

## Risk of Using Cell Phones while Driving and the Implications for Regulation

In February of 1997, the *New England Journal of Medicine* published the findings of researchers Donald Redelmeier and Robert Tibshirani, which suggested that cell phone use significantly increased the risk of having an accident. This research was widely reported in the popular press, and both advocates and critics of legislation regulating cell phone use while driving have made reference to this research. Advocates claim that Redelmeier and Tibshirani have demonstrated risk sufficient to warrant regulations, while critics claim that their research is either flawed, too limited in scope or fails to adequately demonstrate causation. Since the publication of the 1997 article, other researchers have published studies addressing this issue.

Research on the risk of automobile accidents due to cell phones use has included both epidemiological and experimental studies. Determining what governmental restrictions, if any, ought to be enacted, requires making a determination of risk, and that involves careful evaluation of the available evidence. In this project you will work with your classmates to understand some of the studies that have been performed on this issue, as you work to formulate a sophisticated argument on whether cell phone use represents a serious enough problem that governmental involvement is appropriate.

### PRIMARY SOURCES:

- Redelmeier, Donald A., and Robert J. Tibshirani. 1997. "Association between Cellular-Telephone Calls and Motor Vehicle Collisions." *New England Journal of Medicine*, 336 (7), 13 February: 453-58.**
- Alm, Hakan & Nilsson, Lena. "The Effects of a Mobile Telephone Task on Driver Behaviour in a car following situation." *Accident Analysis and Prevention*. (1995). Vol. 27, No. 5. p.707-715.
- Lamble D, Kauranen K, Laakso M and Summala H. "Cognitive load and detection thresholds in car following situations: safety implications for using mobile (cellular) telephones while driving." *Accident Analysis and Prevention* (1999). Vol. 31 No 6. p.617-622.
- Strayer, D. L., and Johnston, W. A. (2001). "Driven to distraction: Dual-task studies of simulated driving and conversing on a cellular phone." *Psychological Science*, 12, 462-466.
- Violanti, John M. and Marshall, James R. "Cellular Phones and Traffic Accidents: An Epidemiological Approach." *Accident Analysis and Prevention*. (1995). Vol. 28, No. 2. p.265-270.



To begin, we will examine the Redelmeier study together, both to help you get a solid understanding of this research itself and to provide a model for the analyses you will be working on in your groups. In order for each of you to get a reasonably broad understanding of the existing research on this topic without being excessively burdened, responsibility for analyzing primary sources will be divided among you. You will work in groups to carefully review an assigned journal article and then co-author an analysis of that article. These student-authored reviews will then be published on our course website to be used (and cited) by your classmates as secondary sources in their writing of individual papers.

### Goals of this approach:

1. To foster a sophisticated approach to reading scientific texts
2. To enhance the development of your writing through the intensive interaction of co-authorship and by having readers that will put some of your writing "to use" in this course.
3. To allow you to work with a greater number of primary sources in your individual papers than you would be able to handle on your own, making more sophisticated arguments possible.

### Outline of Project

1. Class discussion of "Association between Cellular-Telephone Calls and Motor Vehicle Collisions" by Redelmeier and Tibshirani, and discussion of statistical concepts.
2. Journal Club: Each group collaboratively analyzes one of the other journal articles
3. Each group co-authors a review article in which a summary of the research and the group's analysis is presented. The review articles will be made available to the entire class as a resource to be used (and cited) in their individual papers.
4. Individual papers: 6-10 page papers addressing the risk of driving while using a cell phone.

### **Part 1: Class discussion of “Association between Cellular-Telephone Calls and Motor Vehicle Collisions” by Redelmeier and Tibshirani**

We will study a few statistical concepts that we will use in our examination of the primary sources. This work will be integrated with our discussion of the Redelmeier study. You should develop a working knowledge of these ideas and be able to incorporate them in your analyses. Homework will be assigned in class.

### **Part 2: Journal Club**

In some scientific disciplines professionals get together in groups known as journal clubs to review recent research articles. We will be using a similar approach during the first part of this project in which you will work in groups to carefully analyze a piece of primary scientific literature and write a review article to be used by the other members of your class. For the final part of this project you will write an individual paper making use of the primary sources and the review articles written by the groups. *Your audience for these co-authored pieces is therefore the other members of your class.*

### **PART 3: Co-authored Article Reviews**

This text will be taken through 3 drafts, with a different member of the group serving as principle author for each draft. Members of the group will e-mail their contribution to the principle authors. Groups will meet with me to discuss their work between drafts two and three. All members are responsible for the quality of the entire article. The entire assigned primary source article must be read and understood by all members. All members should critique the content of parts written by co-authors, and have a say in the final text.

### **Part 4: Individual Papers**

You are to write a 6-8 page paper arguing how significant the risk of driving while talking on a phone appears to be, based in large part on your critical assessment of the primary literature. Your argument should (1) include analyses of primary source evidence and (2) make use of secondary source arguments that make claims about the degree of risk. Submit a paragraph outline along with your paper for each draft. Keep all materials related to this project in a folder, including peer-critiques, marked drafts, and paragraph outlines. At the end of the project I will ask you to turn in a folder containing all materials for this project, along with a short reflection on your revisions.

Constructing an informed and intelligent position on such a complex issue requires good source selection, careful reading and thoughtful analysis. When the subject matter is scientific or technological, special skills are needed to determine the validity of complicated and often contradictory evidence. In writing this paper you will apply the intellectual skills you have been learning to the analysis of both primary and secondary source materials. Your tasks are to carefully critique the materials selected; to determine the important questions to be addressed, answering those you can, and explaining the relevance of those you cannot; to consider alternatives and other factors which may not have been apparent to you at the start; and to filter all of this through your own intelligence and value preferences into a coherent, well-supported conclusion.

#### **ARGUMENT**

Be sure to include a fair analysis of all evidence and counter-arguments. This does not mean that you should produce a “balanced” paper, giving all arguments *equal* space. Rather, in forming *your own* claims you should fairly consider the best evidence available and the most convincing reasons (from both primary and secondary

sources) and your writing should reflect that. You should also address any reasonable counter-arguments, common misconceptions and fallacies, and highly-publicized but poor quality evidence (ideas and information that some of your readers may bring to their reading of your argument), and explain why these do not sway you. Be clear about which matters you know with reasonable certainty and which you do not, qualifying your main claim and sub-claims as appropriate.

## SOURCES

### Primary Sources

These include the article we will discuss together as a class and the four articles assigned to the journal clubs. Use these sources to raise questions and draw conclusions about the relevant scientific concepts and to provide background and/or introductory material. You should read *all* of the primary sources, but you will be able to use the other group's reviews as guides.

### Secondary Sources

1. The review article you co-authored with your group and the reviews from the other groups: You should cite these just as you cite other published work. (You must make use of and cite *at least two* review articles from another group.) If you use ideas in your own group's review that were not originally your own, you should cite your group's review.
2. Other secondary sources that you select (minimum 2): Use these sources to locate claims that are "out there" on this issue, and to provide background and introductory material. In constructing your argument, you should employ claims from *at least two* different authors: one may support your position, but at least one must be a counter-argument that you will concede or rebut.

## AUDIENCE

Your audience will be college-educated members of the public who have a scientific background and are familiar with the statistical and experimental methodology concepts we have studied in class. In particular, assume that the vocabulary for interpreting scientific literature which we discuss in class is common knowledge.