

Canadian Consumer Concerns About Food Safety Issues and Confidence in Food Products: Comparison of Beef and Pork

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In examining consumers' willingness to pay (WTP) for food attributes, one approach is to use economic experiments, sometimes associated with consumers sensory testing. In this particular research project different types of pork chops are examined to identify consumer WTP for pork chop credence attributes such as traditionally raised, Canadian Pork labelled or identified as coming from a farm with on farm food safety accreditation (CQA). However, the results of the research are only useful for the national industry if the participants' values can be extrapolated to the Canadian population. The participants in the research completed a survey that was similar in many respects to a national on-line survey completed in Canada two months earlier. Comparing the responses from the pork study to the national on line survey can help identify how different the respondents are. The pork study participants self identified to be part of a consumers panel for the Alberta Food Product Testing Centre in Edmonton. Respondents in both groups have less confidence in pork relative to other food products. Respondents in the pork survey were mostly concerned about antibiotics in meat while national survey respondents were mostly concerned about animals genetically modified for meat, egg or dairy production. In terms of human health issues, pork survey respondents were mostly concerned about *E.coli* while national survey respondents were more concerned about unhealthy eating. Respondents in the pork survey had lower risk perception scores for pork and were more willing to accept the risks of eating pork than the national panel assessed either beef or chicken.

Introduction

Most countries emphasize food safety programs through animal traceability systems and feed management as well as HACCP regulations on and off farms. For example, in the Canadian pork industry, rations are tailor made to meet both local and international consumer demands (amount of corn versus barley). At the same time there have been numerous food safety incidents in Canada and other developed countries, in some cases affecting sales of pork, poultry and beef. The food safety incidents can be classified into real (e.g. Listeriosis and *E. coli* food poisoning) and perceived (e.g. *Bovine spongiform encephalopathy* (BSE), H1N1 and Avian flu). BSE cases negatively affected the beef sectors in many countries including Canada. There have been import bans on beef from countries that had BSE cases and reductions in consumption of beef by some local consumers. H1N1 also resulted in trade barriers in the pork industry.

Food safety incidents and livestock production characteristics such as the use of antibiotics and genetically modified animal feeds may have led to increased consumer concerns. According to de Jonge et al (2008) '*a thorough understanding of consumer confidence in the safety of food and the factors by which this is influenced is necessary for the development of adequate and effective risk management and communication regarding food safety*'.

Previous studies have analysed consumers' concerns about food safety issues (Nayga 1996; Hwang and Teisl 2005; Govindasamy and Italia 1998; Grobe, Douthitt and Zepeda 1999, among others) and consumers' confidence in the safety of food products (de Jonge et al 2008; Pennings, Wansik and Meulenber 2002 among others). Other studies have analysed the impact of risk

perceptions, attitudes and their interaction on consumers' response to a crisis (e.g. Schroeder et al 2007; Pennings, Wansik and Meulenberg 2002; Setbon et al 2005; Lusk and Coble 2005).

There have been no previous studies on consumers' risk and perceptions for pork in Canada. Through a self selected panel of Canadians in Edmonton, this study provides an assessment of Canadian consumers' confidence in the safety of pork in relation to other food products, consumers' concerns about animal husbandry practices and their perceptions about the risks to human health of different food safety issues. The study is also aimed at analysing consumers' perceptions of organic and traditional pork as compared to conventional pork. To ensure that the analysis is generalizable to the Canadian population, results on confidence in food products, concerns about livestock production issues and food safety issues and risk perceptions and attitudes are compared with findings from an earlier national survey (Muringai and Goddard 2009).

Comparing the pork study responses to those of a national sample recruited some months earlier in 2009 provides useful information on whether the consumer food panel is representative of the provincial or national population in terms of their attitudes. In this instance people were recruited who knew they were going to be eating pork chops as part of the consumer sensory part of the experiment. There is need to assess whether this biases their responses in favour of pork or food in general.

Conceptual framework

Consumers' concerns about animal husbandry practices, own health and confidence in food products are assumed to be influenced by perceived food safety issues (figure 1). These concerns might be influenced by risk perceptions and or attitudes. Risk attitudes deals with how the individual interprets the content of risk and how much s(he) likes, dislikes the risk while risk perceptions deals with the individual's interpretation of the chance to be exposed to the content of the risk (Pennings et al 2002). Risk attitudes can be likened to the degree of risk aversion (Schroeder et al 2007).

