

**Recent military fatalities in Afghanistan by cause and nationality:
(PERIOD 13: 29 November 2010 to 17 April 2011)**

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Note: A surge of 30,000 US troops was deployed to Afghanistan to facilitate Operation Moshtarak, which began in 2010. By PERIOD 11b, US deployment of 90,000 by province was reckoned as 20,000 to Helmand, NK2 to Kandahar and NK3 elsewhere.

Summary

a) During the 20 weeks of PERIOD 13 (29 November 2010 to 17 April 2011: Afghan winter to early spring), there were 179 coalition military fatalities in Afghanistan (US 136, UK 18, Canada 2, other nations 23) versus 144 fatalities in the 10 weeks of PERIOD 12b (US 117, UK 8, Canada 0, other nations 19).

b) Operational changes notwithstanding, US military fatality rates in Afghanistan in PERIOD 11b+12 had remained at 6.8 fatalities per 1,000 personnel-years (95% CI: 6.1 to 7.5; based on $3 \times 117 = 351$ deaths in $3 \times 17,308 = 51,924$ pys in three 10-week epochs) but decreased to 3.9 fatalities per 1,000 personnel-years in the winter of PERIOD 13 (95% CI: 3.3 to 4.6; based on 136 deaths in 34,616 pys). By contrast, UK troops' fatality rate decreased from 17 (95% CI: 11 to 25) and 12 fatalities per 1,000 personnel-years (95% CI: 8 to 18) in PERIODS 11b and 12a respectively to 4.5 fatalities per 1,000 pys (95% CI: 2.8 to 6.2) in PERIODS 12b and 13 (both post-Sangin hand-over); with the Canadian decrease having occurred even earlier - from 15 fatalities per 1,000 personnel-years (95% CI: 6 to 29) in PERIOD 11b versus 1.9 fatalities per 1,000 pys (95% CI: 0.5 to 4.8) during the 40 weeks of PERIODS 12+13.

c) In the 80 weeks of PERIODS 9 to 12, there were 396 fatal IED-only incidents in Afghanistan, which caused 545 military deaths (that is: mean of 1.4 deaths per fatal IED-only incident) and the proportion of hostile deaths due to IEDs was 57% (545/962; 95% CI: 53% to 60%). In PERIOD 13, there were 66 fatal IED-only incidents, which caused 83 military deaths, and such IEDs accounted for 83/158 (53%) hostile deaths.

*d) The proportion of fatal IED (only) incidents which claimed **more than two lives** declined slightly, but significantly (chi-square on 2df = 6.27, $p < 0.05$), between PERIODS 5+6+7+8 (18/144, 12.5%), PERIODS 9+10 (18/183, 10%) and PERIODS 11+12 (11/213, 5%). In PERIOD 13, 3/66 IED-only incidents (5%) claimed more than two military lives (three, three and six respectively).*

e) UK fatality rates in Afghanistan had essentially doubled when comparing the initial 160 weeks from 1 May 2006 (PERIODS 1 to 8: 160 weeks) versus the more recent 60-weeks (18 May 2009 to 11 July 2010) of PERIODS 9+10+11. Revealing summaries for the subsequent 10-weeks of PERIOD 12a (12 July to 19 September 2010; pre-hand-over and pre-winter), PERIOD 12b (20 September to 28 November 2010; post-hand-over but winter-started) and winter PERIOD 13 (29 November 2010 to 17 April 2011) are added:

PERIODS 1 to 8: 7.4 per 1,000 pys (95%CI: 6 to 9, based on 152 fatalities in 20,476 pys)
PERIODS 9+10+11: 14 per 1,000 pys (95%CI: 12 to 16, based on 155 fatalities in 10,962 pys)
PERIOD 12a: 12 per 1,000 pys (95%CI: 8 to 18, based on 23 fatalities in 1,923 pys)
PERIOD 12b: 4.2 per 1,000 pys (95%CI: 2 to 8, based on 8 fatalities in 1,923 pys)
PERIOD 13: 4.7 per 1,000 pys (95%CI: 2.9 to 7.5, based on 18 fatalities in 3,846 pys).

f) In the 20 weeks of PERIODS 11b+12a, US troops in Helmand outnumbered UK's military personnel in Afghanistan by 2:1, with 45+45 = 90 US military fatalities in Helmand to UK's 32+23 = 55 deaths in Afghanistan. Importantly, the US in Helmand and UK in Afghanistan military fatality rates were **not** significantly different in PERIODS 11b+12a:

US in Helmand:	12 per 1,000 pys (95% CI: 9 to 14, based on 90 fatalities in 7,692 pys)
UK troops:	14 per 1,000 pys (95% CI: 11 to 18, based on 55 fatalities in 3,846 pys).

Following UK's changed area of operations in Afghanistan from 20 September 2010, some reduction in UK's military fatality rate was expected, vis-à-vis US troops in Helmand, in the upcoming 30 weeks from 20 September 2010 to 17 April 2011 (PERIODS 12b+13), as seen below (chi-square on 1df = 3.50, $0.05 < p < 0.10$):

US in Helmand:	6.8 per 1,000 pys (95% CI: 5.3 to 8.4, based on 79 fatalities in 11,538 pys)
UK troops:	4.5 per 1,000 pys (95% CI: 2.8 to 6.2, based on 26 fatalities in 5,769 pys)

g) We relate **hostile deaths** of presumed Explosive Ordnance Disposal (EOD) personnel - UK military personnel who served in the Royal Logistics Corps (unless in an Air Assault Support Regiment) or Royal Engineers (unless in a Field Squadron) -- to the number of IED attacks that claimed the lives of UK military personnel. The calendar year pattern of hostile deaths in Afghanistan among UK's presumed EOD personnel (1, 4, 12 in 2006+2007+2008, 2009, and 2010) was discordant with the rate at which UK's IED-only military fatalities increased in Afghanistan in the same calendar periods (namely 43, 76, 55: chi-square on 2df = 12.2, $p < 0.005$); and similarly when we focused on IED-only fatalities among presumed EOD personnel (1, 4, 9: chi-square on 2df = 7.2, $p < 0.05$) - the difference being two deaths due to hostile fire and one to small arms fire.

