

## **Recent military fatalities in Afghanistan (and Iraq) by cause and nationality**

*(Correction to attribution of fatalities by nationality in PERIOD 9 is made in this report. Initial phase of Panther's Claw, a major counter-insurgency operation in the run-up to elections in Afghanistan, ended mid-way through PERIOD 9. PERIOD 10 overlaps both winter and Operation Moshtarak in Afghanistan.)*

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### **Summary**

*a) During PERIOD 10 (5 October 2009 to 21 February 2010), there were 213 coalition military deaths in Afghanistan (US 136, UK 44, Canada 9, other nations 24). There were 30 military deaths in Iraq, all US personnel (26 non-hostile fatalities, two deaths from small arms fire, one from IED, and one from IED and small arms fire).*

*b) A surge of 30,000 US troops has been deployed to Afghanistan to facilitate Operation Moshtarak which began in 2010. During PERIOD 10 military fatality rates in Afghanistan were as follows: US – up from 3.7 (95% CI: 2.7 to 4.7) per 1,000 personnel-years in PERIOD 8 to 8.4 (95% CI: 7.2 to 9.6) in PERIOD 9 but down to 3.9 fatalities per 1,000 personnel-years in PERIOD 10 (95% CI: 3.3 to 4.6); UK/Canada – up from 8.2 (95% CI: 5.6 to 11) in PERIOD 8 to 16.5 (95% CI: 13 to 20) in PERIOD 9, thereafter reduced to 11.2 deaths per 1,000 personnel-years in PERIOD 10 (95% CI: 8 – 14) and so major combat still.*

*c) The highest number of fatal IED incidents in Afghanistan (94) occurred in PERIOD 9; and caused 136 military deaths. In PERIOD 10, there were nearly as many, 89 fatal IED incidents in Afghanistan, which caused 120 military deaths. The proportion of hostile deaths due to IEDs increased significantly from 52% (136/260; 95%CI: 46% to 58%) in PERIOD 9 to 64% (120/188; 95%CI: 57%-71%) in PERIOD 10.*

*d) Explanation is needed for the consistently higher UK/Canadian than US military fatality rates in Afghanistan – territory, operations, air-cover, civilian collateral damage, equipment, leadership. Chance is not the explanation.*

*e) During PERIODS 9+10, which follow-on from Canada's improved air support for its troops in Afghanistan, Canadian military fatalities were importantly and significantly lower at 22 than expectations of 55 and 36 deaths based respectively on historical Canadian:UK (1.86) and Canadian:US (3.13) rate ratios and respective national fatality rates in PERIODS 9+10.*

### **1. Background**

Since 1 May 2006 we have reported every 20 weeks on military fatalities in Afghanistan and Iraq by cause and nationality. Our analyses<sup>5,3</sup> rely on icasualties.org, to which we make acknowledgement. Date and cause of fatalities on icasualties.org are subject to change as well as to updating. For example, in late July 2009, military fatalities in Afghanistan in the first half of PERIOD 9 were shown as 119, but now as 120.

Because the initial phase of Panther's Claw, a major counter-insurgency operation in the run-up to elections in Afghanistan, ended mid-way through PERIOD 9, unusually we reported a mid-point analysis: please see **Journal of the Royal United Services Institute 2009; 154: 30-38 & 40-45**<sup>35, 36</sup>.

With two mid-point exceptions – determined by UK’s withdrawal from Basra City and, as above, the initial phase of Panther’s Claw having ended - our analyses have related to 140-day PERIODS, see below. Our next update will relate to the 140 days of PERIOD 10 (5 October 2009 – 21 February 2010).

PERIOD	From	To
1	01 May 2006	17 September 2006
2	18 September 2006	04 February 2007
3	05 February 2007	24 June 2007
4 (mid-point)	25 June 2007	<b>2 September 2007</b> 11 November 2007
5	12 November 2007	30 March 2008
6	31 March 2008	17 August 2008
7	18 August 2008	04 January 2009
8	05 January 2009	17 May 2009
9 (mid-point)	18 May 2009	<b>26 July 2009</b> 04 October 2009
10	05 October 2009	21 February 2010
11	22 February 2010	11 July 2010

## 2. Methods briefly

**We report fatality rates per 1,000 personnel-years.** Four thousand troops in a theatre of operation for 3 months contribute 1,000 personnel-years (pys). So too do 1,000 personnel in theatre for one year. Analytically, we characterise “major combat” by a military fatality rate of 6 or more per 1,000 pys.

