

# Fatality Trends in United Nations Peacekeeping Operations, 1948-1998

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**W**HEN UNITED NATIONS (UN) Peacekeeping Operations was awarded the 1988 Nobel Peace Prize, Secretary-General Javier Perez de Cuellar, paid tribute to the 733 “blue helmets” who had lost their lives over 40 years “in the service of peace.”<sup>1</sup> Just 1 decade later, the total number of peacekeepers killed in this “grand experiment, in which soldiers were used as a catalyst of peace, rather than as instruments of war,”<sup>2</sup> had more than doubled, exceeding 1500 by the fiftieth anniversary of UN Peacekeeping Operations in 1998.<sup>3</sup> This mirrored the rise in casualties and fatalities reported among field workers from different humanitarian organizations.<sup>4-6</sup>

Two reasons have been given for this large increase in peacekeeping fatalities. First, the increase in number and scale of peacekeeping operations conducted since the end of the Cold War<sup>7-10</sup>; and second, the changes in nature and characteristics of peacekeeping missions that have made them more dangerous with higher fatality risks.<sup>10-12</sup>

While there are increased concerns voiced for the safety of UN peacekeepers, little is known about actual risks and any changes in these over time. By early 2000, there were more than 30 000 uniformed and civilian UN personnel deployed in 17 peacekeeping missions around the globe.<sup>8</sup> We undertook this study of peacekeeper deaths to assess trends, factors, and risks.

**Context** The rising number of deaths among United Nations (UN) peacekeeping forces after the Cold War has made some troop-contributing countries hesitant to participate in peacekeeping operations. While the number and scale of missions have increased, no data have demonstrated a parallel increase in risks to peacekeepers.

**Objective** To determine the association of characteristics of UN peacekeeping operations with risks and mortality rates among UN peacekeeping forces in both the Cold War and post-Cold War periods.

**Design, Setting, and Participants** Descriptive analysis of 1559 personnel deaths during 49 UN peacekeeping missions from 1948-1998 based on the casualty database maintained by Department of Peacekeeping Operations, UN Headquarters.

**Main Outcome Measures** Number and percentage of deaths by circumstance, total crude death rate, and crude death rate and relative risk of death by circumstance (hostile acts, unintentional violence, and illness or other causes) and time period (Cold War vs post-Cold War), geographic region, and nature of peacekeeping response; and regression analysis of mission variables (strength, duration, and humanitarian mandate) associated with total number of deaths.

**Results** More deaths have occurred among UN peacekeeping forces in the past decade alone than in the previous 40 years of UN peacekeeping (807 vs 752), but crude death rates did not differ significantly by time period (Cold War vs post-Cold War, 21.8 vs 21.2 deaths per 10 000 person-years;  $P = .58$ ), level of peacekeeping response, or for geographic regions other than East Europe and Central America, where rates were lower ( $P < .001$  for both regions). Unintentional violence accounted for 41.2% of deaths, followed by hostile acts (36.1%), and illness or other causes (22.7%). Deaths from hostile acts increased after the Cold War (relative risk [RR] 1.51; 95% confidence interval [CI], 1.22-1.88), while rates for deaths caused by unintentional violence decreased (RR, 0.79; 95% CI, 0.67-0.94) but remain high, particularly in the Middle East and Asia (RR, 1.39; 95% CI, 1.15-1.69). Regression analysis showed a significant association between number of deaths and the strength ( $P < .001$ ) and duration ( $P < .001$ ) of a peacekeeping mission.

**Conclusion** The increase in number of deaths among UN peacekeeping personnel since 1990 can be attributed to the increased number and scale of missions after the Cold War rather than increased RR of death. Post-Cold War peacekeeping personnel have a higher risk of dying from hostile acts in missions where more force is required. In missions providing or facilitating humanitarian assistance, both the RR of deaths from all causes and deaths from hostile acts are increased.

