

Recent military fatalities in Afghanistan by cause and nationality:

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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. In June 2011, towards the end of PERIOD 14a, US President Obama announced the start of draw-down of US troops – an initial 5,000 to 10,000 in 2011. Canadian troops will not have a combat role after 2011. In 2012, UK troops are reckoned to have reduced to 9,500. Withdrawal of French troops will begin in July 2012 and be completed by the end of 2012.

Summary

*We begin with a calendar-year resume which relies only on total number of UK military fatalities in each calendar year and a **mid-year estimate** for the number of UK troops deployed to Afghanistan. Our resume lacks detail on when troop numbers escalated and does not differentiate, as our more detailed analyses do, between the ‘fighting season’ and Afghan winter. Nonetheless, the resume convey some key features: i) 2011 is the first of the past six calendar years in Afghanistan when UK troops have faced less than major combat (which we define operationally as: 6 fatalities per 1,000 personnel-years) and ii) 2009 and 2010 exacted a very heavy toll indeed.*

Calendar year	UK military fatalities in Afghanistan, F	Mid-year UK troop deployment, P	Estimated UK fatality-rates per 1,000 personnel-years, based on F and P only
2006	39 ^{Nimrod=14}	4,500	8.7 (95% CI: 6.2 to 11.8)
2007	42	6,900	6.1 (95% CI: 4.4 to 8.2)
2008	51	8,000	6.4 (95% CI: 4.7 to 8.4)
2009	108	9,000	12.0 (95% CI: 9.7 to 14.3)
2010	103	10,000	10.3 (95% CI: 8.3 to 12.3)
2011	46	10,000	4.6 (95% CI: 3.4 to 6.1)
2012 [to 10 June]	[23]	9,500	[5.5 (95% CI: 3.4 to 8.2)]

The table which follows should give the corresponding detail for ISAF-trained Afghan National Army (ANA) troops but is empty because UK and other ISAF-governments have seemingly made insufficient effort to disseminate this information themselves or to persuade the Afghan government - as a matter of international public accountability – to develop the capability of so doing.

While UK troops serve in Afghanistan along-side ISAF-trained ANA troops, the UK government should know, and be transparent about, the level of combat that ISAF-trained deployed ANA forces encounter, and how their fatality-rate compares with that of ISAF-nations.

The obligation is strengthened because, in the recent 80 weeks of PERIODS 13+14+15+16 when there were 804 ISAF-fatalities in Afghanistan, treachery by Afghan personnel or trainees claimed at least 41 ISAF-lives (all by small arms fire, saf), and so caused 5% of all deaths and 41/152 (27%) of saf-deaths.

Calendar year	ISAF-trained ANA military fatalities in Afghanistan, ANAF	Mid-year ISAF-trained ANA troop deployment, ANAP	Estimated ISAF-trained ANA military fatality-rates per 1,000 personnel-years, based on ANAF & ANAP only
2010	ANAF2010	aaa,000	A.a (95% CI: x.x to yy.y)
2011	ANAF2011	bbb,000	B.b (95% CI: x.x to yy.y)

Large clusters of fatalities

a) Two large clusters, each of eight US fatalities, occurred in PERIOD 14a (when two IEDs exploded in a single incident; and when, in small arms fire & apparently after an argument, a senior-ranking Afghan National Army (ANA) pilot opened fire on 8 US personnel at Kabul International Airport, six of them senior officers {Lt. Colonel, 5 majors, 2 captains and Master Sergeant}). In PERIOD 14b there occurred the largest cluster of ISAF fatalities in Afghanistan in 2006-2011 when 30 US military personnel (including special forces and a Lieutenant Commander) and others* died - the Taliban having brought down a Chinook helicopter in Wardak. In PERIOD 15, there were six US fatalities in a non-hostile helicopter crash; and in PERIOD 16, 12 Turkish fatalities (who included four majors) in a non-hostile helicopter crash.

*Afghan National Army (ANA)**

b) Monitoring is needed of **number deployed** of ISAF-trained ANA personnel; and **their** fatalities.

IED-only fatalities

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 the 80 weeks of PERIODS 13+14+15+16, there were **241** fatal IED-only incidents which caused **333** military deaths (that is: mean of 1.4 deaths per fatal IED-only incident) and accounted for a significantly lower percentage, **49%**, of all hostile deaths (333/684; 95% CI: 45% to 53%).

d) The proportion of fatal IED (only) incidents which claimed **more than two military lives** declined slightly, but significantly (chi-square on 2df = 6.27, $p < 0.05$), between PERIODS 5-8 (18/144, 12.5%), PERIODS 9+10 (18/183, 10%) and PERIODS 11+12 (11/213, 5%). However, in PERIODS 13-16, 20/241 fatal IED-only incidents (8%) claimed **more than two military lives** (2*three and six in PERIOD 13; 3*three, 3*four, five, and eight in PERIOD 14; 4*three, four, and five in PERIOD 15; 3*three in PERIOD 16).

e) 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, $p < 0.005$); also 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. Early in 2011 UK commanders changed bomb disposal tactics in Afghanistan: so that a different trend might emerge. Since 2011 to 10 June 2012, there were three IED-only fatalities in presumed EOD personnel when 6.2 would have been expected on a 2010-basis: encouraging, but not definitive in a statistical sense.