Confidence in food products such as pork and beef is assumed to be influenced by demographic factors such as age, being female, having kids, household size, being single, level of education, where respondents buy the food product (supermarket, butcher or small shop) and trust. General trust levels were measured following the approach by Glaeser et al 2000. In this case respondents were asked the following question: 'Generally speaking would you say that most people can be trusted?' The responses were anchored on 3 points of a Likert scale as follows: 1) people can be trusted 2) can't be too careful in dealing with people 3) don't know. These 3 responses were collapsed into one variable a dummy variable (trust) such that the option people can be trusted becomes 'yes' while the other 2 options becomes 'no'.

Data Collection

Data for the pork study was collected in 2009 (November to December) at Alberta Agriculture Food Product Testing Centre in Edmonton, Canada. This research was targeted at respondents that eat pork since they were also required to participate in sensory tests about traditional and

conventionally raised pork. For the national survey, respondents were recruited through general consumer panels held by Leger Marketing in Canada.

Both surveys collected data on household demographic characteristics, their trust in different organizations (government, farmers, and other organizations in the food supply industry), concerns about livestock production issues, concerns about the risks of food safety issues to human health, perceptions about safety and trustworthiness of the different meats. The national survey contained information on risk perceptions and attitudes towards beef and poultry while in the pork survey there was only pork. A sample of 197 respondents participated from a pool of 1900 voluntarily registered (for sensory testing) participants in the pork survey. Due to missing responses, the sample was reduced to 181 respondents. Respondents were at least 18 years old and there was gender balance across education levels and income brackets (table 1). The sample was representative of the Edmonton census population in terms of gender. The sample was not very representative in terms of other demographic characteristics such as age, number of children, marital status and household sizes. The national survey was a national internet based survey of 1716 respondents conducted in the summer of 2009. Due to missing data, only 1528 respondents are included in the analysis. For the national survey, the sample was representative of the Canadian population in terms of gender, age of the respondent. The samples were better educated and older than the Canadian Census data in both surveys.

Confidence in the different food products

In order to assess consumers' relative ranking of their confidence in pork, respondents were asked 'Please indicate how much confidence you, generally, have in the safety of the following product groups. Give your answer on a scale from 1 ('no confidence at all') to 5 ('complete confidence'). Food products included in the survey are shown in Table 2. Following the method

of Roselius 1979 net favourable percentages (NFP) were calculated in order to make comparisons about strengths of confidence across the two surveys. The net favourable percentage was calculated as follows: $((\text{number of 'favourable' (respondents that selected 5 or 4) responses} - \text{number of 'unfavourable responses' (number of respondents that answered 1 or 2)}) / \text{sample size}) * 100$. This measure deemphasizes the respondents who respond in the middle of the Likert scale. The scale of NFP is from -100 to 100. It allows for the comparison of those respondents who feel strongly to those who don't for a given food product. A large positive percentage suggests that many respondents have high confidence in the food product, percentages around zero suggests that there is a balance, negative numbers suggests that respondents have low confidence in the food product.

In the pork survey, pork ranked 7th out of 8 product groups (table 2) in terms of consumer confidence (ranking from the product which respondents have the highest confidence in to the least). However many of the products compared were not traditional food products. Comparisons to natural meat and organic beef suggested respondents were more confident in those products. In the beef survey, pork ranked 15th out of 19 food products if we consider Alberta separately and the total Canadian sample. Since all the respondents included in the pork survey consume pork they still rank it much lower as compared to other food products as in the beef survey. The reason might be due to the fact that both surveys were carried out after the discovery of the H1N1 flu virus in May 2009. Net favorable percentages are larger in the pork sample as compared to the Alberta and the sample for the whole population. This suggests higher levels of confidence overall in the pork sample.

Concerns about animal husbandry practices and human health food safety issues

Respondents were asked 'To what extent are you concerned about the following issues?' Responses were anchored on a 6 point Likert scale as follows: 1 (not at all concerned), 2 (minor concerns), 3 (some concerns), 4 (major concerns) and 5 (very concerned). Animal husbandry practices included in the analysis are the feed given to the livestock, conditions in which animals are raised, use of genetically modified animal feeds, animal diseases (e.g. avian flu), the origin of the products/animals, presence of antibiotics in meat animals genetically modified for meat, egg or dairy production. Net concerned percentages (NCP's) are calculated as follows: $((\text{number of 'concerned' (major concerns and very concerned) responses} - \text{number of 'unconcerned' (minor concerns and not at all concerned) responses}) / \text{sample size}) * 100$.