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## METHODS

### Study Design

Fatality data for all reported deaths from UN peacekeeping missions from 1948 to August 1998 were obtained from the casualty database maintained by the Situation Center and the Medical Sup-

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Casualty data were based on individual reports submitted by the field mission headquarters within 24 hours of each incident, a requirement for all mission-related fatalities, serious injuries, and illnesses involving UN personnel, both international and local.<sup>13</sup> Deaths among locally contracted civilian staff may have been underreported. Aggregated data available included fatality counts by individual missions and the number of deaths for each incident category as initially reported. Mission-related variables were obtained from official records and publications of the UN Department of Peacekeeping Operations.<sup>8,14</sup> Independent variables that were assessed were circumstances and time period (before or after 1990) of death, geographic region of mission, and level and duration of peacekeeping response.

**Circumstances of Death.** Hostile acts were defined as deaths from intentional violence of political, criminal, or of undetermined hostile origin; the UN classification for deaths due to accidents was defined as deaths from unintentional violence of all causes; and illness and other causes as deaths from disease, "natural causes," and unknown causes.

**Time Period.** 1990 was arbitrarily taken to divide the Cold War and post-Cold War periods. For missions that extended across this time line, the assumption was made that distribution of deaths was uniform throughout the entire mission duration. The 1960 United Nations Mission in Congo (ONUC) has been described as controversial and atypical of missions conducted in the Cold War period because nearly 20 000 personnel were deployed in direct military operations and the highest number of fatalities of any UN mission were sustained (250 reported deaths).<sup>15</sup> Because ONUC resembled a peace enforcement operation more typical of the post-Cold War period than the traditional peacekeeping missions of the Cold War period, it has been excluded from Cold War vs post-Cold War analysis.

**Geographic Region.** For analysis, peacekeeping operations were grouped as Africa, Eastern Europe, Middle East (including Cyprus), Asia, and Central America.

**Level, Strength, and Duration of Peacekeeping Response.** Level 1 response comprises traditional peacekeeping missions involving only unarmed military observers or civilian police monitors.<sup>16</sup> Level 2 responses encompass both traditional and multidisciplinary missions deploying armed military units, for example, in operations like interposition of peacekeeping forces between belligerent forces or their preventive deployment against escalation of hostilities.<sup>16</sup> Level 3 response (peace enforcement) comprises operations conducted with a mandate authorizing use of all measures necessary, including military force, to maintain or restore international peace and security in accordance with Article 42, Chapter VII, of the UN Charter.<sup>16,17</sup> When the mission level changed as a result of amendments to the mandate, the higher level was used. A humanitarian mandate is defined as the specific task given to peacekeeping missions to provide or to facilitate the delivery of humanitarian assistance, which is common in complex humanitarian emergencies occurring in unstable situations with poor security. Strength of mission was determined by number of troops. Duration of mission was measured from first deployment of all UN peacekeeping personnel or until their replacement by a new UN peacekeeping mission under a separate mandate of the UN Security Council or departure of all troops.

#### Data Analysis

The actual strength of each peacekeeping mission varied according to the security situation, amendments to mission mandates, and different mission phases, with fewer peacekeepers deployed during the build-up and liquidation phases. Fatality rates in person-years were estimated for each mission, based on the denominator derived from the product of the official mission

strength and total mission duration. For ongoing missions, strength as of August 1998 was used. United Nations electoral monitors were excluded from the denominator, as they were generally deployed for short periods, often less than a month. Data for locally contracted civilian staff were unreliable and excluded from analysis.

Relative risks (RRs) of death were calculated and presented at the 95% confidence interval (CI), and the independent effects of selected mission variables on the number of deaths were analyzed using multiple linear regression models on Intercooled Stata, version 6.0 (Stata Corporation, College Station, Tex). Confidence intervals were determined for RRs to indicate the level of precision within sample comparisons but not for the rates that were calculated for the total number of peacekeepers, which represent the universe of a unique sample.