**We analyse the lethality of IED (only) incidents.** As in Bird and Fairweather<sup>5</sup>, we exclude from this analysis multiply-ascribed deaths, such as IED and small arms fire or IED and rocket propelled grenade/grenades. A singleton fatal IED attack in Iraq during PERIOD 5 in which a suicide vehicle was used has been coded as ‘suicide bomb’ rather than IED; and similarly a suicide car bomb-IED attack in PERIOD 9 in Afghanistan. Unusually, triple hostile fire US fatalities in Afghanistan and a UK singleton SAS death in PERIOD 6 were coded as ‘explosion’; and likewise the death of a UK lance corporal in PERIOD 7. We have not counted them as IED deaths.

**We need to track changes in deployment.** In PERIOD 5, UK’s deployment to Iraq reduced below 5,000 troops<sup>6-12</sup> and to Afghanistan was to have increased to 7,700, but seems to have remained at around 7,000<sup>10</sup> until PERIOD 6<sup>13-15</sup>. Withdrawal of some 20,000 US combat troops from Iraq during PERIOD 5 was announced by President Bush: we have assumed that their number has effectively stood at 155,000 throughout PERIOD 5<sup>16-19</sup> whereas US troops in Afghanistan have been reckoned at 31,000<sup>16</sup> throughout PERIOD 5. In PERIOD 6 (7), US troop numbers have been reckoned as 150,000 (149,000) in Iraq and 35,000 in Afghanistan<sup>16, 20</sup> despite some reports that both UK and US troop numbers were around 10% lower in Afghanistan<sup>21-23</sup>; and as 139,000 and 39,000 in PERIOD 8 with the UK tallies maintained as in PERIOD 7<sup>24-34</sup>. In PERIOD 9, US and UK troop numbers have been taken as 57,000 and 9,000 respectively. By

PERIOD 10, US troops were reckoned to be around 100,000 in Iraq and around 90,000 in Afghanistan after a further uplift of around 30,000 personnel was announced by President Obama (<http://www.cnn.com/2009/POLITICS/12/01/obama.afghanistan/index.html>; [http://news.google.co.uk/news?hl=en&q=spectre+of+endless+wars&um=1&ie=UTF-8&ei=QIqHS9CZJoz00gS0rZDGCw&sa=X&oi=news\\_group&ct=title&resnum=1&ved=0CAsQsQQwAA](http://news.google.co.uk/news?hl=en&q=spectre+of+endless+wars&um=1&ie=UTF-8&ei=QIqHS9CZJoz00gS0rZDGCw&sa=X&oi=news_group&ct=title&resnum=1&ved=0CAsQsQQwAA)) following a review of military strategy in Afghanistan which was led by General Petraeus (<http://news.bbc.co.uk/1/hi/8527266.stm>; [http://news.bbc.co.uk/1/hi/world/south\\_asia/8389351.stm](http://news.bbc.co.uk/1/hi/world/south_asia/8389351.stm)). Meanwhile, UK and Canadian troops had increased to 9,500 (which does not include mooted 500 “special forces”, see Straight Statistics (<http://www.straightstatistics.org/article/helicopter-numbers-do-we-have-lift>) and 2,800 respectively in Afghanistan (see CBC News, 24 February 2010: “Brace yourself, Canada, our big fight is just ahead”).

### 3. Results

#### 3.1 Fatalities in Afghanistan and Iraq in PERIODS 1 to 10

*Iraq:* For detail on military fatalities in Iraq in PERIODS 1 to 8, please see **Journal of the Royal United Services Institute 2009; 154: 30-38 & 40-45**<sup>35, 36</sup>.

Briefly, in PERIOD 2, which was immediately pre-surge (when US had 145,000 troops in Iraq and UK’s estimated deployment was 7,000 troops), US and UK suffered 416 and 12 respectively of the 436 coalition fatalities. Respective military fatality rates in PERIOD 2 (pre-surge) were: **7.5** per 1,000 US personnel-years (95% CI: 6.7 to 8.2) and **4.5** per 1,000 UK pys (95% CI: 2.3 to 7.8).