There are differences in results for the different samples in relation to concerns about animal husbandry practices (figure 2). Results for the Alberta sample are different from those from the sample of the whole country especially in terms of conditions in which animals are raised, genetically modified animal feeds, BSE and vCJD and origin of products. The NFPs are the similar for the pork survey and the Canada wide sample for genetically modified animal feeds, animal diseases, origin of products, antibiotics in meat and animals genetically modified for meat/poultry or dairy production. For the pork survey, respondents had highest concern for antibiotics in meat (NCP=33.70) followed by animals genetically modified for meat, e or dairy production (NCP=27.62) and animal diseases such as Avian Flu (NCP=27.07). Respondents were least concerned about the feed given to livestock (NCP=7.73) and origin of products. Results from the national survey (for both the Alberta sample and the sample of the whole country) show that respondents were highly concerned about animals genetically modified for

meat/poultry or dairy production, antibiotics in meat and animal diseases. These respondents were least concerned about the feed given to livestock and BSE.

Respondents were also asked 'Would you say that the following food issues are an important risk to human health in our society, are not a very important risk or no risk at all?' The options were: 1) important 2) not very 3) no risk at all 4) don't know. Food safety issues examined include salmonella food poisoning, BSE, genetically modified foods, products from livestock housed in large numbers, pesticides, listeria food poisoning, eating pork when the H1N1 flu virus exists in the country, additives, unhealthy eating, *E. coli* food poisoning, unreasonable food prices and food allergies. In order to assess respondents' perceptions about the risk of the different food safety issues on human health, net concerned percentages were also calculated as follows:
$$\frac{((\text{number of 'important' risk responses} - \text{number of 'no risk at all responses'}))}{\text{sample size}} * 100.$$

Unlike the results for the NCPs for the animal husbandry practices, results on NCPs for the human health food safety issues are similar between the three samples (figure 3). Results from the pork survey show that, as compared to other food safety issues, respondents felt that *E. coli* poses the most important risk to human health (NCP=83.98) followed by salmonella food poisoning (82.87), unhealthy eating (NCP=81.22) and listeriosis (NCP=79.01). Pork respondents were least concerned about eating pork when the H1N1 (swine flu) is in the country (NCP=42.54). In the national survey, respondents also felt that *E. coli* pose the most important risk to human health (74.21) followed by unhealthy eating (72.77) and listeriosis (71.86). Respondents felt that genetically modified foods pose the least important risk to human health. For the Alberta part of the national sample, respondents were more concerned about unhealthy eating, pesticides and salmonella food poisoning and were also least concerned about genetically modified foods.

Risk perceptions and attitudes

Using a similar approach to the one used by Pennings, Wansik and Meulenberg 2002 and Schroeder et al 2007, the following questions were asked in order to assess respondents' risk perceptions: (i) When eating ...I am exposed to (1. very little risk.....5.high risk) (ii) I think eating ... is risky (1. strongly disagree.....5 strongly agree) (iii) For me eating ... is (1. Not risky.....5. risky). For risk attitudes, the following questions were asked: (i) I accept the risks of eating... (1. strongly disagree.....5. strongly agree). (ii) For me eating ... is worth the risk (1. strongly disagree.... 5.strongly agree). (iii) I am ... the risk of eating ... (1. not willing to accept.....5. willing to accept). Risk perception and risk attitude indices were calculated for the pork survey and were compared with those previously calculated for the Alberta and the national sample. The indices were calculated by averaging the means.

Results (table 3) show that respondents included in the pork survey had very different risk perceptions as compared to those in the Alberta and national samples. The risk perception index (perceptions of the riskiness) for pork is 1.73 while it is 2.15 for beef and 2.26 for chicken in the national survey. Risk perceptions for beef and poultry for respondents in the Alberta sample are similar to the ones obtained from the national survey.

The risk attitude index for pork (willingness to accept the risks of eating) is 3.95 while it is 3.71 for beef and 3.66 for chicken in the national survey (table 4). As compared to beef and chicken, even allowing for the H1N1 news explosion over the summer and fall in Canada, these Canadians remain convinced that pork is not a risky meat to eat and are more willing to accept the risks of eating pork. This is not surprising because these respondents were willing to

participate in the pork sensory tastes which imply that they are willing to accept the risks of eating pork. However given the higher risk perceptions and lower risk attitudes for beef and chicken in the national sample, it is possible that these pork respondents are not representative of the broader population in terms of risk perceptions and attitudes towards pork.