#### RESULTS

We analyzed 1559 deaths from 49 UN peacekeeping missions. A chronological list of all missions up to August 1998, including estimated mission-specific fatality rates, is presented in TABLE 1. A total of 22 deaths (1.4%) was excluded from analysis because they involved UN headquarters personnel, who were not part of the peacekeeping force, or did not occur in peacekeeping operations. In 16 peacekeeping missions, there were no reported deaths. The highest number of deaths occurred in Congo (ONUC, 250 deaths), Lebanon (UN Interim Force in Lebanon [UNIFIL], 228 deaths) and former Yugoslavia (UN Protection Force [UNPROFOR], 212 deaths). The highest death rates were in Guatemala (UN Human Rights Verification Mission in Guatemala [MINUGUA]; death rate, 379.94) and Tajikistan (UN Mission of Observers in Tajikistan [UNMOT]; death rate, 296.30); however, the total numbers involved in these 2 missions were small (188 and 72, respectively), and the results may not be representative.

The crude and circumstance-specific death rates and RRs of death by mission variable are summarized in

FATALITY TRENDS IN UN PEACEKEEPING OPERATIONS

**Table 1.** Number and Rate of United Nations Peacekeeping Operations Fatalities by Mission as of August 1998\*

Mission Name	Location	Mission Duration	Mission Strength, No.	Deaths, No.	Death Rate, per 10 000 Person-Years
UNTSO†	Israel	1948-present	153	38	49.43
UNMOGIP†	India-Pakistan	1949-present	45	9	40.20
UNEFI	Middle East	1956-1967	6073	106	16.34
UNOGIL	Lebanon	June 1958–December 1958	591	0	NA
ONUC	Congo	1960-1964	19828	250	31.52
UNSF	West New Guinea (West Irian)	1962-1963	1576	0	NA
UNYOM	Yemen	1963-1964	189	0	NA
UNIFICYP†	Cyprus	1964-present	1268	168	37.32
UNIPOM	India-Pakistan	1965-1996	96	0	NA
DOMREP	Dominican Republic	1965-1966	3	0	NA
UNEFII	Middle East	1973-1979	6973	55	13.53
UNDOF†	Israel-Syria (Golan Heights)	1974-present	1042	39	14.82
UNIFIL†	Lebanon	1978-present	4455	228	24.97
UNIIMOG	Iran-Iraq	1988-1991	400	1	9.69
UNGOMAP	Afghanistan-Pakistan	1988-1990	50	0	NA
UNTAG	Namibia	1989-1990	8000	19	23.75
UNAVEMI	Angola	1989-1991	70	0	NA
ONUCA	Central America	1989-1992	1060	0	NA
UNAVEMII	Angola	1991-1995	711	5	17.94
MINURSO	Western Sahara	1991-present	521	9	23.28
UNIKOM	Kuwait	1991-present	1099	13	15.94
UNAMIC	Cambodia	1991-1992	1504	0	NA
ONUSAL	El Salvador	1991-1995	1159	5	11.26
ONUMOZ	Mozambique	1992-1994	8984	24	12.84
UNOSOMI	Somalia	1992-1993	4469	8	17.90
UNPROFOR	Yugoslavia	1992-1995	38 599	212	17.83
UNTAC	Cambodia	1992-1993	22 000	84	24.17
UNOMUR	Rwanda	1993-1994	81	0	NA
UNAMIR	Rwanda	1993-1996	5500	26	18.91
UNOSOMII	Somalia	1993-1995	30 800	148	23.10
UNOMIL	Liberia	1993-1997	450	0	NA
UNOMIG	Georgia	1993-present	96	3	61.52
UNMIH	Haiti	1993-1996	1858	8	15.21
UNASOG	Chad	May 1994–June 1994	15	0	NA
UNMOT	Tajikistan	1994-May 2000	72	8	296.30
UNAVEMIII	Angola	1995-1997	4200	36	35.42
UNCRO	Croatia	1995-1996	7071	17	26.13
UNMIBH	Bosnia and Herzegovina	1995-present	716	4	15.96
UNPREDEP	Macedonia	1995-1999	1958	6	11.14
UNTAES	Croatia	1996-1998	2847	11	15.45
UNMOP	Croatia	1996-present	114	0	NA
UNSMIH	Haiti	1996-1997	1525	1	6.56
MONUA	Angola	1997-1999	1116	13	66.56
MINUGUA	Guatemala	January 1997–May 1997	188	3	379.94
UNTMIH	Haiti	1997	300	0	NA
MIPONUH	Haiti	1997–March 2000	389	0	NA
MINURCA	Central African Republic	1998–February 2000	1365	1	17.44
UNOMSIL	Sierra Leone	1998-1999	104	0	NA
UNPSG	Croatia	January 1998–October 1998	28	1	133.26

