

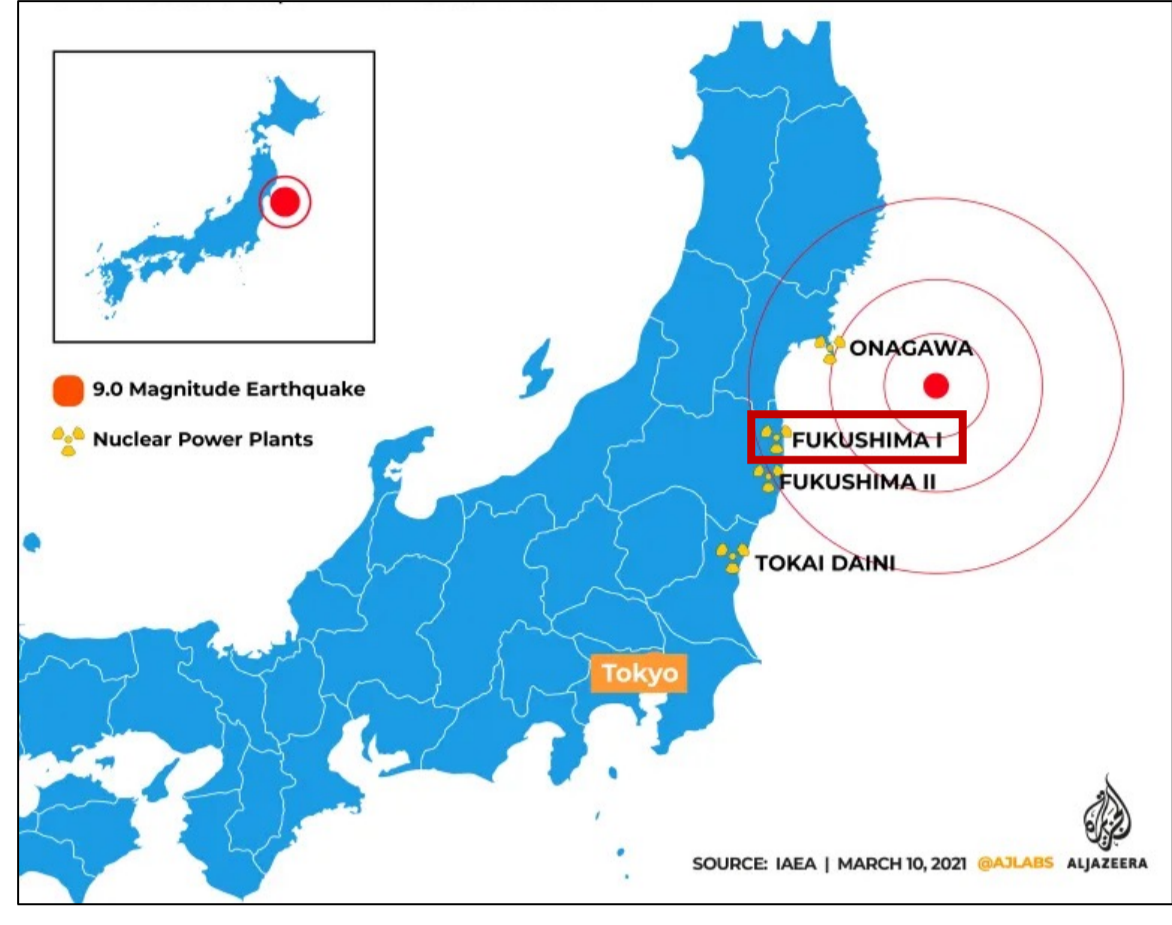
A study of consumer preference for Tohoku products using discrete choice experiments



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Background

2011.03.11
Earthquake & nuclear accident



<https://www.aljazeera.com/news/2021/3/10/fukushima-disaster-in-maps-and-charts>

Current situation

Consumer concerns about food products from Fukushima

Conducting radioactivity inspections to ensure food safety

Previous research

- Significantly lower WTP for carrots from the Tohoku region^[1]
- Consumer concerns about seafood safety^[2]
- Supportive consumption of food products from Tohoku region^[3]

Research Question

Using “discrete choice experiments” to measure MWTP*, **quantify the current state of consumer awareness of Tohoku seafood products**

***MWTP**... The maximum amount a consumer is willing to pay for an additional unit of a specific good or service

[1] Takeshita, (2014). Quantitative analysis of consumer purchasing behavior towards radioactively contaminated food products Journal of Food System Research, 21(3), 153-157.
 [2] Suzuki, T., & Yagi, N. (2017). “Consumer Awareness and Temporal Changes in the Safety of Marine Products after the Fukushima Daiichi Nuclear Power Plant Accident.” Journal of Japan Society for Maritime Policy Studies, 7, 42-58.
 [3] Ujita, K. (2013). “Consideration and Food Consumption: Consumer Evaluation of Attributes with Public Good Aspects.” Food System Research, 20(2), 72-82.