Military fatalities in Iraq peaked at 490 in PERIOD 3 (when US troops had surged to 165,000 but UK’s tally reduced from 7,000 to 5,500); and progressively reduced thereafter (193+123 = 316 in PERIOD 4, 156, 134, 80) to 75 in PERIOD 8 (when US had 139,000 troops and UK’s tally was 4,000).

By PERIOD 9, UK’s deployment to Iraq had effectively ceased. All 52 military fatalities in PERIOD 9 in Iraq were US personnel: 21 deaths were non-hostile, 21 occurred in fatal IED (only) incidents, and 10 were from other hostile causes. In PERIOD 10, all 30 military fatalities in Iraq were US personnel: 24 deaths were non-hostile, one occurred in an IED (only) incident, two from small arms fire, and one from IED and small arms fire, a US military fatality rate of **0.8** per 1,000 personnel-years (95% CI: 0.5 to 1.1).

*Afghanistan:* **TABLE 1** summarises coalition military fatalities by nationality in Afghanistan where US personnel accounted for 49% of all military fatalities in PERIODS 1+2+3+4 (180/367; 95% CI: 44% to 54%), for 52% in PERIODS 5+6+7+8 (220/420; 95% CI: 48% to 57%), and for **63%** in PERIODS 9+10 (**320/506**; 95% CI: 59% to 67%).

**TABLE 1** also shows that, in PERIODS 9+10, non-hostile causes accounted only 58/506 military fatalities in Afghanistan (11%; 95% CI: 8% to 14%). Eleven (7 + 4) of these 58 deaths occurred in two separate helicopter crashes in PERIOD 10 and six in three helicopter/airplane crashes (2, 3, 1) in PERIOD 9.

Likewise, in PERIODS 5+6+7+8, non-hostile causes accounted for 49/420 military fatalities in Afghanistan (12%; 95% CI: 8% to 15%) but for 88/367 fatalities in preceding 80 weeks of PERIODS 1+2+3+4 (24%; 95% CI: 20% to 28%).

Suicide bombings accounted for six military fatalities (4 + 2) in PERIOD 10 and for seven in PERIOD 9 (1+2+1+3).

*By nationality:* Military fatality rates in Afghanistan were notably different by nationality, as indicated by non-overlapping 95% confidence intervals below, and consistently so in both the earlier and later 80-week-summary. In the most recent 40-weeks of PERIODS 9+10, UK and Canadian fatality rates are not differentiated.

**Summary for PERIODS 1+2+3+4:**

Canadians: 15.7 per 1,000 pys (95%CI: 12 to 20, based on 56 fatalities in 3,564 pys)  
UK forces: 8.9 per 1,000 pys (95%CI: 7 to 11, based on 76 fatalities in 8,580 pys)  
US forces: 4.9 per 1,000 pys (95%CI: 4.2 to 5.6, based on 180 fatalities in 36,577 pys).

**Summary for PERIODS 5+6+7+8:**

Canadians: 12.2 per 1,000 pys (95% CI: 9 to 16, based on 47 fatalities in 3,848 pys)  
UK forces: 6.5 per 1,000 pys (95% CI: 5 to 8, based on 77 fatalities in 11,896 pys)  
US forces: 4.1 per 1,000 pys (95% CI: 3.6 to 4.7, based on 220 fatalities in 53,388 pys).

**Summary for PERIODS 9+10:**

Canadians: 10.8 per 1,000 pys (95% CI: 7 to 16, based on 22 fatalities in 2,039 pys)  
UK forces: 14.6 per 1,000 pys (95% CI: 12 to 17, based on 104 fatalities in 7,116 pys)  
US forces: **5.7** per 1,000 pys (95% CI: 5.0 to 6.3, based on **320** fatalities in 56,538 pys).

In PERIOD 9, the combined US/UK/Canadian military fatality rate was as high at **9.8** per 1,000 personnel-years (95% CI: 8.5 to 10.9, based on **257** fatalities in 26,347 pys) as it had been three years earlier in PERIOD 1 (9.0; 95% CI: 7.3 to 10.7).