We shall continue this monitoring in 2011, when commanders are reported to be changing bomb disposal tactics in Afghanistan and a different trend may emerge. In 2011 to 17 April, there have been 9 UK fatalities in IED-only attacks, none of them presumed EOD personnel, and two non-hostile deaths of EOD personnel (in a fire); also dog handler Lance Corporal Liam R. Tasker was killed by small arms fire. It is too early, as yet, to expect a changed pattern to be evident, for which we await the forthcoming 40 weeks of PERIODS 14+15.

h) Periodic, public monitoring is needed of the number of the Afghan National Army's (ANA) ISAF-trained personnel deployed; and their fatalities. Currently, fatalities among ISAF-trained ANA troops are listed **neither** on icasualties.org **nor** by UK's Ministry of Defence in the case of ANA-personnel who work alongside UK troops. In response to parliamentary questions by Patrick Mercer OBE, the UK's Minister of Defence has replied invariably: 'this is a matter for the Afghan government'. But, when the blood of British soldiers is expended on Afghan soil, surely the least that UK Ministers can do is to take on the political battle and ensure that we are properly informed by the Afghan government about how ANA forces fare on operations, whom ISAF has trained.

1. Background

Since 1 May 2006 we have reported every 20 weeks, more recently 10 weekly, on military fatalities in Afghanistan and Iraq by cause and nationality. Our analyses^{5,3} 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**^{35, 36}.

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, until 2010, have related to 140-day PERIODS: see below. As of PERIOD 11a (22 February to 2 May 2010), we initiated 10-weekly reporting. Reasons included: that our PERIOD 11b followed UK’s parliamentary election on 6 May 2010, and change to coalition government in the UK; but, more importantly, even in the 10 weeks of PERIOD 11a that overlapped the end of the Afghan winter, UK military fatalities in Afghanistan had averaged two per week so that, in 2010 and while in military control of Sangin, UK could expect at least as many military fatalities in 10 weeks in Afghanistan as in 20 weeks in 2006. Throughout 2010/11, we therefore make interim 10-weekly reports so that our intensity of monitoring keeps pace with the intensity of combat which UK forces encounter in Afghanistan.

On 20 September 2010 (which marks the start of PERIOD 12b), UK forces in Helmand handed over responsibility for counter-insurgency operations in Sangin to US troops.

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	2 September 2007 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 <i>(Afghan election: mid)</i>	26 July 2009 04 October 2009
10	05 October 2009	21 February 2010
11 (mid-point)	22 February 2010 <i>(UK election: 6 May)</i>	2 May 2010 11 July 2010
12 (mid-point)	12 July 2010 <i>(UK to US in Sangin: 20 Sept)</i>	19 September 2010 28 November 2010
13	29 November 2010	6 February 2011 17 April 2011
14	18 April 2011	26 June 2011 4 September 2011
15	5 September 2011	13 November 2011 22 January 2012

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 Fairweather⁵, 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 11a, there was some debate about the totality of UK’s deployment to Afghanistan. We continue to show UK’s deployment as 10,000 troops, although BBC’s Today programme on 14 May 2010 cited 10,500. In 2011, UK reporting has cited UK’s deployment as 9,500. We continue to use 10,000 as our reference count.

History: In PERIOD 5, UK’s deployment to Iraq reduced below 5,000 troops⁶⁻¹² and to Afghanistan was to have increased to 7,700, but seems to have remained at around 7,000¹⁰ until PERIOD 6¹³⁻¹⁵. 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 5¹⁶⁻¹⁹ whereas US troops in Afghanistan have been reckoned at 31,000¹⁶ 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^{16, 20} despite some reports that both UK and US troop numbers were around 10% lower in Afghanistan²¹⁻²³; and as 139,000 and 39,000 in PERIOD 8 with the UK tallies maintained as in PERIOD 7²⁴⁻³⁴. 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=0CAAsQsQQwAA) 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).

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 in PERIODS 1 to 12

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%), but for **67%** in PERIODS 9+10+11+12 (**718/1,076**; 95% CI: 64% to 70%).

In PERIOD 13, US personnel have accounted for **76%** of all military fatalities (136/179);

95% CI: 70% to 82%, including three large clusters, each of six US deaths, two by small arms fire and one an IED attack).

Non-hostile causes: Non-hostile causes had accounted for 88/367 fatalities in Afghanistan in the 80 weeks of PERIODS 1+2+3+4 (**24%**; 95% CI: 20% to 28%), but for 12% since, namely: for 49/420 military fatalities (**12%**; 95% CI: 8% to 15%) in PERIODS 5+6+7+8; for 114/1,076 military fatalities (**11%**; 95% CI: 9% to 13%) in PERIODS 9+10+11+12; and for 21/179 (**12%**) fatalities in PERIOD 13. A quarter (28) of the 114 non-hostile deaths in PERIODS 9+10+11+12 had occurred in the course of 11 helicopter (or aircraft) accident/crashes [1, 1, 1, 1, 2, 3, 3, 3, 4, 7, **9**]* but none in the winter PERIOD 13.

