

**Mainstreaming an Outlier:
The Quest to Corroborate the Second
Lancet Survey of Mortality in Iraq***

Running title: Mainstreaming an Outlier

**Michael Spagat
Department of Economics Department
Royal Holloway, University of London
Egham Surrey TW20 0EX
United Kingdom
M.Spagat@rhul.ac.uk**

Abstract

I survey much evidence on mortality in Iraq, including data from the first and second *Lancet* surveys. The second *Lancet* survey is inconsistent with all credible and relevant information on levels and trends in violent deaths and on the geographical distribution of violence. I discuss weaknesses in attempts made by The Bloomberg School of Public Health and authors of the second *Lancet* survey to claim corroboration for the second *Lancet* survey from other sources. These attempts notwithstanding, the second *Lancet* survey is a clear outlier within a wide body of evidence on mortality in Iraq.

Key Words: Iraq Mortality, Lancet, Johns Hopkins

JEL codes: N4, I1, C8

1. INTRODUCTION

In 2004 and 2006 researchers mainly based at the Johns Hopkins Bloomberg School of Public Health published controversial estimates in the *Lancet* on the number of violent and excess deaths due to the ongoing Iraq war. The estimate of [Roberts et al. \(2004\)](#), hereafter “L1”, of “100,000 excess deaths, or more” during the first 18 months of the war has not been universally accepted although it did not come under sustained attack in academic outlets.¹ On the other hand, the estimate of 601,000 violent deaths during the first 3.3 years of the war, put forward in [Burnham et al \(2006\)](#), hereafter “L2”, has attracted strong criticism in a number of places, including peer-reviewed journal articles.²

In January of 2008 two independent events shook confidence in the two *Lancet* surveys, especially L2. First, [Munro and Canon \(2008\)](#) challenged the reliability and veracity of the data underpinning L1 and L2 in the influential *National Journal*. Munro (2008), a companion article, also questioned the ethics of the L2 survey, suggesting that the researchers had endangered the lives of their human subjects and of the children they used in the implementation of L2.³ Second, the *New England Journal of Medicine* (NEJM) published [Iraq Family Health Study Group \(2008a\)](#), hereafter IFHS (2008a), a survey with almost exactly the same coverage period as L2. IFHS estimated 151,000 violent deaths, a figure lower than the L2 estimate by a factor of 4, i.e., the IFHS was fully 450,000 lower than the L2 estimate.⁴

The Johns Hopkins Bloomberg School of Public Health rose to the defense of L1 and especially L2, also in January of 2008, by posting “[Answers to Questions about Iraq Mortality Surveys](#)”, hereafter Bloomberg (2008a). This document was unsigned and, hence, took on the character of the official positions of the Bloomberg School of Public

Health. Bloomberg then withdrew this document without explanation some time in mid-April, 2008, replacing it with a second document occupying the same URL and with a similar title: [“The 2004 and 2006 Survey-Based Estimates of Mortality in Iraq: Frequently Asked Questions”](#), hereafter Bloomberg (2008b). This document was, in turn, also withdrawn without explanation after being posted for only a few days. Bloomberg then launched an investigation of the L2 survey, issuing a subsequent announcement ([Bloomberg, 2009](#)) that reversed a key claim of Bloomberg (2008a).

Compare:

“The Bloomberg School of Public Health is satisfied that Burnham and his research team conducted their studies in an ethical manner and in compliance with the Bloomberg School’s policies and procedures.

In the ethical review process conducted with the School’s Institutional Review Board (IRB), Burnham and Roberts indicated that they would not record unique identifiers, such as full names, street addresses or any data (including details from death certificates) that might identify the subjects surveyed and put them at risk.” Bloomberg (2008a)

with:

“A review of the original data collection forms revealed that researchers in the field used data collection forms that were different from the form included in the original protocol. The forms included space for the names of respondents or householders, which were recorded on many of the records. Use of the form and collection of names violated the study protocol submitted to the IRB and on which the IRB determined the study was exempt from full human subjects review....

Because of violations of the Bloomberg School’s policies regarding human subjects research, the School has suspended Dr. Burnham’s privileges to serve as a principal investigator on projects involving human subjects research.” (Bloomberg 2009)

This correction together with the fact that Bloomberg (2008a & b) have both been removed from the Bloomberg web site suggests that some further aspects of these

documents may be unsound or insupportable. In fact, both are filled with incorrect claims that have continued to reverberate in public discussions since they were originally circulated. In the rest of this paper I attempt to correct a subset of the incorrect statements that Bloomberg (2008a) has injected into the public discussion of mortality in Iraq,⁵ focusing almost exclusively on a wide range of evidence cited as “corroborating” L1 and L2. I proceed by quoting and then discussing text from Bloomberg (2008a). Thus, my treatment is self-contained. However, interested readers can consult a link to the original Bloomberg (2008a) posting given in the bibliography to the present paper.

The incorrect claims I discuss in this paper have been made in a number of official Bloomberg statements and by the L2 authors in a variety of contexts, as I document in supplementary material to the present paper posted online. In fact, these claims appear not only in Bloomberg (2008a) but also in other material still posted on the Bloomberg website, in other web postings, radio interviews and articles in newspapers and magazines. Thus, these incorrect claims are still alive in public discussion of mortality in Iraq and must be addressed even though some instances of them have now been withdrawn from the Bloomberg website.

A further contribution of this paper is to provide a broad and critical survey of an extensive portion of the literature on mortality in Iraq.⁶ This discussion advances a long-term agenda of integrating all sound information on Iraq mortality. Many of these sources are poorly understood, widely misinterpreted or suffer from significant quality problems and, therefore, critical assessment is urgently needed. This survey finds that the levels, trends and geographical distribution of violence found in L2 are well outside the mainstream of evidence for Iraq.

2. CLAIMED CORROBORATION FROM THE IRAQ LIVING CONDITIONS SURVEY

I proceed by quoting inaccurate claims from Bloomberg (2008a) and explaining what is wrong with them.

“A survey done by FAFO [sic] (Norway) and the Iraqi government over the first 13 months of conflict estimated 36,000 deaths, which was virtually identical to the 2004 and 2006 mortality estimates [L1 and L2] for the same period.” Bloomberg (2008a)

This Fafo survey is the [Iraq Living Conditions Survey \(ILCS\)](#). The estimate given in the official ILCS report was actually 24,000 “war-related deaths” with a 95% confidence interval of 18,000 to 29,000.⁷ Thus, the figure claimed by Bloomberg (2008a) for the ILCS is too high by about 50%. The Bloomberg (2008a) figure of 36,000 appears to refer to an estimate for “war-dead and missing adjusted to May 1, 2004”⁸ given in Pedersen (2007).⁹ This figure of 36,000 breaks down into estimates of roughly 26,000 dead and 10,000 missing. It is wrong to claim that the Fafo survey “estimated 36,000 deaths”.

The estimate of 10,000 missing includes roughly 2,600 “war-related” missing.¹⁰ The ILCS data can, therefore, support an estimate of 28,600 war-related dead plus missing “adjusted to May 1, 2004.” Thus, even if we inappropriately conflate missing-person estimates with death estimates, the Bloomberg figure of 36,000 is still too high by about 26%.

