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US Casualties: The Trends in Iraq and Afghanistan

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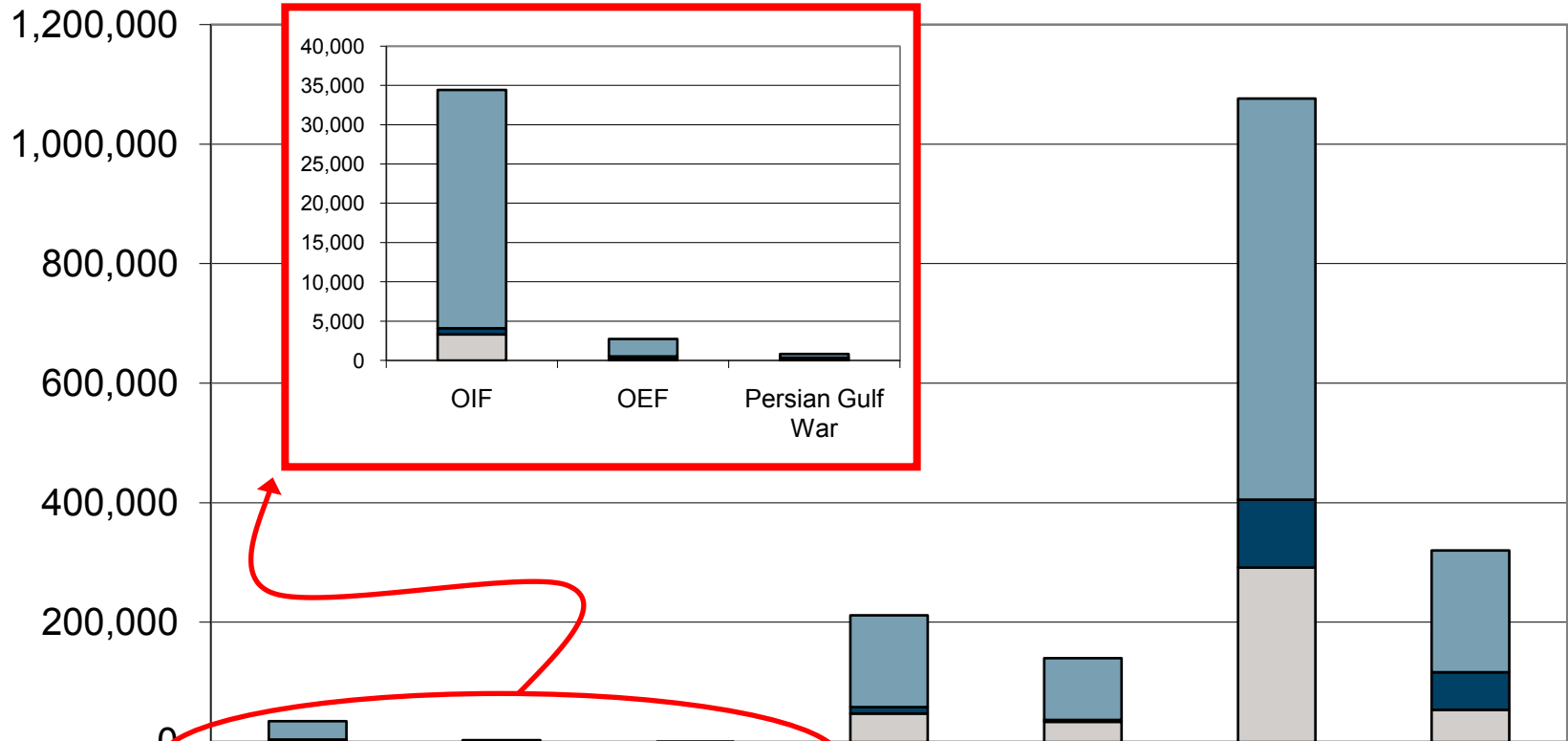
Introduction

- **This analysis shows how different ways of counting casualties alter the analysis of trends in recent conflicts.**
- **It uses US combat data because no similar detailed trend data are available on Allied, Iraqi, and Afghan military and civilian casualties. It in no way is intended to understate their importance or the sacrifices involved.**
- **One consistent result is the importance of considering wounded in action relative to killed in action in measuring the intensity of combat, and the level of sacrifice made by the US military.**
- **The trend in total killed and wounded is far more relevant than the trend in killed alone.**

Charts 1 & 2: Comparisons with Historical Patterns in Other Wars

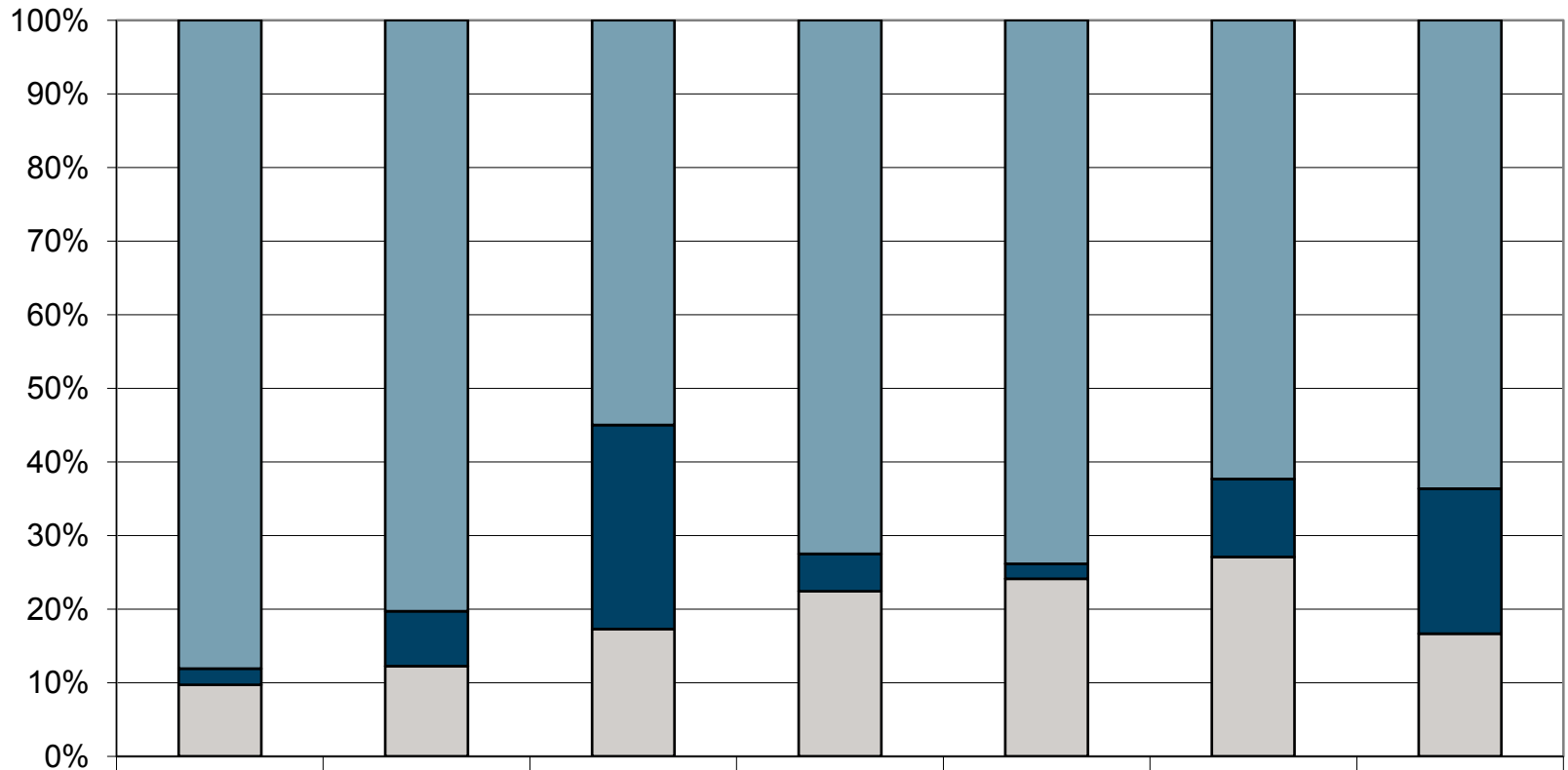
- Cost in lives and wounded far lower than in previous wars of similar intensity and length, including regional/counterinsurgency conflicts.
- There has been a steady trend since World War II of decreasing fatalities in terms of total casualties.
- The percentage of troops who died in combat has decreased from 27 percent of all casualties in World War II to 12.2 and 9.7 percent in Operations Enduring Freedom and Iraqi Freedom, respectively.
- Cost in blood much lower in comparison with cost in dollars. The total number of casualties in operations in Iraq and Afghanistan are relatively low compared to the numbers of the Vietnam and Korea wars.
- Ratio of killed in action continues to slowly drop relative to wounded in action, but decline is much lower than shift that began in post Vietnam era.
- Wounded in action does not include psychological trauma and stress.
- No subtotals available on patterns in wounds that involve loss of limbs, critical head wounds, and lasting disability: **Sacrifice should also be measured in wound intensity but data are not available.**

Chart 1: Historic Casualty Rates - Killed vs. Wounded in Numbers



	OIF	OEF	Persian Gulf War	Vietnam	Korea	World War II	World War I
■ Wounded	30,349	2,190	467	153,303	103,284	670,846	204,002
■ Non-Hostile Deaths	761	204	235	10,786	2,835	113,842	63,114
□ Hostile Deaths	3,345	334	147	47,434	33,739	291,557	53,402

