Estimating mortality in war-time Iraq: a controversial survey with important implications for students

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Estimating Mortality in War-Time Iraq: A Controversial Survey with Important Lessons for Students

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Summary
In teaching introductory quantitative methods in sociology, I have used a controversial survey of mortality in Iraq before and after the 2003 invasion to highlight to students the power of simple questionnaires, the role of ambiguity in statistics and the place of politics in the framing of statistical results. This brief report summarizes Roberts et al.’s (2004) estimate that the invasion of Iraq resulted in 98,000 (95% CI = 8000–194,000) deaths, as well as the intriguing reaction that the survey received in the press. Statistics teachers should find the Roberts et al. study to be an effective way to introduce students to more controversial – and political – aspects of statistical research.

INTRODUCTION

Quantitative methods are often derided as being ‘unimaginative’ and ‘boring’. Many students in the social sciences come to statistics classes with a sense of apprehension and dread; they often believe the material will be too difficult and, perhaps most importantly, that statistical analysis does not offer them a relevant means to understand the pressing issues of the world. In sociology, the backlash against statistical analysis has been quite severe. This is clearly reflected in a statement from a former president of the American Sociological Association, who noted that ‘one reason why sociology does not currently have more social impact is its over-emphasis on advanced statistical methods and a neutrality toward society’s marked inequalities’ (Feagin 1999: B5).

Indeed, in the minds of many students, statistical analysis bears little relevance to the important issues of the day. Unfortunately, coinciding with this belief, statistical tools which can be used to examine the distribution of income (e.g. the Gini coefficient), the progressivity of tax structures (e.g. the Kakwani index), the nature of poverty (e.g. the Sen index), or health inequities (e.g. illness concentration curves) receive little, if any, attention in most introductory courses in statistics. Adding to the notion that statistical analysis offers little to students wanting to study society’s inequalities, standard textbooks continue to use examples lacking political importance.

This brief article summarizes a controversial survey of mortality in Iraq before and after the 2003 invasion published in The Lancet (Roberts et al. 2004). For the past two semesters, I have used this study in class discussions in my undergraduate quantitative methods course. The study is particularly useful in the classroom because it highlights the power of relatively simple questionnaire items and the importance of interpreting estimates together with their
that statistical analysis can be used within the reading lists for teachers who want to emphasize statistical results. It is an excellent addition to course reading lists for teachers who want to emphasize that statistical analysis can be used within the framework of critical social science.

As Roberts et al. (2004) note, no record exists of the number of civilian deaths that have occurred as a result of the military action in Iraq. The most widely cited source of data is the Iraq Body Count project (http://www.iraqbodycount.net), which keeps track of civilian deaths reported in the press. In September 2004, the time of publication of the Roberts et al. study, this project estimated that between 13,000 and 15,000 civilians had been killed by Coalition forces. Noting that the Iraq Body Count estimates rely on press accounts that are in all likelihood incomplete, and that they would not include deaths indirectly attributable to the armed conflict, the Roberts et al. team developed a survey-based approach to estimate the difference in mortality rates in Iraq before and after the 2003 invasion. This would enable the collection and analysis of data on deaths directly and indirectly attributable to the conflict (the latter including deaths due to infections as well as heart attacks, strokes, accidents, and other causes). Unlike the Iraq Body Count project, this methodology would not rely on press accounts (which in any case could have under- or over-estimated the number of deaths); instead, the principles of random sampling would be applied in a very unorthodox setting (a country at a time of war).

Roberts et al. carried out their cross-sectional cluster sample survey in September 2004. The sample selection procedure was complex by necessity, given the conditions in Iraq and the resource limitations of the research team. Using Iraqi Ministry of Health population estimates from 2003, they assigned 33 clusters to Iraq’s 18 governorates using a random sampling technique. The probability that clusters would be assigned to any given governorate was proportional to the size of the population in that governorate. The largest cluster groups were assigned to Baghdad (7 clusters) and Ninawa, in the north of the country (4 clusters). Further rounds of random sampling reduced the governorates-based clusters to individual communities (a town, village or urban neighbourhood) and then to 33 survey areas of approximately 30 households. In total, 988 households containing 7868 residents were interviewed.

During the interview, data were collected on household composition, births and deaths since January 2002. The date, cause and circumstances of deaths were recorded. These simple measures were then used to calculate mortality rates before and after the 2003 invasion. Their analysis indicated that, before the invasion, the mortality rate was 5.0 per 1000 people per year (95% confidence interval (CI) 3.7–6.3). After the invasion (to September 2004), the mortality rate was 12.3 per 1000 people per year (95% CI 1.4–23.2), or 7.9 per 1000 people per year (95% CI 5.6–10.2) if data from the city of Falluja, an extreme statistical outlier, were excluded. Roberts et al. note that Falluja ‘was probably the most violent city in Iraq at the time of the survey’ (2004: 1862). Indeed, interviewees from that city reported widespread death in neighbouring houses but would not or could not give details. In total, more than one-third of the post-invasion deaths reported by interviewees and two-thirds of violent deaths occurred in the Falluja cluster; this was obviously an outlier and Roberts et al. excluded the city so as to not inflate the overall results. This raises an important point of methodological discussion: the appropriateness of a cluster sampling technique. If by chance the selected cluster was the site of substantial bombing, it would seriously bias the results. That is exactly what happened with the Falluja cluster (which was selected on the basis of a random technique). Roberts et al., following a conservative analysis strategy, excluded data from that cluster in an attempt not to bias the results.