The central estimate for the [“2004 mortality estimate” \(L1\)](#) was 98,000 excess deaths, including both violent and non-violent deaths, outside of Anbar governorate.¹¹

The L1 paper does not actually give an estimate for violent deaths, revealing only that there were 21 violent deaths in the L1 sample outside of Anbar during the war. Nevertheless, L1 co-author Richard Garfield disclosed an estimate of 57,600 violent deaths in [Epic \(2004\)](#). There are 5 violent deaths in L1 occurring in May, June, July and August of 2004 that must be excluded for a proper comparison with the ILCS. Including only the 16 violent deaths out of 21 (76%) occurring before May 1, 2004 in L1 we can estimate $(16/21) \times (57,600) = 43,900$ violent deaths for L1 during the ILCS coverage period. Pedersen (2007) gives a 95% confidence interval around the estimate of 26,000 deaths of 20,100 to 31,800 adjusted to May 1, 2004. Therefore, our L1 estimate for violent deaths excluding Anbar governorate exceeds the ILCS estimate including Anbar governorate by a factor of 1.7. This L1 estimate even exceeds the top of the ILCS confidence interval by a factor of 1.4. Removing estimated Anbar deaths, roughly 2,000, from the ILCS estimate, which is appropriate for the present comparison, would further increase the distance between the ILCS and L1 estimates. Moreover, Pedersen (2007) uses a population estimate of 27 million whereas L1 uses an estimate of 24 million. so the distance between the two surveys is, arguably, a factor of 2. Thus, Bloomberg is wrong to characterize these estimates as “virtually identical”.

The Bloomberg (2008a) claim that [“the 2006 mortality estimate” \(L2\)](#) gives a “virtually identical” estimate to the one of the ILCS is more than simply wrong: it is incorrect by a wide margin. The L2 dataset yields an estimate of *at least* 88,000 violent deaths through May 1 of 2004, almost 3.4 times the ILCS estimate adjusted to May 1 of 26,000.¹² In fact, even if we accept the incorrect Bloomberg claim that the ILCS

“estimated 36,000 deaths,” the L2 violent death estimate for the ILCS period still exceeds the ILCS estimate by a factor of more than 2.4.

Yet even these aggregate figures do not capture the full divergence of the L2 survey from the ILCS survey because they do not capture the very large discrepancies between the two surveys in the central governorates of Iraq as illuminated by table 1. In the center L2 exceeds even the top of the 95% confidence interval for the ILCS estimate by nearly a factor of 9. Nevertheless, Bloomberg claims quite strong corroboration from the ILCS, portraying the ILCS and L2 estimates as “virtually identical.”

PLACE TABLE 1 ABOUT HERE

“FAFO’s crude mortality rate of 8.4/1000 years was also similar to pre-invasion 5.0 and post-invasion 7.9/1000 years reported in the 2004 Lancet study, as was the rate of mortality for children under age 5.” Bloomberg (2008a).

First, Pedersen (2007) gives a non-violent mortality rate of 4.3 per 1,000 per year based on the ILCS data with a 95% confidence interval of 3.9 to 4.7.¹³ Thus, Bloomberg (2008a) nearly doubles the true figure.¹⁴ Even adding in 36,000 war deaths plus missing persons would add less than 1.5 per 1,000 per year to the second year covered by the ILCS.

Second, Bloomberg seems to tacitly concede the point that L2’s estimated crude mortality, 13.2 per 1,000 per year, is much higher than the ILCS’s estimated crude mortality rate. Even the published L2 figure for March 20, 2003 through April of 2004, 7.5 per 1,000 per year is distinctly higher than the ILCS estimate.

Third, L1's post-invasion crude mortality rate, excluding Fallujah, of 7.9 per 1,000 per years is a bit higher still. The central estimate for the crude mortality rate including Fallujah in L1 is 12.3 per 1,000 per year. These figures are not similar to the real ILCS estimates. On the other hand, Bloomberg is correct in its claim that L1's pre-invasion crude mortality rate is similar to the ILCS crude mortality rate. The discrepancies arise only for post-invasion estimates.

The L1 paper does not give a "rate of mortality for children under age 5" so I cannot compare such an L1 figure with an ILCS one. I can, however, compare "infant" death rates for L1 and the ILCS, i.e., deaths rates for children under the age of 1. L1 reports an infant mortality rate of 29 per 1,000 live births with a 95% confidence interval of 0 to 64 before the war and 57 per 1,000 live births with a 95% confidence interval of 30 to 85 during the war. The ILCS estimates infant mortality, mixing pre-war and post-invasion, of 32.2 per 1,000 live births with a 95% confidence interval of 28.7 to 35.7.¹⁵ The L1 intervals are so wide that it is hard to make a meaningful comparison. Thus, the ILCS figures are simply not capable of providing great validation for the highly imprecise L1 figures. Nonetheless, if we ignore this uncertainty and take a simple average for L1's estimates over the pre-war and occupation periods we get 43 per 1,000 live births, which is a bit higher than 35.7, the top of the ILCS confidence interval.

"The original FAFO survey, which was completed by Iraq officials, was conducted twice since the first survey revealed an implausibly low death rate. The second survey revealed twice as many child deaths when researchers revisited the same households asking just about deaths in children." Bloomberg (2008a).

First, note that initial underreporting of child mortality is not uncommon in surveys and does not suggest that there must be similar underreporting of adult mortality or war-related deaths. Second, in reality there was just one Fafo survey. What Bloomberg calls “the second survey” was actually a quality-control re-check, a routine procedure that was not followed for L1 or L2.

The ILCS was a good quality survey compared to L2. For example, the ILCS questionnaire was translated into Arabic and Kurdish and these were translated back into English. ILCS sampling procedures included fresh mapping and household listings at each cluster. In contrast, the researchers behind L2 have never released a questionnaire and have refused to answer basic questions about their methodology including their sample design. In fact, the Standards Committee of the American Association for Public Opinion Research conducted an official investigation of the L2 survey and formally censured the lead author because he “repeatedly refused to make public essential facts about his research” including the questionnaire and full sample design (AAPOR, [2009a](#) & [b](#)).¹⁶

To summarize, for comparable coverage periods L1 data suggest higher violence and L2 data suggest considerably higher violence than the ILCS data do. L2 data suggest vastly higher violence than the ILCS data do for central governorates outside Baghdad. The violent death estimates in these three surveys are not “virtually identical” as claimed by Bloomberg. Even the violent death estimates for L1 and L2 are very different. L1 crude mortality and infant mortality figures are not corroborated by the ILCS. There were not two ILCS surveys and the ILCS did not estimate 36,000 deaths.

3. CLAIMED CORROBORATION FROM A BBC POLL AND AN ORB POLL

“All existing data suggest more people have been killed than seriously wounded in the Iraq conflict. A March 2007 poll by the BBC suggested that 17 percent of households had someone killed or wounded while a poll by the opinion firm ORB in September 2007 suggested 22 percent of households had someone killed. Both findings are consistent with the Lancet findings. ORB also estimated that 1.2 million Iraqis had died as of late 2007.” Bloomberg (2008a).