Chart 2: Historic Casualty Rates - Trend in KIAs vs. WIAs as Percent of Total

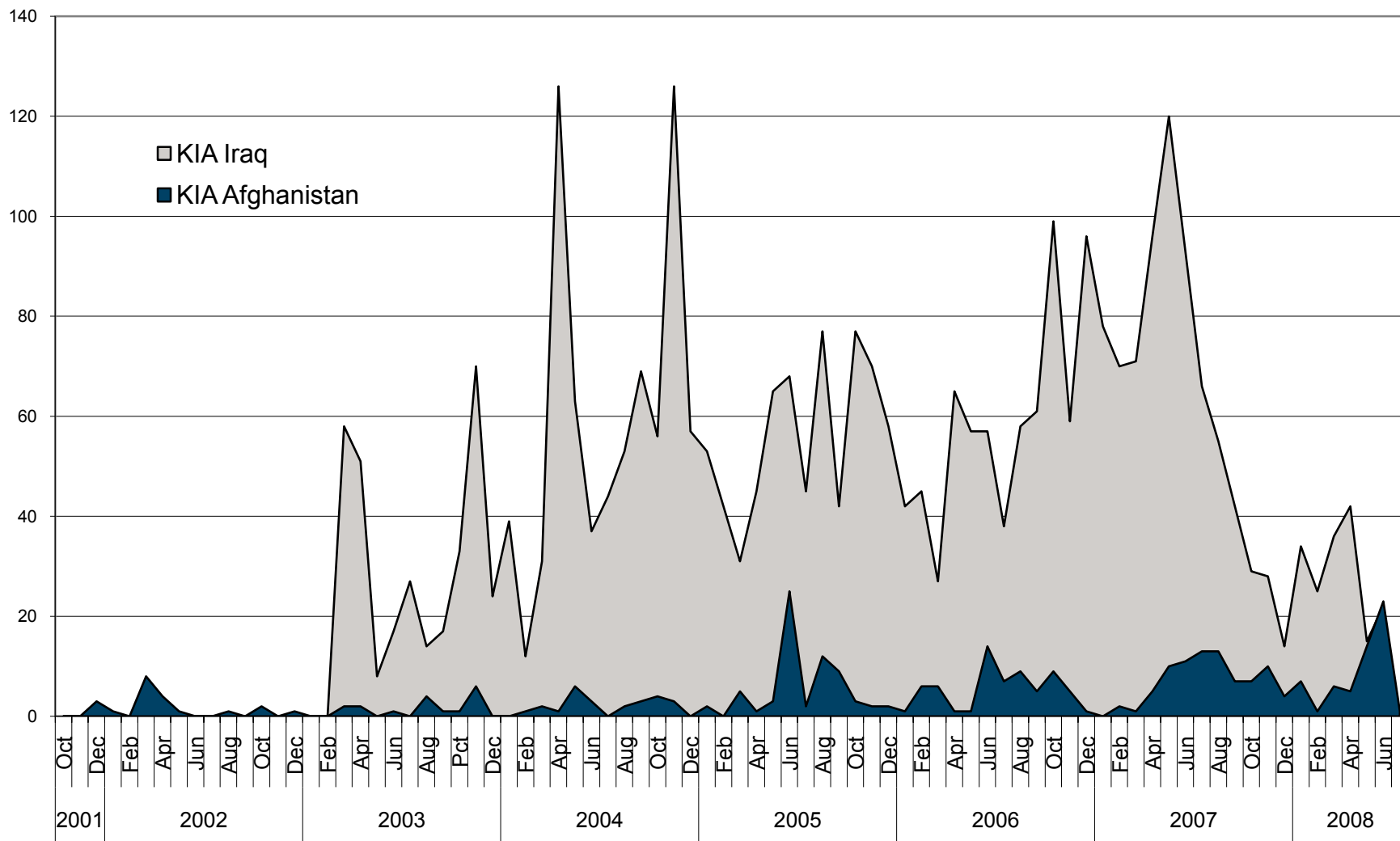


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Charts 3 & 4: Killed in Action: Iraq versus Afghanistan Since 2001

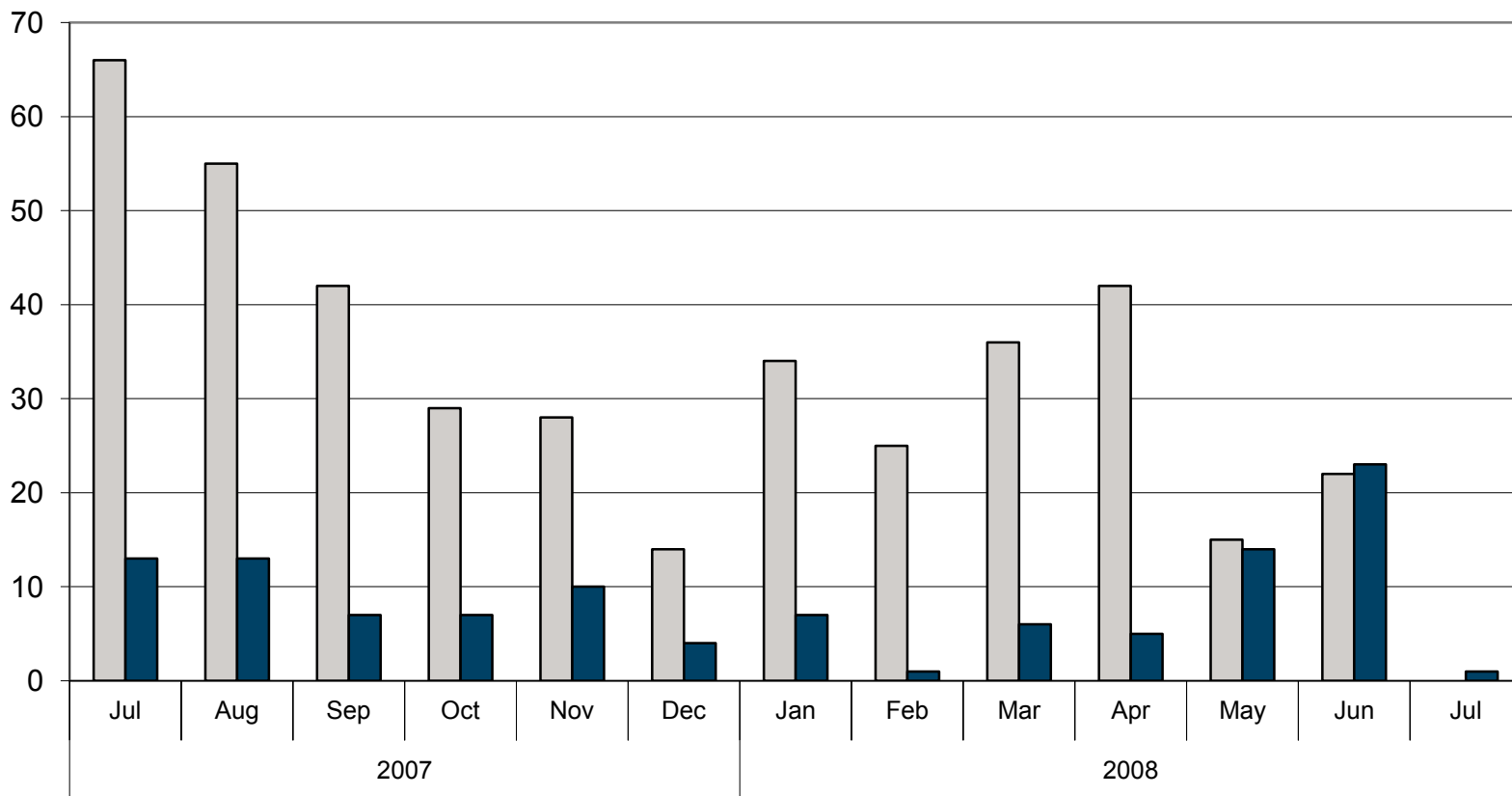
- **While Afghanistan has emerged as having more KIA's, chart 3 shows how recent the trend really is, and how much more intense the Iraq War has been.**
- **The comparison in Chart 3 for the entire length of the Iraq War shows how suddenly one intense period of combat or major exchange can alter the trends.**
- **The comparison in Chart 4 for the period since the “surge” shows that the trend toward higher casualties in Afghanistan is very recent and could easily be reversed by a single relatively minor clash or firefight.**

Chart 3: KIA: Iraq vs. Afghanistan - The Length of the Entire War



Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Chart 4: KIA: Iraq vs. Afghanistan - July 2007-July 2008



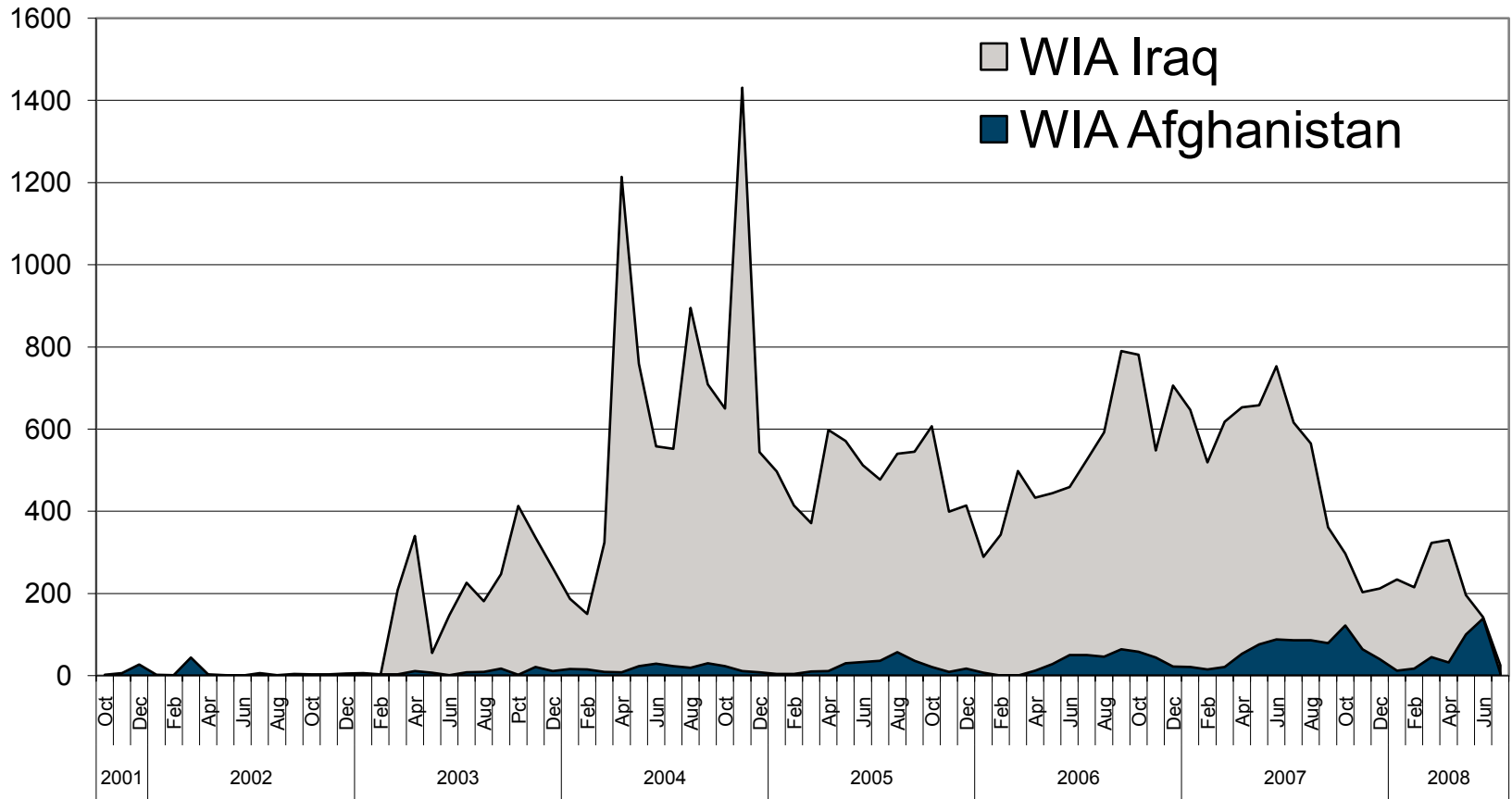
□ KIA Iraq	66	55	42	29	28	14	34	25	36	42	15	22	
■ KIA Afghanistan	13	13	7	7	10	4	7	1	6	5	14	23	1

Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Charts 5 & 6: Killed in Action: Iraq versus Afghanistan Since 2001

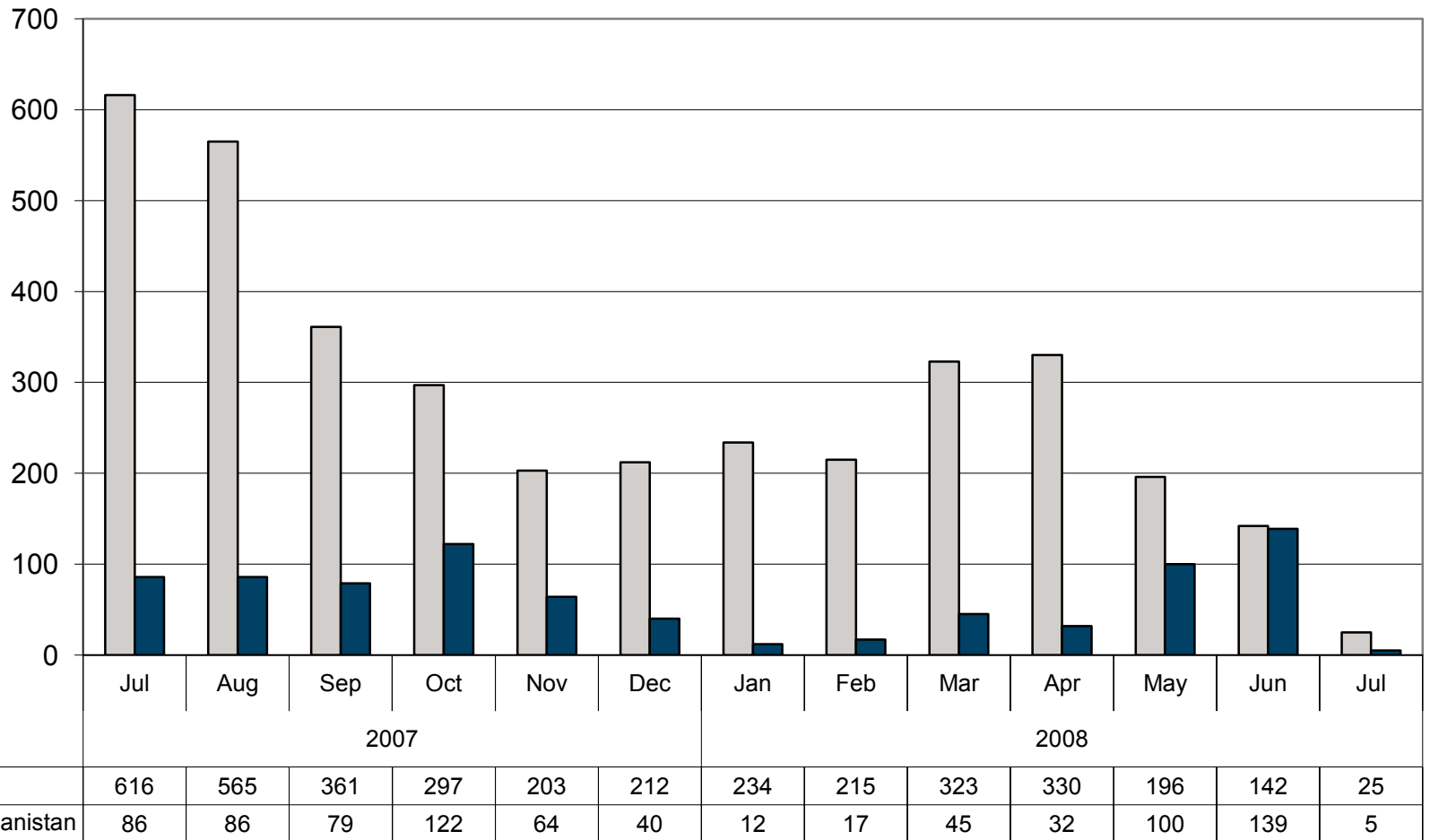
- **The comparison in Chart 5 for the entire length of the Iraq War still shows how suddenly one intense period of combat or major exchange can alter the trends, but the trends are far less driven by one event or clash than KIAs. Wounded provides a better picture of the trends.**
- **The comparison in Chart 6 for the period since the “surge” again shows that the trend toward higher casualties in Afghanistan is very recent and could easily be reversed by a single relatively minor clash or firefight.**

Chart 5: WIA: Iraq vs. Afghanistan from 2001 to Present



Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Chart 6: WIA: Iraq vs. Afghanistan from July 2007 to July 2008



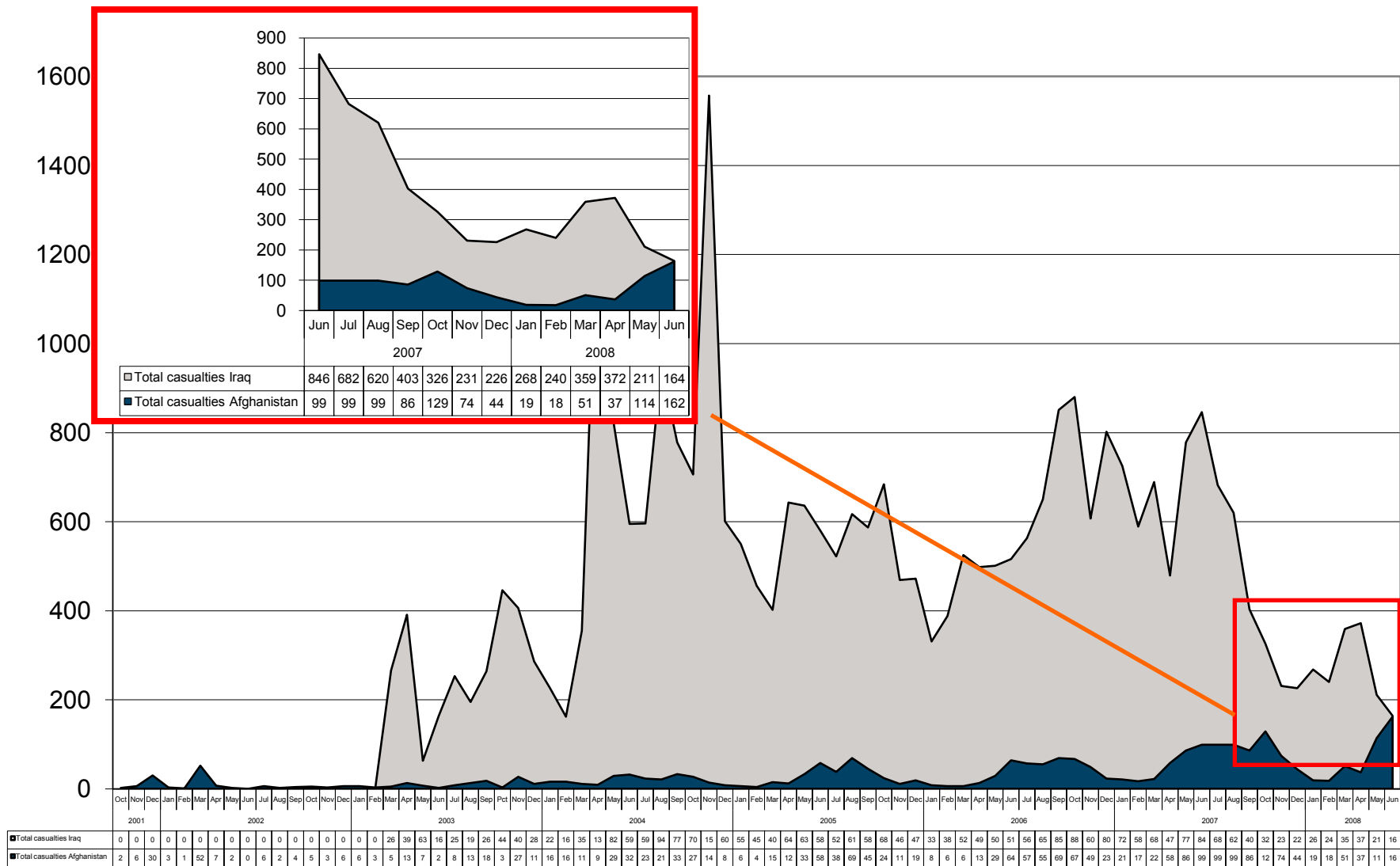
Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Chart 7: Total Casualties: Patterns in Total KIA and WIA in Iraq and Afghanistan Wars from 2001 Onwards

- **Chart 7 compares the total pattern in casualties.**
- **Note that these patterns provide a much better picture of the intensity of the fighting as it affected US forces than the patterns in killed.**
- **The dictionary definition of casualties is not “killed in action.” It is “a member of the armed forces who is killed or injured during combat.”**
- **If one looks at the detailed trends, one sees the following patterns:**
 - Iraq exhibits a relatively stable decline of casualties since mid-2007, but it is difficult to observe regular patterns that allow for further projections. Afghanistan has been following a cyclical pattern since 2003, with an average annual increase of casualties of 48 percent. Although the highest number of casualties since the outset of hostilities has been reported for June 2008, current numbers are still below the projections of observed trends for 2008.
 - The combined number of KIA and WIA (total casualties) best indicates the level of violence. (For the purpose of this briefing, casualty numbers will be used as a statistical proxy for violence.) Since mid-2007 casualties in Iraq have decreased quite gradually to a total number of 164 in June 2008. Such low numbers were last reported from Iraq in February 2004 and May-June 2003, after the overthrow of the regime in Baghdad. Meanwhile, casualties in Afghanistan reached their highest since hostilities began in 2001 at 162.