Comparisons of conventional pork versus organic pork and traditional pork

Pork study respondents were asked to compare organic pork and traditionally raised pork to conventional pork in terms of taste, freshness, healthiness, presence of hormones, presence of antibiotics and safeness to eat. The questions were phrased as follows: In comparison to conventional pork, I believe organic pork is... and In comparison to conventional pork, I believe that traditional pork is.... Responses were anchored on a 5 point scale as follows: 1 (strongly agree), 2 (Agree), 3 (neutral/ no difference), 4 (Disagree), 5 (strongly disagree) and 6 (No opinion). These options were re-ranked such that the no opinion becomes 1 and strongly agree becomes 6.

Formula used to calculate t statistics: $(X1-X2)/S12$ where $S12 = \sqrt{\frac{SD_1^2}{n_1} + \frac{SD_2^2}{n_2}}$, SD=standard

deviation, n is sample size, X1 and X2 are means. This is compared with the critical t value when n is equal to infinity (1.28) at 10% level of significance.

Results show that respondents regard organic pork and traditional pork as being better than conventional pork in terms of taste freshness, healthiness and no presence of hormones and antibiotics (table 5). Between organic and traditionally raised pork, the only significantly different attributes are taste, presence of hormones and antibiotics and safeness to eat. Means for organic pork versus conventional pork and traditional versus conventional pork are

significantly different in terms of taste, presence of hormones and antibiotics. Compared to traditional pork, respondents strongly agreed that organic pork does not contain hormones and antibiotics which is not surprising and possibly leads to their conclusion that it is healthier to eat.

Factors influencing confidence in the different food products

In order to assess factors influencing consumers' confidence in the safety of food products, ordered probit models were estimated using data from the pork survey. Independent variables included in the model are age, being female, having kids, household size, being single, level of education, where respondents buy the food product (supermarket, butcher or small shop) and trust. The dependent variable is the probability that a respondent will choose one of the options available to them (1 ('no confidence at all') ... 5 ('complete confidence')).

Male respondents have more confidence in natural beef, white eggs and brown eggs (table 6). Older respondents are less confident in natural beef, and pork. Respondents who usually buy meat from a butcher are less confident about natural beef, white eggs, brown eggs, chicken and pork. Respondents who have more trust have more confidence in natural beef, white eggs, brown eggs, chicken and pork.

Conclusion

This study was aimed at assessing of Canadian consumers' confidence in the safety of pork in relation to other food products, consumers' concerns about animal husbandry practices and their perceptions about the risk to human health of different food safety issues. Results show that compared to others food products, respondents were less confident in pork. Respondents ranked traditional pork highly in terms of taste, safeness to eat and healthiness. However, organic pork

was ranked highly in terms of no presence of hormones and antibiotics. Compared to female respondents, male respondents had more confidence in natural beef, white eggs and brown eggs. Older respondents were less confident in natural beef, chicken and pork. Respondents who usually buy meat from a butcher are less confident about natural beef, white eggs, brown eggs, chicken and pork. Respondents who have more trust have more confidence in natural beef, white eggs, brown eggs, chicken and pork. Compared to beef and chicken, even allowing for the H1N1 news explosion over the summer and fall in Canada, respondents from the pork survey remain convinced that eating pork is not a high risk. These same consumers were willing to accept the risks of eating pork. Responses to various questions on rankings of animal production concerns and human health risks in the pork survey are different to results from a national survey conducted in summer/fall 2009. There are differences in terms of concerns about animal husbandry practices. Respondents in the pork survey were mostly concerned about antibiotics in meat while in the Alberta part of the national sample the whole national sample respondents were mostly concerned about animals genetically modified for meat, egg or dairy production. In terms of human health issues, pork survey respondents were mostly concerned about *E.coli* while for the Alberta part of the national survey respondents were concerned about unhealthy eating. Risk perceptions and attitudes for different meats also are different between the samples. However, there is need to further analyse the factors influencing confidence in different food products using multivariate ordered probit analysis in order to take care of the cross equation correlations. There is also need to replicate the pork survey with a national population to find out more about the Canadian views of pork.