The combined *UK/Canadian* fatality rate in PERIOD 9, as shown in **TABLE 1**, was double that which pertained during PERIODS 5+6+7+8, namely 7.9 deaths per 1,000 personnel-years (95% CI: 6.5 to 9.3, based on 124 *UK/Canadian* fatalities in 15,744 pys). Likewise, the US military fatality rate had doubled from 4.1 in PERIODS 5+6+7+8 (see above) to **8.4** deaths per 1,000 personnel-years in PERIOD 9 (95% CI: 7.2 to 9.6), see **TABLE 1**.

In PERIOD 10, relative to PERIOD 9, the combined US/UK/Canadian military fatality rate halved to **4.98** per 1,000 personnel-years (95% CI: **4.1** to **5.5**, based on **189** fatalities in **39,346** pys), see **TABLE 1**.

The combined *UK/Canadian* fatality rate reduced by a third in PERIOD 10 to 11.2 per 1,000 personnel-years (95% CI: 8.2 to 14.2, based on 53 *UK/Canadian* fatalities in 4,731 pys). By contrast, the US military fatality rate in PERIOD 10 had halved to **3.9** deaths per

1,000 personnel-years (95% CI: 3.3 to 4.6 based on **136** deaths in 34,615 pys), as shown in **TABLE 1**, and was again similar at the US fatality rate that had pertained pre-surge in PERIODS 5+6+7+8 (see above).

### **3.2 Fatal IED (only) incidents: variations**

**TABLE 2** shows military fatalities in IED (only) incidents, hereafter IED incidents, in Iraq and Afghanistan.

*Iraq:* In the most recent 80 weeks of PERIODS 7+8+9+10, there were 11+15+21+1 = 48 fatalities in 10+12+11+1 = 34 fatal IED incidents, fewer than in any *single* preceding PERIOD.

*Afghanistan:* In Afghanistan, where the number of fatal IED incidents roughly doubled from 12 in PERIOD 3 to 27 in PERIOD 4 ( $p < 0.02$ ), there were thereafter 29+39+42+34 = 144 fatal IED incidents in PERIODS 5+6+7+8.

Lethality per fatal IED incident in PERIODS 5+6+7+8 was 216 fatalities in 144 fatal IED incidents in Afghanistan, a mean of 1.5 deaths per fatal IED (only) incident {sd = 0.83}, consistent with Iraq.

In PERIODS 9+10, fatal IED incidents more than doubled per PERIOD to 94+89 = 183 fatal IED incidents. These 183 fatal IED incidents in PERIODS 9+10 cost the lives of 136+120 = 256 military personnel, a mean of 1.4 deaths per fatal IED (only) incident {sd = 0.91}, and so conferring a lethality which is not significantly lower than in PERIODS 5+6+7+8 {because se for the difference in means is 0.1}.

The proportion of hostile deaths due to IEDs increased significantly from 52% (136/260; 95%CI: 46% to 58%) in PERIOD 9 to 64% (120/188; 95%CI: 57%-71%) in PERIOD 10.

### **4. Discussion**

In early 2009, air support for Canadian forces had been increased to 14 helicopters for 2,500 personnel (six Chinook-style and eight other helicopters: **5.6 helicopters per 1,000 personnel**) to meet a stipulation for Canadian troops' continued presence in Afghanistan (see <http://www.forces.gc.ca/site/news-nouvelles/view-news-afficher-nouvelles-eng.asp?id=2816>). Canada's deployment increased to 2,800 by PERIOD 10.

Before the loss of two UK Chinooks during PERIOD 9, thankfully without fatalities, UK's provision of helicopters had been reported as between 23 (*Times*: 10 Chinook-style and 13 others) and 30 for 9,000 troops (and so **at most 3.3 helicopters per 1,000 personnel**) - well below that of US and Canadian counterparts. UK's deployment in Afghanistan increased to at least 9,500 by PERIOD 10 with only a modest increase to date in helicopter cover (gained 7 Merlins). Operationally, two Merlins can be considered to equate to a Chinook, and so UK's current provision for some 9,500 troops seems to be at best 35 helicopters (which includes 11.5 Chinook-equivalents), not yet the 48 that may be required for international comparability: see Straight Statistics (<http://www.straightstatistics.org/article/helicopter-numbers-do-we-have-lift>).