- Although the Iraq data display a significant and quite continuous decrease in US casualties, sustained over 12 months, it is hard to see any regularity in the data since 2003. There have been periods of extraordinary violence in the spring and fall of 2004, preceded and followed by rather calm months in January-February 2004 and January-March 2005 respectively. Yet, the trendline for the last 12 months in Iraq has a clearly negative slope. This is a reversal of trends compared to the previous 12 months periods.
- In June 2008, for the first time since hostilities started in Iraq, the number of US troops killed there has been lower than the number of US troops killed in Afghanistan. The Department of Defense reported 23 killed in Afghanistan and 22 in Iraq for June 2008. The previous month already showed converging numbers of fatalities in the two theaters with 14 killed in Afghanistan and 15 in Iraq.
- The numbers are high for Afghanistan and low for Iraq. Yet, the only unique event is the coincidence of low numbers in one theater and high numbers in the other. In Afghanistan, more US troops were killed in June 2006 (25 KIA) and Iraq has seen months with lower fatalities in May 2003 (8 KIA), February 2004 (12 KIA), or December 2007 (14 KIA).
- Similar trends can be observed in the numbers of wounded military personnel. Afghanistan reported 139 wounded personnel, Iraq 142 in June 2008. This represents also the highest number in WIA in Afghanistan since the beginning of hostilities in 2001 and the second lowest number of WIA in Iraq, next to 55 WIA in May 2003.
- The first half of 2008 exhibits a sharp increase in the US casualties rising to unprecedented numbers in that theater. Yet, violence in Afghanistan seems to follow a more cyclical pattern than in Iraq. Since 2005 there have been clear peaks of violence in the summer months with regular winter breaks. The average annual number of casualties has also increased gradually from 9.7 in 2003 to 19.9 in 2004, 27.8 in 2005, 37.2 in 2006, to 69.5 in 2007. The average of 2008 is 66.8 so far. Thus, average numbers and general cycles of violence do not yet indicate a rise in violence for 2008. Although June has reached the highest casualty numbers in the war, the entire year may still turn out to be average or below average.
- The statistical analysis of casualty numbers allows to conclude with a trend toward a decrease in violence in Iraq. Afghanistan has been following a different general trend since 2003. The average annual casualty growth rate is 48 percent. A linear projection for 2008 suggests total casualties of 1,234 troops in Afghanistan by the end of 2008. As of June 2008 there have been 401 casualties, a third of projected numbers, only half-way through the year. This indicates that total annual casualties in Afghanistan are still short of the observed trend since 2003. They further project an increase in absolute numbers, but less than the average annual increase since 2003.

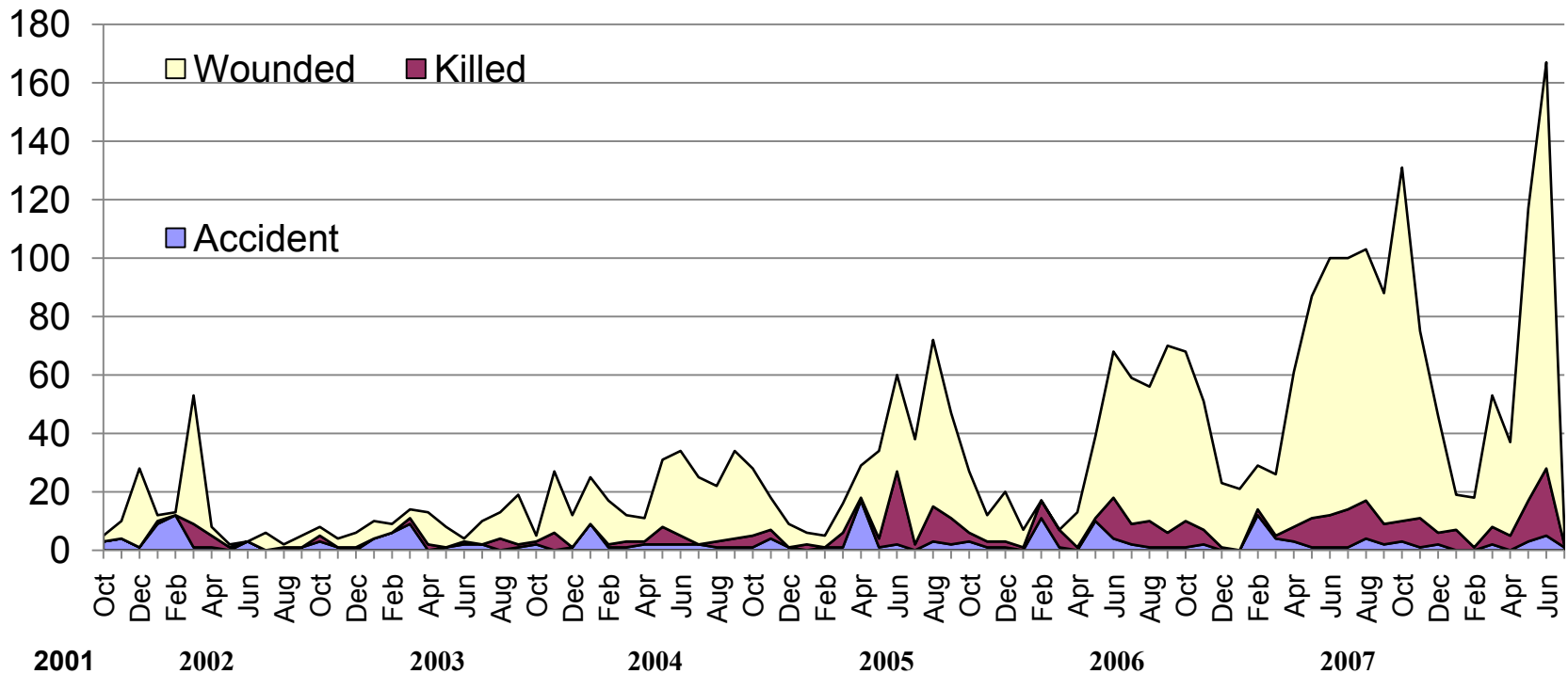
Chart 7: Total Casualties: Patterns in Total KIA and WIA in Iraq and Afghanistan Wars from 2001 Onwards



Charts 8 & 9: Killed in Action versus Wounded in Action During Entire Afghan and Iraq wars

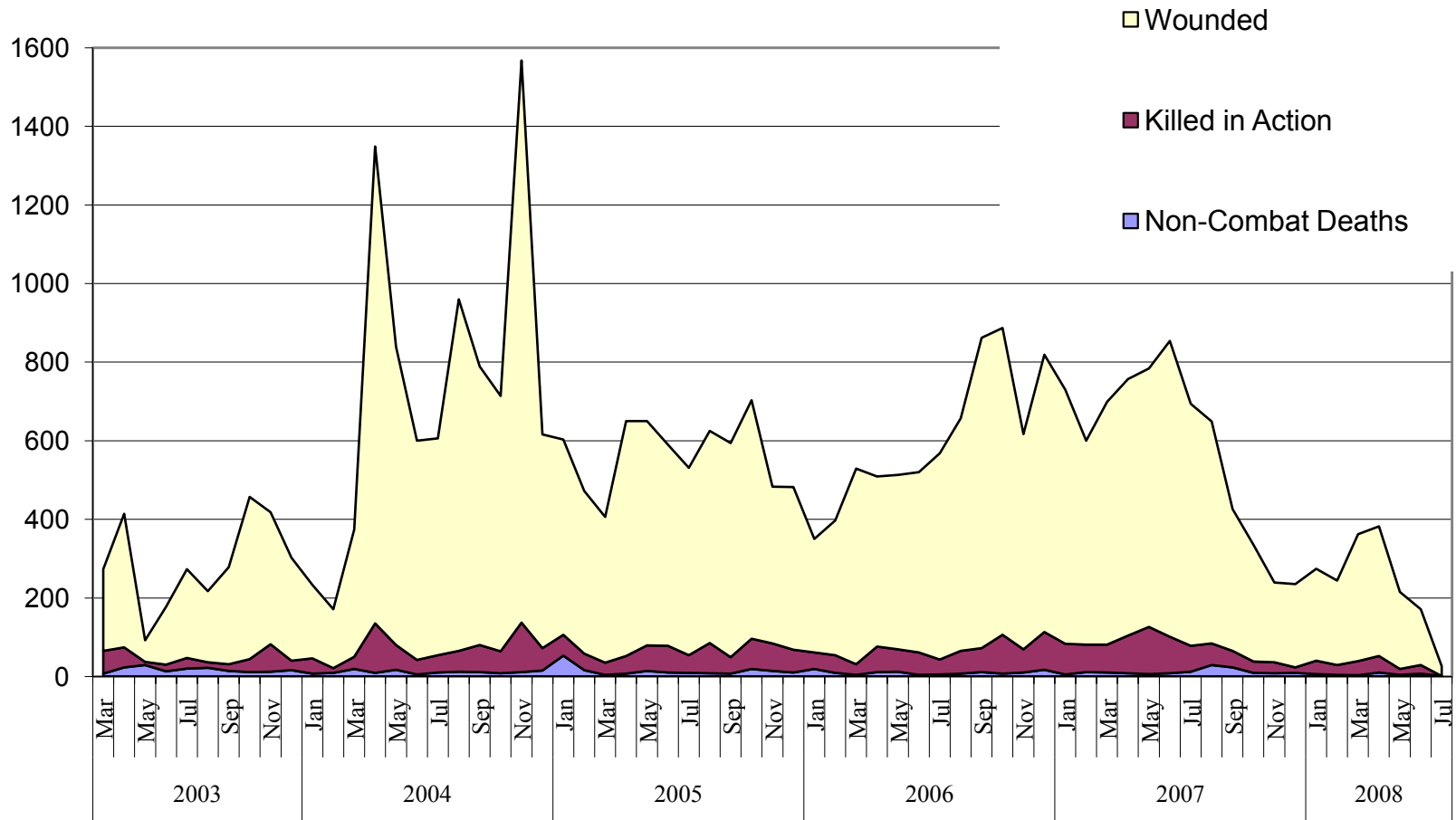
- **Both Charts 7 & 8 show that the total patterns in killed and wounded are far more representative of the intensity of combat than comparisons of killed alone, and that the data on wounded are far more relevant than those on killed.**
- **The data on the Afghan War in Chart 7 show that this war is driven far more by weather and the “campaign season” than the Iraq War. They also show a steady pattern of escalation from 2004 through 2008.**
- **The data on the Iraq War in Chart 8 show that the fighting during the “surge” in 2007 was not the most intense period in the war. The most intense year was 2004, and the fighting in 2006 was more intense than in 2007.**