\*Expansion of mission names can be found at <http://www.un.org/Depts/dpko/>. NA indicates not applicable.  
 †Mission extended across the end of the Cold War.

**TABLE 2.** The crude death rate from all causes was 24.0 per 10000 person-years. Unintentional violence was the most common cause of death and accounted for 41.2% of deaths, followed by deaths from hostile acts (36.1%) and illness or other causes (22.7%).

Crude death rates between the Cold War and post-Cold War periods did not differ significantly. However, the RR of dying from hostile acts increased 1.51 times (95% CI, 1.22-1.88;  $P < .001$ ), with hostile acts accounting for 24.1% of all deaths during the Cold War and 37.6% of all deaths in the post-Cold War period. The RR of dying from unintentional violence decreased 0.79 times (95% CI, 0.67-0.94;  $P = .01$ ) in the post-Cold War period, while the risk of dying from illness and other causes remained the same (Table 2).

The largest proportion of deaths occurred in the Middle East (41.6%) and Africa (34.5%). Of the 10 peacekeeping missions in the Middle East, 7 were among the longest conducted by the UN, with a median duration of 9.1 years (range, 0.6-50.3 years) compared with 2.1 years for all other missions. Larger

numbers of deaths were observed for these extended missions, although the rates were not necessarily higher because deaths were distributed over longer periods. For example, the missions in Cyprus (UN Peacekeeping Force in Cyprus [UNFICYP]: duration, 36 years) and Lebanon (UN Interim Force in Lebanon [UNIFIL]: duration, 21 years) sustained a total of 168 and 228 fatalities, respectively.

There have been more UN peacekeeping missions in Africa than in any other region (16 out of a total of 49), with 5 of the 10 largest peacekeeping forces deployed here. The median strength is 1240 persons per mission (range, 15-30800) vs 1042 for all other missions. There were no significant differences in crude death rates among Africa, Middle East, and Asia. However, Africa had the highest death rate from hostile acts, which was twice as great as in other regions. The lowest death rates from hostile acts were in Central America, with no reported deaths, although these missions were generally smaller in scale and shorter in duration.

There were no significant differences in crude death rates among different levels of peacekeeping response. However, the RR of dying from hostile acts was more than twice as great for level 3 response (peace enforcement) compared with a level 1 or 2 response. The presence of a mandate to provide or to facilitate humanitarian assistance increased RR of death 1.40 times (95% CI, 1.24-1.61;  $P < .001$ ), and increased RRs of dying from hostile acts 2.20 times (95% CI, 1.73-2.84;  $P < .001$ ) and from illness 1.37 times (95% CI, 1.05-1.80;  $P = .02$ ).

The results of regression analysis modeling are shown in TABLE 3. A significant positive correlation was found between the total number of deaths and both the strength and duration of a peacekeeping mission. If all other independent variables were held constant, an increase of 5.27 deaths (95% CI, 3.58-6.95;  $P < .001$ ) would be anticipated for every 1000 personnel deployed and an increase of 2.12 deaths (95% CI, 1.05-3.19;  $P < .001$ ) for each additional mission year. After accounting for other variables, regression analysis showed no

**Table 2.** Fatality Rates in United Nations Peacekeeping Operations by Circumstances of Death and Mission Characteristics, 1948-1998\*