A major counter-insurgency operation that began in Afghanistan in June 2009 ended its initial phase midway through PERIOD 9. Thereafter, Operation Moshtarak began in the second half of PERIOD 10 once US reinforcements of some 30,000 troops had been deployed.

Fatality rates in Afghanistan had doubled in PERIOD 9 relative to PERIOD 8 but in PERIOD 10 reverted for US military personnel and decreased by a third for UK and Canadian forces.

PERIOD 11's emergence from the Afghan winter may herald renewed fighting. There are, however, some early signs that the Petraeus-surge in Afghanistan may pay dividends as it did in Iraq. However, stark political and geographical differences between Iraq and Afghanistan make the military challenges also distinctive. In both countries, surge was quickly instigated in the PERIOD after US military's fatality rate first clearly exceeded major combat, namely 6 deaths per 1,000 personnel-years - which it did in PERIOD 2 in Iraq, and in PERIOD 9 in Afghanistan.

First, military fatality rates have decreased markedly in PERIOD 10. However, quite substantial winter-related decreases have been evident in Afghanistan hitherto, see PERIODS 2 and 5 both of which were pre-surge. Thus, the observed decreases cannot be attributed to the surge alone. Longer perspective is needed.

Secondly, despite the much greater deployment of coalition troops to Afghanistan, fatal IED (only) incidents were no more frequent in PERIOD 10 (89) than in PERIOD 9 (94). However, a higher proportion of hostile deaths in PERIOD 10 was due to IEDs than in PERIOD 9 (64% vs. 52%). Winter may have contributed in part to this stay in IED escalation, a greater availability and use of air transport, better armoured road transport, or more IED-detections. The Taliban's witheringly-described "little flowers" may be being weeded out ever more successfully by the counter-insurgency. Information on this is not routinely in the public domain but fatalities among experienced bomb disposal experts alert the public to their skilled and challenging detection-role. The enemy's supply routes may also be better disrupted.

Whether the Canadians' historically highest of US/UK/Canada fatality-rates in Afghanistan has been effectively counteracted, inter alia by Canada's decision to increase air support, can already be answered provisionally: yes, it has (see below). But the evidence will become even more secure over the next 20 to 40 weeks.

Whereas in PERIODS 1 to 8 the Canadian military fatality rate (**13.9** per 1,000 pys: based on 103 deaths in 7,412 pys) was 1.86 times higher than for UK personnel (**7.5**: 153 deaths in 20, 476 pys), we can already observe that, had the same Canadian : UK fatality ratio pertained in PERIODS 9+10, then we should have expected, not 22 Canadian fatalities, but:

$2,039 \text{ pys} * 1.86 \text{ (rate ratio)} * \text{UK's military fatality rate in PERIODS 9+10} =$   
 $2,039 \text{ pys} * 1.86 \text{ (rate ratio)} * 104 \text{ fatalities}/7,116 \text{ pys} = 55.4 \text{ Canadian deaths.}$

The difference between observed and UK-expected Canadian fatalities (based on historical Canadian : UK rate ratio from PERIODS 1 to 8) is very highly significant, both militarily and in statistical terms ( $p < 0.001$ ). Historically, Canadian and UK troops have undertaken broadly similar missions, albeit in different parts of Afghanistan: *Helmand and Kandahar respectively*.

The equivalent calculation, had the historical Canadian : US fatality rate ratio of 3.13 pertained in PERIODS 9+10, leads to a US-derived Canadian expectation of:  
 $2,039 \text{ pys} * 3.13 \text{ (rate ratio)} * \text{US's military fatality rate in PERIODS 9+10} =$   
 $2,039 \text{ pys} * 3.13 \text{ (rate ratio)} * 320 \text{ fatalities}/56,538 \text{pys} = 36.1 \text{ Canadian deaths.}$

The difference between the observed Canadian fatalities and their US-derived expectation (based on historical Canadian : US rate ratio from PERIODS 1 to 8) is also statistically significant ( $p < 0.02$ ). Thus, Canada's insistence on greater air support inter alia seems to have served its troops well in Afghanistan although other operational changes, to which we are not privy, may also have contributed.

Indirect insight into other operational changes, including differential deployment to provinces within Afghanistan of now substantially more US personnel, is gleaned by comparing the provincial locations of 320 US military fatalities in PERIODS 9 and 10 (see below).

