Figure 1.8. STATISTICS AND SOCIETY: One Perspective

EM9033: Kitchener-Waterloo Record, October 6, 1990, page A7

Twisted facts

Manipulation of statistics turns living into enduring

By Morris E. Chafetz

We count on scientific research to protect us against our prejudices, validate our guesswork and be objective. Most of us don't want to face the fact that research can be contorted to accommodate social values. I contend that it's done all the time in studies of human behaviour.

In the physical sciences almost all factors can be measured, predicted and controlled. NASA was able to predict the arrival time, within a few minutes, of the astronauts on the moon. But in the science of social behaviour, objectivity is at best tenuous. Findings require interpretation, and science interpreters are as affected by the social mores swirling about as the rest of us.

The study of alcohol problems, with which I am familiar, is an example. During the early years of the 20th century, when the temperance movement was reaching a Prohibitionist crescendo, scientific studies on alcohol focused on its deficits. After repeal, the country cautiously began to accept alcohol as an accompaniment to social intercourse. Predictably, researchers responded with an abundance of scientific studies showing the benefits of alcohol. The story is a stunning example of the mercurial nature of science when society attempts to legislate behaviour.

In the past 15 years, we have come full circle. Alcohol is again in the proverbial doghouse and fear is the reason: fear of kids taking drugs, fear of drunken drivers, fear of illness and death.

First, castigating young people about their drug experimentation in the late '60s and early '70s caused them to point their collective finger at their elders' drug of choice: alcohol. Subsequent research showed that young drug experimenters had also tried alcohol, so alcohol was labelled a "gateway drug." But using statistical correlations to blame alcohol for illegal drug use is like saying daily use of alcohol leads to financial well-being: A survey showed graduates of the Harvard class of 1940 who drank every day had higher incomes than those who drank occasionally or not at all.

The second major impetus against alcohol was the fear of drunken driving, which became one of the most emotionally charged issues of the past decade. The image of thousands of innocent victims being struck down by drunken drivers forced people to become concerned about taking alcohol and driving.

The "truth" about the make-up of drunk-driving deaths, however, is vastly different from the slaughter of innocents drawn by advocacy groups and blitzed by the media. A sober look at U.S. Department of Transportation figures contradicts popular belief: 52 per cent of the people killed in drunk-driving deaths are the drunken drivers themselves; these drivers are not innocent victims. Another 20 percent of the deaths are passengers who have chosen to ride with a drunken driver; these passengers are not innocent victims. And 11 per cent are drunken pedestrians who walk in front of a car; these pedestrians are not innocent victims.

Finally, fear of alcohol comes from our frenetic pursuit of health. Statistical studies on health and well-being are studied like catechisms, which will, if followed piously and painfully, reduce the risk of illness, accident and delay death. Pleasure is to be avoided as a celibate man avoids a seductress. Health faddists give up alcohol for purified water.

Statistics and fashion do not lead us astray in alcohol studies alone. When the National Academy of Sciences estimated that passive smoking causes 3,800 lung-cancer deaths annually among nonsmokers in the United States, who would question the estimate? It certainly never occurred to me to do so, until I noticed another story on lung cancer.

An environmental group was lamenting the 20,000 lung-cancer deaths annually linked to radon, a deadly, naturally formed environmental carcinogen. I asked the researchers at the Academy of Sciences if the study on passive smoking had been "controlled" for radon. I was told it had not. As far as I am concerned, the failure to control for radon makes worthless the Academy's estimates for lung cancer among passive smokers.

Another fear is that the food we eat is carcinogenic. Robert Scheuplein, of the Food and Drug Administration, states that the risk of dying from cancer by dietary exposure to both natural and man-made carcinogens is 7.7 per cent. The risk of dying from natural carcinogens alone is 7.6 per cent. Obviously, natural is not better.

We need to ask ourselves why we are letting science and statistics seduce us into a life of enduring rather than living? Novelist Walker Percy said science is robbing us of the human spirit and leaching the sovereignty out of us as individuals. Perhaps a look at the bewildering proliferation of advocacy groups will provide a clue to the cause of our increasing helplessness.