Changed UK deployment and impact of surge in Helmand

f) UK military fatality rate in Afghanistan essentially doubled between the initial 160 weeks from 1 May 2006 (**PERIODS 1 to 8: 160 weeks**) and the subsequent 70-weeks of **PERIODS 9+10+11+12a** (18 May 2009 to 19 September 2010) prior to UK-to-US hand-over of counter-insurgency responsibilities in Sangin). Post hand-over, in the 90-weeks of **PERIODS 12b+13+14+15+16** (20 Sept 2010 to 10 Jun 2012), UK's fatality rate in Afghanistan reduced to below the level of major combat:

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 to 12a: 14 per 1,000 pys (95%CI: 13 to 16, based on 178 fatalities in 12,885 pys)

PERIODS 12b to 16: 4.7 per 1,000 pys (95%CI: 3 to 6, based on 80 fatalities in 17,115 pys)

*g) In PERIODS 11b+12a (20 weeks, 3 May to 19 September 2010), wholly in the Afghan fighting season, 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 so that US in Helmand and UK in Afghanistan military fatality rates were **not** significantly different:*

PERIOD 11b+12a (fighting season, 2010)

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, vis-à-vis US troops in Helmand, was anticipated and, indeed, seen.

PERIOD 12b - 16 (post-handover: winter and fighting seasons)

US in Helmand: 5.4 per 1,000 pys (95% CI: 4.6 to 6.1, based on 186 fatalities in 34,614 pys)

UK troops: 4.7 per 1,000 pys (95% CI: 3.6 to 5.7, based on 80 fatalities in 17,115 pys)

1. Background

Since 1 May 2006 we have reported every 20 weeks, and sometimes 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 made interim 10-weekly reports so that our intensity of monitoring kept pace with the intensity of combat which UK forces encountered in Afghanistan but, from PERIOD 15, we reverted to 20-weekly reporting.

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	22 January 2012
16	23 January 2012	10 June 2012
17	11 June 2012	28 October 2012
18	29 October 2012	17 March 2013
19	18 March 2013	4 August 2013
20	5 August 2013	22 December 2013
21	23 December 2013	11 May 2014

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. In PERIOD 16, four French fatalities were shown as IED on icasualties.org but in the press as having been caused by a suicide bomber. *We assign these military deaths as caused by a suicide bomber (see <http://edition.cnn.com/2012/06/09/world/asia/afghanistan-troops-killed/index.html>).*

We need to track changes in deployment. In PERIOD 11a, there was some debate about the totality of UK's deployment to Afghanistan. We continued 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 continued to use 10,000 as our reference count until PERIOD 16 when we reckoned UK troop-deployment as 9,500.

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=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).

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"). Canadian troops are scheduled to have no combat role in Afghanistan beyond 2011.

3. Results

3.1 Fatalities in Afghanistan in PERIODS 1 to 14

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 PERIODS 13+14+15+16, US personnel have accounted for an even higher percentage, **74%**, of all military fatalities (596/804; 95% CI: 71% to 77%). Three large clusters, each of six US deaths - two by small arms fire and one an IED attack - occurred in PERIOD 13; three clusters in PERIOD 14, two of eight US deaths each - one by small arms fire and the other when two IEDs exploded in a single incident - and one of 30 US fatalities when a Chinook helicopter was brought down. In PERIOD 15, there was one large cluster of six US deaths in a non-hostile helicopter crash, and in PERIOD 16 an even larger cluster of 12 Turkish military fatalities in a non-hostile helicopter crash.

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 120/804 military fatalities (**15%**; 95% CI: 12% to 17%) in PERIODS 13+14+15+16.

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]*; none in the winter of PERIOD 13 but PERIOD 14a accounted for four non-hostile helicopter crashes [1 French, 1 Australian, 1 US, 2 US] as well as for one fatality in a hostile helicopter crash. PERIOD 14b accounted for 30 US fatalities in a hostile helicopter crash; PERIOD 15 for six US fatalities in a non-hostile helicopter crash and one US fatality in hostile helicopter crash; and PERIOD 16 for 12 Turkish deaths and two US fatalities in non-hostile helicopter crashes and one US fatality in non-hostile aircraft crash. Thus, 26/120 (22%) non-hostile deaths in PERIODS 13+14+15+16 occurred in the course of eight helicopter (or aircraft) accident/crashes. *See previous reports for more detail.