References

- de Jonge, J., H. van Trijp, E. Goddard, and L. Frewer. 2008. "Consumer Confidence in the Safety of Food in Canada and the Netherlands: The Validation of a Generic Framework". *Food Quality and Preference* 19 (5): 439-51.
- Glaeser, E. L., D. I. Laibson, J. A. Scheinkman, and C. L. Soutte. 2000. "Measuring Trust". *The Quarterly Journal of Economics* 65: 811-46
- Govindasamy, R and J. Italia. 1998. "Predicting Consumer Risk Perceptions Towards Pesticide Residue: A Logistic Analysis". *Applied Economic Letters* 5 (12): 793-6.
- Grobe, D., R. Douthitt, and L. Zepeda. 1999. "A Model of Consumers' Risk Perceptions Toward Recombinant Bovine Growth Hormone (rbGH): The Impact of Risk Characteristics". *Risk Analysis* 19 (4): 661-73.
- Hwang, Y and M. F. Teisl. 2005. "An Empirical Analysis of United States Consumers' Concerns About Eight Food production and Processing Technologies". *Agbioforum* 8 (1): 40-9.
- Lusk, J. Land K. H. Coble. 2005. "Risk Perceptions, Risk Preference, and Acceptance of Risky Food". *American Journal of Agricultural Economics* 87 (2): 384-95.
- Muringai, V and E. Goddard. 2009. "BSE, Risk Perceptions and Beef Consumption: Comparison of Japan and Canada", paper submitted to the Journal of Toxicology and Environmental Health.

Nayga, R. M. Jr. 1996. "Socio Demographic Influences on Consumer Concern for Food Safety: The Case of Irradiation, Antibiotics, Hormones, and Pesticides". *Review of Agricultural Economics* 18 (3): 467-75.

Pennings, M. E. J., B. Wansik, and M. T. G. Meulenberg. 2002. "A Note on Modelling Consumer Reactions to a Crisis: The Case of the Mad Cow Disease". *Intern. J. of Research in Marketing* 19 (1): 91-100.

Schroeder, T. C., G.T. Tonsor, J.M. E. Pennings and J. Mintert. 2007. "Consumer Food Safety Risk Perceptions and Attitudes: Impact of Beef Consumption Across Countries". *The B.E. Journal of Economic Analysis and Policy* 7 (1): 1-27.

Setbon, M., J. Raude, C. Fischler and A. Flahault. 2005. "Risk Perception of the "Mad cow disease" in France: Determinants and Consequences". *Risk Analysis* 25, (4):813-26.

