilian fatalities or rather with rebel fatalities or government fatalities?

Overall, finding answers to these questions matters greatly. First, the safety and security of UN personnel is an essential element of peacekeeping effectiveness. While UN fatalities do not necessarily indicate operational weakness (i.e. they can also mirror a more

challenging mandate or operational environment), a general rule still persists: the fewer UN fatalities occur, the better. In particular, UN peacekeepers under siege are unable to achieve one of their key mission objectives—to raise the costs of the recurrence of war via deterrence (Fortna, 2008: 86 and 102; Jakobsen, 2000: 44; Last, 2000: 81–82; Walter, 2002). A UN force that can protect its own peacekeepers can more credibly signal to potential spoilers that it will take them on if they intend to threaten the peace. Second, if UN peacekeepers feel that they are under threat, their morale is also likely to decline and thus their willingness to execute their mandates. UN peacekeepers might feel the need to hunker down instead of working toward a safe and secure environment in which the civilian population is protected and political and humanitarian actors are able to perform their work. Third, understanding what factors lead to UN fatalities might help reduce future UN casualties and thus enhance overall UN peacekeeping effectiveness. Detailed information on, for example, which conflict environments or which types of mandates make peacekeepers particularly vulnerable might help mission planners to rethink deployment strategies and thus minimize the risks associated with UN peacekeeping in the future. For these numerous reasons, UN fatality data can thus improve the general value of UN peacekeeping operations.

## Data overview

This dataset covers the time period from 1948 to June 2015. Data was obtained directly from the UN Department of Peacekeeping Operations after a declassification procedure initiated by the author. The dataset consists of two separate sets. The first set presents the type of fatality (accident, malicious act, illness and other causes) as well as the total number of fatalities per UN operation *per year*. I term this dataset, the "mission-year" dataset. The second set offers much greater precision. It provides *monthly* UN fatality data by type of fatality (accident, malicious act, illness and other causes), by type of UN personnel (troops, military observer, police, international staff, local staff, other) and by the nationality of the deceased for each UN operation worldwide that deployed during 1948–2015. I term this dataset, the "contingent-mission-month" dataset. With regard to the fatality types included in the latter dataset, two clarifications are in order. First, the UN considers a "malicious act" to be a fatality caused by "war; invasion; hostilities; acts of foreign enemies; civil war; revolution; rebellion; insurrection; military or usurped power; riots or civil commotion; sabotage; explosion of war weapons; or terrorists activities" (UNDP, 2013: 4). In other words, it is a deliberate act caused by a malevolent actor (Rogers and Kennedy, 2014: 660). On the other hand, a fatality caused by an "accident" includes among others stray bullets and friendly fire as well as road accidents. All UN personnel that died in the earthquake in Haiti in 2010 also fall into the category of accident-related fatalities (Rogers and Kennedy, 2014: 663).

### *Descriptive statistics*

The unit of analysis of the *monthly* dataset is contributor-mission-month. As an example, the dataset shows that Canada lost two troops serving in the UN mission in Former Yugoslavia (UNPROFOR) in June 1994. The death causes were malicious act and other causes, respectively. Recording these UN fatality numbers for every contributor-mission-month yields 2492 observations (Table 1). The values for total UN fatalities per contributor-mission-month range from 1 to 38 with a mean value of 1.4 and a standard deviation of 1.5. For UN fatalities owing to accidents per contributor-mission-month the values range from 0

**Table 1.** Descriptive statistics of the "contingent-mission-month" dataset

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Year | 2492 | 1996.299 | 15.73532 | 1948 | 2015 |
| Month | 2492 | 6.57183 | 3.434198 | 1 | 12 |
| Nationality | 0 | | | | |
| Mission | 0 | | | | |
| Illness | 2492 | 0.417737 | 0.537676 | 0 | 3 |
| Accident | 2492 | 0.505618 | 1.019859 | 0 | 20 |
| Malicious acts | 2492 | 0.34671 | 1.385601 | 0 | 38 |
| Other | 2492 | 0.082263 | 0.276277 | 0 | 2 |
| Total | 2492 | 1.352327 | 1.508794 | 1 | 38 |
| Troops | 2492 | 0.977528 | 1.560855 | 0 | 38 |
| Observers | 2492 | 0.034912 | 0.185767 | 0 | 2 |
| Police | 2492 | 0.097111 | 0.353056 | 0 | 6 |
| Local staff | 2492 | 0.135634 | 0.547303 | 0 | 17 |
| International staff | 2492 | 0.095104 | 0.328287 | 0 | 5 |
| Other staff | 2492 | 0.012039 | 0.141164 | 0 | 4 |