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 subsequent **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 level of ‘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+14** for both Canadian and UK troops which, for Canadian troops, occurred from the start of PERIOD 12: see summaries below, **TABLE 1**. Change of operations resulted in a major decrease in the fatality rate of UK but not US troops in PERIODS 12+13+14 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+14: 60 weeks

Canadians: 1.9 per 1,000 pys (95% CI: 0.7 to 4.0, based on 6 fatalities in 3,231 pys)
UK forces: 5.7 per 1,000 pys (95% CI: 4.3 to 7.1, based on 66 fatalities in 11,538 pys)
US forces: **5.6** per 1,000 pys (95% CI: 5.2 to 6.1, based on **585** fatalities in 103,848 pys)

Summary for PERIOD 15+16: 40 weeks

UK forces: 4.9 per 1,000 pys (95% CI: 3.5 to 6.8, based on 37 fatalities in 7,500 pys)
US forces: **3.5** per 1,000 pys (95% CI: 3.1 to 4.0, based on **245** fatalities in 69,232 pys)

From 2009 to 2011, see **TABLE 1b**, there were progressive, significant reductions in the combined US/UK/Canadian military fatality rate during 20-week ‘fighting seasons’ from: **9.8** (95% CI: 8.5 to 10.9, based on **257** fatalities in 26,347 pys, see PERIOD 9 in 2009) to **7.6** (95% CI: 6.7 to 8.4, based on **299** fatalities in 39,539 pys, see PERIOD 11b+12a in 2010) to **5.9** (95% CI: 5.1 to 6.7, based on **281** fatalities in 39,539 pys, see PERIOD 14) in 2011.

3.2 Fatal IED (only) incidents: variations

TABLE 2 shows military fatalities in IED (only) incidents, hereafter IED incidents, in 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 the 80 weeks 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%).

In the 80 weeks of PERIODS 13+14+15+16, 241 fatal IED (only) incidents cost the lives of 333 military personnel, a mean of 1.4 deaths per fatal IED (only) incident. The proportion of hostile deaths due to fatal IED (only) incidents was lower at **49%** (333/684; 95% CI: 45% to 53%).

The proportion of fatal IED (only) incidents which claimed *more than two military 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%). During PERIODS 13+14+15+16, however, 20/241 (8%) fatal IED (only) incidents claimed *more than two military fatalities* (2*three and six in PERIOD 13; 3*three, 3*four, five and eight in PERIOD 14; 4*three, four, five in PERIOD 15; and 3* three in PERIOD 16).

Small arms fire

For context, note that, in PERIODS 13+14+15+16, friendly-fire or drone fire accounted for seven ISAF-fatalities (1 Italian, 1UK, 2US-drone-fire, 1French, 1NZ, 1US).

Fatalities from small arms fire (other than friendly-fire) were as follows:

- 32 in PERIOD 13, which included two clusters, each of six US deaths (at Konar and Nangarhar);
- 31 in PERIOD 14a, which included a large cluster of eight fatalities at Kabul International Airport (where an Afghan military pilot murdered 8 US personnel) and two US fatalities at the Afghan National Civil Order Police Compound;
- 19 in PERIOD 14b, and one from 'saf and RPG';
- 39 in PERIOD 15, and one from 'saf and RPG';
- 31 in PERIOD 16.

Thus, of all 689 hostile deaths in PERIODS 13+14+15+16, a fifth (152, 22%) were specifically from small arms fire (only), 41 of them apparently during incidents of anger or treachery by Afghan personnel (as detailed in ***Discussion***): that is 41/689 hostile deaths (5%), and 41/152 deaths by small arms fire (27%).

4. Discussion

While UK troops serve in Afghanistan along-side ISAF-trained ANA troops, there is surely an obligation on the UK government to know, and be transparent about, the level of combat that

ISAF-trained ANA forces encounter, and how their fatality-rate compares with that of troops from ISAF-nations, such as UK. The obligation is strengthened because, in the recent 80 weeks of PERIODS 13+14+15+16 when there were 804 ISAF-fatalities in Afghanistan, apparent treachery by Afghan personnel or trainees claimed at least 42 ISAF-lives (all by small arms fire), and so caused 5% of all deaths; and accounted for 42/152 (27%) deaths by small arms fire.

Even without access to ANA deployment and fatalities, and hence without appraisal of the wider context, it appears that the nature of ISAF- fatalities has begun to alter, now that ‘withdrawal’ is out in the open. As we progress towards 2013 and 2014, we remain concerned by acts of ‘individual treachery’ directed at the military personnel from all (or specific) ISAF-countries, and by the potential for suicide bombings also to be directed at more senior ranks.

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 PERIOD 10 with its second phase, in 2010, timed to mesh with US reinforcements of some 30,000 troops. 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.

Surge. In Afghanistan, quite substantial winter-related decreases in military fatality rates were evident pre-surge, see PERIODS 2 and 5; and have continued, see 30-week summaries in **TABLE 1b** and **TABLE 1c** for PERIOD 15. However, there is now clear evidence that the US troop surge and re-deployments have coincided with a very significantly reduced combined US/UK/Canadian military fatality rates across the ‘fighting seasons’ of 2009 to 2011: from **9.8** (95% CI: 8.5 to 10.9) in 2009 to **7.6** (95% CI: 6.7 to 8.4) in 2010 and further reduced to **5.9** (95% CI: 5.1 to 6.7) per 1,000 personnel-years in 2011. The UK and Canadian forces, which hitherto had faced the worst odds, have benefitted from the re-deployments while the US troops have taken more strain.