Chart 8: Afghanistan: KIA vs WIA from 2003 to Present



Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Chart 9: Iraq: KIA vs WIA from 2003 to Present

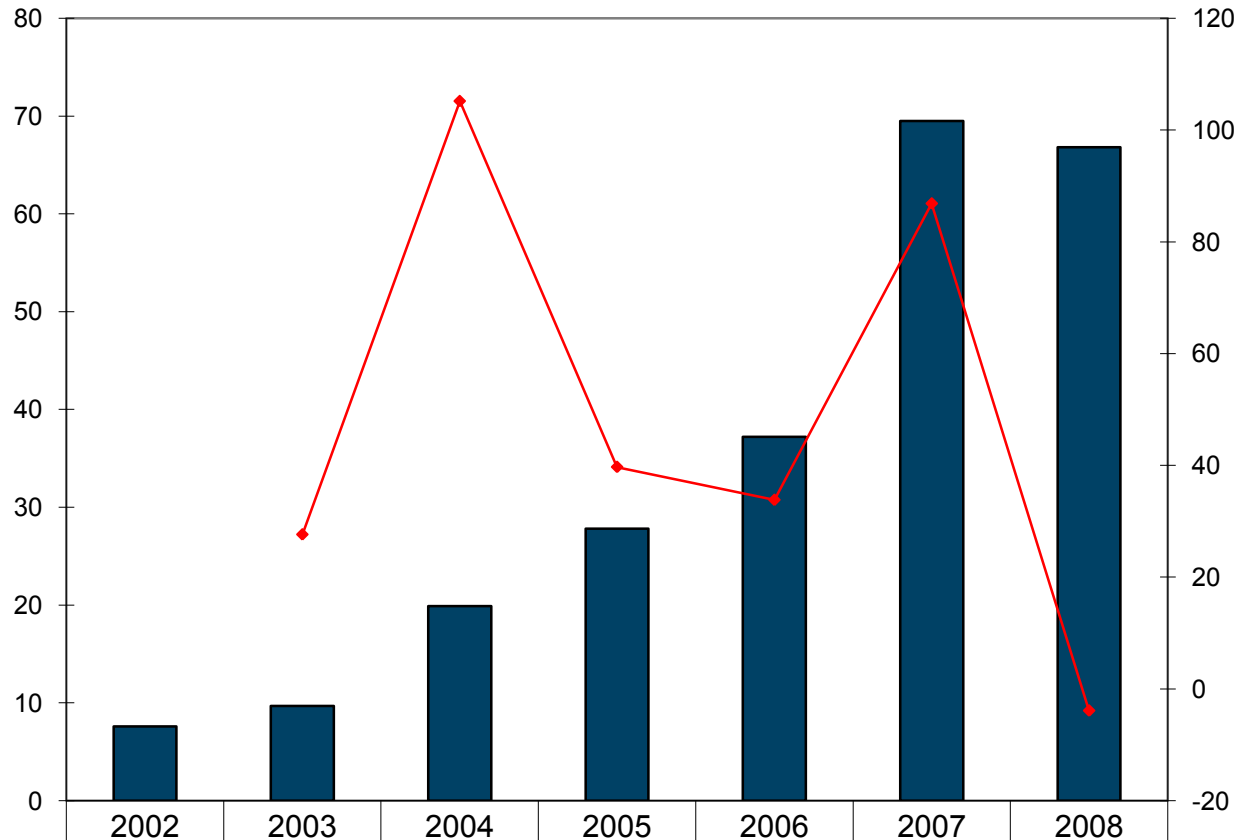


Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Charts 10 & 11: Other Ways of Measuring Casualties and Combat Intensity

- The growth of casualties shows a clear trend in Afghanistan, but is little conclusive in Iraq.
- Afghanistan experienced a steady growth in the number of casualties since the war started. The largest increase has been between 2006 and 2007, when the average monthly casualty rate jumped from 37 to 70, an increase of 87 percent. Although 2008 has seen the most violent month in the entire war, the year's monthly average has decreased by 4 percent. This might be reversed by the end of the year, since the first six months in the year include the less violent winter months. Yet, a growth rate such as that of 2007 is unlikely to materialize.
- The average monthly casualty number has decreased in Iraq in 2008 for the second consecutive year and assumed a negative growth rate. The average monthly casualty rate has been relatively stable between 2005 and 2007 and dropped significantly in 2008, with a negative growth rate of -52 percent. These numbers do not indicate a trend, although the growth rate for 2008 is unlikely to turn positive again by the end of the year.

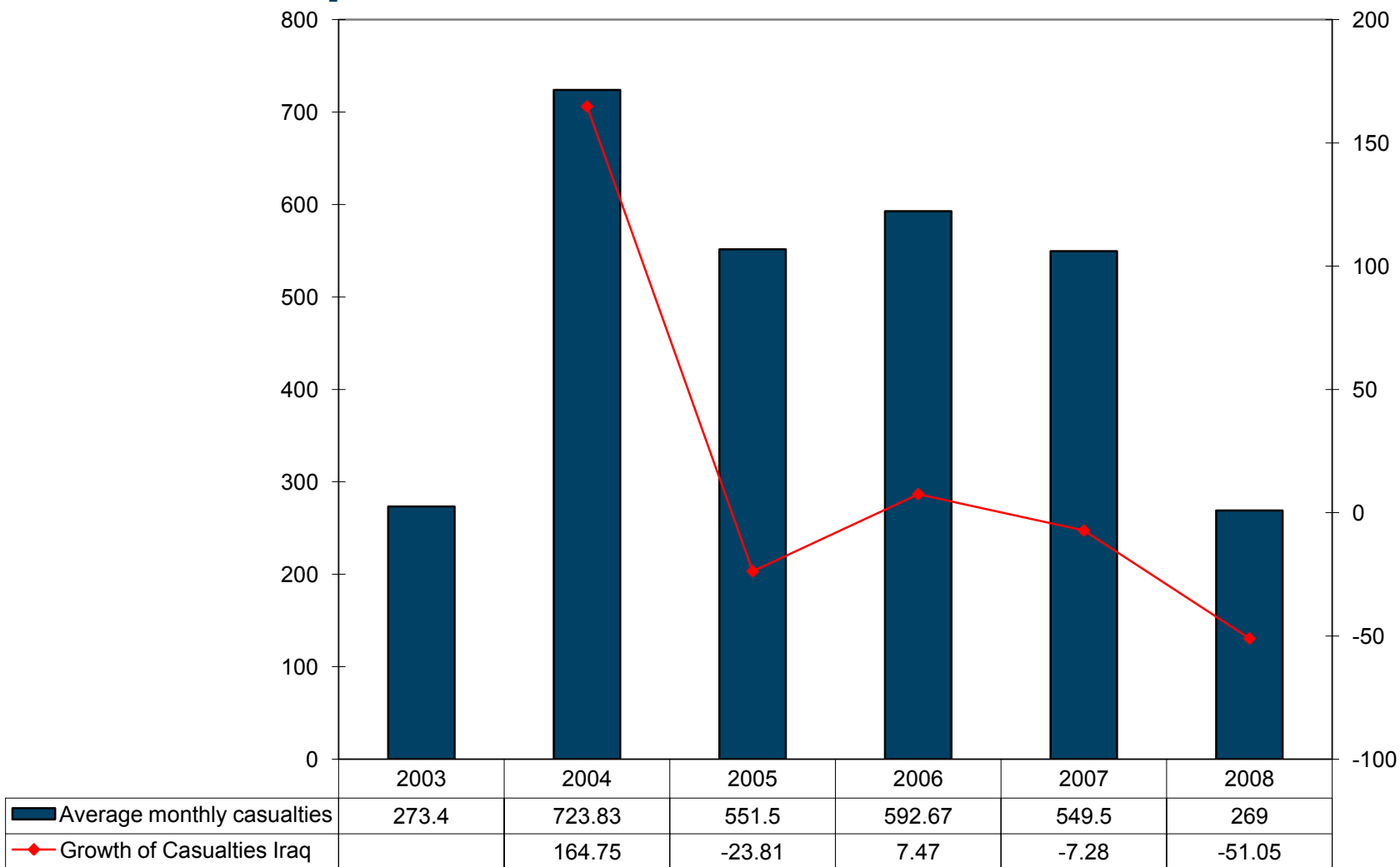
Chart 10: Growth of Casualties in Afghanistan



■ Average monthly casualties	7.6	9.7	19.9	27.8	37.2	69.5	66.8
◆ Casualty growth rate in percent		27.63	105.15	39.7	33.81	86.83	-3.88

Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Chart 11: Growth of Casualties in Iraq