In 1970, there were 828 American advocacy groups operating in the health and science area. In 1980, there were 1,337 groups; and by 1990, the number had jumped to 2,162. In public affairs the number of groups rose from 532 in 1970 to 2,292 in 1990. Advocacy groups function to guide the perplexed through life by catering to their fears and providing simple answers.

I head an organization dedicated to teaching people to count on themselves and not on the experts if they want to stay healthy. I can only conclude that I haven't succeeded very well; the manipulation of science and statistics by advocacy groups and experts is turning health into sickness for a lot of people.

Morris Chafetz, head of the Health Education Foundation, chaired a committee of U.S. President Bush's Commission on Drunk Driving.

1 In the second paragraph of the article reprinted above, Mr. Chafetz contrasts predictability in the physical sciences with the science of social behaviour where *objectivity is at best tenuous.* Indicate briefly the underlying reason(s) for this important difference between the physical and the behavioural sciences.

2 On the basis of figures quoted in the paragraph at the bottom of the left-hand, and the top of the right-hand, column of the article given above, give an approximate value for the annual number deaths in the U.S. of 'innocent victims' of drunken drivers; for simplicity, take the total number of automobile fatalities as 50,000 per annum and assume that 25% of these

(*continued overleaf*)

2 are 'drunken driving' deaths. Set out your calculations and assumption(s) clearly.

- In light of your value, comment briefly on the first sentence of the paragraph: *The "truth"..... is vastly different from the slaughter of innocents .....*.
- What possible *distortion* of this matter is introduced by considering only automobile *fatalities*?
- Using your U.S. figure, give an approximate value for the annual number of 'innocent victims' of drunken drivers on *Canadian* roads; set out your calculations and assumption(s) clearly.

3 Explain briefly what is meant by "controlling" for radon in the NAS investigation of passive smoking deaths from lung cancer, mentioned in the third and fourth paragraphs of the right-hand column of the article reprinted overleaf on page 1.15.

- Explain briefly whether you agree with Mr. Chafetz's assessment in the fourth paragraph that the failure to control for radon makes "worthless" the NAS estimate of the annual number of U.S. lung cancer deaths due to passive smoking.

4 Explain and comment briefly on the logic involved in obtaining the Answer: *Obviously, natural is not better*, from the figures quoted in the fifth paragraph of the right-hand column of the article reprinted overleaf on page 1.15.

5 After reading Mr. Chafetz's comments overleaf on page 1.15 about the NAS estimate of the annual number of U.S. lung cancer deaths due to passive smoking, how severe do you consider the *limitations* to be on the Answer, in the second-last paragraph of the article below, that passive smoking is responsible for at least 53,000 heart disease deaths a year among non-smokers in the U.S. Briefly justify your assessment.

EM9102: The Globe and Mail, January 11, 1991, page A7

Passive smoking studied

Heart disease risk outlined in tests

BY PAUL TAYLOR
Medical Reporter

Non-smokers who live and work with smokers are at risk of developing heart disease by breathing in second-hand smoke, according to U.S. researchers.

"There is a lot of convincing evidence and it comes from the results of more than just one experiment," said Stanton Glantz, a professor of medicine at the University of California in San Francisco.

In an article published in the current issue of *Circulation*, the journal of the American Heart Association, Prof. Glantz and Dr. William Parmley, also of the University of California, reviewed 71 separate studies dealing with various aspects of second-hand smoke.

They concluded "a whole bunch of bad things happen" when people breathe in second-hand smoke, Prof. Glantz said in an interview.

Second-hand smoke – also known as passive smoking – makes blood platelets abnormally sticky and more likely to form clots that block the flow of blood and cause a heart attack, Prof. Glantz said. Sticky platelets also play a role in the buildup in heart artery walls of fatty deposits that lead to heart attacks.

He added that carbon monoxide (CO) in second-hand smoke hampers the ability of red blood cells to carry oxygen. That means vital organs – including the heart itself – are deprived of badly needed oxygen. Also, nicotine constricts arteries, further reducing the flow of blood.

Using studies of spouses in which one is a smoker and one is not, the researchers estimated that each year at least 53,000 people die in the United States from heart disease caused by second-hand smoke.

"This toll makes passive smoking the third leading preventable cause of death in the United States today, behind active smoking and alcohol," the researchers concluded.

05-08-20