Seeing the surge coming, the Taliban may themselves have switched tactics, and even their provincial focus – in part, away from Helmand - to concentrate, for example, on strategic suicide attacks elsewhere which aim to take out Afghanistan’s potential future leaders.

Differential deployment of US troops. Following US operational changes during PERIODS 9+10, the observed deaths of US personnel have been consistent with a common-provincial-distribution of US military fatalities across PERIODS 11+12, and - but for the large cluster of 30 Chinook fatalities in Wardak – in PERIOD 13+14+15+16 too. In PERIODS 11 to 16, half of US fatalities (510/994; 95% CI: 48% to 55%) occurred elsewhere than in Helmand/Kandahar.

Location of US military fatalities	Helmand	Kandahar	Elsewhere in Afghanistan/NA	US TOTALS
PERIOD 9	39	18	127	184
PERIOD 10	43	35	58	136
PERIOD 11	51	20	83	164
PERIOD 12	84	48	102	234

PERIOD 13	40	24	72	136
PERIOD 14	46	43	126^{30H}	215^{30H}
PERIOD 15	36	31	58	125
PERIOD 16	25	26	69	120

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 – fatality rates being therefore comparably high, see below.

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), $0.05 < p < 0.10$.

With the fighting season resumed in PERIOD 14, remarkably, neither UK’s military fatality rate nor that of US troops in Helmand increased - both remaining consistent with major combat, however. Both are importantly lower – indeed halved or better - compared to the fighting season of 2010:

PERIOD 11b+12a (fighting season)

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 (post-handover; winter)

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)

PERIOD 14 (post-handover; fighting season)

US in Helmand: 6.0 per 1,000 pys (95% CI: 4.4 to 8.0, based on 46 fatalities in 7,692 pys)
 UK troops: 4.4 per 1,000 pys (95% CI: 2.6 to 7.1, based on 17 fatalities in 3,846 pys)

Post-handover, we note that UK’s military fatality rate in Afghanistan and that of US troops in Helmand have been essentially below the level of major combat (**6.0 per 1,000 pys**).

PERIOD 12b+13+14+15+16 (post-handover)

US in Helmand: 5.4 per 1,000 pys (95% CI: 4.6 to 6.1, based on 186 fatalities in 34,614 pys)
 UK troops: 4.7 per 1,000 pys (95% CI: 3.6 to 5.7, based on 80 fatalities in 17,115 pys)

Fatal IED-only incidents: As winter ends so, too often, does any 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 claimed *more than two lives* has decreased from 12.5% (18/144) to 5% (11/213). Abetted by an exceptional cluster of eight fatalities in a single incident when two IEDs exploded, this decrease has reverted somewhat in PERIODS 13+14+15+16 when 20/241 fatal IED (only) incidents (8%) claimed *more than two military lives*.

Deaths of UK's presumed EOD personnel to end December 2010: We attempt to identify deaths in Afghanistan among UK military personnel who have been engaged in Explosive Ordnance Disposal (EOD).

We listed 17 hostile deaths, 14 by IED-only attack, and three non-hostile deaths which we presumed to fall into this category, see **APPENDIX**. 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.

Deaths of UK's presumed EOD personnel in 2011: In early February 2011, there was a welcome announcement that UK army commanders were planning to change bomb disposal tactics in Afghanistan to favour the destruction rather than 'exploitation' of IEDs³⁸.

We continued to monitor deaths by cause of UK's presumed EOD personnel in 2011 and to 10 June 2012, when a new trend might emerge. There were three IED-fatalities among presumed EOD personnel when 6.2 would have been expected (that is: $9/55 * 38$) had the EOD-2010-rate (9/55) applied to the 38 IED-only UK fatalities during 2011 up to 10 June 2012: encouraging but not statistically definitive.

Afghan National Army: Public monitoring is needed of the numbers of the Afghan National Army's (ANA) ISAF-trained personnel deployed; and their fatalities.

But, we also need to know how exceptional are incidents of treachery by Afghan personnel or trainees against ISAF-troops. The following list is derived from press reports, and may be incomplete. Incidents of apparent treachery are not readily identifiable as such on icasualties.org and so we have reviewed obituary and pres notices for all listed deaths by small arms fire.

In PERIOD 16, 12: two UK personnel were killed on 12 May 2012 (Afghan police); one US sergeant on 6 May 2012 (Afghan police uniform suspect) and another on 25 April 2012; UK lance-corporal and sergeant were killed on 26 March 2012 (rogue Afghan personnel suspected) and, in a different province but on the same day an US sergeant (alleged Afghan police). Three pairs of US personnel, each pair sergeant or higher-ranked soldier, were killed respectively by rogue Afghan soldier, security officer, soldier on 1 March 2012 (Kandahar: staff sergeant & private 1st class), 25 February 2012 (Kabul City Ministry of Interior: Lieutenant Colonel & major), and 23 February 2012 (Nangarhar: sergeant & corporal). The twelfth rogue Afghan incident caused the death of US lance-corporal on 1 February 2012. PERIOD 16 coincided with an American soldier having run amok and murdered Afghan civilians, including children; and offence at the inadvertent burning of Korans.