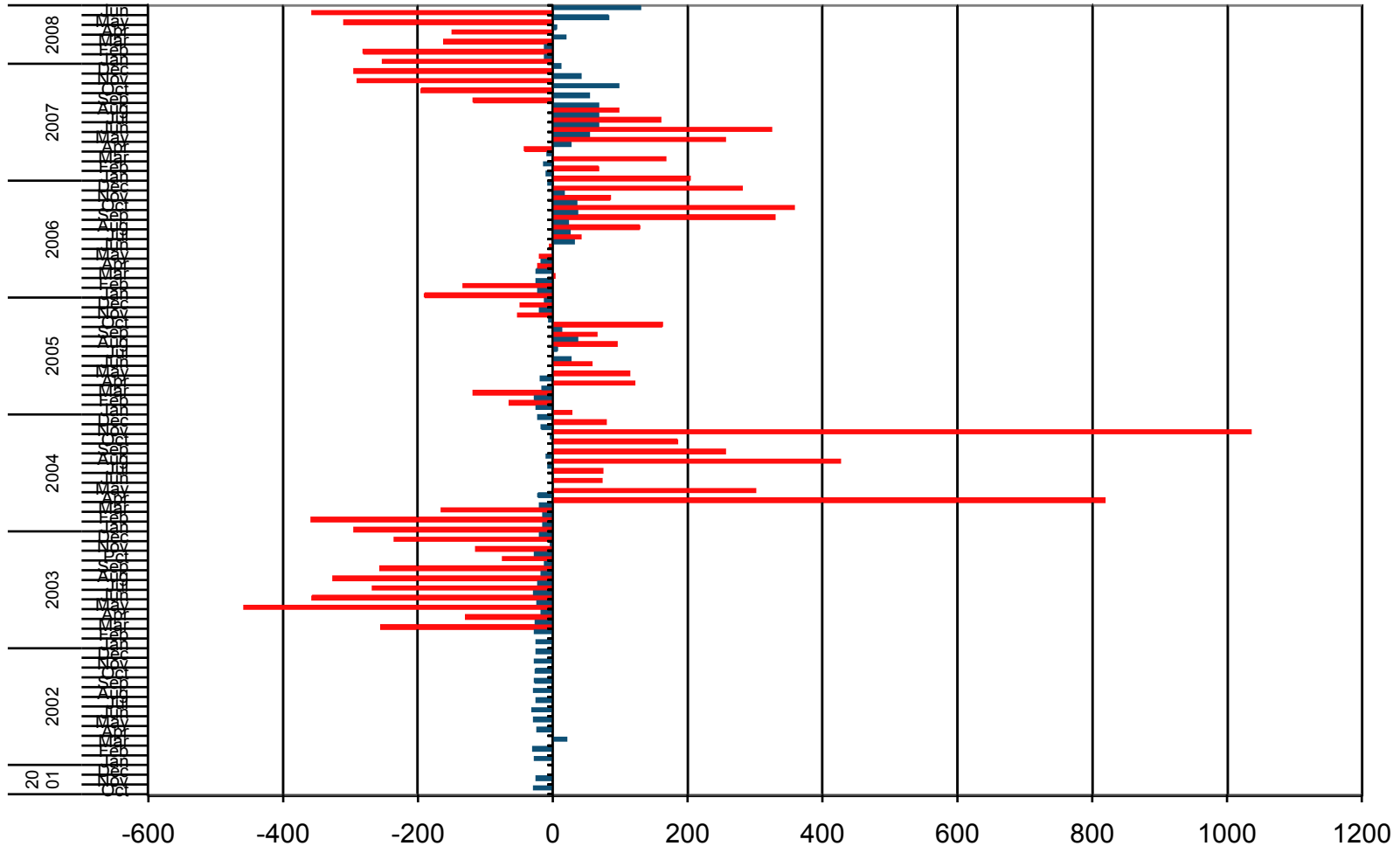


Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Charts 12-15: Deviations

- **The deviation statistics indicate that Iraq is increasingly normalizing in terms of violence, whereas the numbers for Afghanistan suggest that violence is increasingly moving away from the observed average since the beginning of the war.**
- In addition to the analysis of absolute numbers, a look at the dispersion of the numbers can give a better idea of the regularity of numbers and the reliability of trends suggested by the absolute data.
- The values for Afghanistan confirm the cyclical seasonal fluctuations starting 2004. Yet, such fluctuations render the exercise of calculating probabilities of trends by linear deviation inconclusive.
- The standard deviation is the average absolute difference between the monthly numbers and the mean value of all recorded casualties in the war. The standard deviation for Iraq is 268.2 and for Afghanistan 33.3, or roughly 50 percent of its respective mean in Iraq and 120 percent in Afghanistan. This indicates a large dispersion in both cases. The analysis of the absolute data for Afghanistan explained this large dispersion with important cyclical fluctuations. In the case of Iraq, however, where no such fluctuation is apparent, the large standard deviation indicates that projections and trends are relatively unreliable, since the values do not closely follow a clear trendline either.
- However, if the last 12 months are looked at in isolation, linear projections of Iraq do assume smaller standard deviations and thus become more probable.
- To allow direct comparisons between the two war theaters, the deviation values are being adjusted and expressed in terms of their respective mean. Thus, the adjusted deviation is noted in percentage of the respective mean. This allows to compensate for the difference in the number of troops deployed in each theater. Beside the different fluctuation patterns, the graph shows that the values for Afghanistan increasingly move away from their mean, while the trendline for Iraq decreases towards the respective mean. This trend can be interpreted as a seasonal escalation in Afghanistan and a gradual decline in violence in Iraq.

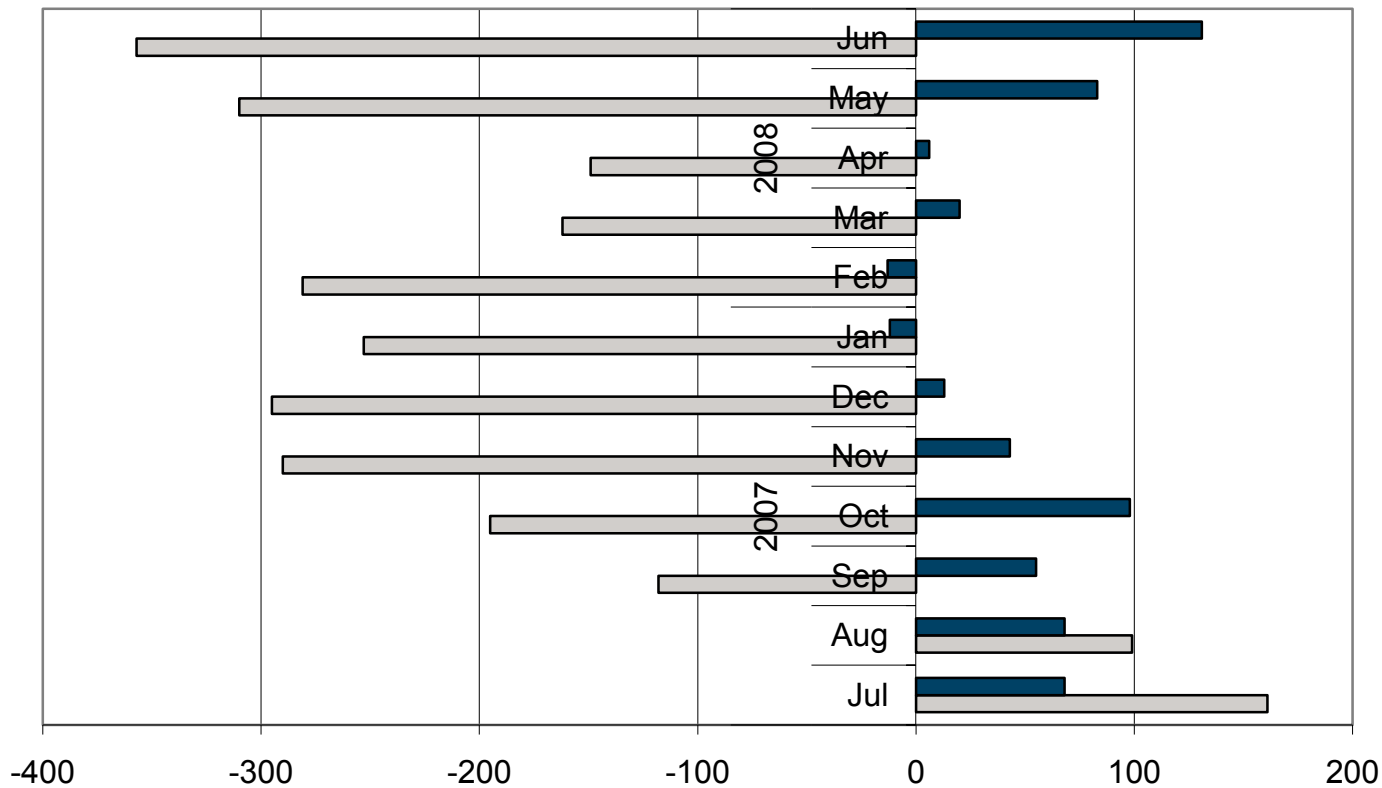
Chart 12: Deviation from Mean



	2001			2002					2003					2004					2005					2006					2007					2008																																																				
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun																																									
■Afghanistan: deviation from mean	29	-25	-1	28	30	21	-24	-29	-31	-25	-29	-27	-28	-28	-25	-25	-28	-28	-18	-24	-29	-23	-18	-13	-28	-4	-20	-15	-15	-20	-22	-2	1	-8	-10	2	-4	-17	-23	-25	-27	-16	-19	2	27	7	38	14	-7	-20	-12	-23	-25	-25	-18	-2	33	26	24	38	36	18	-8	-10	-14	9	27	55	68	68	68	68	65	68	68	68	65	68	43	13	-12	-13	20	6	83	131
■Iraq: deviation from mean																-25	-13	-45	-35	-28	-32	-25	-75	-11	-23	-29	-35	-16	819	301	74	75	427	257	185	103	80	29	-85	-11	122	115	59	1	96	66	163	-52	-49	-19	-13	4	-23	-20	-6	42	129	330	359	86	281	204	68	168	-42	257	325	161	99	-11	-19	-29	-29	-25	-28	-16	-14	-31	35							

Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

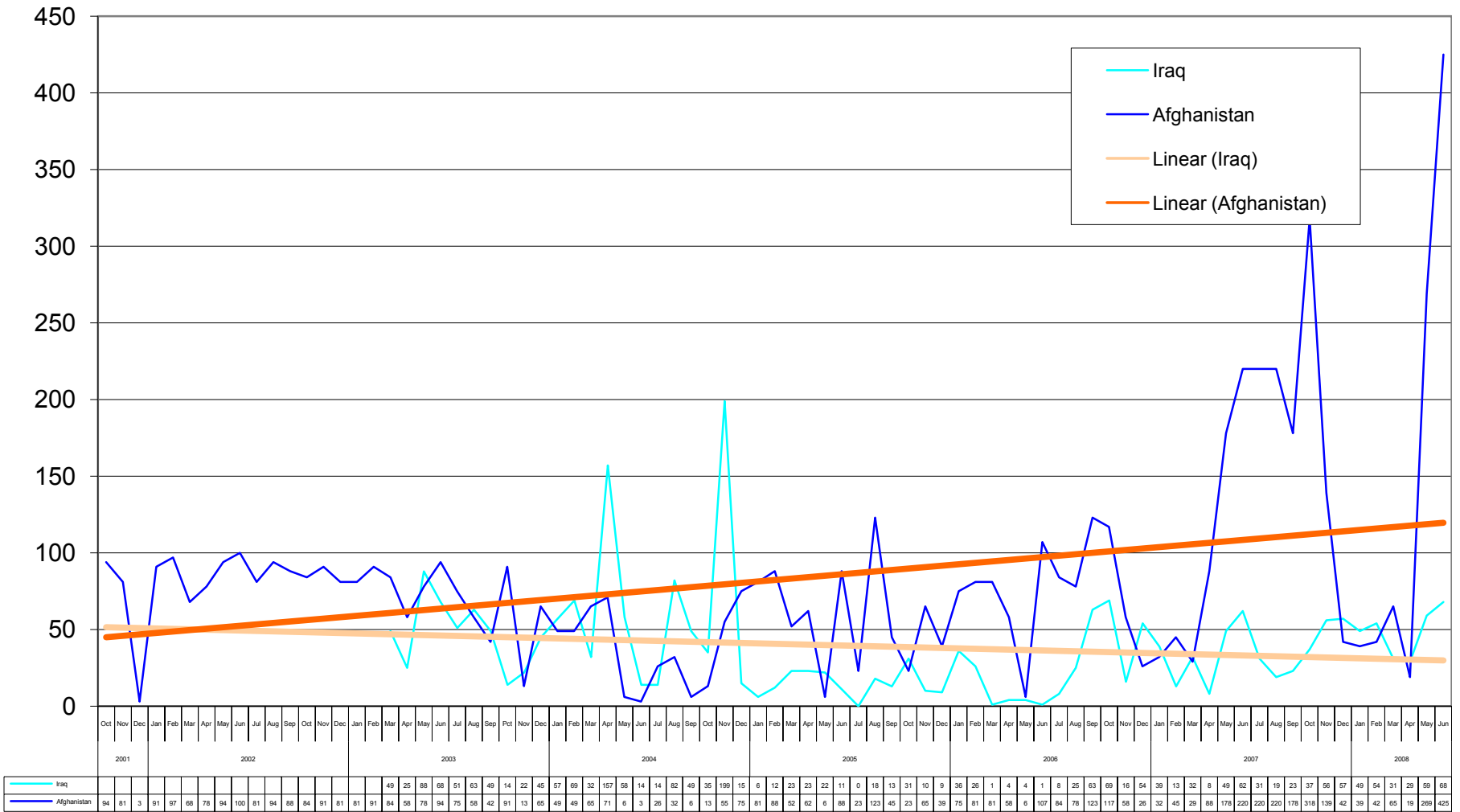
Chart 13: Deviation from Mean, July 2007-June 2008



	2007							2008					
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
■ Afghanistan: deviation from mean	68	68	55	98	43	13	-12	-13	20	6	83	131	
□ Iraq: deviation from mean	161	99	-118	-195	-290	-295	-253	-281	-162	-149	-310	-357	

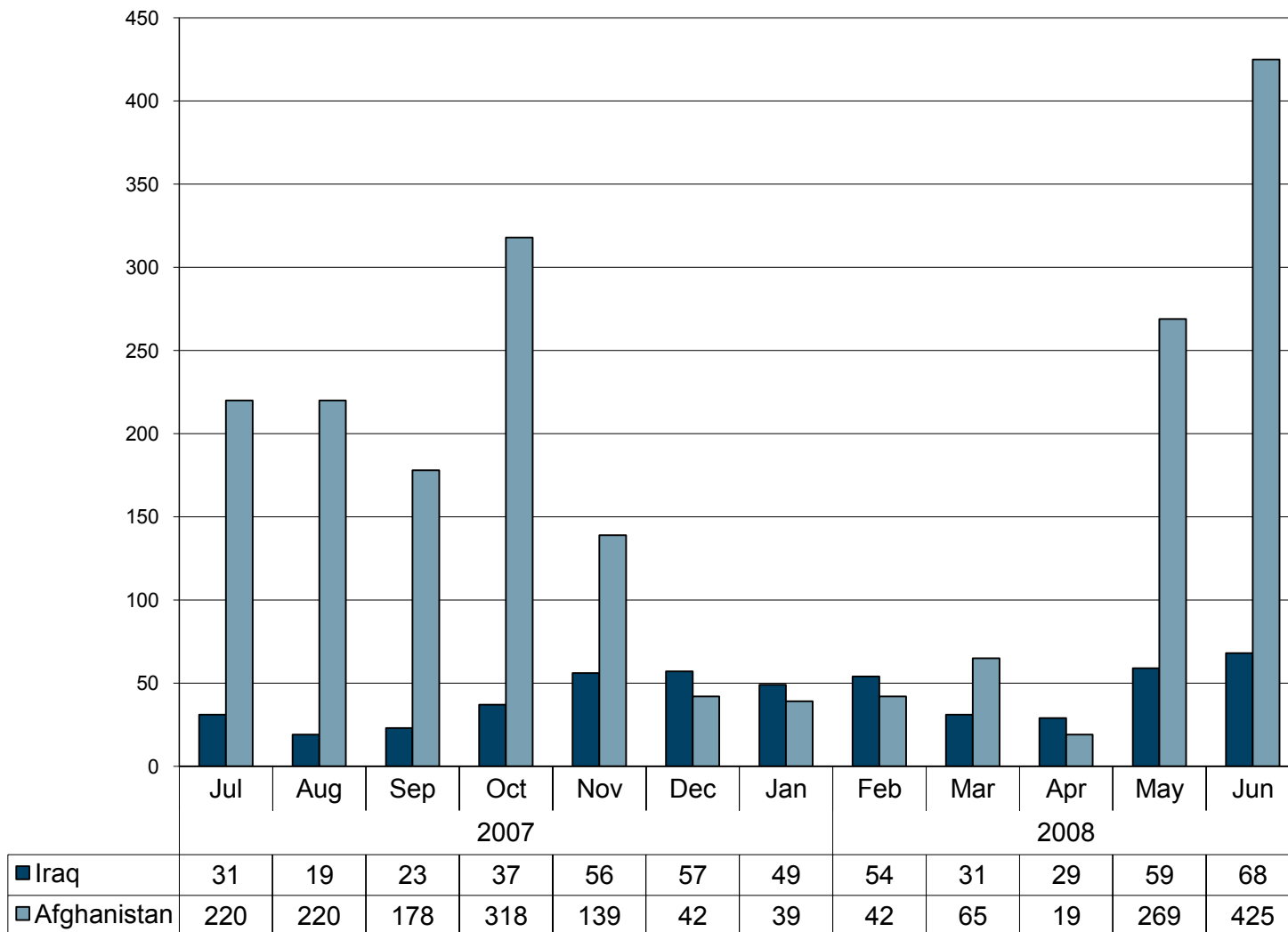
Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Chart 14: Absolute Deviation from Mean in Percentage of Mean



Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Chart 15: Deviation from Mean in Percentage of Mean, July 2007 – June 2008

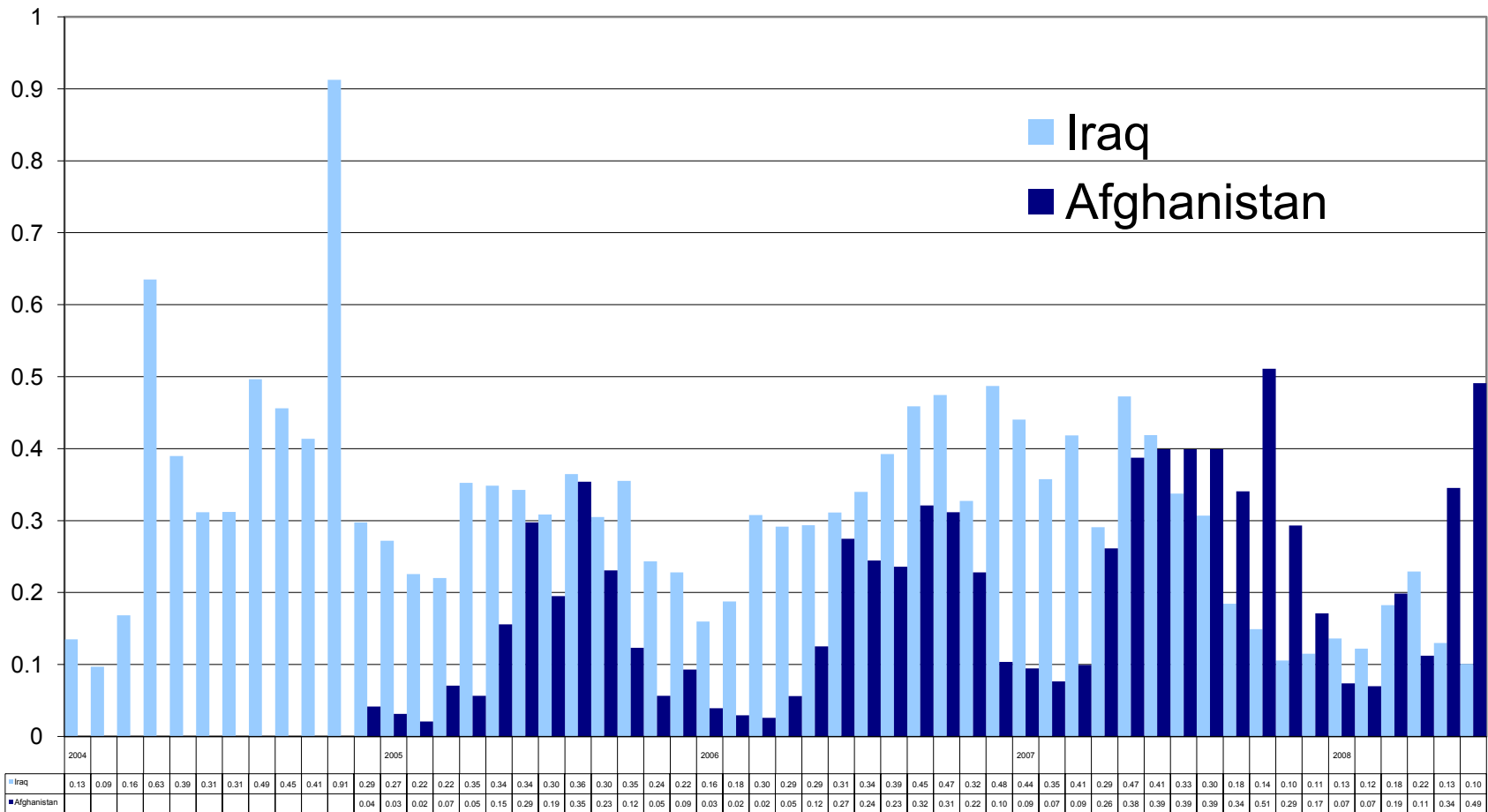


Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Charts 16 & 17: Stress on the Troops