First, “all existing data” do not suggest that killings exceed injuries in the Iraq conflict. Quite the opposite is true. [Civic Worldwide \(2003\)](#) identified approximately 2,000 deaths and 4,000 injuries during the first 50 days of the war. The database of the Iraqi Ministry of Health (MoH) recorded 12,657 conflict injuries and 3,274 conflict killings between July 1, 2004 and January 1 2005 ([BBC \[2005\]](#)), a ratio of 3.9 injuries per killing. Combined figures from the Iraqi Interior, Defense and Health Ministries show 6,898 injuries and 5,062 killings in the first half of 2006 ([FoxNews \[2006\]](#)), a ratio of 1.4 injuries per killing. The MoH reported 16,536 killed and 38,609 injured in 2007 ([NINA \[2008\]](#)), a ratio of 2.3 to 1. The drop in the ratio for 2006 and 2007 compared to 2004 may partly be due to differences in measurement methods but also probably reflects a rise in sectarian executions that leave few injured people behind. The UN Assistance Mission to Iraq (UNAMI) reported 34,452 killings and 36,685 injuries in 2006 ([UNAMI \[2007\]](#)).¹⁷ Two reports of the [Iraq Body Count \(IBC\)](#) covering the beginning of the war through July 6, 2003 ([IBC \[2003\]](#)), and March, 2003 – March, 2005 ([IBC \[2005\]](#)) found ratios of injuries to killings of about 2.5 to 1, and 1.7 to 1 respectively. Finally, the Iraqi

Ministry of Human Rights reported 78,907 killings and 147,195 injuries between 2004 and 2007, a ratio of 1.9 to 1 (Todd, 2009). Thus, the Bloomberg claim that “all existing data” point to more killings than injuries is incorrect. A variety of existing data sources suggests more injuries than killings.¹⁸

Second, Bloomberg seems to imply that the BBC poll ([BBC \[2007\]](#)) backs up its claim that killings exceed serious injuries in the Iraq conflict. It does not. In fact, the BBC poll provides no information whatsoever on the ratio of injuries to killings. Bloomberg cites question 35 of the BBC Poll to which 17% of respondents answered “yes”:

“Have you or an immediate family member-by which I mean someone living in this household-been physically harmed by the violence that is occurring in the country at this time? BBC (2007), question 35.

This question cannot be used to separate “physical harm” into components which would include at least killings, injuries, and various other forms of physical harm such as rapes, kidnappings and robberies. It is impossible to use this question or any others in the BBC poll, to compare the number of injuries with the number of killings in the Iraq conflict.

The same Bloomberg paragraph also seems to suggest that the BBC and ORB polls are consistent with the mortality estimates of L2. However, the BBC poll, actually a joint project involving several news organizations including ABC, cannot corroborate any mortality information because it does not contain a mortality question. The closest this survey comes to mortality is question 35 on physical harm, already quoted above. Since Bloomberg (2008a) cites a question on physical harm as providing important

corroborating evidence for L2 we must compare apples (fatalities) with oranges (physical harm) which we do in the following paragraphs.

The first step in this comparison is to adjust for the different coverage periods of the two studies. L2 field work was conducted between May 20 and July 10, 2006 while the field work for the BBC poll was conducted between February 25 and March 5, 2007. The period between the two coverage periods was an exceptionally violent period for the war. For example, according to the database of the Iraq Body Count project ([IBC \[continuously updated\]](#)) only about 69% of the deaths occurring during the (longer) BBC coverage period occurred during the (shorter) L2 coverage period. Applying this 69% figure to the 17% of households that reported physical harm to the BBC poll yields $(17\%)(0.69) = 11.7\%$.¹⁹

In the L2 study 13.6% of all households reported a household member violently *killed*, not just physically harmed. Thus, for a comparable time period the BBC poll would suggest fewer households suffering physical harm (11.7%) than L2 suggests have suffered violent deaths (13.6%). Yet many respondents would include injuries from violence, kidnappings, rapes, robberies and other crimes as causing physical harm. The number of households suffering killings would be much lower than the number of households suffering physical harm. Thus, to the extent that the BBC poll can shed any light on violent mortality in Iraq without actually asking a mortality question, the poll suggests a substantially lower rate than L2 does.

The BBC poll also does not corroborate L2 on the geographical distribution of violence in Iraq. According to L2, the violence level in Baghdad is roughly equal to the national average; Baghdad suffered 25% of the post-invasion violent deaths in the L2

sample and is estimated in L2 to contain about 25% of the population that was covered by the survey. Yet the BBC poll suggests that Baghdad is substantially more violent than the rest of the country.²⁰ According to the BBC poll, the percentages of Iraqis feeling entirely unsafe, reporting ethnic cleansing in their neighborhoods and moving house “in the last year to avoid violence or religious persecution” in all of Iraq and in Baghdad, respectively, are: 33% versus 84%, 12% versus 31%, and 15% versus 35%. In other words, Baghdad residents are between 2.3 and 2.6 times more likely to report feeling unsafe, witnessing ethnic cleansing and fleeing their homes than are average Iraqis.²¹ Table 2 reports the percentages of respondents reporting that various kinds of violence have occurred nearby to them:

PLACE TABLE 2 ABOUT HERE

To summarize, the BBC poll is not usable to corroborate mortality information in L2 because it did not collect mortality data. To the extent that data on “physical harm” can shed any light on mortality, the BBC data point to substantially lower mortality numbers than those claimed in L2. The BBC poll also suggests, contrary to L2, that Baghdad has been much more violent than the rest of Iraq.

[ORB \(2008\)](#), in contrast to the Fafu survey and the BBC poll, at least offers some hope of corroboration for L2 mortality estimates since the ORB poll does give a very high violent-death estimate of 1,033,000.²² According to the IBC database about 57% of the killings occurring during the ORB coverage period occurred during the L2 coverage period. L2’s estimate of 601,000 violent deaths is about 58% of the ORB figure. So the

aggregate figures for the two studies are indeed in line with each other according to this comparison.

Yet the ORB poll does little to bolster the credibility of L2 for two main reasons. First, ORB's estimate of violent deaths in Iraq is, itself, not credible due to serious anomalies in the ORB data suggestive of gross overestimation. Moreover, the ORB poll has a number of important methodological flaws that are discussed in detail in Spagat and Dougherty (2009).

Second, there are strong discrepancies between the ORB poll and L2 in the geographical pattern of violent deaths, rendering corroboration from the ORB poll double-edged at best for L2. ORB data imply an estimate of about 600,000 violent deaths in Baghdad compared to an estimate of about 150,000 implied by L2 data (Spagat and Dougherty, 2009). Thus, there would need to be roughly 450,000 violent deaths in Baghdad between July of 2006 and August of 2007 for both ORB and L2 to both be roughly accurate for Baghdad. IBC records 19,559 deaths of civilians between July 1, 2006 and September 1, 2007 in Baghdad. It would appear to be virtually impossible for the international media and the Baghdad morgue to have missed more than 95%, i.e., about 430,000 out of 450,000, of all violent deaths in Baghdad during a 14-month period. For this to happen, the international media would have failed to notice the violent deaths of more than 6% of the population of Baghdad in little more than a year: 1,009 unnoticed violent deaths per day for 426 days. Note that Baghdad was under particular scrutiny during this period ([Kaplan 2008](#)) which included the Baghdad-focused "surge" in US troops, the ceasefire by the Sadr militia and the Tribal Awakening.

4. CLAIMED CORROBORATION FROM THE WORLD HEALTH ORGANIZATION

“In May of 2007, the World Health Organization convened a meeting in Geneva to discuss the issue of mortality in Iraq. Three reviewers, including an author of a January 9, 2008, *New England Journal of Medicine* study on civilian deaths reanalyzed the *Lancet* data as part of their critique. Riyadh Lafta attended to answer questions about the field activities. While many scenarios were proposed (regarding internal migration, mass exodus from the country, the possibility of excluding specific clusters) that could affect the point estimate produced, no reviewer found reason to discard or dismiss the *Lancet* findings.” Bloomberg (2008a).

In the above paragraph Bloomberg mentions the IFHS study published in the *New England Journal of Medicine* (IFHS [2008a]) but ignores the fact that the IFHS estimated 151,000 violent deaths and had virtually the same coverage period as L2. L2’s violent-death estimate is 4 times higher than the IFHS one. The factor-of-4 difference translates into an additional 450,000 estimated violent deaths for L2 compared to the IFHS estimate. IFHS (2008a) was, in fact, highly critical of Burnham et al. (2006).