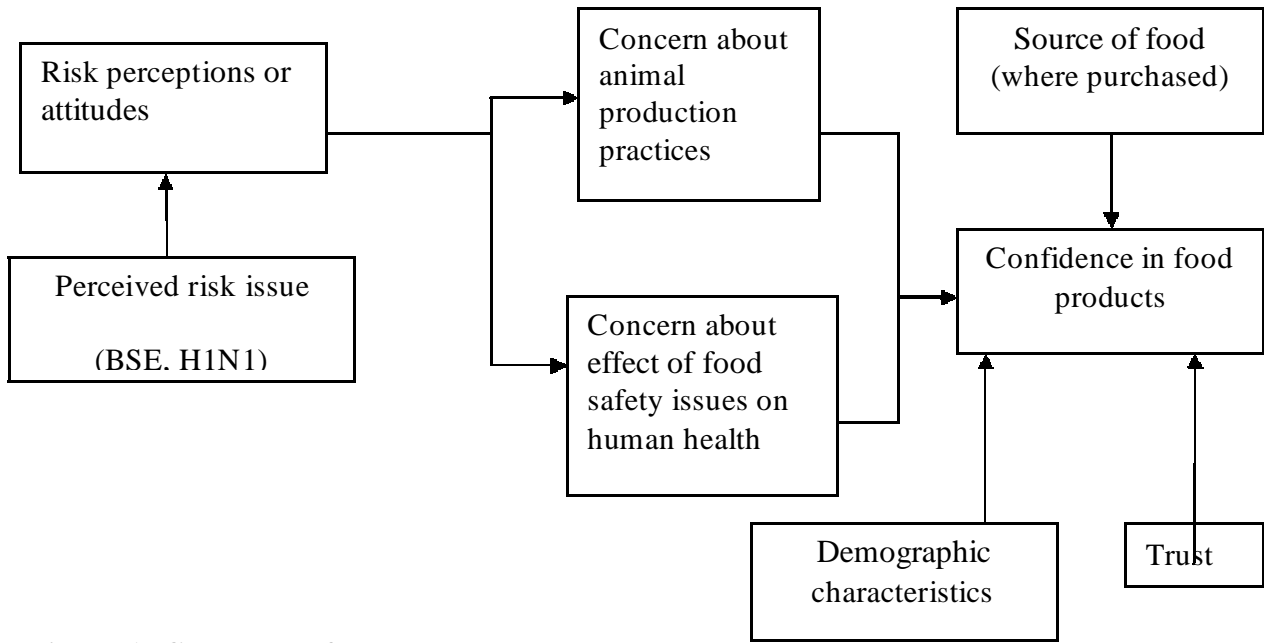


Figure 1: Conceptual framework

Table 1: Demographic Characteristics of Respondents

		Edmonton Pork Survey (n=181)	National Survey Alberta only (n=181)	National Survey (n=1528)	Edmonton ¹ Census n=1,034,945	Canada Population (n=31,612,897)
Gender	Male	49.2	46.1	52.4	49.7	49.5
	Female	50.8	53.9	47.6	50.3	50.5
Age	15-19	1.1	1.1	0.9	7.16	6.8
	20-24	11.0	14.9	8.3	8.23	6.9
	25-29	14.4	12.7	7.5	7.57	6.9
	30-39	18.2	18.8	16.4	14.03	13.6
	40-49	22.7	20.4	19.6	16.4	16.0
	50-64	29.3	21.5	34.4	17.4	19.5
	over 64	3.3	10.5	13.0	11.09	14.3
Household size	1	13.3	21.5	18.9	26.43	2.6
	2	41.4	37.6	41.6	33.23	33.6
	>3	45.3	40.9	39.5	40.54	73.3

¹ Source: <http://www12.statcan.gc.ca> , <http://www.statcan.gc.ca/stcsr/query.html>

	None	72.4	72.4	72.3	37.58	38.5
Number of children (< 18yrs)	1	10.5	15.5	13.7	27.15	27.3
	2	13.8	8.3	9.6	24.29	24.0
	>3	3.3	3.9	4.2	10.93	10.3
Marital status	Married	64.6	54.7	64.1	48.9	48.4
	Single	35.4	45.3	39.9	51.1	51.6
Education level	Elementary school	0.0	0.0	0.4	21.74	23.76
	Secondary school	14.9	22.1	21.8	26.19	25.5
	Technical/business /community college		35.9	34.8	53.07	28.0
	University	69.1 ²	34.8	32.4		16.0
	Post graduate studies	16.0	7.2	32.4		6.5

² Include respondents in technical/ business/community college and university

Table 2: Net Favourable Percentages for Different Food Products

	Pork Survey Edmonton (n=181)	National Survey (Alberta) (n=181)	National Survey (Canada) (n=1528)
Natural meat	72.93		-
Organic beef	73.48		-
White eggs	82.32	44.19	49.08
Brown eggs	82.32		
Free range eggs	73.48		
Beef	-	27.62	21.91
Pork	70.72	11.60	12.97
Chicken or poultry	67.96	15.64	13.12
Fish	-	6.74	7.76
Meat replacers or substitutes	-	-21.91	-29.15
Canned products	-	25.41	20.50
Products sold in jars	-	26.52	25
Fresh vegetables and fruits	80.11	43.33	49.11
Pecut and washed fresh vegetables	-	12.15	14.10
Milk products	-	48.60	48.32
Cheese	-	58.01	51.80
Eggs	-	44.19	49.08
Bread products	-	57.22	46.67

Frozen products	-	44.13	38.41
Ready-to-eat meals	-	4.96	-5.16
Vitamin supplements	-	32.17	18.04
Baby food	-	31.84	32.17
Confectionery products	-	28.73	25.91
Processed meat	-	-25.41	-33.18