*More detail is follows: 10 (1UK+9US) occurred in two separate helicopter accident/crashes in PERIOD 12, eight (3Australian + 1UK+ 3US +1USAircraft) in four helicopter/aircraft accident/crashes in PERIOD 11, while 11 (7US + 4US) occurred in two separate helicopter crashes in PERIOD 10, and six (2+3+1) in three helicopter/airplane crashes in PERIOD 9.

By nationality: Military fatality rates in Afghanistan have been notably different by nationality, as indicated by non-overlapping 95% confidence intervals below for the first 160 weeks of PERIODS 1 to 8. In the more recent **60-weeks of PERIODS 9+10+11**, UK and Canadian fatality rates were not differentiated. Both were very significantly higher than for US troops, for whom the overall fatality rate in PERIODS 9+10+11, although up by nearly a fifth on PERIODS 1 to 8, had remained just below the ‘major combat’, which we define analytically as 6 fatalities per 1,000 pys.

Important decreases in military fatality rate became evident in PERIODS 12+13 for both Canadian and UK troops which, for Canadian troops, occurred from the start of PERIOD 12: see summaries below, **TABLE 1**, and **Discussion**. Change of operations has resulted in a major decrease in the fatality rate of UK but not US troops in PERIODS 12+13 relative to PERIODS 9+10+11.

Summary for PERIODS 1 to 8: 160 weeks

Canadians: **13.9** per 1,000 pys (95% CI: 11 to 17, based on 103 fatalities in 7,412 pys)
UK forces: **7.4** per 1,000 pys (95% CI: 6 to 9, based on 152 fatalities in 20,476 pys)
US forces: **4.4** per 1,000 pys (95% CI: 4.0 to 4.9, based on **400** fatalities in 89,965 pys)

Summary for PERIODS 9+10+11: 60 weeks

Canadians: **10.3** per 1,000 pys (95% CI: 7 to 15, based on 32 fatalities in 3,116 pys)
UK forces: **14.1** per 1,000 pys (95% CI: 12 to 16, based on 155 fatalities in 10,962 pys)
US forces: **5.3** per 1,000 pys (95% CI: 4.8 to 5.8, based on **484** fatalities in 91,154 pys)

Summary for PERIOD 12+13: 40 weeks

Canadians: **1.9** per 1,000 pys (95% CI: 0.5 to 4.8, based on 4 fatalities in 2,156 pys)
UK forces: **6.4** per 1,000 pys (95% CI: 4.6 to 8.2, based on 49 fatalities in 7,692 pys)
US forces: **5.3** per 1,000 pys (95% CI: 4.8 to 5.9, based on **370** fatalities in 69,232 pys)

The combined US/UK/Canadian military fatality rate, which had been **3.4** per 1,000 personnel-years (95% CI: 2.6 to 4.3, based on **68** fatalities in 19,769 pys) in PERIOD 11a, more than doubled (post-winter) to **7.9** (95% CI: 6.7 to 9.2, based on **157** fatalities in 19,769 pys) in PERIOD 11b and was likewise **7.2** (95% CI: 6.0 to 8.4, based on **142** fatalities in 19,770 pys) in PERIOD 12a, dropping back only slightly - and not significantly - to **6.3** (95% CI: 6.0 to 8.4, based on **125** fatalities in 19,770 pys) in (winter-proximal) PERIOD 12b, see **TABLE 1**. **In the winter of PERIOD 13, the combined US/UK/Canadian military fatality rate again dropped back to 3.9 (95% CI: 3.3 to 4.6, based on 156 fatalities in 39,540 pys).**

3.2 Fatal IED (only) incidents: variations

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

Afghanistan: 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}, and consistent with Iraq.

In 560 days of PERIODS 9+10+11+12, fatal IED (only) incidents nearly tripled to 94+89+101+112 = 396 fatal IED incidents (0.71 per day). These 396 fatal IED incidents cost the lives of 136+120+129+160 = 545 military personnel, a mean of 1.4 deaths per fatal IED (only) incident. The proportion of hostile deaths due to fatal IEDs (only) incidents was **57%** (545/962; 95% CI: 53% to 60%).

The proportion of fatal IED (only) incidents which claimed *more than two lives* declined slightly, but significantly (chi-square on 2df = 6.27, p < 0.05), between PERIODS 5+6+7+8 (18/144, 12.5%), PERIODS 9+10 (18/183, 10%) and PERIODS 11+12 (11/213, 5%). In PERIOD 13, there were 66 fatal IED-only incidents, which claimed 83 military lives, but in only 3/66 (5%) were there *more than two fatalities* (three, three and six).

3.3 Explosive Ordnance Disposal and IEDs.

Below we list UK military fatalities since 1 May 2006 whose regiment/unit suggests to us that they may have served as explosives experts. We list these 22 men by date and cause of death, rank, surname and regiment with a further 12 listed whose duties just possibly included Explosive Ordnance Disposal (EOD). In addition, we list the death of dog-handler Lance Corporal Liam Richard Tasker of the Royal Army Veterinary Corps.