In PERIOD 15, 10: four French personnel were killed on 20 January 2012 by an Afghan soldier during a training exercise at a base jointly operated by French and Afghan forces in the eastern province of Kapisa. Several other soldiers were wounded, see⁴¹ <http://www.voanews.com/english/news/europe/France-Suspends-Afghan-Military-Operations--137749718.html>; also an US soldier was killed by an Afghan soldier on 8 January 2012. Two French Foreign Legion soldiers were killed by an Afghan soldier in eastern Afghanistan on 29 December 2011; and on 29 October 2011, an Afghan soldier killed three Australian army trainers in the south. All 10 deaths were registered as having been caused by small arms fire.

In PERIOD 14, 10: eight US military personnel were shot by an Afghan pilot at Kabul International Airport on 27 April 2011 and two US personnel were shot at the Afghan National Civil Order Police Compound in May 2011.

In PERIOD 13, 9: an Afghan police trainee killed six US soldiers in eastern Afghanistan on 29 November 2010 {See⁴² <http://www.wsws.org/articles/2010/dec2010/afgh-d01.shtml>} and on 18 February 2011, a man in Afghan army uniform killed three German soldiers in northern Afghanistan.

In PERIOD 12, three British Royal Gurkha Rifles soldiers were killed by an Afghan soldier on 13 July 2010. In PERIOD 10, on 3 November 2009, five UK military personnel had been shot dead by a rogue Afghan policeman⁴³.

To summarise, during the 80 weeks of PERIODS 13+14+15+16, apparent treachery cost the lives of at least 41 ISAF-personnel, and accounted for 5% of all fatalities (41/804); alternatively, for 41/152 (27%) deaths by small arms fire; and outnumbered friendly-fire deaths by more than 4: 1 (namely, 41: 7).

These acts of apparent treachery (green on blue) could well be the result of individual disillusionment, but the possibility of some being part of a strategically directed campaign cannot be ruled out either. When multiple fatalities occur in a single incident, they can lead to questioning by ISAF-nations of their continued role in Afghanistan, as by France⁴¹.

We look to UK Ministers - apparently in vain despite treacherous incidents having accounted for 5% of 804 fatalities in the past 80 weeks - to win the necessary political battles to 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 proper accountability by both UK and Afghan governments.

References

1. Spiegelhalter DJ. Surgical audit: statistical lessons from Nightingale and Codman. *Journal of the Royal Statistical Society Series A* 1999; 162: 46-58.
2. Bird SM. Military and public-health sciences need to ally. *Lancet* 2004; 364: 1831-1833.
3. Bird SM. UK Statistical indifference to its military casualties in Iraq. *Lancet* 2006; 367: 713 – 715.
4. Hodgetts T. UK statistical indifference to military casualties in Iraq (letter). *Lancet* 2006; 367: 1393.
5. Bird SM, Fairweather CB. Military fatality rates (by cause) in Afghanistan and Iraq: a measure of hostilities. *International Journal of Epidemiology* 2007; 36: 841 – 846. (advanced access published online on 21 May 2007, doi:10.1093/iej/dym103).
6. Norton-Taylor R. Brown to make deep cuts in troop numbers and offer asylum deal. *Guardian* 2007: 8 October (<http://www.guardian.co.uk/politics/2007/Oct/08/immigration.iraq>; access 3 April 2008).
7. Holt R. Gordon Brown to cut UK Iraq force to 2,500. *Telegraph* 2007; 8 October (<http://www.telegraph.co.uk/news/main.jhtml?xml=/bews/2007/10/08>; accessed 3 April 2008).
8. Lydall R. Iraq violence puts pull-out of 1,500 UK troops in doubt. *Scotsman* 2008; March 20.
9. Defence Factsheet Operations in Afghanistan: British Forces (<http://www.mod.uk/DefenceInternet/FactSheets/OperationsFactsheets/OperationsInAfghanistanBritishForces.htm>; accessed on 3 July 2007).
10. McGinty S. Their sacrifice is not in vain. *Scotsman* 2008; 1 April.
11. Defence Factsheet Operations in Iraq: Key Facts and Figures (<http://www.mod.uk/DefenceInternet/FactSheets/OperationsFactsheets/OperationsInIraqKeyFactsFigures.htm>; accessed 3 July 2007).