Expectations shown in brackets *in italics* assume a common-provincial-distribution of US military fatalities across PERIODS 9+10, an hypothesis which the data do not conform to (comparison of observed versus expected fatalities by location gives  $\chi^2$  on 2 degrees of freedom of 24.7,  $p < 0.001$ ). There is thus circumstantial evidence that US operational changes have occurred during PERIODS 9+10, let alone hitherto.

Location of US military fatalities	Helmand	Kandahar	Elsewhere in Afghanistan	<b>US TOTALS</b>
PERIOD 9	39 <i>{47.2}</i>	18 <i>{30.5}</i>	127 <i>{106.4}</i>	<b>184</b>
PERIOD 10	43 <i>{34.8}</i>	35 <i>{22.5}</i>	58 <i>{78.6}</i>	<b>136</b>
<b>Total</b>	<b>82</b>	<b>53</b>	<b>185</b>	<b>320</b>

Whichever expectation for Canadian fatalities (55 or 36) is heeded, the observed fatalities were at least a third lower. How much of the reduction is random variation, and how much systematic, will become increasingly clear during PERIODS 11+12. There is, however, indirect evidence of operational changes within PERIODS 9+10 which impact on Kandahar where Canadian troops are deployed and which, in addition to better air support, may have contributed to the altered fortunes of the Canadians.

It remains starkly the case that both UK and Canadian forces have faced major combat throughout the 40 weeks of PERIODS 9+10 (that is: fatality rates greater than 6 per 1,000 personnel-years). And, for UK forces, substantially worse than in either of the preceding 80-week epochs.

Finally, a caution: if we have over-estimated US's deployment to Afghanistan in PERIOD 10, shown as 90,000 personnel, then US fatality rates may be slightly underestimated thereby.

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**TABLE 1a:** Coalition military deaths in Afghanistan and estimated fatality rates per 1,000 personnel-years in consecutive 140-day periods

Theatre	Afghanistan							
Period	1	2	3	4	5	6	7	8
Dates	1 May 2006 to 17 Sept 2006	18 Sept 2006 to 4 Feb 2007	5 Feb 2007 to 24 June 2007	25 June 2007 to 11 Nov 2007	12 Nov 2007 to 30 Mar 2008	31 Mar 2008 to 17 Aug 2008	18 Aug 2008 to 4 Jan 2009	5 Jan 2009 to 17 May 2009
Total fatalities (non-hostile)	117 ( 41)	40 ( 4)	96 ( 27)	114 ( 16)	59 ( 10)	136 ( 20)	123 ( 6)	102 ( 13)
US deaths* (troops) personnel-years	54 (23,300) <b>8,962</b>	18 (22,000) <b>8,462</b>	50 (24,800) <b>9,538</b>	58 (25,000) <b>9,615</b>	25 (31,000) <b>11,923</b>	88 (35,000) <b>13,425</b>	53 (35,000 or 31,000 <sup>1</sup> ) <b>13,425</b>	54 (39,000) <b>14,615</b>
UK deaths (troops) personnel-years	33*** (4,500) <b>1,726</b>	6 (up to 5,250) <b>2,014</b>	15 (5,250 to 6K to 6,900) <b>2,186</b>	22 (6,900) <b>2,654</b>	8 (7,000) <b>2,692</b>	24 (8,000) <b>3,068</b>	24 (8K or 7,300) <b>3,068</b>	21 (8,000) <b>3,068</b>
Canadian deaths (troops) personnel-years	17 (2,250) <b>865</b>	12 (2,250) <b>865</b>	16 (2,500) <b>962</b>	11 (2,500) <b>962</b>	10 (2,500) <b>962</b>	9 (2,500) <b>962</b>	16 (2,500) <b>962</b>	12 (2,500) <b>962</b>
Other deaths	13	4	15	2	16	15	30**	15
<b><i>Estimated fatality rates per 1,000 personnel-years (95% Poisson uncertainty)</i></b>								
US	6 (4.6 to 7.9)	2 (1.3 to 3.4)	5 (3.8 to 6.7)	6 (4.5 to 7.6)	2.1 (1.3 to 2.9)	6.6 (5.2 to 7.9)	4.0 <sup>@</sup> (2.9 to 5)	3.7 (2.7 to 4.7)
UK	19 (13 to 27)	3 (1 to 6)	7 (4 to 11)	8 (5 to 11)	3 (1 to 6)	8 (5 to 11)	8 <sup>@</sup> (5 to 11)	7 (4 to 10)
Canada	20 (11 to 31)	14 (7 to 24)	17 (9 to 27)	9 (3 to 16)	10 (5 to 19)	9 (3 to 16)	17 (9 to 27)	12 (6 to 22)
UK/Canada	19 (14 to 25)	6 (4 to 11)	10 (7 to 14)	8.2 (5.4 to 11)	4.9 (2.9 to 7.8)	8.2 (5.4 to 11)	9.9 (7 to 13)	8.2 (5.6 to 11)
<b>US/UK/Canada</b>	<b>9.0</b> (7 to 11)	<b>3.2</b> (2 to 4)	<b>6.4</b> (5 to 8)	<b>6.9</b> (5.5 to 8.3)	<b>2.8</b> (1.9 to 3.6)	<b>6.9</b> (5.7 to 8.2)	<b>5.3</b> (4.2-6.4)	<b>4.7</b> (3.7 to 5.6)