Characteristic	Circumstance-Specific Deaths															
	Total Deaths				Hostile Acts				Unintentional Violence				Illness/Other			
	No.	Rate†	RR	P Value	No.	Rate†	RR	P Value	No.	Rate†	RR	P Value	No.	Rate†	RR	P Value
Period‡																
Cold War	502	21.8	1.00		121	5.2	1.00		250	10.9	1.00		131	5.7	1.00	
Post-Cold War	807	21.2	0.97	.58	302	8.0	1.51	<.001	327	8.6	0.79	.01	178	4.7	0.82	.09
Region																
Africa	538	25.6	1.00		279	13.3	1.00		163	7.8	1.00		96	4.6	1.00	
East Europe	255	18.1	0.71	<.001	88	6.2	0.47	<.001	119	8.4	1.09	.49	48	3.4	0.74	.09
Middle East	648	22.7	0.88	.03	165	5.8	0.43	<.001	309	10.8	1.39	<.001	174	6.1	1.33	.02
Asia	101	25.9	1.01	.92	31	7.9	0.60	<.01	42	10.8	1.39	.07	28	7.1	1.57	.04
Central America	17	12.2	0.47	<.001	0	0.0	NA	NA	9	6.4	0.83	.61	8	5.7	1.25	.52
Response§																
Level 1	48	23.1	1.00		9	4.3	1.00		23	11.1	1.00		16	7.7	1.00	
Level 2	809	22.1	0.95	.74	200	5.5	1.26	.52	389	10.6	0.96	.82	220	6.0	0.77	.33
Level 3	702	23.2	1.01	.98	354	11.7	2.71	<.001	230	7.6	0.69	.10	118	3.9	0.51	.02
Humanitarian mandate§																
Absent	304	17.3	1.00		76	4.3	1.00		157	8.8	1.00		71	4.1	1.00	
Present	1255	24.4	1.40	<.001	487	9.5	2.20	<.001	485	9.5	1.08	.43	283	5.5	1.37	.02
<b>Total</b>	<b>1559</b>	<b>24.0</b>			<b>563</b>	<b>8.7</b>	<b>1.00</b>		<b>642</b>	<b>9.9</b>	<b>1.14</b>	<b>.02</b>	<b>354</b>	<b>5.5</b>	<b>0.63</b>	<b>&lt;.001</b>

\*RR indicates relative risk; NA, not applicable.

†Rate is crude rate per 10000 person-years.

‡1990 divides Cold War and post-Cold War periods. United Nations Operation in the Congo (ONUC) is excluded from analysis (n = 250 deaths)

§See "Methods" section for definitions of level of response and humanitarian mandate.

**Table 3.** Regression Analysis of Modeling Mission Variables Associated With Total Number of Deaths in United Nations Peacekeeping Operations\*

Characteristic	Regression Coefficient	Correlation Coefficient	P Value
Constant	-7.93		.30
Mission strength, per 1000 persons	5.27	0.71	<.001
Mission duration, per 1 year	2.12	0.29	<.001
Humanitarian mandate†	20.07	0.49	.15

\*Geographic region and level of peacekeeping response were not significant predictors of death and were dropped from the analysis.

†Dummy variable with absence of humanitarian mandate as the reference category.

significant correlation between the number of deaths and the mission area, level of peacekeeping response, or the presence of a humanitarian mandate.

## COMMENT

We found that while there were more deaths among UN peacekeeping personnel in the post-Cold War decade compared with the previous 40 years of peacekeeping operations, there was no significant increase in the crude death rate. This is contrary to the general perception that post-Cold War missions have become more risky for peacekeepers.<sup>12,18</sup> The increased number of deaths is largely accounted for by increases in number and scale of UN peacekeeping operations. In the 4 decades between 1948-1989, the UN undertook 18 peacekeeping missions, of which 9 (50%) comprised more than 1000 persons. In the past decade alone, there were 31 missions, of which 17 (55%) comprised more than 1000 persons.<sup>8,14</sup> At the peak of peacekeeping activities in 1993, there were more than 80000 deployed military and civilian personnel, with more than 38000 peacekeepers in former Yugoslavia alone.<sup>8</sup> In contrast, the only ambitious peacekeeping operation undertaken during the Cold War was in Congo from 1960-1964 (UNOC).<sup>15</sup> All other missions in that period were much smaller in scale.