“Both sources [the IFHS and the Iraq Body Count data] indicate that the 2006 study by Burnham et al. [L2] considerably overestimated the number of violent deaths. For instance, to reach the 925 violent deaths per day reported by Burnham et al. for June 2005 through June 2006 as many as 87% of violent deaths would have been missed in the IFHS and more than 90% in the Iraq Body Count. This level of underreporting is highly improbable, given the internal and external

consistency of the data and the much larger sample size and quality-control measures taken in the implementation of the IFHS.” IFHS (2008a).

Actually, the difference between L2 and the IFHS is even greater than these numbers suggest. The IFHS paper makes a generic argument that conflict surveys tend to underestimate violent deaths, mainly due to survivor bias, so the IFHS estimate is adjusted upwards by about 54% to account for this proposed bias. Yet, if this bias argument is true then it applies with equal force to L2; either both surveys should be adjusted upward by a similar factor or neither survey should be adjusted at all.

Comparing like with like the violent death rate in L2 during the war exceeds the violent death rate in the IFHS by a factor of 6.6: 7.2 per thousand per year for L2 compared to 1.09 per 1,000 per year for the IFHS. For the period June 2005 through June 2006 the violent death rate in L2 exceeds even the upward-adjusted violent death rate in the IFHS by a factor of 7.2. If we compare like with like for this last period then the discrepancy rises to nearly a factor of 11.

The IFHS measured a crude mortality rate (unadjusted), including deaths from all causes, during the war of 6.01 per 1,000 per year with a 95% confidence interval of 5.49 to 6.60. In contrast, the crude mortality rate reported by L2 during the war is 13.2 per 1,000 per year with a 95% confidence interval of 10.9 to 16.1. Therefore, even the bottom of the L2 crude-mortality confidence interval exceeds the top of the IFHS confidence interval by a factor of nearly 1.7. The IFHS also finds that Baghdad has more than twice the violent death rate of Iraq as a whole, whereas L2 finds that the Baghdad rate is only about equal to the national average. There is, therefore, a strong incompatibility between the IFHS and L2.

5. CLAIMED CORROBORATION FROM PENTAGON DATA

“The violent death rates recorded in the 2004 and 2006 surveys [L1 and L2] showed Baghdad had a violent death rate similar to the national average in spite of the impression in Iraq and the Western media that Baghdad was more violent. The Pentagon data on attacks (not deaths) in Iraq show a similar pattern.” Bloomberg (2008a).

First, note that it is not even clear that L1 and L2 corroborate each other on violent death rates inside and outside of Baghdad. L2 does find mortality rates in Baghdad very close to the national average. In L1, 7-10 out of 21 post-invasion violent deaths outside of the outlying Fallujah cluster were in Baghdad (Spagat and Dougherty, 2009), a governorate which contained 7 out of the 32 clusters outside Fallujah. This suggests that Baghdad had at least 1.5 times the violent death rate of the average outside Fallujah during the L1 coverage period.²³ There is a very wide margin of error around both L1’s and L2’s geographical breakdowns of violence. Still, it is not at all clear that L1 and L2 confirm each other on the geographical pattern of violence in Iraq.

Second, even Bloomberg (2008a) concedes (above) that that the Pentagon’s *mortality* data do not show a similar pattern to the L1 or L2 *mortality* data. Indeed, the Pentagon data finds civilian death rates in Baghdad that are far above (probably twice) the national averages ([Multi-National Force-Iraq \[2007\], slide 4](#)). So the Pentagon mortality data do not corroborate the L1 and (especially) the L2 mortality data. Bloomberg (2008a) claims, nevertheless, that the Pentagon’s *attack* data corroborates the

mortality data of L1 and L2. The Pentagon does actually find that per capita attack rates in Baghdad are near national averages, due mainly to a very high rate of attacks recorded in Anbar province (figure 1), but this information hardly overrules the direct Pentagon data on violent deaths.²⁴

PLACE FIGURE 1 ABOUT HERE

Bloomberg (2008a) also concedes that “the impression in Iraq and the Western media that Baghdad was more violent,” is contrary to L2. But this “impression” finds support in the data of the Pentagon, the Fafo survey, the IFHS, the BBC poll, the ORB poll, the Iraq Body Count project and the UNAMI data of the United Nations among others. L2 is the only source on mortality in Iraq I am aware of that clearly suggests that Baghdad suffers only average violence.

“Likewise, the 2006 data suggested that over the preceding years, violence was greater in Diala province than in Anbar province in spite of the lack of press coverage in the former. An examination of data from the Pentagon on attacks by province showed a similar pattern. These findings strongly suggest that the data could not have been fabricated.” Bloomberg (2008a).

Again, this is an incorrect claim. The Pentagon attack data by province are presented in a series of reports entitled [“Measuring Stability and Security in Iraq”](#), the first of which was released in July of 2005, which are summarized in Table 3. All reports covering periods that overlap with L2 show much higher attack rates in Anbar than in Diala. [The July 2005 report \(page 6\)](#) measures 20% of attacks in Anbar and 5% in Diala

between February 12, 2005 and June 24, 2005. [The October 2005 report \(page 22\)](#) finds about 440 attacks in Anbar and 100 attacks in Diala between August 29, 2005 and September 16, 2005. [The February 2006 report \(page 26\)](#) measures more than 23 attacks per day in Anbar and less than 6 attacks per day in Diala between August 29, 2005 and January 20, 2006. [The May 2006 report \(page 34\)](#) finds more than 28 attacks per day in Anbar and less than 9 attacks per day in Diala between February 11 and May 12 of 2006. [The August 2006 report \(page 32\)](#) measures more than 31 attacks per day in Anbar and less than 15 attacks per day in Diala between May 20 and August 4, 2006.²⁵ The population of Diala is slightly larger than the population of Anbar according to L1, L2 and the IFHS so differences in per capita rates are slightly larger than the differences given above.

PLACE TABLE 3 ABOUT HERE

Thus, both press coverage and the Pentagon data suggest more attacks in Anbar than in Diala. Of course, the L1 data also suggest vastly more deaths in Anbar than in Diala for the L1 coverage period. L1 recorded 52 violent deaths in a single cluster in Anbar and 1 violent death between two clusters in Diala.