Deciding whether to detonate or dismantle a detected IED is influenced by the need to prevent casualties to military personnel or civilians, likely damage to property, the desire to track whether bomb-makers' materials or techniques have changed, and professional curiosity. However, unless bomb-makers alter their techniques and sources with high frequency, the learning to be gained from dismantling must be weighed against the risk to EOD personnel whose lives and skills we can ill afford to expend, and who may be vulnerable to hostile fire while they work. In the week when the Truro coroner's inquiry into the death of Staff Sergeant Olaf Schmidt, who was awarded the George Cross,

reached its verdict of unlawful killing³⁷ (verdict: 11 February 2011, date of death: 31 October 2009), Sean Rayment reported that army commanders are planning to change bomb disposal tactics in Afghanistan “to destroy rather than exploit” IEDs³⁸. Exploitation refers to the intelligence gained about bomb makers’ tactics from the dismantling of IEDs.

By calendar year, the following table summarises IED-only fatalities (by our definition) that occurred among UK military personnel together with i) hostile deaths by any cause and ii) IED-only fatalities among UK’s presumed EOD personnel. The data display a significantly enhanced rate of i) hostile deaths for UK’s presumed EOD personnel in 2010 (chi-square on 2 degrees of freedom of 11.2, $p < 0.01$); and also ii) when particularised to IED-only fatalities (chi-square on 2 degrees of freedom of 6.06, $p < 0.05$).

IED-only fatalities among UK’s presumed EOD personnel had increased *more than* the rate at which UK’s IED-only fatalities increased – when we might have expected them to hold steady, precisely because the dismantling of a threshold number of IED for learning purposes can be achieved via a higher detonation rate when there are more IEDs to deal with. Instead, we see that presumed EOD personnel were 1/43 (2%) and 4/76 (5%) of UK’s IED-only fatalities in 2006-2008 and 2009 respectively, but 9/55 (16%) in 2010.

It is too early to know whether a different pattern will be established in 2011.

Calendar year	UK IED-only fatalities	i) Hostile death of UK presumed EOD personnel {expectations by trend in IED-only fatalities}	ii) IED-only death of UK presumed EOD personnel {expectations by trend in IED-only fatalities}
2006+2007+2008	1+12+30 = 43	1 {4.20}	1 {3.46}
2009	76	4 {7.43}	4 {6.12}
2010	55	12 {5.37}	9 {4.42}
Total	174	17 chi-square on 2df = 12.2, $p < 0.01$	14 chi-square on 2df = 7.2, $p < 0.05$
<i>Will a new pattern emerge in 2011?</i>			
2011 to 17 April	9	0 (or 1 = dog-handler)	0

Date of death	Cause of death	Rank	Surname	Regiment
1 March 2011	Small arms fire	Lance Corporal	Tasker	Royal Army Veterinary Corps
14 Feb 2011	NH – fire	Private	Hutchinson	Royal Logistics Corps
14 Feb 2011	NH – fire	Private	Wood	Royal Logistics Corps
28 Dec 2010	IED attack	Warrant Off 2	Wood	Royal Logistics Corps, 23 Pioneer Regiment
30 Oct 2010	Hostile fire	Sapper	Blanchard	Engineer Regiment (EOD)
19 Oct 2010	IED attack	Acting Corporal	Barnsdale	33 Engineer Regiment (EOD)
18 Sept 2010	IED attack	Sergeant	Jones	Royal Engineers
26 July 2010	IED attack	Sapper	Smith	36 Engineer Regiment
17 July 2010	IED attack	Staff Serg.	Linley	Royal Logistic Corps: 11 EOD* Regiment
27 June 2010	Small arms fire	Corporal	Kirkpatrick	101 Engineer Regiment (EOD)
3 May 2010	NH* vehicle accident	Lance Corporal	Buxton	21 Engineer Regiment
3 May 2010	IED attack	Sapper	Roy	21 Engineer Regiment
26 Feb 2010	IED attack	Not reported	Fox	28 Engineer Regiment
15 Feb 2010	IED attack	Sapper	Mellors	36 Engineer Regiment: Counter-IED Task Force
8 Feb 2010	IED attack	Warrant Off. 2	Markland	36 Engineer Regiment
11 Jan 2010	Hostile fire	Captain	Read	Royal Logistics Corps: 11 EOD Regiment
31 Dec 2009	IED attack	Sapper	Watson	33 Engineer Regiment (OED): Royal Engineers

15 Nov 2009	IED attack	Corporal	Marlton-Thomas	33 Engineer Regiment: Royal Engineers
31 Oct 2009	IED attack	Staff Serg.	Schmid	Royal Logistics Corps
20 July 2009	IED attack	Captain	Shepherd	Royal Logistics Corps: 11 EOD Regiment
6 July 2009	NH helicopter crash	Captain	Babington-Browne	22 Engineer Regiment: Royal Engineers
10 Sept 2008	IED attack	Warrant Off.2	O'Donnell	Royal Logistics Corps: 11 EOD Regiment
9 Aug 2006	NH vehicle accident	Private	Reeves	Royal Logistics Corps