\* For PERIODS 1- 4, US deployments were ascertained retrospectively from Department of Defense Active Duty Military Personnel Strengths (309A): with acknowledgement to Olivier Grouille, RUSI.

\*\* includes large cluster of 10 French fatalities in hostile fire

\*\*\* large cluster of 14 Nimrod deaths

@ US fatality rate in Afghanistan in PERIOD 7 would be 4.4 (3.2 to 5.6) and UK rate would be 9 (4 to 13) if their troop numbers were 31,000 {and hence 11,923 pys} and 7,300 {and hence 2,808 pys} rather than as shown in Table 1.

**TABLE 1b:** Coalition military deaths in Afghanistan and estimated fatality rates per 1,000 personnel-years in consecutive 140-day periods {**Note corrections to PERIOD 9**}

Theatre	Afghanistan							
Period	9 <b>UPLIFT</b>	10 <b>SURGE</b>						
Dates	18 May 2009 to 4 Oct 2009	5 Oct 2009 to 21 Feb 2010						
Total fatalities (non-hostile)	293 ( 33)	213 ( 25 <sup>11H</sup> )						
US deaths* (troops) <b>personnel- years</b>	<b>184</b> (57,000) <b>21,923</b>	<b>136</b> (90,000) <b>34,615</b>						
UK deaths (troops)  <b>personnel- years</b>	60 ( 9,000)  <b>3,462</b>	44 ( 9,500)  <b>3,654</b>						
Canadian deaths (troops) <b>personnel- years</b>	13 ( 2,500)  <b>962</b>	9 ( 2,800)  <b>1,077</b>						
Other deaths	36	24						
<i>Estimated fatality rates per 1,000 personnel-years (95% Poisson uncertainty)</i>								
US	<b>8.4</b> (7.2 to 9.6)	<b>3.9</b> (3.3 to 4.6)						
UK	17.3 (13 to 22)	12.0 ( 8 to 16)						
Canada	13.5 ( 7 to 23)	8.4 ( 4 to 16)						
UK/Canada	<i>16.5</i> (13 to 20)	<i>11.2</i> ( 8 to 14)						
<b>US/UK/ Canada</b>	<b>9.8</b> (8.5-10.9)	<b>4.8</b> (4.1 to 5.5)						

*11H* Total of 25 non-hostile deaths in PERIOD 10 includes 11 US fatalities (7+4) in two helicopter crashes.