**Table 2.** Descriptive statistics of the "mission-year" dataset

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Mission | 0 | | | | |
| Year | 718 | 1995.345 | 16.07992 | 1948 | 2015 |
| Location | 0 | | | | |
| Accidents | 718 | 1.735376 | 5.201615 | 0 | 100 |
| Illness | 718 | 1.433148 | 3.297497 | 0 | 28 |
| Malicious acts | 718 | 1.193593 | 5.818991 | 0 | 104 |
| Other | 718 | 0.277159 | 0.690487 | 0 | 6 |
| Total | 718 | 4.633705 | 11.17745 | 0 | 141 |

to 20 with a mean value of 0.4 and a standard deviation of 0.5. For UN fatalities owing to illness per contributor-mission-month the values range from 0 to 3 with a mean value of 0.4 and a standard deviation of 0.5. Finally, the values for UN fatalities owing to malicious acts per contributor-mission-month range from 0 to 38 with a mean value of 0.3 and a standard deviation of 1.4. Ghana suffered the highest number of total fatalities in one mission-month. It lost 38 of its personnel in May 1961 while serving in the UN mission to the Congo (ONUC). Brazil suffered the highest number of UN fatalities owing to accident. It lost 20 UN personnel in January 2010 while serving in the UN mission in Haiti (MINUSTAH). Five countries share the rank of highest number of fatalities owing to illness. Among them are Ethiopia in June 2005 while serving in the UN operation to Liberia (UNMIL) and Zambia in November 2001 while serving in the UN mission to Sierra Leone (UNAMSIL).

The *yearly* data has a mission-year unit of analysis and contains information on the number of fatalities per UN mission by fatality type. As an example, the data shows that in 2014 MONUSCO suffered 16 fatalities: five owing to accidents, 10 owing to illness and one owing

to malicious acts. Recording these amounts for every mission-year over the period 1948–2015 yields 718 observations (Table 2). The total fatality counts per year and mission range from 0 to 141 with a mean value of 4.6 and a standard deviation of 11.2. For fatalities owing to accidents the values range from 0 to 100 with a mean value of 1.7 and a standard deviation of 5.2. For illness per mission-year, fatality counts range from 0 to 28 with a mean value of 1.4 and a standard deviation of 3.3. Finally, fatalities owing to malicious acts per mission-year range from 0 to 104 with a mean value of 1.2 and a standard deviation of 5.8. The highest value of total fatalities suffered in a year pertains to ONUC, which lost 141 of its personnel in 1961. The highest value of fatalities owing to accidents pertains to MINUSTAH in 2010 (100 deaths) while UNMIL suffered in 2005 the highest number of illness-related fatalities (28 deaths).

## *Coding processes*

The coding of these values was a straightforward process in the vast majority of cases. However, users of this data should be aware of some minor qualifiers. The "contingent-mission-month" dataset registered one fatality in 2003 for the UN mission in Somalia (UNOSOM), although UNOSOM officially ended in 1995. As a result, I assumed that a mistake was made and deleted that observation. Moreover, when I summed up all the *monthly* fatality data by UN mission and compared it with the *yearly* UN fatality data by UN mission, I found that fatalities across monthly and yearly data matched up perfectly in 76% of all cases. For 15% of UN missions, differences between the yearly and monthly fatalities numbers were very small (<5). Only in three instances were differences greater than 5: in MINUSMA, the yearly data counted 49 fatalities while the monthly data counted 55 fatalities; for MONUSCO, the yearly data reported 86 fatalities while the monthly data reported 92 fatalities; and finally, in the UN Transitional Administration for Eastern Slavonia, Baranja and Western Sirmium (UNTAES), the yearly data counted five fatalities while the monthly data counted 11 fatalities.[14] In addition, the monthly dataset registered one fatality for the UN Supervision Mission in Syria (UNSMIS), while the yearly data did not include UNSMIS at all. On the other hand, the yearly dataset includes the UN Integrated Peacebuilding Office in the Central African Republic (BINUCA). The monthly dataset does not list this mission.

Overall, the UN missions for which fatality data is available are as follows: BINUCA, BONUCA, IPTF, MICAH, MINUGUA, MINURCA, MINURCAT, MINURSO, MINUSCA, MINUSMA, MINUSTAH, MIPONUH, MONUA, MONUC, MONUSCO, ONUB, ONUMOZ, ONUSAL, UNAMA, UNAMET, UNAMI, UNAMID, UNAMIR, UNAMSIL, UNAVEM, UNCRO, UNDOF, UNFICYP, UNGCI, UNIFIL, UNIKOM, UNIOSIL, UNIPSIL, UNISFA, UNMA, UNMEE, UNMIBH, UNMIH, UNMIK, UNMIL, UNMIN, UNMIS, UNMISET, UNMISS, UNMIT, UNMOGIP, UNMOT, UNOCI, UNOMIG, UNOSOM, UNPF, UNPOS, UNPREDEP, UNPROFOR, UNPSG, UNSMA, UNSMIH, UNSMIS, UNTAC, UNTAES, UNTAET, UNTAG, UNTSO. The dataset also includes fatality data for UN personnel serving with the UN Secretariat (UN Secretariat), the UN Office to the African Union (UNOAU), the UN Mine Action Office in Sudan (UNMAO), UN Humanitarian Coordinator for Iraq (UNHCI), and the United Nations Office for West Africa (UNOWA).