Even if the Pentagon attacks data did show more attacks occurring in Diala than in Anbar it is not obvious why this would “strongly suggest that the [presumably L2] data could not have been fabricated.” In fact, the Diala data in L2 are suggestive of fabrication. L2’s violent death estimate for Diala during the ILCS coverage period

exceeds that of the ILCS by more than a factor of 46 and even exceeds the upper limit of the ILCS confidence interval by more than a factor of 23.²⁶

6. CLAIMS THAT RECORDED DEATHS ARE BACKED BY DEATH CERTIFICATES

Burnham et al. (2006) generated some credibility for its extremely high violent death estimate with the claim that a large percentage of the violent deaths recorded by L2 interviewers were backed up by death certificates. However, the veracity of these very high confirmation rates has been questioned in various publications. There are 35 deaths listed in the L2 dataset for which interviewers claim to have seen death-certificate confirmation but for which they were, nevertheless, only able to determine a year but not even a month of death ([Kane, 2007](#)), although dates of deaths should be available on death certificates. Moreover, the L2 data implies, implausibly, that the death-certificate system operates imperfectly for non-violent deaths yet perfectly for violent deaths in seven of Iraq's governorates ([Munro and Cannon, 2008](#), [Spagat 2009](#), section 3.6). In addition, recent death certificate counts released by the Iraqi government ([Gamel, 2009](#), [Todd, 2009](#)) are too low by factors of at least 7 to 14 to be consistent with L2 claims of death certificate backing for its violent death estimates. For example, using only the violent deaths in the L2 dataset for which interviewers claim to have seen positive proof of death in the form of a death certificate we can estimate 128,000 violent deaths *backed by death certificates* in 2004. Yet the Iraqi Ministry of Human Rights only counted 11,313 death certificates issued for violent deaths in 2004, a discrepancy of a factor of 11.²⁷

Bloomberg (2008a) responds to some of the criticism by claiming, incorrectly, that some of the criticism is factually inaccurate:

“...the authors [Munro and Canon] cite Michael Spagat, an economics professor who was not given the data to review. The article states, “Spagat noticed that the 23 missing certificates for nonviolent deaths were distributed throughout eight of the 16 surveyed provinces, while all 22 missing certificates for violent deaths were inexplicably heaped in the single province of Nineveh.” There are numerous errors in this statement.

The assertion that “all 22 missing certificates for violent deaths” came from one cluster is wrong on two counts. First, there were 3 clusters in which survey interviewers either forgot or chose not to ask for death certificates out concern for their personal safety. In total, interviewers did not ask for or households did not provide a death certificate in about 100 reported deaths.” Bloomberg (2008a).

It is true that L2 authors refused to give me the data to review. I have largely managed to overcome this handicap through the kind assistance of David Kane who assembled the table to which Bloomberg (2008a) refers above and which appears in Spagat (2009) and the *National Journal*. However, this table is correct and anybody with the L2 dataset can confirm that it is correct. The table shows clearly that Nineveh is the only governorate where respondents failed to produce death certificates for violent deaths when they were requested to produce them by interviewers. The table also shows that there were eight governorates where respondents failed to produce death certificates for non-violent deaths when they were requested to produce them by interviewers.

7. CLAIMED UNRELIABILITY OF IBC AND CORROBORATION FROM THE BAGDHAD MORGUE

Bloomberg (2008a) acknowledges that the database of the Iraq Body Count project does not support L2, so Bloomberg endeavors to discredit IBC.

“The 2006 *Lancet* study suggests that mortality more than doubled during the conflict due to violence. The Iraq Body Count (IBC) data, which the *National Journal* cited as more valid, suggest that the death rate increased by less than 10 percent during the occupation.” Bloomberg (2008a).

IBC records violent deaths of civilians. It does not record non-violent deaths either before or during the war. Yet Bloomberg (2008a) attributes to IBC an estimate that the total violent plus non-violent death rate of civilians plus combatants during the occupation is only 10% higher than the violent plus non-violent death rate before the war. In fact, there is no reason why the IBC data are incompatible with a doubling of the crude mortality rate during the occupation. The IBC data certainly suggest a large increase in violent mortality. If there has also been a large enough increase in non-violent mortality and violent deaths of combatants then crude mortality could have doubled.

It would be more sensible to compare violent deaths of civilians in the IBC data with violent deaths in the other studies. Take as a baseline the central estimate for the pre-war violent death rate provided by the IFHS: 0.1 per 1,000 per year. Then, based on IBC figures, the post-invasion violent death rate of civilians for the first 5 years of the conflict was well over 6 times the pre-invasion violent death rate. The IFHS finds a post-invasion violent death rate of about 11 times the pre-invasion violent death rate. L2 finds

a violent death rate of about 72 times the pre-invasion violent death rate. Thus, both IBC and IFHS data do suggest a tremendous surge in violence during the war with L2 again being an outlier.

“Data from the Baghdad morgue, Najaf graveyards, and data compiled from other graveyards across Iraq consistently suggest more than a doubling of mortality.” Bloomberg (2008a)

These claims are untrue, but the general idea of a “doubling of mortality” in Iraq since the invasion can be considered on its own merits. Bloomberg does not actually mention a piece of evidence aside from L2 that might actually suggest a doubling of mortality in Iraq: the IFHS. As of August, 2008 the WHO has only released what [IFHS \(2008c\)](#) calls “provisional unadjusted crude mortality figures” and, of course, figures described in this way must be used cautiously.²⁸ These “provisional, unadjusted” figures place the post-invasion crude mortality rate above the pre-war crude mortality rate by a factor of 1.9 on average.

Such an increase in the crude mortality rate by a factor of 1.9 would not support L2. First, a factor of 1.9 is still substantially below L2’s estimated factor of 2.4, translating into about 240,000 fewer excess deaths or about 37% of L2’s total excess deaths. Second, the near-doubling of mortality suggested as a possibility by the IFHS data would not be “due to violence”, at least not directly due to violence. The provisional figures released by the IFHS for crude mortality suggests that well over half of the increase in the mortality rate in Iraq during the occupation comes from non-violent deaths. In contrast, L2 finds no statistically significant increase in non-violent deaths during the occupation compared to the pre-war period. This makes a big difference from

a public health perspective. The L1/L2 perspective on the relative importance of violent and non-violent deaths in Iraq is summarized succinctly in the L1 paper:

“In this case, the lack of precision does not hinder the clear identification of the major public-health problem in Iraq –violence.” Roberts et al. (2004), page 1861.

The IFHS, to the contrary, suggests that Iraq faces a much broader public-health crisis, most probably involving the health-care delivery system, mental health, and the availability of doctors, clean-water and other problems.

The IFHS is, in fact, much more consistent with the IBC data than with L2.²⁹ First, IBC’s figure for violent deaths of civilians was lower than the IFHS’s central estimate for violent deaths of civilians plus combatants by a factor of 3, which translates into about 103,000 violent deaths. L2’s central estimate exceeds the IFHS’s central estimate by a factor of 4, or about 450,000 deaths. As already mentioned, even this comparison understates the IFHS-L2 difference because the IFHS figures have been adjusted upward for a presumed “underreporting” in mortality surveys while the L2 figures have not been adjusted. Second, the geographical patterns of violent deaths are very similar for IBC and the IFHS, with both diverging sharply from the geographical pattern in L2. L2 has relatively much less violence in Baghdad and much more violence in governorates surrounding Baghdad than do the IFHS, IBC, the ILCS and other sources as already noted above. Finally, the patterns over time in deaths are very similar for IBC and the IFHS, with both differing strongly from L2. Figure 2 shows violent mortality rates from the three sources using data taken from Table 4 of IFHS (2008a).³⁰ Both IBC and IFHS rates are slightly lower in the second period than in the first period and slightly

higher in the third period than in the second period. The L2 rate is more than twice as high in the second period than in the first period and nearly twice as high in the third period as in the second period.

PLACE FIGURE 2 ABOUT HERE

I have just argued that mortality may have doubled in Iraq but that such a doubling would not be problematic for the IBC database, so I address here only the implication of the above Bloomberg quote that suggests data from the Baghdad morgue boost the credibility of L2 and diminish the credibility of the IBC data.

The Baghdad morgue data are actually built into the IBC database so, by construction, they cannot suggest a large undercount by IBC. Indeed, figure 3 shows that that IBC figures for violent deaths in Baghdad are slightly higher than Baghdad morgue figures for violent deaths and the trends in the two curves match each other fairly well.³¹ In contrast, estimates based on the L2 data for violent deaths in Baghdad begin much higher and increase much more sharply than the morgue figures; the ratios of the L2 figures to the morgue figures are 3.7, 5.2 and 9.5 for the three respective periods. It is clear that data from the Baghdad morgue do not enhance the credibility of L2 relative to IBC.