**TABLE 2** (Iraq): IED (only) fatalities in Iraq

Theatre	Iraq								
Period	Baseline (I)	2	3	4 SURGE	5 SURGE	6 SURGE	7 SURGE	8 SURGE	9 SURGE
Dates	1 Jan 2001 to 17 Sept 2006	18 Sept 2006 to 4 Feb 2007	5 Feb 2007 to 24 June 2007	25 June 2007 to 11 Nov 2007	12 Nov 2007 to 30 Mar 2008	31 Mar 2008 to 17 Aug 2008	18 Aug 2008 to 4 Jan 2009	5 Jan 2009 to 17 May 2009	18 May 2009 to 4 Oct 2009
Duration	<b>260 days</b>	140 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days
Deaths in fatal IED incidents	<b>271 in 183 fatal IEDs</b>	217 in 135 fatal IEDs	280 in 155 fatal IEDs	136 in 86 fatal IEDs	78 in 48 fatal IEDs	62 in 49 fatal IEDs	11 in 10 fatal IEDs	15 in 12 fatal IEDs	21 in 11 fatal IEDs
<b>Number of fatalities in a fatal IED incident</b>									
<i>Fatalities, x, in IED incident</i>	<i>By period: frequency of fatal IED incidents with x fatalities</i>								
1	<b>128</b>	88	97	57	35	39	9	11	7
2	<b>33</b>	23	22	13	4	8	1	0	2
3	<b>14</b>	14	20	12	4	1		0	2
4	<b>5</b>	9	10	3	3	1		1	1
5	<b>3</b>	1	1	1	1				
6+			5		1				
TOTAL fatal IED incidents	<b>183</b>	135	155	86	48	49	10	12	11
Fatal IED incidents per day	<b>0.7</b>	<b>1.0</b>	<b>1.1</b>	<b>0.6</b>	<b>0.34</b>	<b>0.35</b>	<b>0.07</b>	<b>0.09</b>	<b>0.08</b>
Mean deaths per fatal IED incident	<b>1.5</b>	<b>1.6</b>	<b>1.8</b>	<b>1.6</b>	<b>1.6</b>	<b>1.3</b>	<b>1.1</b>	<b>1.3</b>	<b>1.9</b>

There was a single IED (only) fatality in PERIOD 10 in Iraq.

**TABLE 2 (Afghanistan): IED (only) fatalities in Afghanistan**

Theatre	<b>Afghanistan</b>								
Period	Baseline (A)	3	4	5	6	7	8	9	10
Dates	<b>1 Oct 2001 to 4 Feb 2007</b>	5 Feb 2007 to 24 June 2007	25 June 2007 to 11 Nov 2007	12 Nov 2007 to 30 Mar 2008	31 Mar 2008 to 17 Aug 2008	18 Aug 2008 to 4 Jan 2009	5 Jan 2009 to 17 May 2009	18 May 2009 to 4 Oct 2009	5 Oct 2009 to 21 Feb 2010
Duration	<b>1,953 days</b>	140 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days
Deaths in fatal IED incidents	<b>76 in 46 fatal IEDs</b>	22 in 12 fatal IEDs	44 in 27 fatal IEDs	37 in 29 fatal IEDs	62 in 39 fatal IEDs	62 in 42 fatal IEDs	55 in 34 fatal IEDs	136 in 94 fatal IEDs	120 in 89 fatal IEDs
<b>Number of fatalities in a fatal IED incident</b>									
<i>Fatalities, x, in IED incident</i>	<i>By period: frequency of fatal IED incidents with x fatalities</i>								
<i>1</i>	<b>28</b>	8	19	22	25	29	20	71	70
<i>2</i>	<b>11</b>	1	3	6	8	7	9	11	13
<i>3</i>	<b>2</b>	2	3	1	3	5	3	7	3
<i>4</i>	<b>5</b>	0	1		3	1	2	4	2
<i>5</i>	<b>0</b>	0	0					0	
<i>6+</i>	<b>0</b>	1	1					1	1*
TOTAL fatal IED incidents	<b>46</b>	12	27	29	39	42	34	94	89
Fatal IED incidents per day	<b>0.02</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.7</b>	<b>0.6</b>
Mean deaths per fatal IED incident	<b>1.7</b>	<b>1.8</b>	<b>1.6</b>	<b>1.3</b>	<b>1.6</b>	<b>1.5</b>	<b>1.6</b>	<b>1.45</b>	<b>1.35</b>

\* Seven fatalities in apparently a single IED incident – the highest per-incident toll in Afghanistan to date.

Consistent with our methodology<sup>5</sup>, excluded from the above analysis of PERIOD 9 are 11 multiply-ascribed IED-related deaths in four IED + small arms fire incidents (2, 1, 2, 1 fatalities) and in three IED + rocket propelled grenade incidents (1, 1, 3 fatalities).