

Generalizing Results to Other Types of Food Safety News

A retrospective analysis may indicate the magnitude and duration of changes in retail purchases of foods in response to a particular food safety news event. It may also help in forecasting impacts of other events when those events have characteristics similar to the studied event. Assuming that consumers always make food choices under some set of assumptions about risks, then they will make different food choices only to the extent that news changes their risk perceptions. That observation suggests a two-way classification scheme for food safety news and a mechanism by which retrospective analyses might point to particular types of consumer responses to other food safety news.

First, news has to be news to consumers before they will revise their subjective risk assessments. If newly released information repeats what consumers have already incorporated in their ideas about risk, the information might not really be news. Information might have to be at odds with what consumers believe to have an impact on risk perceptions. For news to change food choices, it would have to suggest to consumers that they had misjudged the likelihood of illness or had misunderstood health outcomes.

Second, some types of risks will concern consumers more than others. News about risks that consumers dread, like cancer, may provoke relatively large responses. As consumers often overassess very small risks and underassess more substantial risks (Viscusi, 1998), disproportionately large (or small) responses could sometimes be anticipated.

The 2003 BSE announcements are especially useful as benchmarks for classification. Following the logic of the two-way classification scheme, *ex ante*, there was good reason to be uncertain about the announcements' impacts. In terms of news, the announcements informed consumers that a risk they were largely ignoring was negligible. In terms of risk type, human health risks associated with BSE are similar to other risks that have provoked large responses from consumers.

Were the BSE Announcements News?

On May 20, 2003, the Food and Drug Administration (FDA) issued a statement saying that it had learned from the Government of Canada that a cow in Alberta had tested positive for BSE (U.S. Department of Health and Human Services, U.S. Food and Drug Administration, 2003). FDA said meat from the infected cow did not enter the food supply and, although there was no evidence of transmission to other animals, the infected cow's herd mates would be destroyed as a precaution. In its statement, FDA claimed that, "To date, no case of BSE has ever been found in the U.S., despite years of intensive testing for the disease."

FDA described the import prohibitions on cattle and beef from countries that were on the list of BSE-restricted countries (which was immediately amended to include Canada). The agency also highlighted its rule prohibiting mammalian protein from being fed to ruminants; that rule was

designed to limit the spread of BSE within the United States even if it did cross the border.

In December 2003, the Centers for Disease Control and Prevention (CDC) issued a statement after the Washington State finding. CDC described the testing confirming the BSE finding, the beef recall, the epidemiologic investigation into the disease source, and the apparent species barrier protecting humans from BSE (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2003). In its statement, CDC claimed that, “The risk to human health from BSE in the United States is extremely low.”

CDC also described its activities related to BSE. These include monitoring the trends and incidence of Creutzfeldt-Jakob disease (CJD) in the United States and conducting followup reviews of clinical and neuropathology records of CJD decedents younger than 55.⁷

Following the Washington State finding, the Secretary of Agriculture was interviewed by major media outlets and issued public statements describing new programs USDA was undertaking. For example, on December 30, 2003 (U.S. Department of Agriculture), the Secretary announced an expansion of the ongoing surveillance program, new regulations that would reduce consumer exposure to BSE if BSE were in animals intended to be part of the U.S. food supply, and development of a national animal identification system. New regulations included a ban on the use of downer cattle for food uses; prohibiting tissues most likely to harbor prions—believed to cause BSE—in food; process-control regulations on advanced meat recovery that would prohibit spinal cord tissue; and a regulation prohibiting the use of air injection to stun cattle. A technical team provided daily public statements for several weeks, reporting on testing progress and on tracing the infected animal through the supply chain.

And, like the CDC and FDA statements, the Secretary reminded the public that “...our food supply and the public health remain safe” (U.S. Department of Agriculture, Dec. 30, 2003).

Each of the agencies made unequivocal statements that the U.S. food supply was safe, in effect telling consumers not to be concerned with the BSE findings: the likelihood of exposure to BSE was near zero and likely to fall. The statements also gave agencies an opportunity to highlight programs and activities targeted at managing the risk of BSE.⁸

However, for the most part, agencies were not communicating directly with consumers. News media filtered the information agencies provided, summarizing some points and focusing attention to others. News media analyses also drew on nongovernment information sources. Thus, the aggregate message consumers received has to be somewhat uncertain.

Trying to characterize consumer knowledge about the human health risks posed by BSE is a speculative effort. But, some survey information speaks to the issue.

⁷ British cases of the variant form of CJD (vCJD) occurred among people much younger than the CJD cases.

⁸ “The U.S. approach to managing the risk is focused on three primary goals:

- Prevent the agent of BSE from entering the United States and infecting U.S. cattle;
- Prevent the amplification of the agent of BSE throughout the U.S. cattle herd, were it to penetrate the primary firewall at the borders and infect U.S. cattle; and
- Prevent the exposure of Americans to the agent of BSE via food and other products that are fully or partially of bovine derivation” (PL 107-9 Federal Inter-agency Working Group, 2003).