### How does the data compare with existing UN fatality datasets?

The SIPRI Multilateral Peace Operations Database and the UN Peacekeeping Department's fatality statistics website both provide data on UN fatalities. Nevertheless, the data available from these sources is limited to *yearly* fatality figures. Both data sources also do not offer data that lists fatality numbers alongside incident type, nationality and appointment type of the deceased. The SIPRI dataset only provides data on incident types per UN mission/year. The UN database offers eight different spreadsheets, each one providing a different combination of UN fatality data such as (a) fatalities by year, (b) fatalities by nationality and UN mission, and (c) fatalities by year, incident type and appointment type. For lack of a common identifier, these spreadsheets cannot be combined. As a result, it is impossible to obtain data that jointly lists UN fatalities by UN mission, nationality of the deceased, incident type and appointment type. Moreover, all UN data is also limited to the *yearly* level. These data limitations inhibit research on various topics of interest to UN peacekeeping scholars. Notably, yearly fatality data makes it very difficult to calculate accurate UN fatality ratios (e.g. UN fatality numbers relative to UN deployment levels). UN deployment levels vary by month. These fluctuations get lost when using annual deployment averages, thus leading to inaccurate UN fatality ratio estimates (Henke, 2016). Moreover, monthly UN fatality data can be combined with monthly conflict processes data (e.g. civilian and battlefield deaths, UN mandate changes) which allows for more accurate estimations of how these events are correlated. Finally, UN fatality observations that combine data on the incident type, nationality and appointment type of the deceased also allow for more precise calculations on which national contingents or appointment types are particularly prone to what type of UN fatality and under what kind of circumstances.

### How compatible is the data with other datasets?

I added to both datasets country codes from the *Correlates of War State System Membership* dataset (Sarkees and Wayman, 2010) to identify either the host nation to which the UN operations deployed or the nationality of the deceased. Since most conflict data projects follow *Correlates of War* country codes, both datasets can thus be easily merged with a variety of extant datasets. To further enhance compatibility with existing data, I also decided to provide two separate datasets as mentioned above: (a) the "mission-year" dataset and (b) the "contingent-mission-month" dataset. Most of the existing conflict datasets use either one of these two units of analysis (e.g. Uppsala Conflict Data Program/Peace Research Institute, Oslo (UCDP/PRIO) Armed Conflict Dataset and related datasets such as the one-sided violence dataset by Eck and Hultman (2007)). Datasets that provide monthly data (e.g. Kathman's (2013) Dataset on UN Personnel Commitments) or datasets that provide information that can be easily converted into monthly data (e.g. the UCDP Georeferenced Event Dataset by Sundberg and Melander (2013)) have seen a rise in popularity in recent years. These datasets are all compatible with the "contingent-mission-month" dataset. In addition, providing yearly and monthly data also allows for month-lag and year-lag controls for endogeneity.

### Yearly vs monthly UN fatality data

Both types of data—the yearly and monthly accounts of UN fatalities—have advantages and disadvantages. The yearly data of UN fatalities by UN missions allows for easy

comparison of fatality rates between UN missions overall. Yearly data also fits well with much of the quantitative work on UN peacekeeping and conflict processes which uses the conflict-year as the unit of analysis (e.g. Doyle and Sambanis, 2000; Fortna, 2004, 2008; Gilligan and Sergenti, 2008; Salverda, 2013). The monthly data, in turn, can be used to assess the impact on UN fatality of monthly changes affecting UN deployments such as troop escalations or withdrawals, UN mandate changes and changes to the local environment in host states. One can imagine, for instance, that in periods of troop withdrawal UN peacekeepers appear vulnerable and are thus more easily targeted. On the other hand, increases in troops might also have a deterrent effect and thus lead to a reduction in UN fatality numbers. Overall, by accounting for these monthly developments, we can more easily assess specific causal mechanisms that lead either to increases or decreases in fatality rates, thus enhancing our understanding of UN peacekeeping risks.

## Data trends

To illustrate the usefulness of this new data and to inspire future research, I present in what follows interesting trends and features of the data.

### *What are the overall UN fatality trends?*

As mentioned above, UN fatality trends are overall poorly understood. To remedy this shortcoming, I conduct an initial analysis of UN peacekeeping fatality developments using the "mission-month" fatality dataset that provides yearly UN fatality data by UN mission over the time period 1948 to June 2015. I sum up all UN fatalities (malicious acts, accidents, illness, and other) across all missions included in the dataset as well as all UN appointment types in one year to create Figure 1. The trend line indicates that UN fatalities since 1948 follow an upward slope, which is strongly statistically significant ($p$-value = 0.000). Note that the graph does not control for UN deployment numbers. It simply provides an *absolute* account of UN fatalities per year.

Next I try to assess UN fatality trends relative to UN deployment numbers. In other words, I divide the number of all fatality types (malicious acts, accidents, illness and other) across all UN missions per month by the number of UN peacekeepers deployed globally in that same month (cf. Henke 2016). Figure 2 depicts these UN fatality *ratios*. UN deployment data is only available from 1990 to 2011 and is limited to troops, police and military observers. Consequently, Figure 2 is limited to the time period 1990–2011 and does not include fatalities of local and international staff serving in UN peacekeeping missions. This new analysis now reveals a strongly statistical significant ($p$-value = 0.000) and substantive decrease in overall UN fatality ratios since the early 1990s.