PLACE FIGURE 3 ABOUT HERE

8. CONCLUSION

Bloomberg (2008a) claims of corroboration for its mortality surveys - from the ILCS, the BBC poll, the IFHS (apparently), Pentagon data and the Baghdad morgue - are all incorrect. The Bloomberg (2008a) claim of corroboration from one ORB poll has some surface plausibility but is ultimately weak because the data and methodology underpinning the ORB estimate are fatally flawed (Spagat and Dougherty, 2009) and, in any case, the ORB poll finds a very different geographical distribution of violent deaths than L2 does. Bloomberg (2008a) makes further incorrect claims about the ILCS, on death certificates and many other matters documented in the present paper.

L2 stands out as an outlier among the sources surveyed in this article. Its finding that Baghdad suffers only average violence levels is inconsistent with all other mortality data surveyed including the ILCS, IFHS, BBC poll, ORB poll and IBC. L2's violence trends are also inconsistent with all data covered in this article providing trends: the IFHS, IBC, the Pentagon data (see Appendix A) and the Baghdad morgue. The size of the L2 violent-death estimate is much higher than all sources surveyed except for the ORB poll. The efforts of Bloomberg (2008a) to mainstream L2 do not hide the fact that it lies far out of the mainstream of mortality data on Iraq.

* I would like to thank Josh Dougherty, Hamit Dardagan and David Kane and an anonymous referee, all for vital help on this paper.

¹ However, see [Van der Laan and de Winter \(2006\)](#).

² See Bohannon (2006), Dardagan et al. (2006), Daponte (2007), Guha-Sapir and Degomme (2007), Johnson et al. (2008), Iraq Family Health Study Group (2008a), Laaksonen (2008), Munro and Canon (2008), Rosenblum and van der Laan.(2009) and Spagat (2009). The American Association for Public Opinion Research censured Gilbert Burnham, the lead author of L2 because he “repeatedly refused to make public essential facts about his research on civilian deaths in Iraq ([AAPOR, 2009a](#)).” He was also suspended by Johns Hopkins University from human subject research for protocol violations that compromised the safety of survey respondents ([Bloomberg School of Public Health, 2009](#)).

³ Daponte (2007) criticizes the ethics of L1 and L2 for endangering the lives of interviewers: “Further, one should question how a proposal to conduct this research made it through the Institutional Review Board at a US university...In this case, the utility of the additional data on the population was probably not worth the risk to interviewers’ lives, so that the proposal to carry out such research should not have been approved.” Hicks (2006) and Spagat (2009) argue that L2 endangered the lives of its respondents.

⁴ [IFHS \(2008b\)](#) is a web site on the IFHS containing much interesting material that is not included in the article that was published in the NEJM.

⁵ Bloomberg (2008b) was not posted long enough to have much impact so I will not address it below.

⁶ The appendix at the end of the paper names the main sources that I will be referring to. These tables also provide handy links to these sources when possible and release dates for the various surveys and polls. These tables should help readers to navigate through the many sources I will refer to below.

⁷ [ILCS \(2005a\)](#), page 54.

⁸ This adjustment recognizes that the ILCS field work was conducted between March 22, 2004 and May, 25, 2004 and, therefore, would have missed some deaths during the 40 days before May 1, 2004 while also capturing some other deaths occurring during the 24 days after May 1, 2004. The missed deaths are likely to outnumber the post-May-1 deaths, hence the “adjusted to May 1, 2004” estimate is slightly higher than the original ILCS estimate.

⁹ The data on missing persons in the ILCS do not seem to be extremely reliable. For example, calculations of Gabriel Guerrero-Serdan of the economics department of Royal Holloway College, based on the ILCS dataset, indicate that 5,547 out of an estimated 10,144 missing persons are estimated as missing due to disease which makes little sense.

¹⁰ Again, I use the calculation of Gabriel Guerrero-Serdan.

¹¹ Including Anbar governorate would add “about 200,000” additional deaths to the central estimate of L1 (Roberts et al (2004), page 1861). Obviously, a full L1 estimate cannot be “virtually identical” to the ILCS one, even accepting the Bloomberg inflation of the ILCS estimate up to 36,000 deaths. Therefore, I remove Anbar governorate to give the L1 estimate at least a chance to resemble the ILCS one.

¹² The L2 dataset contains 44 violent deaths clearly marked as occurring after the start of the war and before May 1, 2004 and 2 additional deaths for 2004 for which months are not specified and may, therefore, have occurred either before or after May 1, 2004. Each death translates into roughly 2,000 estimated deaths.

¹³ Pedersen, (2007) page 7 and table 1, page 12.

¹⁴ Pedersen (2007), page 8 proposes a “revised estimate to the baseline crude mortality rate to 9.7/1,000” but it would be incorrect to compare this figure with the crude mortality rate in either L1 or L2. Pedersen argues (p. 6) that all sample surveys of mortality have “a considerable selection bias in that households need to have one or more living members in order to be interviewed.” He applies *General Growth Balance* (GGB) methods from the field of demography to adjust for survivor bias and notes that fully following these “would yield a revised estimate of the baseline crude mortality rate to 9.7/1000.” But he insists “..., a GGB adjusted estimate derived from the present study should in principle only be compared with a similarly adjusted estimate based on the 2004 Lancet paper, since the problem of selection bias is equally present in that study.” Of course, this comment applies equally to L2.

¹⁵ ILCS (2005a) page 50, table 34.

¹⁶ For more on poor quality control in L2 see [Kane \(2007\)](#), Laaksonen, (2008), [Spagat \(2009\)](#), section 3.2 and [Guha-Sapir and Degomme \(2007\)](#). Concern for quality in the ILCS is evident from reading [ILCS \(2005b\)](#).

¹⁷ Note that the ratio near 1 reported by UNAMI only applies to 2006 when sectarian executions became much more prevalent than they had been previously. The ratio of injuries to killings during 2006 is likely to be below the average ratio for the entire war. Note also that there are reasons to believe that UNAMI may have double-counted some deaths recorded by both the morgue and the hospital system, and that the MoH death figures probably exclude bodies that passed through the morgue but not the hospital system. If so, then the true ratios of injuries to killings probably lie somewhere in between the MoH ratios and the UNAMI ratios.

¹⁸ The ORB poll ([ORB \[2008\]](#)), cited by Bloomberg, does find a ratio of injuries to killings of about 0.95 to 1 and is the only data source I am aware of that actually does suggest that killings might, by a narrow margin, outnumber injuries in the Iraq conflict. However, ORB (2008) is not very credible on this point since this poll finds implausibly low ratios of injuries to killings even in explosions: 1.3 for car bombings, 1.2 for aerial bombardments and 1.4 for “other blast/ordnance”. See [Coupland and Meddings \(1999\)](#) on the ratio of injuries to killings in armed conflict.

¹⁹ We can consider adjustment factors larger (smaller) than 0.69 reflecting the possibility that IBC’s upward trend might be sharper (less sharp) than the true underlying trend. However, it would be hard to make a plausible case for adjustment factors as high as 0.83 since such factors would imply that the average violent death rate between the L2 and BBC coverage periods was below the average rate for the entire conflict until the end of the BBC coverage period, despite a range of evidence showing this period to be far more deadly than average.

²⁰ The version of the report on the ABC web site, [ABC \(2007\)](#) brings out the high violence in Baghdad compared to the rest of the country quite clearly. The BBC write-up does not delve into this question.