25 Sept 2010	IED attack	Corporal	Thomas	Royal Electrical & Mechanical Engineers (Special Forces Support Group)
13 Aug 2010	Small arms fire	Sapper	Gurung	21 Engineer Regiment: 69 Gurkha Field Squadron
13 Aug 2010	Small arms fire	Sapper	Foster	21 Engineer Regiment
2 Sept 2009	IED attack	LanceCorporal	Brandon	Corps of Royal Electrical & Mechanical Engineers (REME)
4 Aug 2009	IED attack	Craftsman	Lombardi	Royal Electrical & Mechanical Engineers (REME)
23 May 2009	IED attack	Sapper	Rossi	38 Engineer Regiment: 5 Field Squadron
21 Dec 2008	IED attack	Corporal	Deering	Commando Logistics Regiment
12 Dec 2008	Suicide bomber	Marine	Davies	Commando Logistics Regiment
27 June 2008	NH vehicle accident	Warrant Off.2	Shirley	Royal Logistics Corps: 13 Air Assault Support Regiment
9 Nov 2007	NH vehicle accident	LanceCorporal	Alderton	36 Engineer Regiment: 20 Field Squadron
17 Sept 2007	IED attack	LanceCorporal	Violini	36 Engineer Regiment: 20 Field Squadron
6 Aug 2006	Small arms fire	Private	Cutts	Royal Logistics Corps: 13 Air Assault Support Regiment

* EOD = Explosive Ordnance Disposal; NH = non-hostile

3.4 Suicide bombings and senior ranks.

Suicide bombings: In the 160+80 weeks since 1 May 2006 to 28 November 2010, 33 suicide bombings have caused 63 military fatalities (out of 1,863 deaths in 240 weeks: 3.4%). The mean has been **1.9 military fatalities per suicide bombing** in Afghanistan (15 single fatalities, 12 pairs, three triple fatalities, and single incidents of 4, 5, and 6 deaths).

Of these 63 military deaths in suicide bombings, there were four (1+3) in PERIOD 12b, none in PERIOD 12a, eight fatalities in PERIOD 11b (2+6), one death in PERIOD 11a, six fatalities (4 + 2) in PERIOD 10 and seven (1+2+1+3) in PERIOD 9. There were thus 26 military fatalities in 11 suicide bombing incidents in the 80 weeks of PERIODS 9+10+11+12, of whom 24 were US/UK/Canadian personnel (in 144,771 pys) – a clearly low US/UK/Canadian military fatality rate by suicide bomb of **17 per 100,000 pys**. Of the earlier 37 military fatalities in 22 suicide bombing incidents in the 160 weeks of PERIODS 1 to 8, 25 were US/UK/Canadian in 117,853 pys, a similarly low rate of **21 per 100,000 pys**.

Suicide bombing claimed five military fatalities in PERIOD 13.

Senior ranks: In the 160+80 weeks since 1 May 2006, there have been 17 military fatalities at the senior rank of Lieutenant Colonel or Colonel: nine in PERIODS 1 to 8 (8US + Italy), seven in PERIODS 9 to 12 (4US +US in helicopter crash + UK + Canadian + Georgian in IED attack which killed four Georgians in total). Twenty-two majors also died: 13 in PERIODS 1 to 8 (9US + UK + 2Canada + Denmark), and nine in PERIODS 9 to 12 (3US + UK + Canada + Germany; US in helicopter crash and UK in RPG attack; and US in NH helicopter crash that killed 9 US personnel in total).

The reason that we first drew attention to these fatalities in PERIOD 11b was *data-inspired*: on 18 May 2010, a suicide car bombing in Kabul claimed six coalition military lives, four of them ranked Lieutenant Colonel/Colonel. This one incident claimed the lives of a US colonel, a Canadian colonel and two US Lieutenant Colonels as well as US Specialist and US Staff Sergeant. *Prior to this major incident in Kabul*, suicide bombings had caused the death of only one other person ranked Major/Lieutenant Colonel/Colonel – a US Lieutenant Colonel who died on 26 May 2009 (in PERIOD 9): that is one out of 30 *prior* fatalities ranked Major/Lieutenant Colonel/Colonel (3%) was by suicide bombing, no different from the all-ranks rate.

In PERIOD 13, heart attack caused the death of an US major, IED attack the death of an UK major, and hostile fire the death of a Norwegian Lieutenant Colonel.

3.5 Friendly fire and small arms fire

In PERIOD 13, two fatalities (one Italian in Badghis, one UK in Helmand) were ascribed to 'friendly fire – small arms fire' and two US hostile-deaths to 'drone fire'. Thirty-two other fatalities, which included two clusters, each of six US deaths (at Konar and Nangarhar) were also recorded to small arms fire.

4. Discussion

Operations. A major counter-insurgency operation began in Afghanistan in June 2009 which ended its initial phase midway through PERIOD 9. US operational changes occurred during PERIODS 9+10. These impacted on the Canadians' deployment in Kandahar and, in addition to better air support, may have contributed to the altered fortunes of the Canadians.

Operation Moshtarak began in the second half of PERIOD 10 once US reinforcements of some 30,000 troops had been deployed. By the start of PERIOD 11b, 20,000 US troops had deployed to Helmand province. At the start of PERIOD 12b, UK forces in Helmand handed over responsibility for counter-insurgency operations in Sangin to US troops; and in December 2010 took up some duties in Kandahar.

Fatality rates in Afghanistan had doubled in PERIOD 9 relative to PERIOD 8 but between PERIODS 9 and 11a reduced progressively by a factor of two-thirds for US military personnel; and nearly halved for UK/Canadian forces. However, major hostilities by the Taliban resumed (post-winter, post-planting) in PERIOD 11b during which the UK/Canadian fatality rate was **16** per 1,000 pys (95% CI: 11 to 22) - as high as in PERIOD 9 - and the US rate of **6.8** (95% CI: 5.5 to 8.0) also represented major combat.