This example of juxtaposing fatality rates and ratios nicely illustrates one of the advantages of this new dataset. Given that the "contingent-mission-month" dataset provides fine-grained data on UN fatalities at the monthly level and by national contingents, we can easily merge the dataset with UN deployment data and thus calculate a range of different types of fatality trends, thus advancing our knowledge on UN fatality realities and possible perceptions.

### *How are UN fatalities distributed over the course of an operation?*

In addition to overall UN fatality trends, the new data introduced in this article also allows for tracking of UN fatality occurrences within individual UN missions. Figure 3, for

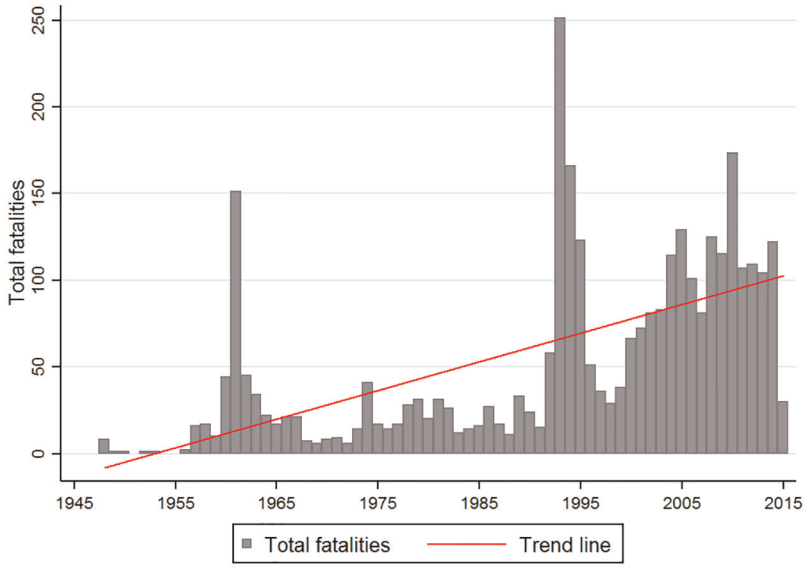


**Figure 1.** UN fatality trend not controlling for deployment numbers (1948–2015).

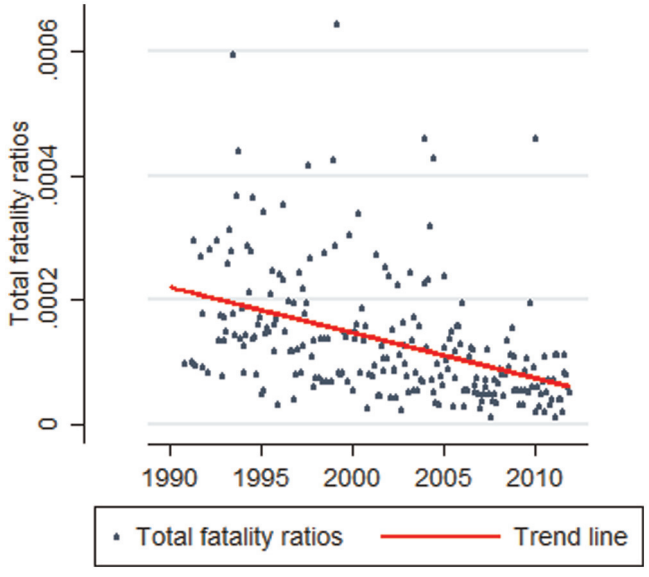


**Figure 2.** UN fatality trend controlling for deployment numbers (1990–2011) (only troops, police and military observers).