Methodology

Discrete choice experiments

◎A method for statistically **calculating the degree of preference for a product or service**

- Selecting the most preferred option from several hypothetical options containing different attributes
- Calculation of the extent to which respondents value each attribute

Example

Q1	Product A	Product B	Q2	Product A	Product B
Price	¥150	¥100	Price	¥150	¥200
Producing area	Tokyo	Osaka	Producing area	Tokyo	Yokohama

Data

- **Target seafood** : clams(Aquaculture)
- **Options** : [3 options or "I don't want to buy any of these"] x 8 questions
- **Period** : 15-20 August 2023
- **Method** : Snowball sampling using Google Forms and recruitment via social media
- **Volume** : 207 subjects, mainly university students (1656 responses)
- **Attributes and levels**
 - Price : ¥230, ¥260, ¥290, ¥320, ¥350
 - Production area : Fukushima(Tohoku), Miyagi(Tohoku), Aichi(not Tohoku), China
 - Eco-label(ASC) : labeled, unlabeled
 - Radiological inspection : inspected, uninspected



Results

Analysis

◎**Estimation of conditional logit model**

- Using R's 'support.CEs' and 'survival' packages
- Regression coefficients and marginal willingness to pay (MWTP) for each attribute

Results

utility $V = 7.97$ (Alternative-Specific Constants) -0.02483^* (price)
 -2.877^* (China) -0.2426^* (Miyagi) -0.8021^* (Fukushima)
 $+0.9149^*$ (labeled) $+1.558^*$ (inspected)