In Afghanistan, quite substantial winter-related decreases had been evident pre-surge, see PERIODS 2 and 5, so that the observed decreases in fatality rates in PERIODS 10+11a could not be attributed to the surge alone. In particular, PERIOD 11a ended in early May before the anticipated renewal of major hostilities, which were only too evident in PERIODS 11b+12a. **The impact of the Afghan winter was again evident in markedly lower overall fatality rate for US/UK/Canadian forces in PERIOD 13.**

Winter may also have contributed in part to the stay in IED escalation, but other explanations include greater availability and use of air transport, better armoured road transport, better disruption of the enemy's supply routes or more IED-detections which are not routinely reported – although now Wiki-leaked.

As winter ends so, too often, does the let-up in fatal IED incidents. However, when comparing across PERIODS 5+6+7+8, PERIODS 9+10 and PERIODS 11+12, there is some evidence that the proportion of fatal IED (only) incidents that claim *more than two lives* has decreased from 12.5% (18/144) to 5% (11/213). This decrease was sustained in PERIOD 13 when 3/66 fatal IED (only) incidents (5%) claimed *more than two lives*.

Deployment. Insight on differential deployment to provinces within Afghanistan of now substantially more US personnel, is gleaned by comparing the provincial locations of **718 US military fatalities in PERIODS 9+10+11+12** (see below) and 136 in PERIOD 13.

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 χ^2 on 2 degrees of freedom of 24.7, $p < 0.001$). There is thus circumstantial evidence that US operational changes occurred during PERIODS 9+10, and that these impacted on the Canadians' deployment in Kandahar and probably contributed to their altered fortunes.

The observed deaths of US personnel are consistent with a common-provincial-distribution of US military fatalities across PERIODS 11a+11b (see expectations in ***bold italics***), which broadly persisted throughout PERIOD 12+13 albeit at a lower rate in the winter of PERIOD 13.

Location of US military fatalities	Helmand	Kandahar	Elsewhere in Afghanistan/NA	US TOTALS
PERIOD 9	39 <i>{47.2}</i>	18 <i>{30.5}</i>	127 <i>{106.4}</i>	184
PERIOD 10	43 <i>{34.8}</i>	35 <i>{22.5}</i>	58 <i>{78.6}</i>	136
PERIOD 11a	16 <i>{17.5}</i>	7 <i>{5.7}</i>	24 <i>{23.8}</i>	47
PERIOD 11b	45 <i>{43.5}</i>	13 <i>{14.3}</i>	59 <i>{59.2}</i>	117
PERIOD 12a	45	25	47	117
PERIOD 12b	39	23	55	117
PERIOD 13	40	24	72	136
Total	267	145	442	855

Helmand: In PERIOD 11b+12a, there were some 20,000 US troops in Helmand who outnumbered UK military personnel in Afghanistan by 2:1, and there were 90 US fatalities in Helmand versus 55 UK deaths in Afghanistan. Thus, US troops' fatality rate in Helmand province of 12 per 1,000 pys (95% CI: 9 to 14, based on 90 deaths in 7,692 pys) was not significantly different from UK's PERIOD 11b+12a fatality rate in Afghanistan of 14 (95% CI: 10 to 18, based on 55 fatalities in 3,846 pys).

However, in PERIOD 12b+13, having handed-over responsibility for counter-insurgency operations in Sangin, UK's military fatalities reduced to 4.5 per 1,000 pys (95% CI: 2.8 to 6.2) during PERIODS 12b+13 (winter), when the military fatality rate for US troops in Helmand was 50% higher at 6.8 per 1,000 pys (95% CI: 5.3 to 8.4), $0.05 < p < 0.10$.

PERIOD 11b+12a

US in Helmand: 12 per 1,000 pys (95% CI: 9 to 14, based on 90 fatalities in 7,692 pys)
 UK troops: 14 per 1,000 pys (95% CI: 11 to 18, based on 55 fatalities in 3,846 pys)

PERIOD 12b+13

US in Helmand: 6.8 per 1,000 pys (95% CI: 5.3 to 8.4, based on 79 fatalities in 11,538 pys)
 UK troops: 4.5 per 1,000 pys (95% CI: 2.8 to 6.2, based on 26 fatalities in 5,769 pys).

Deaths of UK's presumed EOD personnel to end December 2010: We have attempted to identify deaths in Afghanistan among UK military personnel who have been engaged in EOD. We listed 17 hostile deaths, 14 by IED-only attack, and three non-hostile deaths

which we presume to fall into this category. The hostile death rate (and IED-only fatality rate) by calendar period for presumed EOD personnel exceeded the rate of increase in UK's IED-only fatalities, when we should have expected it to hold steady if more IEDs were to mean that a greater proportion could be dealt with by detonation. Either this logic (ours) was not being applied, or EOD personnel were being specifically targeted by the Taliban (such as by IED-placements which inhibit safe detonation, or by associated small arms fire), or the bomb-makers had devised mechanisms that were more challenging for EOD personnel to circumvent, or UK's presumed EOD personnel were safeguarding other troops besides our own so that seeking-for trend against *only* UK's IED fatalities is insufficient.

Deaths of UK's presumed EOD personnel in 2011: The recent announcement in early February 2011 that UK army commanders were planning to change bomb disposal tactics in Afghanistan to favour the destruction rather than 'exploitation' of IEDs³⁸ suggests a sharing of our logic but does not rule out other contributing factors. We shall continue this monitoring 20-weekly in 2011 when a new trend may emerge.