Note: - implies that the food product was not available in the survey

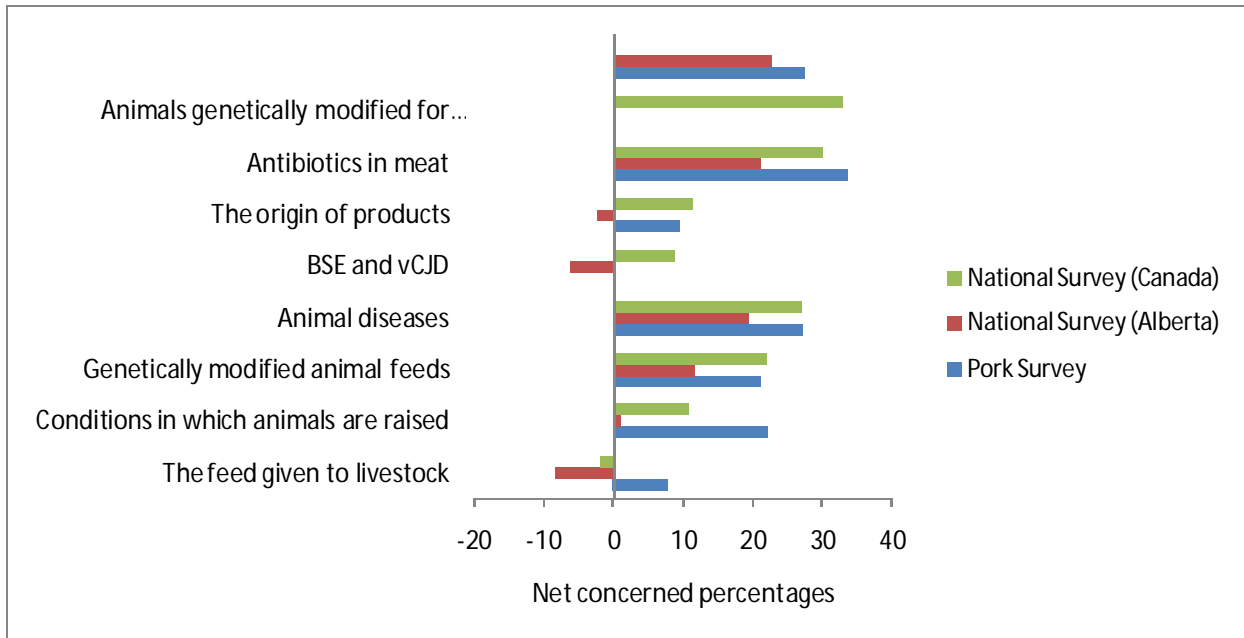


Figure 2: To what extent are you concerned about the following Issues? (net concerned percentages)

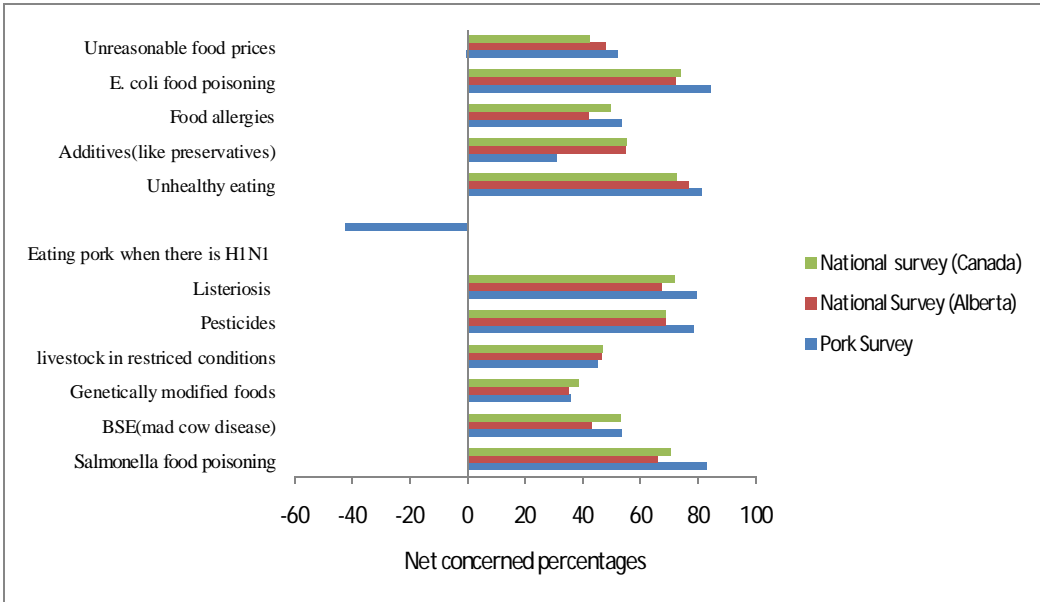


Figure 3: ‘Would you say that the following food issues are an important risk to human health in our society, are not a very important risk or no risk at all?’ (net concerned percentages)

Table 3: Risk Perceptions for Pork, Beef and Chicken

	Pork Survey (Edmonton) (n=181)	National Survey (Alberta) (n=181)	National Survey (Canada) (n=1528)		
	Pork	Beef	Chicken	Beef	Chicken
When eating, I am exposed to <i>(1. very little risk..5.a great deal of risk)</i>	1.85	2.26	2.38	2.25	2.36
I think eating.....is risky <i>(1.strongly disagree...5. strongly agree)</i>	1.71	2.04	2.31	2.10	2.24
For me eating is..... <i>(1.not risky.... 5.risky)</i>	1.64	2.04	2.24	2.09	2.17
Risk Perception index (RPI)	1.73	2.11	2.31	2.15	2.26