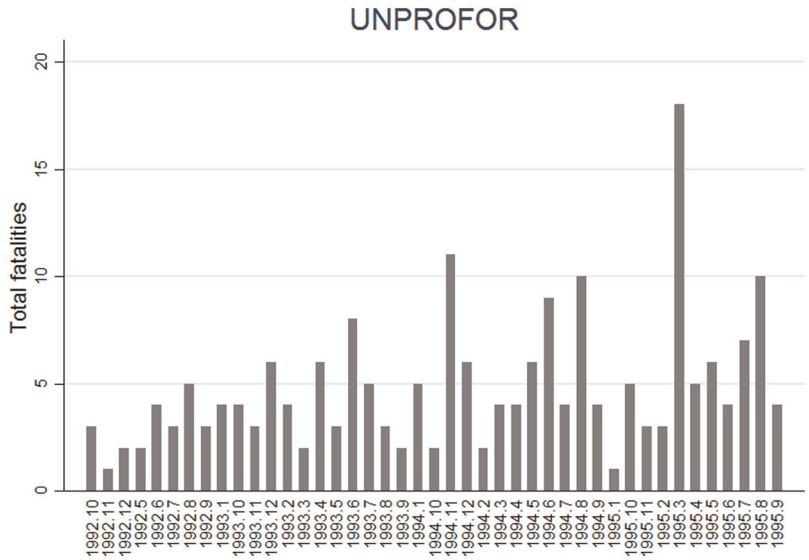


**Figure 3.** UNPROFOR fatalities (all UN personnel, all fatality types) per month.

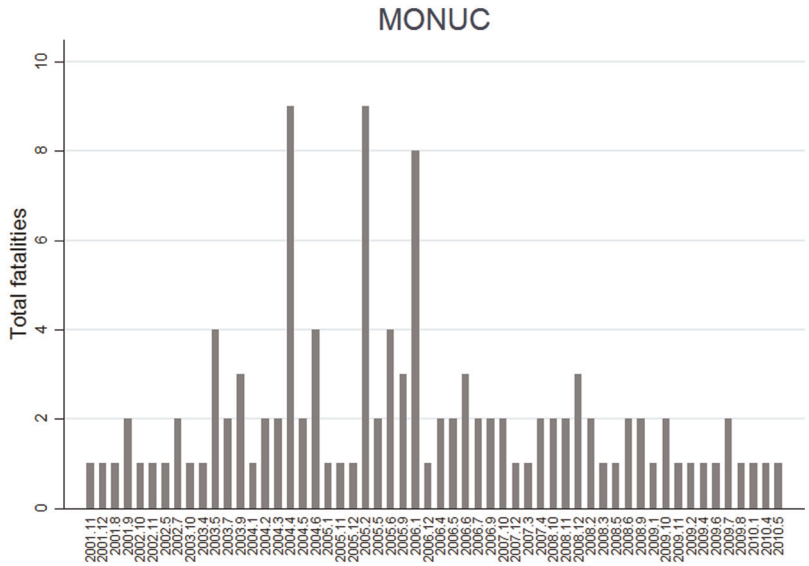


**Figure 4.** MONUC fatalities (all UN personnel, all fatality types) per month.

instance, shows how UN fatalities slowly increased over the course of the UN deployment to Bosnia Herzegovina (UNPROFOR). Figure 4, instead, reveals that UN fatalities that occurred in the UN mission in the DRC (MONUC) peaked in three instances: April 2004, February 2005 and January 2006. Both graphs thus raise interesting questions that seek

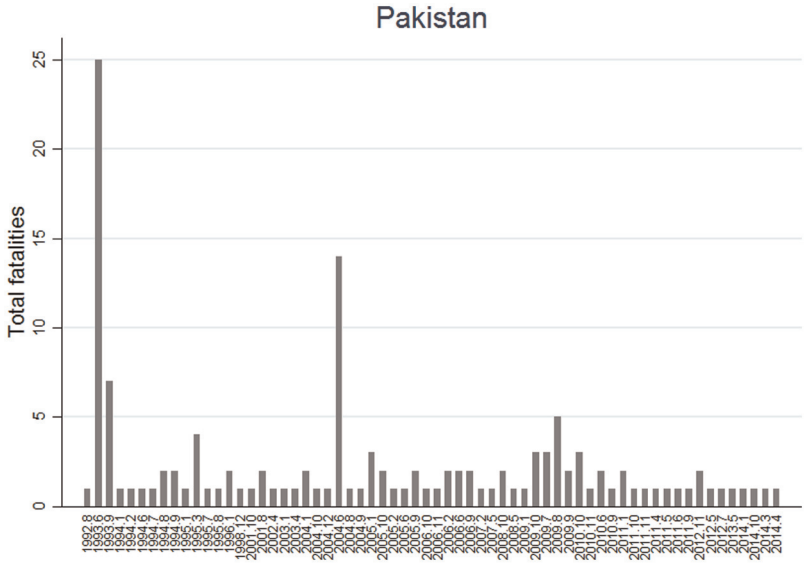


**Figure 5.** Pakistan all UN fatalities (1992–2014).

answers: how can we explain these different UN fatality developments? How did these UN fatality trends intact with local and global events? Can we establish a pattern predicting UN fatalities using almost 60 years of UN fatality data?

### *How do fatality numbers of national contingents evolve?*

Finally, the "contingent-mission-month" dataset enables us to examine fatality trends by UN contributing states. Figure 5 depicts fatalities incurred by Pakistani troop and police contingents, military observers and other staff serving in UN missions since 1992. It illustrates two peaks: one in June 1993 when Pakistan lost 25 of its personnel while serving in UNOSOM and one in June 2004 when Pakistan lost 14 of its personnel while serving in the UN mission to Sierra Leone (UNAMSIL). Figure 6, in turn, illustrates French fatality numbers. France has participated in UN peacekeeping operations since 1948. Overall, it lost most of its personnel while serving in UN missions in the Balkans in 1995. Again, these graphs raise a set of challenging questions: how can we explain the vulnerability of these national contingents in these very specific deployment moments? Moreover, did these fatalities affect the UN deployment policies of these countries? Or even of the UN more generally? And if so, how?

In summary, each one of these graphs above raises important questions and thus illustrates the possibilities of research that this new dataset on UN fatalities can offer to researchers who are interested in examining the causes, trends and perceptions of UN fatalities and their impact on UN peacekeeping more broadly.