We have not attempted to identify, from their regiments, other nations' EOD personnel. However, the sort of analysis that we have outlined could be applied for EOD personnel from other nations to discover if our UK-signals hold more generally, or are a specious alert.

Future beyond the surge: Periodic, public monitoring is needed of the numbers of the Afghan National Army's (ANA) ISAF-trained personnel deployed; and their fatalities. Currently, fatalities among ISAF-trained ANA troops are listed **neither** on icasualties.org **nor** by UK's Ministry of Defence in the case of ANA-personnel who work alongside UK troops. In response to parliamentary questions by Patrick Mercer OBE, the Minister of Defence replies invariably that: 'this is a matter for the Afghan government'. However, when the blood of British soldiers is expended on Afghan soil, the least that UK Ministers can do is to take on political battles and ensure that the British public is properly informed by the Afghan government about how Afghan forces fare on operations, whom ISAF has trained. Such reporting is essential for democratic accountability by both UK and Afghan ministers; and should be insisted upon by UK, US, Canadian and other nations' ministers who have deployed their forces to Afghanistan.

We had hoped that before PERIOD 14 (which began on 18 April 2011) UK would have given a lead within ISAF on properly and publicly documenting ISAF-trained ANA deployment; and their fatalities. Matthew Green, writing in the Financial Times on 7 February 2011, reported that 70,000 Afghan police and soldiers had been ISAF-trained in 2010 but the number of ISAF-trained ANA troops who were deployed was not reported; nor their fatalities. We ask: how many ISAF-trained ANA-troops were operational alongside UK forces in Afghanistan in December 2010, and how many fatalities did ISAF-trained ANA-troops sustain in PERIOD 13?

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Postscript: *Kandahar Reel* has moves which mimic the rotor blades of a Chinook helicopter and was devised by cousins Captain Andy and Rob Colqhoun of the Black Watch, 3rd battalion the Royal Regiment of Scotland during a six-month tour of duty in Afghanistan in 2009. See Cowling E. *Reel men make a ceilidh of Kanadahar*. *Scotland on Sunday* 2011; April 24: 3.

TABLE 1a (Afghanistan): 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) 8,962	18 (22,000) 8,462	50 (24,800) 9,538	58 (25,000) 9,615	25 (31,000) 11,923	88 (35,000) 13,425	53 (35,000 or 31,000 ²¹) 13,425	54 (39,000) 14,615
UK deaths (troops) personnel-years	33*** (4,500) 1,726	6 (up to 5,250) 2,014	15 (5,250 to 6K to 6,900) 2,186	22 (6,900) 2,654	8 (7,000) 2,692	24 (8,000) 3,068	23 (8K or 7,300) 3,068	21 (8,000) 3,068
Canadian deaths (troops) personnel-years	17 (2,250) 865	12 (2,250) 865	16 (2,500) 962	11 (2,500) 962	10 (2,500) 962	9 (2,500) 962	16 (2,500) 962	12 (2,500) 962
Other deaths	13	4	15	2	16	15	31**	15
<i>Estimated fatality rates per 1,000 personnel-years (95% Poisson uncertainty)</i>								
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 [@] (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)	7 [@] (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)	9.7 (7 to 13)	8.2 (5.6 to 11)
US/UK/Canada	9.0 (7 to 11)	3.2 (2 to 4)	6.4 (5 to 8)	6.9 (5.5 to 8.3)	2.8 (1.9 to 3.6)	6.9 (5.7 to 8.2)	5.3 (4.2-6.3)	4.7 (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 8 (5 to 12) 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 (Afghanistan): Coalition military deaths in Afghanistan and estimated fatality rates per 1,000 personnel-years in consecutive 70-day (a/b) or 140-day periods.

Theatre	Afghanistan							
Period	9 UPLIFT	10 SURGE	11a SURGE	11b SURGE	12a SURGE	12b SURGE	13 SURGE	14a SURGE
Dates	18 May 2009 to 4 Oct 2009	5 Oct 2009 to 21 Feb 2010	22 Feb 2010 to 2 May 2010	3 May 2010 to 11 July 2010	12 July 2010 to 19 Sept 2010	20 Sept 2010 to 28 Nov 2010	29 Nov 2010 to 17 April 2011	18 April 2011 to 26 June 2011
Total fatalities (non-hostile)	293 (33)	213 (25 ^{11H})	79 (9 ^{4H/A})	182 (20 ^{4H})	165 (9 ^H)	144 (18 ^{9H})	179 (21 ^{0H})	
US deaths* (troops) personnel- years	184 (57,000) 21,923	136 (90,000) 34,615	47 (90,000) 17,308	117 (90,000) 17,307	117 (90,000) 17,308	117 (90,000) 17,308	136 (90,000) 34,616	
UK deaths (troops) personnel- years	60 (9,000) 3,462	44 (9,500) 3,654	19 (10,000) 1,923	32 (10,000) 1,923	23 (10,000) 1,923	8 (10,000) 1,923	18 (10,000) 3,846	
Canadian deaths (troops) personnel- years	13 (2,500) 962	9 (2,800) 1,077	2 (2,800) 538	8 (2,800) 539	2 (2,800) 539	0 (2,800) 539	2 (2,800) 1,077	
Other deaths	36	24	11	25	23	19	23	
<i>Estimated fatality rates per 1,000 personnel-years (95% Poisson uncertainty)</i>								
US	8.4 (7.2 to 9.6)	3.9 (3.3 to 4.6)	2.7 (1.9 to 3.5)	6.8 (5.5 to 8.0)	6.8 (5.5 to 8.0)	6.8 (5.5 to 8.0)	3.9 (3.3 to 4.6)	
UK	17.3 (13 to 22)	12.0 (8 to 16)	9.9 (6 to 15)	16.6 (11 to 25)	12.0 (8 to 18)	4.2 (2 to 8)	4.7 (2.9 to 7.5)	
Canada	13.5 (7 to 23)	8.4 (4 to 16)	3.7 (0.5 to 13)	14.8 (6 to 29)	1.9 (0.5 to 4.8)			
UK/Canada	16.5 (13 to 20)	11.2 (8 to 14)	8.5 (5 to 13)	16.2 (11 to 22)	10.2 (7 to 15)	3.2 (1 to 7)	4.1 (2.3 to 5.8)	
US/UK/ Canada	9.8 (8.5-10.9)	4.8 (4.1 to 5.5)	3.4 (2.6 to 4.3)	7.9 (6.7 to 9.2)	7.2 (6.0 to 8.4)	6.3 (5.2 to 7.4)	3.9 (3.3 to 4.6)	

