First proof: driving while talking on phone is a hazard.

Gina Kolata

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The good news is that cellular phones do not cause brain cancer. The bad news? They are unfortunately a cause of car accidents. In fact, according to research by Drs. Donald A. Redelmeier and Robert J. Tibshirani, driving with the use of a cell phone can be likened to driving with a blood alcohol level of about 0.10 per cent. The chances of getting into an car accident while using a cellular phone is nearly equal to the chances of having an accident while slightly drunk.

Another factor in the chance of having an accident is the topic and content of conversation: "A person who is not talking on the phone cannot become distracted by a shouting match with a boss or a significant other." Thus, the risk gets even greater if the person is discussing something important or especially is in the middle of an argument.

The researchers, a professor of medicine at the University of Toronto and a statistician at the same school, ran a study of 699 drivers who had cellular phones and who had also been involved in an accident. They analyzed 26,798 phone calls on cellular phones and determined that the risk of having an accident quadrupled when drivers spoke on the phone. With heated discussions, this rate is even higher.

Dr. Malcom Maclure and Dr. Murray A. Mittleman of the Harvard Medical School have concluded that, with the growing usage of car phones, accidents caused by cell phones could account for between 0.6 and 1.2 per cent of all car accidents by the year 2000.

On the other hand, several people used their cellular phones to call the police after their accidents. The Cellular Telecommunications Industry Association made sure to note this point. Though they saw the statistical

evidence of usage causing accidents, they also felt that the benefits of being able to get hold of the police immediately following an accident should also be considered.

Bradley Efron, professor of statistics at Stanford University was doubtful about the possibility of deciding whether or not cellular phones truly cause a threat to drivers. Problems included: how "to determine whether phones were being used at or near the time of car accidents and whether the confluence of phone use and car crashes were more than coincidence." However, after reading the researchers paper, he was convinced that it was indeed possible.

Dr. Redelmeier decided to do the study after one of his patients was in an accident while talking to him on her cell phone. He came to the realization that people just do not realize the "limitations of their attention." With this new information out, hopefully more people will realize these limitations. The article remarks that other researchers praised the elegant and novel method used. We decided to see, from the original article (*New England Journal of Medicine*, February 17, 1997), how the study was carried out.

The researchers used a "case cross-over" method. This is a case control study where the controls are the same people used for the cases. This obviously avoids a lot of questions of possible differences between people in the controls and the cases. In this study, the cases were people identified as drivers who use cellular phone and have had an accident within a certain interval of time. The controls were the same people observed at the same interval at an earlier time on a previous day.

The idea is to see if those who were also driving at the same time a day before when they did not have an accident, used their telephones significantly less than they did during the time just before their accidents. If so, this would suggest that the use of a cellular phone is a risk factor for an accident.

The original paper is very clearly written and the authors discuss in detail how they tried to make the study as rigorous as possible and also some of the limitations of such a study.

Discussion Questions:

1. As usual, even if a relation between use of a cellular telephone and accidents is established, this may not be the cause of the accident. What other possible causes might be considered?

2. How might you decide if the proportion of people who used their cellular phone while driving on the day before than had an accident was significantly less than the proportion who used it on the day of their accidents?