²¹ Baghdad is included in these national averages so the differences between Baghdad and the rest of the country are larger than they might appear to be from a first glance at these figures. The same is true for Table 2.

²² There was an earlier version of the ORB poll released in September ([ORB 2007a](#)) that estimated 1.2 million violent deaths. But at that stage the ORB had undersampled rural areas ([ORB \(2007b\)](#)). ORB did some additional rural interviews so the January 2008 press release (ORB [2008]), with its estimate of 1,033,000, supersedes the September one, with its estimate of 1,220,580.

²³ If L1's Fallujah outlier cluster is included then Baghdad, with roughly 25% of the population of Iraq, would account for less than 10% of all violent deaths in L1.

²⁴ See, e.g., [Department of Defense \(2006b, pages 32 and 34\)](#). It is likely that the Pentagon's attack data is focused primarily on attacks targeting coalition troops and allied Iraqi security forces (i.e., insurgency-related attacks), many of which have occurred in the Sunni-dominated Anbar governorate outside of Baghdad. It is also likely that many sectarian killings in Baghdad and other mixed areas are not as thoroughly monitored or recorded as attacks by the Pentagon since they are not attacks directed at coalition forces. Thus, there is no obvious inconsistency in the Pentagon data: per capita, attacks on coalition and allied security forces may be only average in Baghdad, while Iraqi mortality in Baghdad is above average.

²⁵ The references for these reports, respectively, are Department of Defense (2005a &b and 2006a, b &c).

²⁶ [See Spagat \(2009\), tables 1 and 2.](#)

²⁷ The discrepancy between L2-estimated death certificates that should be circulating and counted ones in circulation is really worse than a factor of 11, because for 6,042 of the 11,313 cases in 2004 bodies were not identified and, therefore, families should not have copies of death certificates. Thus, the real discrepancy between estimated and counted death certificates is roughly a factor of 24 in 2004. Moreover, L2 interviewers claim a perfect record of 24 confirmations in 24 attempts in 2003. This claim is implausible since the Ministry of Human Rights did not even attempt to count death certificates issued during this period because of chaos in the death-certificate issuing system at that time.

²⁸ See the very bottom of [IFHS \(2008c\)](#).

²⁹ As noted in the Introduction above, this is stated directly in the paper published in IFHS (2008a).

³⁰ The levels of the three sources are not directly comparable because the IFHS, but not L2, has been adjusted upwards and the IBC rates capture only violent deaths of civilians rather than civilians plus combatants as the two surveys do.

³¹ The Baghdad morgue data that I use in the next two paragraphs was generously supplied to me by IBC. I will provide the direct sources for these numbers upon request. Again, David Kane helped me with the L2 estimates. For these I simply multiply the number of violent deaths recorded by L2 in Baghdad for each time period by 2,000 and divide by the number of months in the time period. The L2 dataset contains, respectively in 2004 and 2005, 1 and 3 violent deaths in Baghdad for which there are no months given

(only years). These are allocated to time periods in proportion to the number of months each time period includes in 2004 and 2005 respectively.

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Appendix B: Data Sources Referred to in this Article

Table A1: Surveys and Polls

Primary Name	Release Date	Other Names	URL's
L1	October, 2004	Roberts et. al. 2004: 2004 <i>Lancet</i> survey First <i>Lancet</i> survey	http://www.zmag.org/lancet.pdf
ILCS	May, 2005	Iraq Living Conditions Survey: Fafo survey: UNDP survey	http://reliefweb.int/rw/rwb.nsf/db900sid/KHII-6CC44A?OpenDocument
L2	October, 2006	Burnham et al. 2006: 2006 <i>Lancet</i> study Second <i>Lancet</i> survey	http://www.thelancet.com/webfiles/images/journals/lancet/s0140673606694919.pdf
BBC poll	March, 2007	ABC poll	http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/19_03_07_iraqpollnew.pdf http://abcnews.go.com/US/story?id=2954716&page=1
IFHS	January, 2008	Iraq Family Health Survey: WHO survey	http://content.nejm.org/cgi/content/full/NEJMsa0707782 http://www.emro.who.int/Iraq/ifhs.htm
ORB poll	January, 2008		http://www.opinion.co.uk/Newsroom_details.aspx?NewsId=88

Table A2: Other Sources or Claimed Sources

Source	URL's
IBC (Iraq Body Count)	http://www.iraqbodycount.org/
Pentagon Data	http://www.defenselink.mil/home/features/Iraq_Reports/index.html http://www.talkingpointsmemo.com/docs/petraeus-slides/?resultpage=4&
Ministry of Health	http://news.bbc.co.uk/1/hi/programmes/panorama/4217413.stm
Ministries of Interior, Health and Defense	http://www.foxnews.com/story/0,2933,201982,00.html
UNAMI (UN Assistance Mission to Iraq)	http://www.uniraq.org/FileLib/misc/HR_Report_Nov_Dec_2006_EN.pdf
Baghdad Morgue	http://www.washingtonpost.com/wp-dyn/content/article/2007/01/14/AR2007011400256.html

Tables

Table 1. Violent Deaths: ILCS Adjusted to May 1, 2004 vs. L2 Through April 30, 2004

	ILCS lower CI limit	ILCS central estimate	ILCS upper CI limit	L2 central through April 30, 2004	(L2 central)/ (ILCS upper limit)
Total	20,000	26,000	32,000	88,000+	2.8

North	0	500	1,500	0	0
South	8,500	13,000	17,000	14,000	0.9
Baghdad	4,500	8,000	11,500	14,000+	1.4
Center	2,500	4,500	6,500	60,000+	10.1

+ In 2004 there is one violent death without a month in both Baghdad and Anbar in the L2 dataset. I have excluded these since they may or may not have occurred during the ILCS coverage period.

Sources: Pedersen (2007) for ILCS and David Kane for analysis of L2 data

Table 2. % Reporting Various Violence Types;

All Iraq (including Baghdad) and only Baghdad

	All %	Baghdad %
Kidnappings for ransom	40	58
Gov't/anti-gov't fighting	34	57
Car bombs, suicide attacks	32	52
Snipers, crossfire	30	56
Sectarian fighting	25	49
Unnecessary violence by:		
U.S./coalition forces	44	59
Local militia	31	44
Iraqi police	24	44
Iraqi Army	24	44
Any of these	80	100
Four or more of these	37	70
Friend/family member harmed	53	77

Source: BBC/ABC Poll reproduced from [ABC \(2007\)](#)