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

4H /A PERIOD 11a includes 4 US fatalities (3+1) in helicopter + aircraft crashes.

4H PERIOD 11b includes 3 Australian + 1US fatalities (3+1) in 2 helicopter crashes.

1H PERIOD 12a includes 1 UK fatality in a helicopter accident.

9H PERIOD 12b includes cluster of 9 US fatalities in a helicopter crash.

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

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

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

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

Theatre	Afghanistan								
Period	9+10	11a	11b	12a	12b	13	14a		
Dates	18 May 2009 to 21 Feb 2010	22 Feb 2010 to 2 May 2010	3 May 2010 to 11 July 2010	12 July 2010 to 19 Sept 2010	20 Sept 2010 to 28 Nov 2010	29 Nov 2010 to 17 April 2011	18 April 2011 to 26 June 2011		
Duration	280 days	70 days	70 days	70 days	70 days	140 days	70 days		
Deaths in fatal IED incidents	256 in 183 fatal IEDs	34 in 31 fatal IEDs	95 in 70 fatal IEDs	88 in 58 fatal IEDs	72 in 54 fatal IEDs	83 in 66 fatal IEDs			
Number of fatalities in a fatal IED incident									
<i>Fatalities, x, in IED incident</i>	<i>By period: frequency of fatal IED incidents with x fatalities</i>								
1	141	28	51	38	41	55			
2	24	3	16	15	10	8			
3	10	0	1	1	1	2			
4	6	0	1	3	2				
5	0	0	1	1	0				
6+	2*	0	0	0	0	1			
TOTAL fatal IED incidents	183	31	70	58	54	66			
Fatal IED incidents per day	0.65	0.4	1.0	0.8	0.8	0.5			
Mean deaths per fatal IED incident	1.4	1.1	1.4	1.5	1.3	1.3			

Consistent with our methodology⁵, 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). In PERIOD 11b, there were two IED+RPG incidents (1, 1). In PERIOD 12a, there was one New Zealand fatality in an IED+RPG+small arms fire incident. In PERIOD 12b, there was one US fatality and four Italian fatalities in two separate IED attack+small arms fire incidents. In PERIOD 13, there was one US fatality in IED+saf, and 2 US personnel died in an IED+RPG attack.

APPENDIX for REFERENCE re IRAQ

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^{35, 36}**. 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). In PERIOD 11, all 34 military fatalities in Iraq were US personnel: 22 were non-hostile, two deaths were from hostile fire, six in four fatal IED incidents, one in RPG, one small arms fire, one indirect fire and one in mortar attack. In PERIOD 12, there were 15 US fatalities in Iraq (4 non-hostile, 3 by small arms fire, 1 indirect fire, 1 by grenade, 1 by IED, **1 NH vehicle roll-over, and 3 apparently non-hostile but also attributed to small arms fire**). In PERIOD 13, there were 18 US fatalities in Iraq (9 non-hostile, 2 small arms fire, 3 by IED, 2 indirect fire, 1 sniper fire, 1 by RPG).

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

Theatre	Iraq								
Period	Baseline (I)	2	3	4	5	6	7	8	9
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	260 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days	140 days
Deaths in fatal IED incidents	271 in 183 fatal IEDs	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 12 fatal IEDs
Number of fatalities in a fatal IED incident									
<i>Fatalities, x, in IED incident</i>	<i>By period: frequency of fatal IED incidents with x fatalities</i>								
<i>1</i>	128	88	97	57	35	39	9	11	7
<i>2</i>	33	23	22	13	4	8	1	0	2
<i>3</i>	14	14	20	12	4	1		0	2
<i>4</i>	5	9	10	3	3	1		1	1
<i>5</i>	3	1	1	1	1				
<i>6+</i>			5		1				
TOTAL fatal IED incidents	183	135	155	86	48	49	10	12	12
Fatal IED incidents per day	0.7	1.0	1.1	0.6	0.34	0.35	0.07	0.09	0.08
Mean deaths per fatal IED incident	1.5	1.6	1.8	1.6	1.6	1.3	1.1	1.3	1.7

There was a single IED (only) fatality in PERIOD 10 in Iraq; **6 IED (only) fatalities in four IED attacks (2+1+1+2) in PERIOD 11 in Iraq**; and one IED (only) fatality in a single IED attack in PERIOD 12a.