## An empirical application

To further illustrate the utility of this new dataset, I conduct a simple empirical analysis below. The empirical puzzle I attempt to address is as follows: do UN deployment numbers

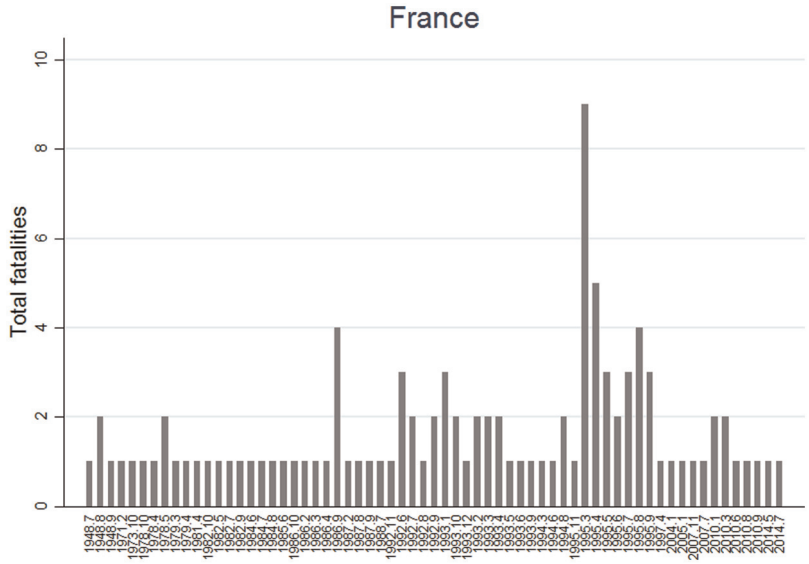


**Figure 6.** France all UN fatalities (1948–2014).

affect UN fatality rates? In other words, does the number of UN troops, police or observers deployed correlate with UN fatalities? As mentioned earlier, one might suspect that if more troops, observers or police are deployed, the likelihood of UN fatalities increases as more potential targets exist. Nevertheless, one could equally hypothesize that the more UN personnel participate in a given operation, the more legitimate and forceful that mission is and thus the less likely a UN fatality is to occur. The puzzle becomes even more complex if we add the effects of deployment numbers on the individual fatality types (i.e. malicious acts, accidents and illness-related fatalities). For instance, do larger UN missions have a particularly deleterious effect on illness-related fatalities as diseases can spread more easily among UN personnel? Or rather, do the effects of deployment numbers not vary among fatality types? Additionally, does only the number of troops deployed have an effect on UN fatality rates, or do police and military observer contingents equally matter?

To find answers to these questions, I merge the "contingent-mission-month" dataset with Kathman's (2013) United Nations Peacekeeping Commitments dataset. As mentioned earlier, Kathman's data is only available from 1990–2011 and is limited to troops, police and military observers. As a result, the regression analysis presented below is limited to the time period 1990–2011 and does not include fatalities of local and international staff serving in UN peacekeeping missions.

## *Variables and model specifications*

I use four dependent variables for this analysis: the first one is a count variable that aggregates *all* UN fatalities at the monthly level; the second dependent variable includes only UN fatalities owing to malicious acts; the third, UN fatalities owing to accidents, and the fourth, UN fatalities owing to illness. As independent variables, I include the exact number of troops, police and observers deployed per UN mission/month. Since the dependent variables

**Table 3.** Regression analysis

| Variables | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| | Total UN fatalities | UN fatalities owing to malicious acts | UN fatalities owing to accidents | UN fatalities owing to illness |
| Number of troops deployed | **0.000***** | **0.000***** | **0.000***** | **0.000***** |
| | **[0.000]** | **[0.000]** | **[0.000]** | **[0.001]** |
| Number of police deployed | **0.000**** | 0.000** | 0.000 | 0.000* |
| | **[0.011]** | [0.048] | [0.219] | [0.092] |
| Number of military observers deployed | 0.000 | 0.000 | −0.001 | 0.001 |
| | [0.892] | [0.991] | [0.434] | [0.389] |
| Constant | −2.405*** | −4.154*** | −3.139*** | −3.400*** |
| | [0.000] | [0.000] | [0.000] | [0.000] |
| lnalpha | 0.787*** | 2.291*** | 1.804*** | 0.498** |
| | [0.002] | [0.000] | [0.000] | [0.046] |
| Observations | 4004 | 4004 | 4004 | 4004 |

Robust *p*-values in brackets ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Standard errors clustered by UN mission. Analyses performed using STATA14.

(i.e. UN fatalities and its sub-categories) are over-dispersed count variables, I run negative binomial regression models. I also use standard errors clustered by UN mission to control for contemporaneous correlation among cross sections. I thus assume that UN fatality rates are not independent within one UN mission. For instance, a Nigerian casualty in UNAMID might be latently related to a Rwandan casualty in UNAMID (e.g. if a virus spreads among UN peacekeepers).