Roberts et al. then subtracted the pre-invasion rate from the post-invasion mortality rate, multiplied by the estimated population of Iraq (24.4 million) and multiplied by the time period covered by the study. Their conclusion: the 2003 invasion of Iraq had resulted in 98,000 deaths (95% CI = 8000–194,000). (This estimate did not include data from the city of Falluja.) The causes of deaths also changed considerably; whereas before the invasion the leading causes of death included heart attacks, strokes and chronic diseases, after the invasion, violence was the primary cause of death.

For Roberts et al., ‘this survey indicates that the death toll associated with the invasion and occupation of

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Iraq is probably about 100,000 people, and may be much higher. We have shown that even in extremely difficult circumstances, the collection of data is possible, albeit with limited precision. In this case, the lack of precision does not hinder the clear identification of the major public-health problem in Iraq – violence’ (2004: 1861). The conclusion that the invasion of Iraq resulted in 98,000 (95% CI = 8000–194,000) excess deaths quickly generated debate, much of it focusing on the appropriateness of the cluster sampling technique and the interpretation of the very wide confidence interval. The survey findings were certainly a strong contrast to the oft-cited remarks from US General Tommy Franks, who famously stated during the Afghan campaign: ‘we don’t do body counts’ (quoted in Roberts et al. 2004: 1863).

REACTION IN THE POPULAR PRESS

The Roberts et al. study received a mixed response in the popular press; in The Economist (Counting the casualties 2004) it was received with a healthy dose of scepticism, reports in The Independent highlighted criticisms that the study exaggerated the number of civilian deaths (see Medialens 2005), and other publications published scathing editorials. Most notably, a Washington Times editorial read ‘...how about the constantly cited figure of 100,000 Iraqis killed by Americans since the war began, a statistic that is thrown about with total and irresponsible abandon by opponents of the war. That number, which should be disputed at every turn by those who care about the truth of what is going on in Iraq was derived from a controversial study...’ (Dale 2004: no pagination). Other papers quoted critical assessments from ‘experts’. For example, a Brookings Institution analyst quoted in The Sun deemed the study’s results ‘preposterous’, and an expert from Human Rights Watch commented to the Washington Post that ‘these numbers seem to be inflated’ (see Ericson 2004). (The Human Rights Watch expert subsequently admitted to not having read the study at the time of his interview and withdrew his comment.)

BRINGING THE STUDY INTO THE CLASSROOM

This material can be used in classroom discussions to raise questions about the role of the researcher in the research process, as well as the classic notions of ‘objectivity’ and ‘detachment’. This has been a point of considerable debate among sociologists; in the traditional view, while a researcher is permitted to have political views, the researcher would be expected to put them aside when conducting proper scientific research. This is strongly contrasted by the tradition of critical social science; here, a researcher’s political views and moral values have an explicit role at the centre of the research process. In sociology, quantitative research continues to be stereotyped as lacking a political dimension; indeed, studies like this one break down the traditional stereotype of the quantitative researcher as ‘value-free’ and ‘independent from that being researched’ (Creswell 1994). This can be further explored in class discussions with questions such as: How might the values of the research team have influenced the design of the study? Can you find any evidence in the article that suggests that Roberts et al. purposely inflated the findings? Do they fairly discuss their estimates and their associated confidence intervals? More generally, how do issues of objectivity and detachment relate to quantitative researchers interested in issues such as poverty, health and human rights? These questions can be developed to foster a sense of reflexivity about students’ own projects.
Additionally, the press reaction to the Roberts et al. study can be used to highlight the important role of politics in the framing of statistical findings. As Roberts notes, ‘It is odd that the logic of epidemiology embraced by the press every day regarding new drugs or health risks somehow changes when the mechanism of death is their armed forces’ (quoted in Medialens 2005: no pagination). Class discussions can be based around this quotation to explore the complex interplay between hierarchies of credibility, claims of scientific precision and political standpoints. Assignments can also explore the contrasting receptions given in the media to the Iraq study and a study that Roberts led in the Congo using a very similar methodology (Guterman 2005). Class discussion on this point can involve an in-depth comparison of the methods used in the Iraq and Congo studies, as well as a content analysis of the reactions published in the press. Other promising classroom activities would entail having students (perhaps in groups) come up with their own suggestions for how to estimate the number of deaths in Iraq and also having them compare the pros and cons of both the Iraq Body Count and Roberts et al. approaches.

In my experience, students benefit from discussing the published commentary on the Roberts et al. study; it helps the statistical analysis ‘come alive’ and they quickly engage with the arguments in the press accounts by trying to figure out which positions they agree with in regards to the methodology and the interpretation of the statistical findings. Perhaps most significantly, studies like this one can be used with students beginning their studies of statistics to inspire a belief that statistics matter in the real world.

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