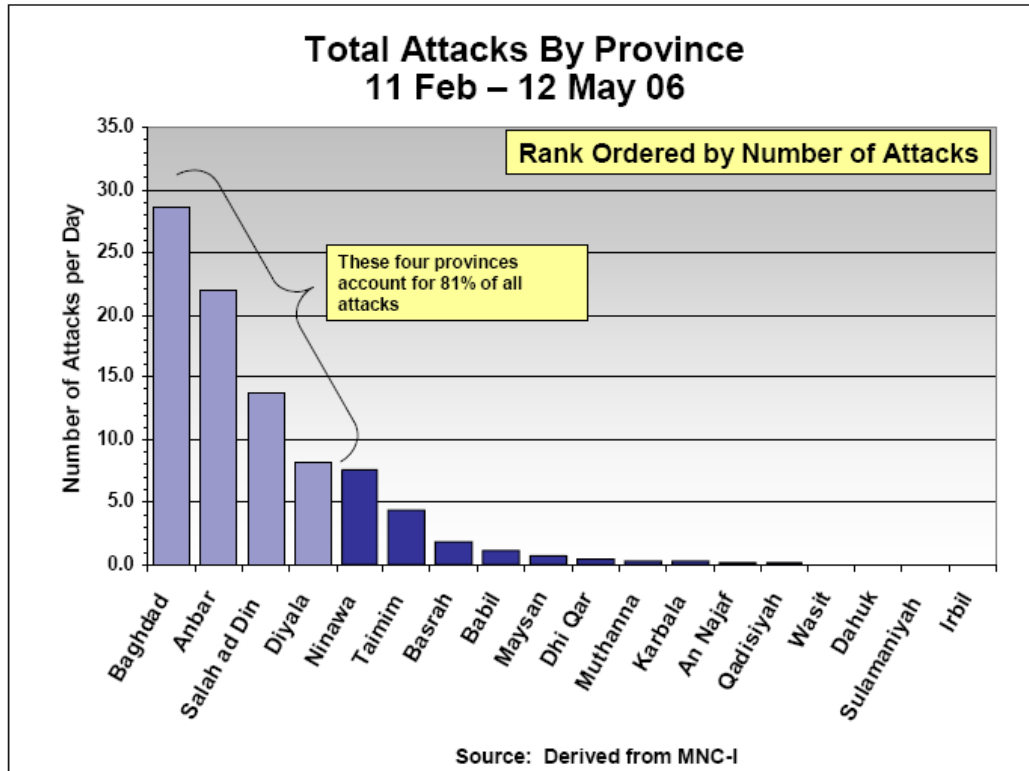
Table 3. Pentagon data on attacks in Diala and Anbar

	12/2/05 – 24/6/05	29/08/05 – 16/09/05	29/08/05 – 20/01/06	11/02/06 – 12/05/06	20/05/06 – 4/08/06
Diala	5%	100	6 per day	9 per day	15 per day
Anbar	20%	440	23 per day	28 per day	31 per day

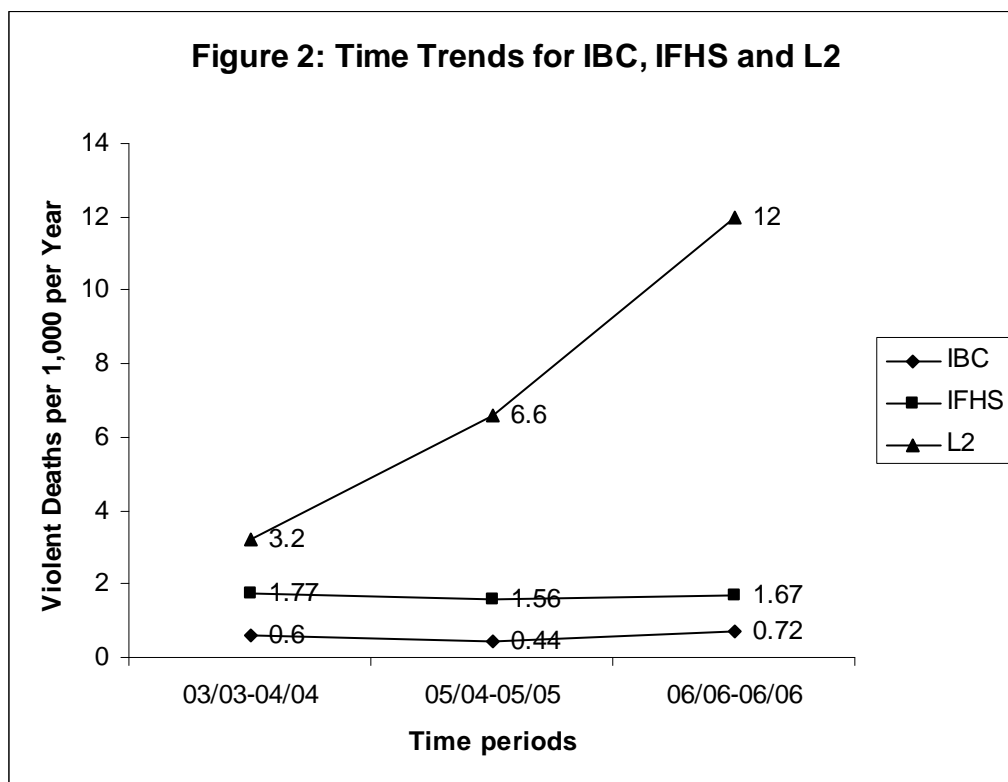
Sources: Department of Defense (2005a &b and 2006a, b &c).

Figures

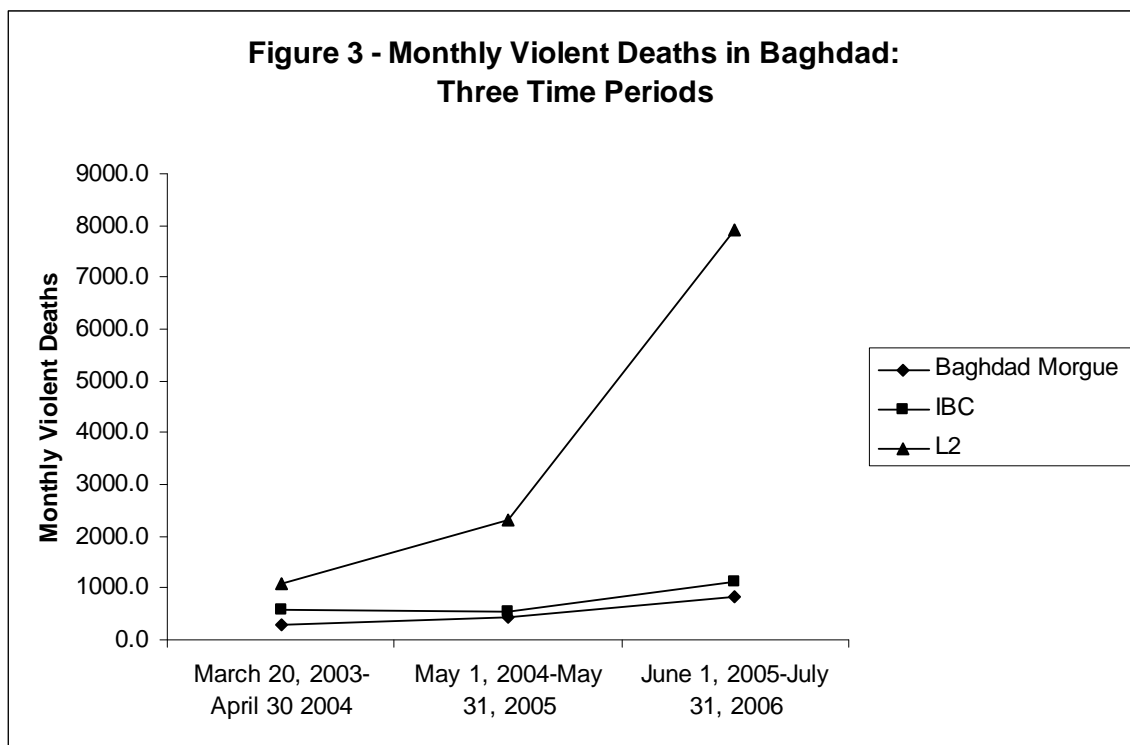
Figure 1.



Source: Department of Defense (2006c)



Sources: IBC (continuously updated), IFHS (2008a) and David Kane for L2.



Sources: IBC (continuously updated), the Baghdad Morgue figures come from media reports collated by the Iraq Body Count project. The L2 figures come from David Kane.