

VALUE OF PORK WITH DIFFERENT QUALITY ATTRIBUTES TO CONSUMERS WITH DIFFERENT BELIEFS ABOUT TRADITIONALLY RAISED PORK

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Abstract – Consumers' willingness to pay (WTP) for pork is estimated from stated choice experiments with packaged pork produced from different production systems (conventional vs. traditionally raised), and labeled as Canadian Pork and/or Canadian Quality Assurance[®] (CQA[®]) in Edmonton (with real pork) and across Canada (online survey with photographs). Respondents in Edmonton and Canada were studied as groups based on whether they believed that traditionally raised pork was healthier than conventional pork and WTP values within each respondent group were compared between men and women. Results showed that consumer's prior beliefs affected the WTP for pork chops with different quality attributes; the highest WTP, from the Edmonton sample, is for traditionally raised pork with the Canadian pork label from men who believed that traditionally raised pork was healthier than conventional pork; whereas for the national sample, the highest WTP is for government certified traditionally raised pork from women who agreed that traditionally raised pork was healthier than conventional pork.

Key Words – willingness to pay, pork quality, consumer beliefs.

I. INTRODUCTION

Quality has many definitions in the eyes of participants in the food value chain [1]. To maximize returns from pork production, participants in the pork supply chain need to know how quality is perceived in the eyes of final consumers. Consumer perceptions and beliefs have been found to play an important role in

defining consumer preferences and purchase decisions [2]. The objectives of this study are to assess consumer WTP for pork chops with different quality attributes (production practice, production system certification, Canadian, CQA[®] and physical quality indicators). In the study the influence of consumers' prior beliefs about traditionally raised pork on their preferences is highlighted. In addition the results from experiments with 197 respondents in Edmonton, Canada are compared to a larger national sample from an online survey.

II. MATERIALS AND METHODS

Consumer stated preference experiments in Edmonton were conducted between November 19 and December 17, 2009 with 197 consumer panelists who were required to be "users or likers" of pork chops and demographically representative of the Edmonton adult population. All packaged pork chops were labeled with the normal fresh meat product label containing safe handling instructions, best before date, product price, weight and actual package price [3]. Products were priced at four different levels (from \$8.82 per kg to \$15.07 per kg). In addition, based on a fractional factorial design, products were labelled as traditionally raised certified by the Canadian pork industry or by government or uncertified, without a production practice label (conventional pork), and as Canadian pork (or not) or as CQA[®] pork (or not). An information sheet was provided to participants showing what the various labels meant where 'traditionally raised' was defined as pork from a family farm production setting, reared outdoors or in bedded settings, with no subtherapeutic antibiotics or growth promotants and no animal by-products in feed. Panelists were

asked to make choices in eight pairs of real packaged pork chops with a no-choice option and also completed a survey of their attitudes and perceptions about food quality and relevant issues. Each panelist was compensated with a \$60 honorarium. In July 2011, 1603 Canadians completed a national online survey with the same stated choice experiments as in the Edmonton experiments, using photographs where marbling was the only variable physical quality indicator. Consumers' preferences for physical quality attributes are expected to be better defined in an experiment using photographs as compared to using real products because the differences in an attribute could be more easily distinguished in photographs by consumers and because there is less variation overall in the pork chop appearance.

III. RESULTS AND DISCUSSION

Survey results showing the frequency distributions of responses to the statement that traditionally raised pork is healthier than conventional pork for the Edmonton sample and for the national sample are similar with 39% of each sample believing that traditionally raised pork is healthier to eat than conventional pork (Figure 1).