## Results

The results of the regression analysis are illustrated in Table 3. Model 1 uses all UN fatalities disregarding fatality type as dependent variable. Model 2 uses only UN fatalities by malicious acts, Model 3 uses UN fatalities by accidents, and Model 4 uses UN fatalities by illness as dependent variable. Across Models 1–4 the number of troops deployed is strongly positively correlated with the overall number of UN fatalities as well as with the three subcategories of UN fatalities, i.e. accidents, malicious acts and illness. In other words, the more UN troops deploy, the greater the likelihood of a UN fatality occurring. This finding thus resolves one of the questions asked above as to whether the number of UN troops deployed affects UN peacekeeping fatalities. The answer is a resounding yes. Larger UN troop contingents increase the chances of a fatality occurring. Nevertheless, Table 3 also illustrates that the effects of police and military observers on UN fatalities are less strong than for UN troops deployed. Indeed, the number of military observers does not affect UN fatalities numbers at all, while the number of police deployed is positively correlated and statistically significant at the 0.01 level with total UN fatalities. It is positively correlated at the 0.05 level with UN fatalities owing to malicious acts and its effect on illness-related and accident-related fatalities appears to be minor.

In summary, this empirical application further illustrates the utility of this dataset by depicting how the UN fatality data can be easily merged with other available datasets and can thus be used to advance our knowledge on a range of important UN peacekeeping topics

## Conclusion

Our knowledge of UN peacekeeping processes has expanded greatly in recent years. However, many important questions remain unresolved, including the ongoing debate on whether UN peacekeeping has become more dangerous in recent years. The data this article introduces offers many possibilities to explore this question and many more, such as: how deadly is UN peacekeeping? What specific risks do UN peacekeepers face? Who dies in UN peacekeeping missions, when and why? What are the impacts of technical skills and equipment availability on UN fatality rates? What political impact do UN fatalities have? The data presented in this article significantly improves upon existing UN fatality datasets and thus will enable researchers to undertake studies to get at the heart of many remaining UN peacekeeping puzzles.

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### Notes

1. See UN General Assembly, Report of the Secretary-General on the Implementation of the Recommendation of the Special Committee on Peacekeeping Operations, UN Doc. A/69/642, 9 December 2014, p. 8.
2. For MONUSCO see United Nations Security Council, Resolution 2147 (2014), S/RES/2147 (2014), 28 March 2014. For MINUSMA see United Nations Security Council, Resolution 2100 (2013), S/RES/2100 (2013), 25 April 2013.
3. UN Peacekeeping Fatalities by Mission, 31 October 2016, available at http://www.un.org/en/peacekeeping/resources/statistics/fatalities.shtml (accessed November 22, 2016).
4. Notable exceptions are Rogers and Kennedy (2014), Seet and Burnham (2000) and Van der Lijn and Smit (2015).
5. SIPRI Multilateral Peace Operations Database, available at https://www.sipri.org/databases/pko; UN Peacekeeping Department fatality statistics, available at http://www.un.org/en/peacekeeping/resources/statistics/fatalities.shtml (accessed 23 November 2016)
6. The nine categories are: (a) fatalities by year; (b) fatalities by nationality and mission; (c) fatalities by mission and appointment type; (d) fatalities by mission and incident type; (e) fatalities by mission, year and incident type; (f) fatalities by year and incident type; (g) fatalities by year, mission and incident type; (h) fatalities by year and appointment type; and (i) fatalities by year, incident type and appointment type.
7. This is, of course, a simplified calculation based on two months. Average deployment numbers *do* take into account how many troops are deployed in each month of the year and then calculate average deployment numbers per year.

8. The calculation assumes that the UN mission only incurred fatalities in January and December.
9. Notable exceptions are Benson and Kathman (2014), Dorussen and Gizelis (2013), Salverda (2013) and Wright and Greig (2012).
10. The High-Level Independent Panel on UN Peace Operations, for instance, stresses on several occasions that UN personnel operates in "increasingly dangerous environments." See High-Level Independent Panel on United Nations Peace Operations (HIPPO), "Uniting our Strengths for Peace—Politics, Partnership and People," presented to UN Secretary-General, 16 June 2015, 21. Available at: www.un.org/sg/pdf/HIPPO_Report_1_June_2015.pdf.
11. 'As UN peacekeeping veers toward counterterrorism, US urges Europe to donate high-tech skills', 26 September 2015, available at http://www.usnews.com/news/world/articles/2015/09/26/as-un-peacekeeping-veers-toward-counterterror-us-steps-in (accessed 9 November 2015).
12. See empirical application below.
13. Report of the Secretary-General on the United Nations Observer Mission in Angola (MONUA), S/1999/49, 17 January 1999, available at http://www.un.org/en/ga/search/view_doc.asp?symbol=S/1999/49 (accessed 24 August 2016).
14. Most of the discrepancies occurred with regard to illness related fatalities (7), followed by accident related fatalities (4), malicious acts (4) and other (3).

## Supplementary data

The dataset and all other supporting materials can be accessed via a supplementary data file hosted on SAGE's CMPS website.

## References

Andersson A (2000) Democracies and UN peacekeeping operations, 1990–1996. *International Peacekeeping* 7: 1–22.

Anna C and Hadjicostis M (2015) As UN peacekeeping veers toward counterterrorism, US urges Europe to donate high-tech skills. *US News and World Report*.

Bellamy AJ and Williams P (2013) *Providing Peacekeepers: The Politics, Challenges, and Future of United Nations Peacekeeping Contributions*. Oxford: Oxford University Press.