12. Colvin R. UK's next PM on fact-finding visit to Iraq. (http://www.boston.com/news/world/europe/articles/2007/06/11/uks_brown_makes_fact_finding_visit_to_iraq/; accessed on 3 July 2007).
13. Page J. Resurgent Taleban kill French troops. *Times* 2008; 20 August: 3.
14. Sengupta K. SAS spearheads new surge against Taleban. *Independent* 2008; 19 August: 9. (<http://www.independent.co.uk/news/world/asia/sas-spearheads-new-surge-against-taliban-901861.html>, accessed 21 August 2008).
15. Associated Foreign Press (AFP). Brown visits Afghanistan. AFP 2008; 21 August. (afp.google.com/article/ALeqM5iMV4wJqh9xpEkPKcIHTDls2BdhvQ, accessed 21 August 2008).
16. Anonymous at AFT. Despite hints of force cuts, Bush not saying when troops will come home. (<http://afp.google.com/article/ALeqM5gul8fDiSEXA0o7mPTvETX0aS3piA>; accessed on 4 September 2007).
17. Goldenberg S. Petraeus to claim surge success and resist calls for early withdrawal. *Guardian* 2007; 8 September: 29.
18. Martig N. Gates says Iraq troop withdrawals will probably continue. (<http://www.voanews.com/tibetan/archive/2008-02/2008-02-22-voa4.cfm>; accessed 3 April 2008).
19. Goldenberg S. Bush pledges more troops to Afghanistan despite focus on Iraq. *Guardian* 2008; 5 April: 22.
20. Spillius A. US to bolster Afghanistan troop numbers. *Telegraph* 2008; 18 July. (www.telegraph.co.uk/news/worldnews/2304779/US-to-bolster-Afghanistan-troop-numbers.html).
21. Gearan A. Report: US had unrealistic goals in Afghanistan. *The Associated Press* 2009; 8 January. (see <http://www.google.com/hostednews/ap/article/ALeqM5iWxiu65iLP>, access 12 January 2009).
22. Deen M, Alexander C. Brown says UK forces will leave Iraq in 2009. *Bloomberg.com* (see <http://www.bloomberg.com/apps/news?pid=20601102&sid=ai5.J.1Ln>, access on 12 January 2009).
23. Judd T. UK forces in Afghanistan in worst ever winter campaign. *The Independent* 2009; Sunday 11 January. (see <http://www.independent.co.uk/nnews/world/asia/uk-forces-in-afghanistan>, accessed 12 January 2009).
24. Rivers T. Britain ends combat role in Iraq. *Voice of America* 2009; 30 April. (see <http://www.voanews.com/english/2009-04-30-voa12.cfm>; accessed 28 May 2009).
25. Sky News. British troop rearguard finally flies home. *Sky News* 2009; 27 May. (see <http://uk.news.yahoo.com/5/20090526/tuk-british-troop-rearguard-finally-flie-45dbed5.html>; accessed on 28 May 2009).
26. Carter CJ, Vogt H. Troops in Iraq, Afghanistan honor their fallen. *Associated Press* 2009; 25 May. (see http://news.yahoo.com/s/ap/20090525/ap_on_re_mi_ea/ml_two_wars_memorial_day; accessed on 28 May 2009).
27. Associated Press. US withdrawal from Iraq 'on track' despite violence: Mullen. *Associated Press* 2009; 24 May. (see http://news.yahoo.com/s/afp/20090524/pl_afp/usiraqmilitary; access 28 May 2009).
28. Vina G. UK finishes withdrawal of its last combat troops in Iraq. *Bloomberg* 2009; 26 May. (see http://www.bloomberg.com/apps/news?pid=20601102&sid=asIB2Laf_hWs&refer=uk; accessed on 28 May 2009).
29. Mail Foreign Service. 700 extra British troops on their way to Afghanistan as Brown outlines new strategy to win war that has lasted SEVEN years. *Mail Online* 2009; 30 April. (see <http://www.dailymail.co.uk/news/worldnews/article-1175036/700-extra-British-troops-way-Afghanistan-Brown-outlines-new-strategy-win-war-lasted-SEVEN-years.html>; accessed 28 May 2009).
30. Starr B. Obama approves Afghanistan troop increase. *CNN Politics* 2009; 18 February. (see <http://edition.cnn.com/2009/POLITICS/02/17/obama.troops/index.html>; accessed 28 May 2009).
31. Jackson D. Obama's Afghanistan plan calls for 4,000 more U.S. troops. *USA Today* 2009; 30 March. (see http://www.usatoday.com/news/washington/2009-03-26-afghanistan-troops_N.htm; accessed on 28 May 2009).