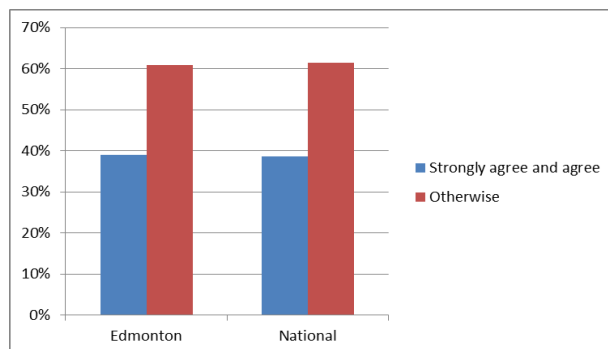


Figure 1. Consumers' prior beliefs about traditionally raised pork, Edmonton vs. Canada

Consumer choices and WTP for pork with different quality attributes are estimated by respondent group clustered based on their belief that traditionally raised pork is healthier to eat than conventional pork or not using multinomial logit regressions for each sample. The dependent variable is the probability of choosing a particular pork chop, independent variables include price, credence attributes as listed in Table 1 with

conventional pork the base, physical quality attributes and interaction terms between demographics (Table 2) and product attributes. Hog grade (a representation of hog carcass quality determined by warm carcass weight and estimated lean yield ranges between 50 and 116 in the sample), measures of meat color (L^* (lightness where 0=black and 100=white) and a^* (redness)) and shear force (a technical measure of tenderness) are included as physical quality attributes in the Edmonton regressions while marbling (defined as 1 if a pork chop has low marbling and 0 otherwise) is included in the Canadian regressions.

Table 1 Combinations of pork credence attribute

CON	CON-CP	CON-CQA [®]	CON-CP-CQA [®]
TR	TR-CP	TR-CQA [®]	TR-CP-CQA [®]
CTR	CTR-CP	CTR-CQA [®]	CTR-CP-CQA [®]
GTR	GTR-CP	GTR-CQA [®]	GTR-CP-CQA [®]

CON: conventional. TR: uncertified traditionally raised. CTR: industry certified traditionally raised. GTR: government certified traditionally raised. CP: Canadian pork label.

The percentage of choosing neither of the pork chop alternatives in the national groups is much higher than in the Edmonton groups (Table 2). Not eating meat or specifically, not eating pork are the major contributors to these high percentages in the national sample and those people would likely select neither all of the time. All participants in Edmonton ate pork since they also did sensory analysis. .

Table 2 Responses of "I would choose neither" and means of demographics in regressions by group, Edmonton and Canada Samples

Edmonton				
	Not healthier		Healthier	
I would choose neither of these	8.2%		6.4%	
	Mean	Std Dev	Mean	Std Dev
Gender	0.52	0.50	0.44	0.50
Age	43.76	14.70	39.60	12.63
Kids	0.21	0.41	0.28	0.45
Education	15.96	1.90	15.76	2.13
Pork eating frequency	2.87	0.72	2.76	0.62
Trust	0.65	0.48	0.55	0.50

National				
I would choose neither of these	25.6%		14.1%	
Age	52.43	14.69	50.58	15.14
Gender	0.59	0.49	0.62	0.48
Kids	0.25	0.43	0.28	0.45
Education	13.93	1.75	13.87	1.76
Quebec	0.14	0.34	0.13	0.33
Ontario	0.13	0.34	0.17	0.38
Manitoba	0.18	0.38	0.17	0.37
Saskatchewan	0.13	0.34	0.10	0.30
Alberta	0.14	0.34	0.13	0.34
B.C.	0.17	0.37	0.16	0.37
Rural	0.17	0.38	0.21	0.41
Trust	0.45	0.50	0.47	0.50
Non-pork eater	0.22	0.41	0.12	0.33
Pork eating frequency	2.05	1.15	2.31	1.01
Eat meat and fish	0.80	0.40	0.84	0.37
Eat meat	0.14	0.34	0.13	0.33

WTP values for pork chops with different quality attributes as compared to conventional pork are reported by gender, within each group, for both of the samples based on the coefficients obtained from the regressions (Table 3).

For the packaged pork chops without additional labels, results from Edmonton show that there was no significant WTP for any traditionally raised pork over conventional pork for either men or women. Results from the national sample show that government certified traditionally raised pork received the highest WTP values (\$6.38/kg-\$8.16/kg) for both men and women (higher if they believe traditionally raised is healthier) as compared to conventional pork and the price premiums received from women were higher than from men. Uncertified traditionally raised pork only received a statistically significant WTP from females who agreed that traditionally raised pork is healthier to eat than conventional pork.