Benson M and Kathman JD (2014) United Nations bias and force commitments in civil conflicts. *The Journal of Politics* 76: 350–363.

Cunliffe P (2013) *Legions of Peace: UN Peacekeepers from the Global South*. London: CH Hurst.

Diehl PF (2008) *Peace Operations*. Cambridge, MA: Polity.

Dorussen H and Gizelis T-I (2013) Into the lion's den: Local responses to UN peacekeeping. *Journal of Peace Research* 50: 691–706.

Doyle M and Sambanis N (2000) International peacebuilding: A theoretical and quantitative analysis. *American Political Science Review* 94: 779–801.

Doyle M and Sambanis N (2006) *Making War and Building Peace: United Nations Peace Operations*. Princeton, NJ: Princeton University Press.

Eck K and Hultman L (2007) One-sided violence against civilians in war insights from new fatality data. *Journal of Peace Research* 44: 233–246.

Fjelde H, Hultman L and Bromley SL (2012) Coercive bargaining strategies: The logic of attacks on third parties in civil war. Paper presented at the *International Studies Association Annual Convention*, San Diego, CA, 1–4 April 2012.

Fortna VP (2004) Does peacekeeping keep peace? International intervention and the duration of peace after civil war. *International Studies Quarterly* 48: 269–292.

Fortna VP (2008) *Does Peacekeeping Work?: Shaping Belligerents' Choices after Civil War*. Princeton, NJ: Princeton University Press.

Gilligan MJ and Sergenti EJ (2008) Do UN interventions cause peace? Using matching to improve causal inference. *Quarterly Journal of Political Science* 3: 89–122.

Gilligan M and Stedman SJ (2003) Where do the peacekeepers go? *International Studies Review* 5: 37–54.

Henke ME (2016) *Has UN Peacekeeping Become More Deadly? Analyzing Trends in UN Fatalities*. Providing for Peacekeeping No. 14. New York: International Peace Institute.

Howard LM (2008) *UN Peacekeeping in Civil Wars*. Cambridge: Cambridge University Press.

Hultman L, Kathman JD and Shannon M (2013) United Nations peacekeeping and civilian protection in civil war. *American Journal of Political Science* 57: 875–891.

Hultman L, Kathman JD and Shannon M (2014) Beyond keeping peace: United Nations effectiveness in the midst of fighting. *American Political Science Review* 108: 737–753.

Hultman L, Kathman JD and Shannon M (2015) United Nations peacekeeping dynamics and the duration of post-civil conflict peace. *Conflict Management and Peace Science* 33: 231–249.

Jakobsen PV (2000) The emerging consensus on grey area peace operations doctrine: Will it last and enhance operational effectiveness? *International Peacekeeping* 7: 36–56.

Kathman JD (2013) United Nations peacekeeping personnel commitments, 1990–2011. *Conflict Management and Peace Science* 30: 532–549.

Last D (2000) Organizing for effective peacebuilding. *International Peacekeeping* 7: 80–96.

Nichols M (2014) U.N. states overcome impasse to pass peacekeeping budget. *Reuters*, 3 July. Available from: http://www.reuters.com/article/us-un-peacekeepers-budget-idUSKBN0F82FG20140703

Ricks TE (2006) *Fiasco: The American Military Adventure in Iraq*. New York: Penguin.

Rogers JI and Kennedy C (2014) Dying for peace? Fatality trends for United Nations peacekeeping personnel. *International Peacekeeping* 21: 658–672.

Saideman SM and Auerswald DP (2012) Comparing caveats: Understanding the sources of national restrictions upon NATO's mission in Afghanistan. *International Studies Quarterly* 56: 67–84.

Salverda N (2013) Blue helmets as targets: A quantitative analysis of rebel violence against peacekeepers, 1989–2003. *Journal of Peace Research* 50: 707–720.

Sarkees MR and Wayman F (2010). *Resort to War: 1816–2007*. Washington DC: CQ Press.

Seet B and Burnham GM (2000) Fatality trends in United Nations peacekeeping operations, 1948–1998. *JAMA* 284: 598–603.

Sundberg R and Melander E (2013) Introducing the UCDP Georeferenced Event Dataset (UCDP GED). *Journal of Peace Research* 50(4): 523–532.

Townsen AA and Reeder BW (2014) Where do peacekeepers go when they go? *Journal of International Peacekeeping* 18: 69–91.

UNDP (2013) *MAIP—Malicious Acts Insurance Policy*. New York: UNDP.

Van der Lijn J and Smit T (2015) Peacekeepers under threat? Fatality trends in UN peace operations. SIPRI Policy Brief.

Walter BF (2002) *Committing to Peace: The Successful Settlement of Civil Wars*. Princeton, NJ: Princeton University Press.

Willmot H, Sheeran S and Sharland L (2015) *Safety and Security Challenges in UN Peace Operations*. Providing for Peacekeeping No. 10. New York: International Peace Institute.

Wright TM and Greig JM (2012) Staying the course: Assessing the durability of peacekeeping operations. *Conflict Management and Peace Science* 29: 127–147.