32. Jakes L. US troops in Afghanistan won't be sent to Pakistan. Associated Press 2009; 7 May. (see http://www.google.com/hostednews/ap/article/ALeqM5iHJ_mmyzSO5vLdDwuAyMaHxEbcJgD981AAHG0; accessed 28 May 2009)
33. Reid T, Page J. US 'to send 7,000 extra troops to Afghanistan'. Times Online 2008; 5 May. (see <http://www.timesonline.co.uk/tol/news/world/article3871915.ece>; accessed 28 May 2009).
34. Griffin J, Fishel J. More than 17,000 troops headed to Afghanistan. Fox News 2009; 17 February. (see <http://www.foxnews.com/politics/2009/02/17/troops-headed-afghanistan/>; access 28 May 2009).
35. Bird SM, Fairweather CB. IEDs and military fatalities in Iraq and Afghanistan. *Journal of the Royal United Services Institute* 2009; 154: 30 -39.
36. Grouille O. Bird and Fairweather in context. Assessing the IED threat. *Journal of the Royal United Services Institute* 2009; 154: 40 -45.
37. Neild B. inquest ignored role of stress in bomb officer's death, says wife. The Observer 2011; Sunday 13 February: 11.
38. Rayment S. Commanders to change bomb disposal tactics. The Telegraph 2011; Saturday 12 February. (see <http://www.telegraph.co.uk/news/newstoppers/politics/defence/8320560/Commanders-to-change-bomb-disposal-tactics.html>; accessed 14 February 2011).
39. http://www.longwarjournal.org/archives/2011/04/afghan_pilot_kills_8.php
40. <http://www.10news.com/news/28034763/detail.html>.
41. Bryant L. France suspends Afghan military operations after troop deaths. <http://www.voanews.com/english/news/europe/France-Suspends-Afghan-Military-Operations--137749718.html>.
42. van Auken B. Afghan trainee kills six US troops. http://www.wsws.org/articles/2010/dec2010/afgh-d01_shtml.
43. Anonymous. Three British soldiers killed by rogue Afghan soldier. <http://www.telegraph.co.uk/news/worldnews/asia/afghanistan/7887072/Three-British-soldiers-killed-by-rogue-Afghan-soldier.html>
44. Walker P. Nato troops killed by Afghan forces – timeline. <http://www.guardian.co.uk/world/2012/jan/20/nato-troops-killed-afghanistan?newsfeed=true>

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 ²) 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 – Periods a or b are 70 days' duration, not 140 days							
Period	9 UPLIFT	10 SURGE	11a SURGE	11b SURGE	12a SURGE	12b SURGE	13 SURGE	14 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 4 Sept 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})	286 (35 ^{5H+1FF})
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	215 (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	17 (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) 538	0 (2,800) 539	2 (2,800) 1,077	2 (2,800) 1,077
Other deaths	36	24	11	25	23	19	23	52 ^{1=NATO}
<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)	6.2 ^{30H} (5.4 to 7.0)
		30 weeks: 3.5 (3.0 to 4.0)		6.8 (5.9 to 7.6)		30 weeks: 4.9 (4.3 to 5.5)		
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)	4.4 (2.6 to 7.1)
		30 weeks: 11.3 (8.5 to 14.1)		14.3 (10.8 to 18.6)		30 weeks: 4.5 (2.9 to 6.6)		
Canada	13.5 (7 to 23)	8.4 (4 to 16)	3.7 (0.5 to 13)	14.8 (6 to 29)	3.7 (0.5 to 13)			1.9 (0.2 to 6.7)
		30 weeks: 4.3 (3.8 to 4.9)		9.3 (4.4 to 17)		30 weeks: 1.2 (0.1 to 4.5)		
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)	5.9 (5.1 to 6.7)
		30 weeks: 4.3 (3.8 to 4.9)		7.6 (6.7 to 8.4)		30 weeks: 4.7 (4.2 to 5.3)		

^{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.

^{5H} PERIOD 14a includes 5 deaths in 4 non-hostile helicopter crashes (1France, 2US, 1 Austral, 1US).

30H PERIOD 14b includes major cluster of 30 US fatalities in hostile-fire Chinook helicopter crash in Wardak.

TABLE 1c (Afghanistan): Coalition military deaths in Afghanistan and estimated fatality rates per 1,000 personnel-years in consecutive 140-day periods.

Theatre	Afghanistan – Periods are 140 days' duration						
Period	15 SURGE	16 SURGE					
Dates	5 Sept 2011 to 22 Jan 2012	23 Jan 2012 to 10 June 2012					
Total fatalities (non-hostile)	173 ^{2FF} <i>(23^{6H})</i>	166 <i>(41^{12H+2H+1A})</i>					
US deaths* (troops) personnel- years	125^{6H+1H} (90,000) 34,616	120^{2H+1A} (90,000) 34,616					
UK deaths (troops) personnel- years	15 (10,000) 3,846	22 (9,500) 3,654					
Canadian deaths (troops) personnel- years	1 (2,800) 1,077	0					
Other deaths	32 ^{6=NATO}	24 ^{3=NATO}					
US	3.6 <i>(3.0 to 4.2)</i>	3.5 <i>(2.8 to 4.1)</i>					
UK	3.9 <i>(2.2 to 6.4)</i>	6.0 <i>(3.5 to 8.8)</i>					