Fig.1 MWTP of each producing area

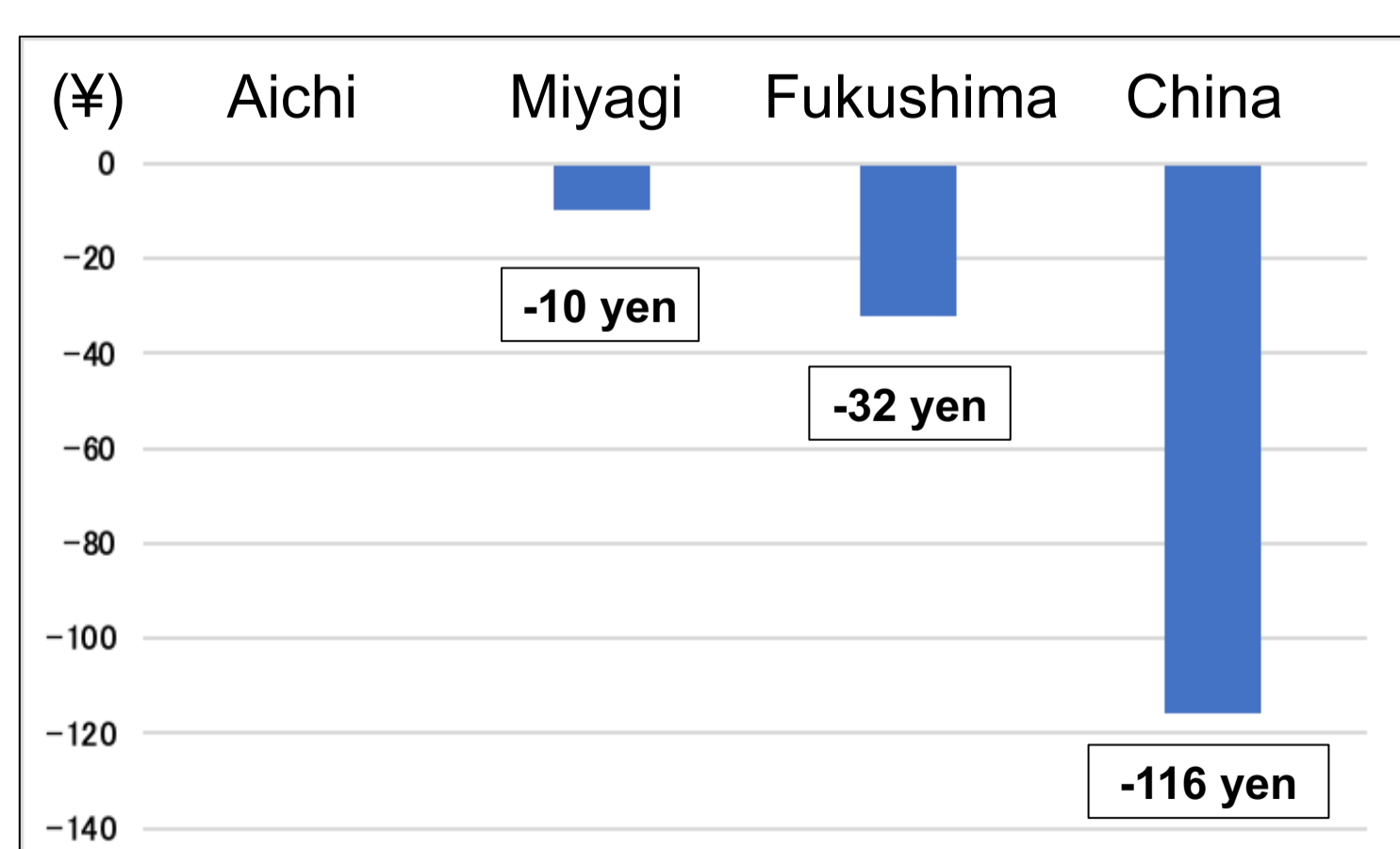
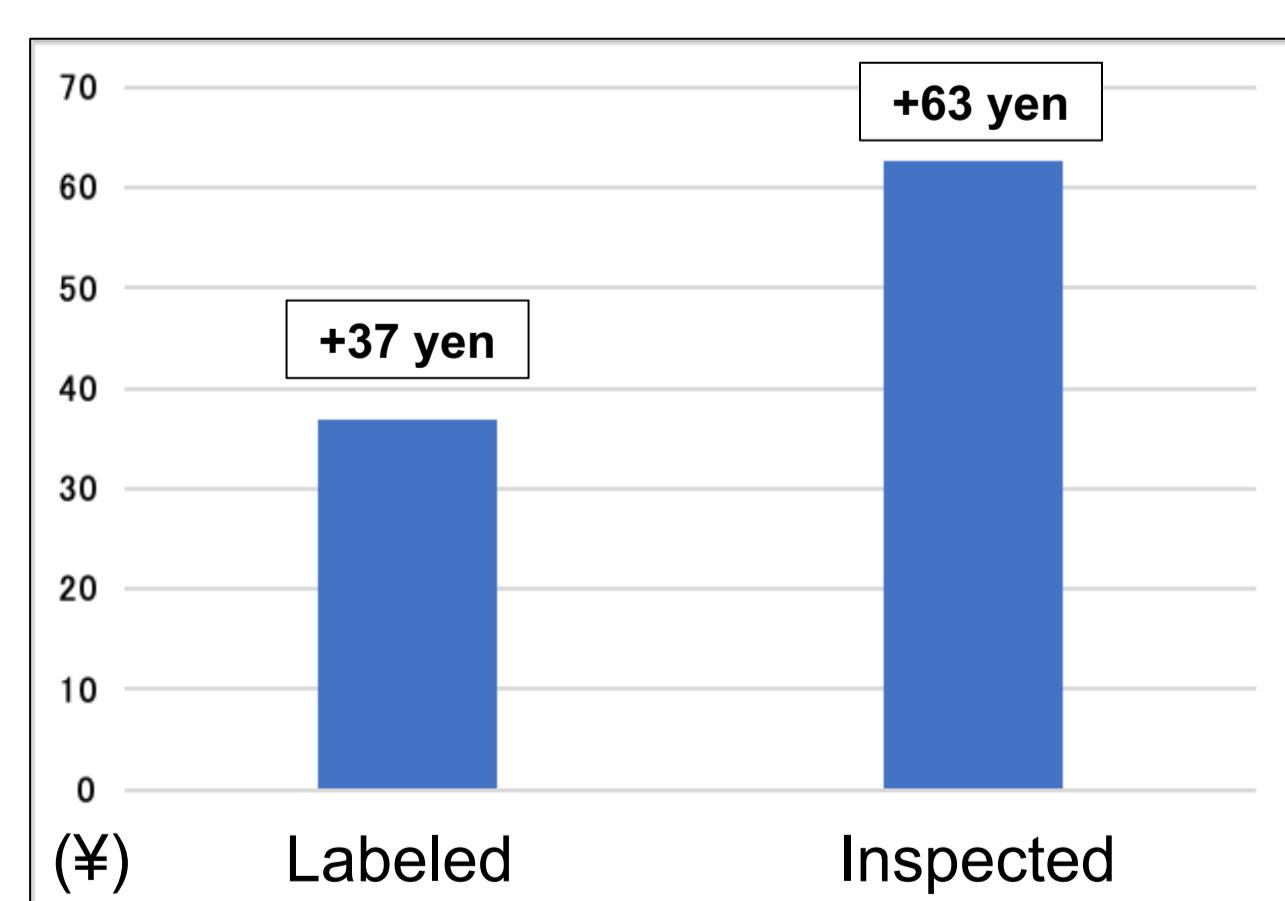