There were no significant differences in crude death rates among different levels of peacekeeping response and among most mission areas, with the exception of East Europe and Central America, where rates were lower. This does not confirm the beliefs of military planners

that limited operations carry higher casualty rates than those in which a larger decisive force is employed.<sup>19,20</sup> While this finding might be confounded by the greater likelihood of deploying large peacekeeping forces in more dangerous missions, it suggests that the overall risk of death for individual peacekeepers may not vary with differences in these mission variables. It might be that overall peacekeeping fatalities could be reduced by deploying a smaller number of well-trained peacekeepers, rather than larger multinational forces that include military units from countries with limited experience in complex peace support operations.<sup>21</sup>

Peacekeeping missions with a mandate to provide or facilitate humanitarian assistance were associated with higher crude death rates and with greater risks of dying from hostile acts and illness, which may reflect the instability and poorer conditions encountered.<sup>10-12</sup> However, in the regression analysis model, the presence of a humanitarian assistance mandate does not predict an increase in the number of deaths. Overall, unintentional violence remained the most common cause of death, but our findings showed that there has been a significant decrease over time in the RR of dying from unintentional violence. This might be explained by better preventive measures, as well as improved medical support for casualties.<sup>13,22</sup>

An alarming trend is the higher risk of death from hostile acts after the Cold War. Risk factors include missions in Africa, level 3 (peace enforcement) operations, and missions with a humanitarian assistance mandate. This may have

resulted from the increasing use by the UN of a military approach to address complex political emergencies, a process referred to as “military humanitarianism,” the key difference being the level of force and offense employed.<sup>10-12</sup> In peace enforcement, peacekeepers are often deployed in the midst of civil war between parties that had not all consented to intervention and, with no peace to keep, find themselves drawn into the conflict.<sup>12,23</sup> While authorized to use “all means necessary” to achieve its mandate,<sup>17</sup> strict rules of engagement often leave peacekeepers at a disadvantage in coping with hostile actions directed against them.<sup>24</sup> Deaths occurring in such situations have received high political and media attention, examples being the missions in Somalia (UN Operation in Somalia [UNOSOM]) and Rwanda (UN Assistance Mission in Rwanda [UNAMIR]). Such attention has led the UN and various troop-contributing countries to review their peacekeeping commitments and to set new conditions for involvement in future operations.<sup>25,26</sup> Crude death rates for these 2 missions, however, were not significantly higher than for other missions that continue to receive broad international support.

There are no comparable data for deaths among civilian humanitarian workers. There are similar perceptions of increasing numbers of deaths and increased risks.<sup>4,6,27</sup> Many humanitarian organizations have only recently begun to document staff deaths in detail and to keep accurate records of field staff strength, data that are needed to provide denominators for risk calculations.<sup>4</sup> Observational studies and analysis of secular trends over time conventionally have been used to study warfare<sup>28,29</sup> and can be useful in tracking civilian humanitarian deaths as well. Because of the dynamic nature of current conflicts, with frequent exacerbations and remissions, mortality trends among both civilian humanitarian workers and peacekeeping forces are likely to shift as security and other risk factors change. This points to the need for continuous casualty and mortality surveil-

lance for all parties striving to bring relief and stability to the chaos that will continue to characterize the post–Cold War era in many parts of the world.

## CONCLUSIONS

The number of deaths in UN peacekeeping missions in the post–Cold War decade was 807, compared with 752 in the previous 40 years. However, there has been no significant rise in crude death rates, with the increase in num-

bers of deaths largely explained by the UN's greater commitment of military forces to such operations. Extended missions and large-scale peace-enforcement operations accounted for the largest number of fatalities, although the individual risks of dying in these missions were generally not greater. There was an increased RR of dying from hostile acts after the Cold War, with risk factors including missions in Africa, level 3 (peace enforce-

ment) operations, and missions with a humanitarian mandate. There was a decreased risk of death from unintentional violence, and no differences in death rates from illness and other causes. This study provides a simple model for estimating death rates in UN peacekeeping operations.

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