

## Impact of Food Safety Events on Canadian Beef Demand

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### Project Title:

Does Canadian beef demand respond to food safety recalls and food quality improvements?

### Researchers:

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### Background

Beef demand is an indication of consumers' willingness to purchase, and refers to how much beef will be consumed at a given price. Higher beef consumption at higher prices indicates stronger demand; smaller consumption at a lower price indicates weaker demand. However, stronger demand can also be the result of lower consumption at higher prices or higher consumption at lower prices if the positive change is larger than the negative change. This is measured by the Canadian Retail Beef Demand Index.

Beef demand is influenced by consumer income, prices of competing proteins (e.g. poultry, pork and lentils) and evolving consumer preferences for convenience, health benefits and taste. All sources of information indicate price is among the most important determinants of consumption, but previous studies have also shown that *food safety and product quality* are consistently the top two demand shifters for both ground beef and steak. Health ranks third<sup>1</sup>.

A number of food safety events and recalls have raised consumer awareness about the risks associated with food borne pathogens. While consumer confidence in the food safety system as a whole has not waned in the long run, food safety events can have important short and medium-term impacts.

Studies have shown that there have been more high-profile food safety related recalls for a variety of food products. While food safety based recalls have an adverse effect on company performance or market outcomes, the effects of recalls are not permanent and the size and duration of the economic impact vary considerably. Company and market-level impacts of such recalls and scares originate with the behavior of consumers during and after a food safety event. Ultimately, reductions in consumer demand for beef from an *E. coli* event have impacts downstream as packers adjust demand for fed cattle.

Consumer awareness of food recalls has increased following a number of high-profile events. These include large scale *E. coli* recalls in the U.S. and Canada (e.g. Jack in the Box 1993, Topp's Meat 2007, XL Food's 2012), and the 2008 *Listeria* recall in Canada. Information flows are an important variable of demand following a food recall, and social media in particular delivers information to consumers very quickly. While it is not possible to determine the impact of communications related to one food safety incident, the net effect is an altered relationship between beef demand and food safety recalls.

### Objectives:

To determine:

1. whether food safety related recalls of beef and non-meat food products (arising from possible *E. coli* contamination) in Canada affect beef demand in Canada
2. whether food safety related recalls of beef and non-meat food products (arising from possible *E. coli* contamination) in the U.S. affect beef demand in Canada

### What They Learned:

#### Trends in Food Safety Recalls

From 1998 to 2010 there were more beef recalls than pork or chicken in Canada and the U.S. There was a noticeable increase in recalls of all meats in Canada with heightened scrutiny of meat products following the *Listeria* recall of ready-to-eat meats in 2008. Heightened awareness and sensitivity to these events lead to changes in the Canadian food inspection system. Since then, there have been sharply more *E. coli* related recalls. In addition, there has been a rising trend in non-meat, *E. coli*-based food recalls in the U.S. since 2008. This study did not include the Canadian *E. coli*-based beef recall in September/October 2012 due to insufficient data available at the time of writing to determine the full impact.

#### Food Safety Recalls in Canada

A one percent increase in beef recalls would lead to a 0.037 percent decrease in beef demand.

There has been a structural shift in how consumers responded to food safety recalls in Canada. After mid-2008, the relationship became negative and suggested that a one percent increase in beef recalls would lead to a 0.037 percent decrease in beef demand. This is in line with U.S. studies that show a one percent increase in U.S. beef recalls lead to a 0.023 percent decrease in U.S. beef demand (Tonsor *et. al.* 2010).

Simulations from 1998:Q3 to 2010:Q3 showed that on average one additional beef recall in Canada would lead to a 2,260 tonne reduction in beef consumption per quarter (with a range of 710-5,740 tonnes), valued around \$C26.5 million at the retail level (with a range of \$8-67 million). This is equivalent to a one percent drop in consumer beef expenditures.

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Pork recalls reduced demand for pork, but had no impact on beef or chicken. However, chicken recalls had significant impacts in beef (negative) and pork (positive) demand, but not on chicken demand. There was no relationship between non-meat, *E. coli* based recalls in Canada and beef demand.

#### Food Safety Recalls in the U.S.

The U.S. is a major export destination for Canadian beef so demand shocks from a food safety event in the U.S. can impact demand for beef in general and consequently may impact demand for Canadian beef. U.S. recalls of beef did not have a measurable effect on Canadian beef demand. However, a one percent increase in U.S. *E. coli* based recalls of non-meat foods (no connection to Canadian product) led to a 0.055 percent reduction in Canadian beef demand. Many non-meat food recalls due to *E. coli* lead to negative media about the potential of beef production as a source of contamination (e.g. spinach contaminated with beef manure).

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#### U.S. Research

Schroeder *et al.* (April 2013) noted that food safety is an important demand shifter. If the industry can improve beef safety via investment in new technology or by enhancing safety interventions in beef production, processing, handling or preparation or if the industry can improve consumer perception of beef safety, then making a strategic investment in food safety could have a significant positive impact on beef demand. If the industry has a limited ability to influence or improve these areas, then investments would have little impact on consumer demand for beef.<sup>2</sup>

This study goes on to say "product quality and food safety are where the industry can most feasibly improve upon to increase [U.S.] beef demand in the next ten years." Approximately 80% of experts surveyed were concerned about *E. coli* (79% for ground beef, 68% for steak), *Salmonella* (72% for ground beef, 56% for steak), and *Listeria* (62% for ground beef, 47% for steak).

#### What It Means:

The benefits of avoiding a single recall event is valued around \$C26.5 million, making public and private investments into food safety research a worthwhile endeavor.

Investments in food safety research that reduce the incidence of recalls can support beef demand. Recalls have a cumulative effect for consumers with a notable structural shift in consumer response to food safety incidence after the *Listeria* recall in 2008. Greater consumer awareness on these issues leave a lasting impression. The benefits of avoiding a single recall event is valued around \$C26.5 million, making public and private investments into food safety research a worthwhile endeavor.

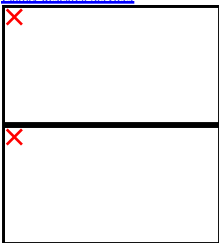
<sup>1</sup> Schroeder, Tonsor and Mintert. April 2013. Beef Demand: Recent Determinants and Future Drivers. Prepared for the Cattlemen's Beef Board

<sup>2</sup> Schroeder, Tonsor and Mintert. April 2013. Beef Demand: Recent Determinants and Future Drivers. Prepared for the Cattlemen's Beef Board

Find the full report of the study "Does Canadian beef demand respond to food safety recalls and food quality improvements?" by Dr. John Cranfield at: <http://www.beefresearch.ca/research/topic.cfm?economic-analysis-25>

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The Beef Cattle Research Council, a division of the Canadian Cattlemen's Association, sponsors research and technology development and adoption in support of the Canadian beef industry's vision to be recognized as a preferred supplier of healthy, high quality beef, cattle and genetics.

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