Table 4: Risk Attitudes for Pork, Beef and Chicken

	Pork Survey (Edmonton) (n=181)	National Survey (Alberta) (n=181)		National Survey (Canada) (n=1528)	
	Pork	Beef	Chicken	Beef	Chicken
I accept the risks of eating beef <i>(1.strongly disagree...5.strongly agree)</i>	4.11	3.93	3.83	3.72	3.69
For me eating beef is worth the risk <i>(1.strongly disagree...5.strongly agree)</i>	3.61	3.87	3.69	3.65	3.62
I am....the risk of eating beef <i>(1. not willing to accept..5.willing to accept)</i>	4.12	3.88	3.89	3.76	3.71
Risk Attitude index (RAI)	3.95	3.89	3.80	3.71	3.66

Table 5: Conventional Pork versus Organic Pork and Traditional Pork (Pork survey)

	Organic pork vs conventional pork	Traditional pork vs conventional pork	Differences between the means
	Mean	Mean	T statistics
Sample size	181	181	
Taste better	3.36 (1.53)	3.71 (1.54)	-2.11*
Fresher	3.59 (1.54)	3.73 (1.38)	-0.91
Healthier	4.13 (1.67)	3.94 (1.38)	1.18
Does not contain hormones	4.36 (1.67)	3.76 (1.51)	3.59*
Does not contain antibiotics	4.39 (1.68)	3.75 (1.49)	3.89*
Is safer to eat	4.00 (1.59)	4.02 (1.28)	-0.13

Note: *significant at 10% level of significance

Table 6: Factors Influencing Confidence in the Different Food Products (Pork survey)

	Natural beef	White eggs	Brown eggs	Free range eggs	Chicken	Pork	Organic beef
Constant	6.66*** (1.15)	4.33*** (1.13)	3.79*** (1.30)	3.41*** (1.10)	3.54*** (0.93)	5.02*** (1.06)	4.24*** (1.06)
Female	-0.38** (0.18)	-0.48*** (0.17)	-0.57*** (0.18)	-0.21 (0.17)	-0.13 (0.18)	-0.25 (0.18)	-0.20 (0.17)
Age	-0.02*** (0.0080)	-9.03*10 ⁻³ 7.58*10 ⁻³	0.004 (0.008)	0.79*10 ⁻⁴ (7.45*10 ⁻³)	-0.01* (0.007)	-0.01* (7.28*10 ⁻³)	0.040 (0.007)
Kids	0.47** (0.23)	0.17 (0.23)	-0.18 (0.24)	-0.02 (0.23)	0.52** (0.23)	0.40* (0.22)	0.31 (0.24)
Household size	-0.18 (0.15)	-0.16 (0.16)	0.01 (0.17)	-0.19 (0.17)	-0.20 (0.15)	-0.06 (0.16)	-0.13 (0.16)
Single	-0.35* (0.20)	0.02 (0.19)	0.06 (0.21)	0.02 (0.19)	-0.28 (0.20)	-0.37* (0.20)	-0.01 (0.17)
Education	-0.26* (0.17)	-0.23 (0.16)	-0.09 (0.17)	-0.01 (0.15)	-0.13 (0.15)	-0.37** (0.16)	-0.12 (0.15)
Buying from supermarket	-0.97	-0.33	-0.45	-0.70	-0.34	-1.05*	-0.78

	(0.71)	(0.70)	(0.68)	(0.74)	(0.61)	(0.63)	(0.69)
	-1.42*	-1.40**	-1.29*	-0.96	-1.61**	-1.78**	-1.00
Buying from the butcher	(0.75)	(0.73)	(0.73)	(0.95)	(0.74)	(0.77)	(0.19)
	-0.86	0.45	0.52	-0.34	-0.15	-2.17***	-1.10
Buying from another small shop	(0.74)	(0.10)	(0.98)	(0.81)	(0.64)	(0.87)	(0.23)
Trust	0.34*	0.50***	0.49***	0.18	0.43**	0.62***	0.24
	(0.19)	(0.18)	(0.18)	(0.18)	(0.18)	(0.18)	(0.17)
MU3	0.97***		0.45	0.43***	0.96***		1.11***
	(0.35)		(0.30)	(0.17)	(0.15)		(0.34)
MU4	1.9***	1.09***	1.70***	1.24***	2.50***	0.93***	1.66***
	(0.37)	(0.22)	(0.34)	(0.20)	(0.19)	(0.15)	(0.35)
MU5	3.70***	2.53***	3.13***	2.47***	3.54***	2.60***	3.06***
	(0.40)	(0.25)	(0.35)	(0.22)	(0.93)	(0.19)	(0.36)

Note: n=181, *significant at 10% level, **significant at 5% level, ***significant at 1% level, standard errors are in parentheses