Consumer surveys conducted by the National Cattlemen's Beef Association asked consumers if they had heard about "mad cow" disease in the last month. Results indicated that awareness of BSE increased after both the Canadian announcement and the Washington State announcement. In the latter case, awareness increased from 61 to 96 percent, suggesting that, prior to the announcement, a substantial minority of consumers were not aware of risks related to BSE.

A survey of consumers in the United States, Germany, and the Netherlands conducted by Pennings et al. (2002) in the last week of January and the first week of February 2001 showed that U.S. consumers were the least informed about variant Creutzfeldt-Jakob disease outcomes. Among U.S. consumers, 24.1 percent reported that the illness is fatal and untreatable. More than 58 percent of the Europeans reported similarly.

From a news perspective, prior to the BSE announcements, there would be good reason to suspect that announcements might not have large impacts on food choices. Many consumers were unaware of BSE, and many others considered the exposure risk to be negligible. Government agencies said the risk was negligible. As long as media coverage was consistent with the agencies' messages, news would reinforce pre-existing beliefs. In other words, news would not be "news."

Are Human Health Risks From BSE Like Other Food Safety Risks?

Variant Creutzfeldt-Jakob disease (vCJD) in humans is strongly linked with exposure to BSE through food (World Health Organization, 2002). BSE and vCJD fall into the class of diseases called transmissible spongiform encephalopathy (TSE).⁹ All TSE diseases display a prolonged incubation period of months or years and are progressive, debilitating, neurological illnesses. They are always fatal (Detwiler, 1992).

Two notions about consumers' risk perceptions support anticipating disproportionately large responses to BSE announcements. First, health outcomes from vCJD raise issues of dread and lack of control. The degenerative illness is untreatable and, other than abandoning beef products, there are few defensive actions consumers can take on their own. Unlike bacterial contamination that may be controlled with cooking methods and ordinary hygiene, there are no such safeguards against vCJD. In other countries, vCJD has killed both the young and the elderly, so being healthy might not offer much defense.

Second, while evidence supports the assumption that the likelihood of dietary exposure to BSE is very small, the risk cannot be proven to be zero. As consumers often overestimate small risks, disproportionate responses to news about BSE could have been anticipated.

The Harvard Center for Risk Analysis and Tuskegee University collectively reviewed risks posed by BSE and the effectiveness of government programs at controlling risks (Cohen et al., 2001). The study concluded that several key actions have been particularly effective in achieving these goals:

⁹ The TSE family of diseases includes (among others) scrapie in sheep, chronic wasting disease in deer and elk, transmissible mink encephalopathy, and classical and variant Creutzfeldt-Jakob disease in humans (Detwiler, 1992).

- The Animal and Plant Health Inspection Service's ban on the import of live ruminants and ruminant meat and bone meal from the United Kingdom (since 1989) and all of Europe (since 1997);
- The FDA's feed ban instituted in 1997 to prevent recycling of potentially infectious cattle tissues to ruminants; and
- Measures instituted in meatpacking plants by the industry and the Food Safety and Inspection Service to reduce the opportunity for infectious tissues (brain and spinal cord) to contaminate human food.

Monitoring data support the conclusion that the risk from BSE is very small. The BSE enhanced surveillance program has tested 775,271 samples from its beginning in 2004 through August 6, 2006 (U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2006b). In that time, two additional infected indigenous animals were identified.

While the historical record makes it easy to argue that the BSE risks to humans in the United States are negligible, USDA will never be able to say that there are no infected animals awaiting slaughter. There are physical limits to what any program can do to guarantee food safety. The enhanced surveillance program allows for the possibility that the agency could make probability statements about the number of infected animals awaiting slaughter.¹⁰ But even the most sophisticated sampling scheme cannot prove that the number is zero.

Certainty that the food supply is BSE-free would require testing all animals with a test that never yields a false negative. Further, for a perfect filter, test results that did confirm BSE would have to lead to 100 percent recall of products derived from infected animals.

From the agencies' perspectives, risks were so small they were justified in reassuring consumers. From their reasoning, consumers who refrain from eating beef out of fear of contracting vCJD have meals that are less satisfying and are no less risky. *Ex ante*, however, it would have been impossible to know if consumers would agree that a risk that cannot be proven zero is effectively zero.

Predictions Need a Benchmark

The two characteristics of the 2003 BSE announcements point in opposite directions. The BSE news involved a negligible risk that consumers were already ignoring. But, the type of risk likely raises issues of dread and lack of control. The first factor suggested no change in food choices, while the second suggested that consumers would shun beef products.

Gauging the consumer response to the 2003 BSE announcements resolves which characteristic of the news was most important to consumers. The measured change in food choices also serves as a benchmark for our classification of food safety news. In this case, the first factor dominated; consumers' risk perceptions before the BSE news were probably very close to their risk perceptions after the news. Consumer response to food safety news with similar characteristics might yield similar changes in food

¹⁰ APHIS issued a draft statement (for review). Findings "support a conclusion that the prevalence of BSE in the United States is less than 1 infected animal per million adults" (U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2006a).

choices. Of course, consumers may respond to another BSE announcement in an entirely different manner. That is, another BSE announcement might be made in an environment in which consumers' interpretation of both the likelihood of exposure and the health outcomes from becoming ill could differ from the 2003 responses.