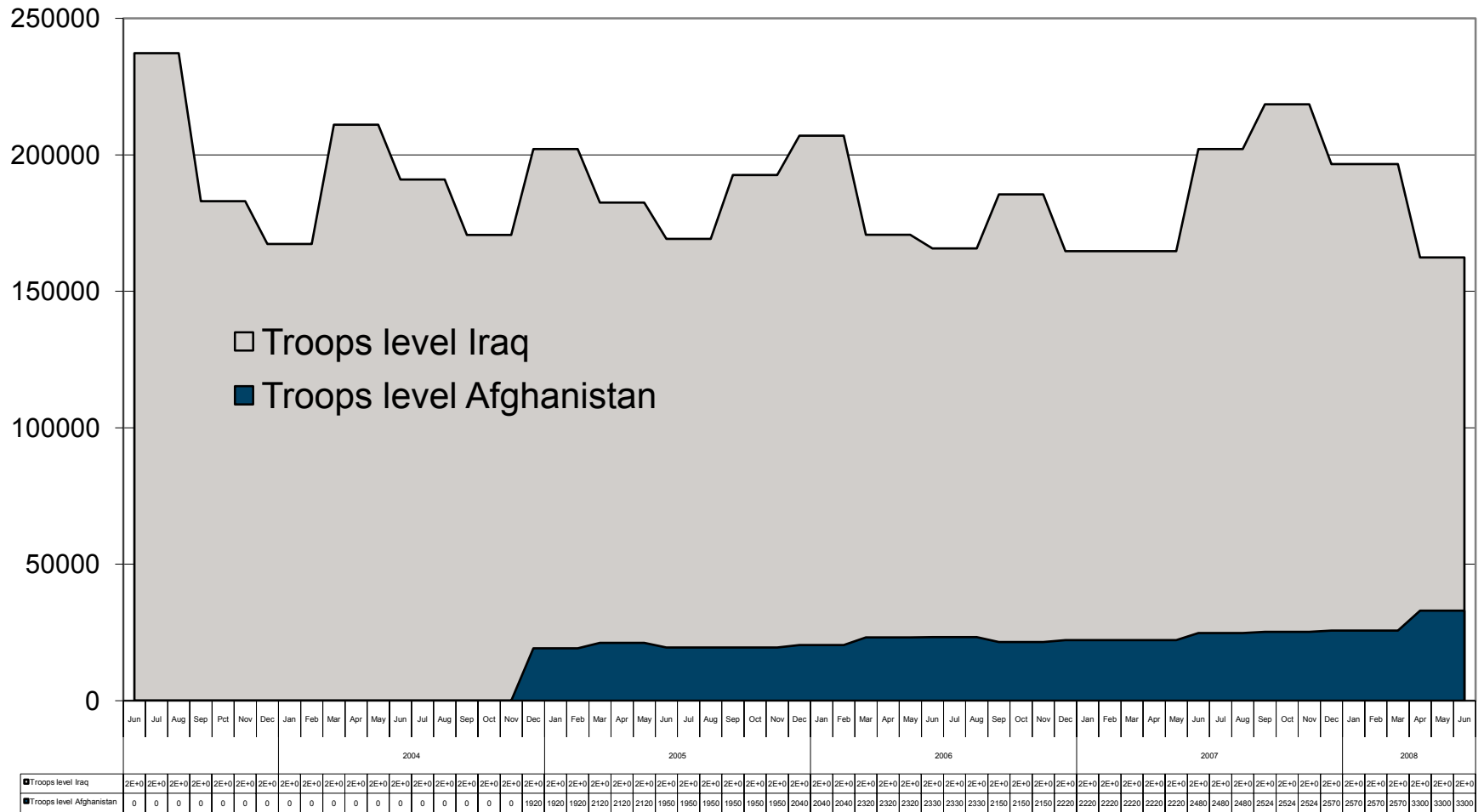
- **Violence in Afghanistan increasingly imposes greater stress on the troops than violence in Iraq**
- The stress on troops in Afghanistan has been rising steadily since at least 2003. Whereas a surge in troops in Iraq was followed by a decrease in the ratio of casualties to the total number of troops, a significant increase of troops in Afghanistan in early 2008 has failed to produce similar effects.
- A final measure is the number of casualties in terms of the total number of troops deployed in the respective theaters. The resulting values have two implications. First, the more troops are deployed, the more troops are exposed to violence. Second, the higher the ratio of casualties to total troops, the higher the stress on troops and the greater the challenge to the mission. Absolute casualty numbers may hide the real impact on the troops and the mission. In percentage of the total number, however, they reflect the impact of the violence on the troops.
- The ratio of killed and wounded troops to the total number of deployed in Afghanistan remained clearly lower than in Iraq until June 2007. Since then, only three months have seen higher relative casualties in Iraq than in Afghanistan. This development is rather due to the decrease in violence in Iraq than to the increase in violence in Afghanistan. Despite an increasing discrepancy for values in Afghanistan and Iraq, the values for Afghanistan are not unusual compared to last year's values. However, the most significant increase in troops since data are available for Afghanistan in early 2008 has failed to reduce the stress on troops. A decrease in violence following a surge in troops, similar to that in mid-2007 in Iraq, is yet missing in Afghanistan.

Chart 16: Casualties in Percent of Deployed Troops



Source: Compiled data, CRS, Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/MILITARY/history/hst0712.pdf>

Chart 17: Troops Level



Source: Compiled data, CRS, Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/MILITARY/history/hst0712.pdf>

Appendix I: Source Data Afghanistan

	Accident	Killed	Wounded		Accident	Killed	Wounded		Accident	Killed	Wounded
2001				2004				2006			
Oct	3		2	Jan	9		16	Jan		1	6
Nov	4		6	Feb	1	1	15	Feb	11	6	
Dec	1		27	Mar	1	2	9	Mar	1	6	
2002				Apr	2	1	8	Apr		1	12
Jan	9	1	2	May	2	6	23	May	10	1	28
Feb	12		1	Jun	2	3	29	Jun	4	14	50
Mar	1	8	44	Jul	2		23	Jul	2	7	50
Apr	1	4	3	Aug	1	2	19	Aug	1	9	46
May		1	1	Sep	1	3	30	Sep	1	5	64
Jun	3			Oct	1	4	23	Oct	1	9	58
Jul			6	Nov	4	3	11	Nov	2	5	44
Aug		1	1	Dec	1		8	Dec		1	22
Sep	1		4	2005				2007			
Oct	3	2	3	Jan		2	4	Jan			21
Nov	1		3	Feb	1		4	Feb	12	2	15
2003				Mar	1	5	10	Mar	4	1	21
Dec		1	5	Apr	17	1	11	Apr	3	5	53
Jan	4		6	May	1	3	30	May	1	10	76
Feb	6		3	Jun	2	25	33	Jun	1	11	88
Mar	9	2	3	Jul		2	36	Jul	1	13	86
Apr		2	11	Aug	3	12	57	Aug	4	13	86
May	1		7	Sep	2	9	36	Sep	2	7	79
Jun	2	1	1	Oct	3	3	21	Oct	3	7	121
Jul	2		8	Nov	1	2	9	Nov	1	10	64
Aug		4	9	Dec	1	2	17	Dec	2	4	40
Sep	1	1	17					2008			
Oct	2	1	2					Jan		7	12
Nov		6	21					Feb		1	17
Dec	1		11					Mar	2	6	45
								Apr		5	32
								May	3	14	100
								Jun	5	23	139

Source: Defense Manpower Data Center, Statistical Information Analysis Division, available at <http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>.

Appendix II: Source Data Iraq

	Accident	Killed	Wounded		Accident	Killed	Wounded		Accident	Killed	Wounded
2003				2005				2007			
Mar	7	58	208	Jan	53	53	497	Jan	5	78	647
Apr	23	51	340	Feb	16	42	413	Feb	11	70	520
May	29	8	55	Mar	4	31	370	Mar	10	71	618
Jun	13	17	147	Apr	7	45	598	Apr	8	96	651
Jul	20	27	226	May	14	65	571	May	6	120	658
Aug	22	14	181	Jun	10	68	512	Jun	8	93	755
Sep	14	17	247	Jul	9	45	478	Jul	13	66	616
Oct	11	33	413	Aug	8	77	541	Aug	28	56	565
Nov	12	70	336	Sep	7	42	545	Sep	23	42	361
Dec	16	24	263	Oct	19	77	607	Oct	9	29	297
2004				Nov	14	70	399	Nov	9	27	203
Jan	7	39	187	Dec	10	58	414	Dec	9	14	213
Feb	9	12	150	2006				2008			
Mar	19	31	324	Jan	19	42	288	Jan	6	34	234
Apr	9	126	1,215	Feb	9	45	343	Feb	4	25	216
May	17	63	759	Mar	4	27	499	Mar	3	36	327
Jun	5	37	588	Apr	11	65	434	Apr	10	42	330
Jul	10	44	552	May	12	57	444	May	4	15	196
Aug	12	53	895	Jun	4	57	459	Jun	7	22	142
Sep	11	69	709	Jul	5	38	525				
Oct	8	56	650	Aug	7	58	592				
Nov	11	126	1,431	Sep	11	61	791				
Dec	15	57	544	Oct	7	99	781				
				Nov	10	59	548				
				Dec	17	96	706				