7H Total of 23 non-hostile deaths in PERIOD 15 includes 6 US fatalities in a single 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>								
1	28	8	19	22	25	29	20	71	70
2	11	1	3	6	8	7	9	11	13
3	2	2	3	1	3	5	3	7	3
4	5	0	1		3	1	2	4	2
5	0	0	0					0	
6+	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	14	15	16
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 4 Sept 2011	5 Sept 2011 to 22 Jan 2012	23 Jan 2012 to 10 June 2012
Duration	280 days	70 days	70 days	70 days	70 days	140 days	140 days	140 days	140 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	122 in 87 fatal IEDs	73 in 46 fatal IEDs	55 in 41 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	70	28	32
2	24	3	16	15	10	8	9	12	7
3	10	0	1	1	1	2	3	4	3
4	6	0	1	3	2		3	1	0
5	0	0	1	1	0		1	1	0
6+	2*	0	0	0	0	1	1	0	0
TOTAL fatal IED incidents	183	31	70	58	54	66	87	46	42
Fatal IED incidents per day	0.65	0.4	1.0	0.8	0.8	0.5	0.6	0.3	0.3
Mean deaths per fatal IED incident	1.4	1.1	1.4	1.5	1.3	1.3	1.4	1.6	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 on AFGHANISTAN

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.

Has a different pattern been established since 2011? Notice first that there has been a very marked reduction overall in UK's IED-only fatalities compared to 2010 which, paradoxically makes it harder to answer the question authoritatively.

Had the 2010 pattern persisted throughout 2011 and into 2012, we should have expected 6.2 IED-only deaths of UK presumed EOD personnel: thankfully, we have observed only three (1-directional test, $p < 0.18$). The three, as observed, are consistent with expectation based on all five preceding years: 2006 to 2010.

Had the pattern of hostile deaths in presumed EOD personnel persisted as in 2010, we should have expected 8.3 hostile deaths in UK's presumed EOD personnel: we have observed five (at most six). The data since 2011 are encouraging but not yet definitive in a statistical sense that the changed policy has importantly reduced the fatal IED risks faced by presumed EOD personnel.

Calendar year	UK IED-only fatalities	i) Hostile death of UK presumed EOD personnel {expectations by trend in IED-only fatalities}	ii) IED-only deaths 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, $p < 0.05$
Did a new pattern emerge in 2011?			

2011	27	2 (or 3 = dog-handler)	2
2012 to 10 June	11	3	1

Date of death	Cause of death	Rank	Surname	Regiment
4 May 2012	Indirect fire	Private	Silibaravi	Royal Logistics Corps
4 May 2012	Indirect fire	Corporal	Roberts	Royal Logistics Corps
18 April 2012	IED attack	Sapper	Ray	33 Engineer Regiment (EOD)
8 Dec 2011	IED attack	Sapper	Bond	35 Engineer Regiment, Royal Engineers
19 April 2011	IED attack	Captain	Head	321 EOD Squadron
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

16 June 2011	IED attack	Craftsman	Found	Royal Electrical and Mechanical Engineers (REME)
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	Lance Corporal	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 first 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**.

Subsequently, suicide bombing has claimed five military fatalities in PERIOD 13, seven (2+5) in PERIOD 14 [one of them a German major], five US fatalities in PERIOD 15 [one of them a lieutenant colonel: suicide car bomb], and seven military fatalities in PERIOD 16 [4 French, one a brigadier + 3 US] a total of 24 fatalities out of 804 military deaths in 80 weeks: **3.0%**.

Senior ranks: In the first 160+80 weeks since 1 May 2006, there had 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). In total, 38 deaths (2%) with rank of major/Lt Col/ Colonel (or equivalent) were among 1,865 military fatalities in PERIODS 1 to 12.

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 caused the death of UK major, and hostile fire the death of a Norwegian Lieutenant Colonel. In PERIOD 14a, US Lt Colonel (and a sergeant) died by small arms fire at the Afghan National Civil Order Police Compound in Helmand, a German major (and Hauptfeldwebel) died by suicide bomber, and a US Lt Colonel and four majors (together with two captains and master sergeant) died by treacherous small arms fire at Kabul International Airport. In PERIOD 14b, one of the 30 US fatalities when a Chinook helicopter was brought down was a Lieutenant Commander (major-equivalent). In PERIOD 15, US Lieutenant Colonel died (with four others: 2 sergeants, staff sergeants, and Canadian master corporal) in suicide car bomb, and UK Squadron Leader in an IED attack. In PERIOD 16, eight senior ranks died as follows: French brigadier, four Turkish majors, US major and US Lieutenant Colonel, and US Brigadier General (non-hostile) died.

PERIODS 1 to 12 & 13+14+15+16 have seen the deaths of 16 & eight = 24 military personnel ranked Lt Colonel/Colonel/Squadron Leader and of 22 & 13 = 35 majors among 1,863 & 804 = 2,667 military fatalities. Overall, about 1 in 45 military fatalities in Afghanistan ranked major or higher.

3.5 Friendly 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'. In PERIOD 14, one French fatality was ascribed to 'non-hostile friendly fire'. In PERIOD 15, a New Zealander died by hostile friendly-fire and a US soldier by hostile 'small arms fire-friendly fire'. PERIODS 13+14+15 accounted for 7 deaths by friendly fire, and nil in PERIOD 16.