For the Edmonton sample, respondents who did not agree that traditionally raised pork is healthier than conventional pork were willing to pay more for conventional pork with a Canadian Pork label,

with men being willing to pay about \$1.02/kg more than women. Both male and female respondents who agreed that traditionally raised pork was healthier than conventional pork were willing to pay the highest values for uncertified traditionally raised pork with a Canadian pork label. Price premiums were higher from men than from women. For the national sample, all types of pork, labeled Canadian Pork, received significant WTP (preferred to unlabeled conventional pork) from both men and women in the two groups with the industry certified traditionally raised pork, receiving the highest value from women.

For pork chops with the CQA[®] label, for the Edmonton sample, neither men nor women in the group who believed traditionally raised pork is healthier to eat than conventional pork were willing to pay more than for conventional pork while respondents who did not think traditionally raised pork is healthier to eat than conventional pork were willing to pay significant premiums for conventional and certified traditionally raised pork (women preferred industry certified while men preferred government certified). All types of pork chops except government certified traditionally raised pork received significant WTP from the national respondent groups where the highest WTP is for CQA[®] labeled conventional pork by women who believe that traditionally raised pork is healthier to eat than conventional pork.

For pork chops with both Canadian Pork and CQA[®] labels, government certified traditionally raised pork is the only pork to receive a significant and positive WTP values (over conventional pork) from both men and women in the two respondent groups but women were willing to pay higher values than men. Some negative WTP values suggest the possibility of information overload discouraging respondents from selecting certain pork options.

Results for the physical quality attributes from the Edmonton sample show that man who believe that traditionally raised pork is healthier and those who do not believe that both preferred darker pork to lighter. Results from the national sample show that pork with less marbling received a positive WTP of \$0.83 from males who do not think traditionally raised pork is healthier to eat than conventional pork.

Table 3 Consumer WTP (\$/kg.) for pork chops with different attributes as compared to a conventional pork chop

		Edmonton				Canada			
		Not Healthier		Healthier		Not healthier		Healthier	
		male	female	male	female	male	female	male	female
No Canadian pork or CQA [®] label	TR								3.93
	CTR					1.89		5.16	6.44
	GTR					6.38	7.19	7.47	8.16
with Canadian pork label	CON	8.50	7.48	10.04		4.16	4.14	3.41	5.39
	TR			11.53	8.28	4.93	2.50	6.55	3.90
	CTR					5.46	7.43	3.74	4.06
	GTR			9.29		4.08	3.85	5.21	4.46
with CQA [®] label	CON	10.47	8.57			4.20	3.57	4.87	7.08
	TR					3.96	3.02	4.49	4.94
	CTR		8.89			5.53	6.44	4.42	3.06
	GTR	7.06					-2.50		
with both Canadian pork label and CQA [®] label	CON	-17.77							-3.43
	TR			-16.67					
	CTR						-6.16		
	GTR					2.80	4.83	3.93	5.21
Physical quality attributes	Hog grade		-0.09						
	color L*	-0.42		-0.43					
	Less marbling					0.83			

CON: conventional. TR: uncertified traditionally raised. CTR: industry certified traditionally raised. GTR: government certified traditionally raised.

IV. CONCLUSION

Consumer beliefs did affect their WTP for pork chops with different quality attributes, but greater differences were observed among respondent groups in Edmonton than in the national sample. In Edmonton, the Canadian pork label can generate higher premiums from men who believe traditionally raised pork is healthier than conventional pork while the CQA[®] label can attract consumers who do not think traditionally raised pork is healthier than conventional pork. For the national sample there was greater interest in a range of different pork attributes as compared to the Edmonton respondents. The Edmonton sample, which included people with a much higher regular pork eating frequency, was not as good a predictor of national preferences and the national results imply a greater potential market national-wide for pork from different production systems.

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