Fig.2 MWTP of labeled or inspected clams

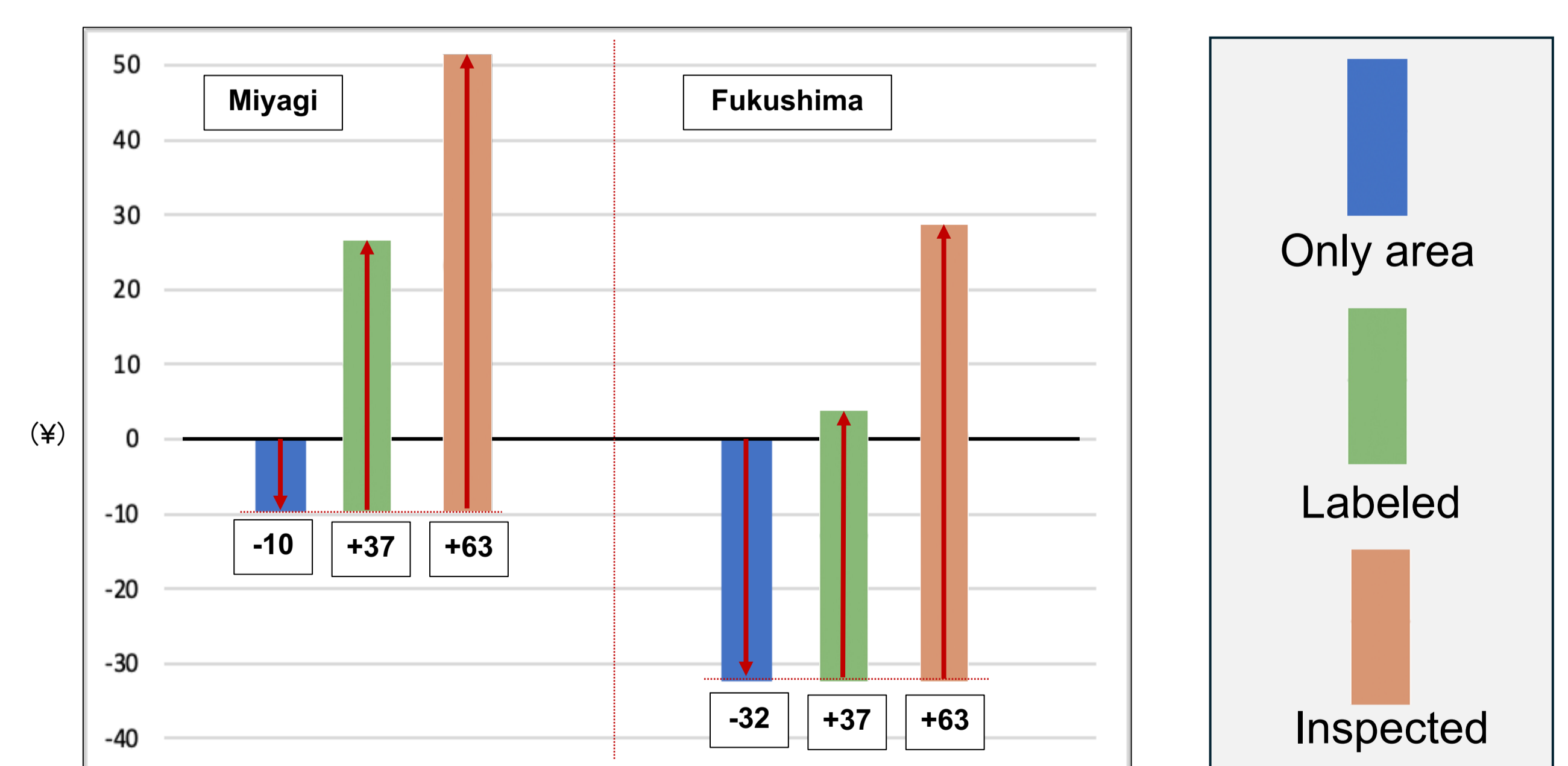


Discussion

- **Negative price premiums** for clams **from Tohoku** region
 - Suggests that consumer reluctance to buy may still be occurring today even if 12 years have passed
- **Positive price premium** for claims **eco-labeled and inspected for radioactivity**
 - Possibility of covering the negative price premiums of production areas by adding them to Tohoku products

Comparisons of MWTP

Fig.3 Total MWTP for each production area and eco-labelling/radioactivity testing



Potential to cover negative price premiums by combining eco-label or radioactivity inspection

Conclusion

- Negative price premiums exist, but there are also positive price premiums that can cover them.
- To increase consumption, sufficient publicity of monitoring inspections being carried out and eco-labeling certification may be effective.

Future work

- The impact of each combination of production area and radioactivity inspection/eco-labelling
- Investigation of transitions in consumer preference
- Re-survey with implementation of random sampling