

Which Consumers Respond More to Food Safety Incident? A Quasi-Natural Experiment from the 2017 Fipronil Egg Scandal in South Korea

Yeon A Hong, PhD; Sanghyo Kim, PhD
Division of Food and Marketing Research, Korea Rural Economic Institute



Abstract

- The objective of this study is to explore the factors that determine heterogeneity in household food consumption behaviors and to investigate their impact on consumer risk perception on food contamination incident.
- A national food consumption survey of 3,043 household meal planners consecutively conducted in 2017 right before and after the egg scandal provides a novel opportunity to measure and analyze consumers' risk perception and response in a quasi-natural experiment setting.
- We use multivariate linear regression using a set of variables that identify the factors associated with heterogeneity of household food consumption behaviors such as lifestyles, consumer competency, experience of purchasing food online, and experience of dietary education.
- A deeper understanding of how households perceive and respond to food safety incidents hold important policy implications in addressing food safety concerns and designing effective education programs and risk communication strategies.

FOOD SAFETY

Model

Multivariate Linear Regression

- We assume that the socio-demographic variables such as age, income, education level, and gender remain the same between 2017 and 2018.

$$Food\ Safety_{i,t+1} - Food\ Safety_{i,t} = \alpha + X'_{it}\beta + Z'_i\gamma + \varepsilon_{it}$$

- $Food\ Safety_{i,t+1} - Food\ Safety_{i,t}$: Difference in perception/evaluation on food safety between two time points – “Shock” (after-before difference observed by the scandal in 2017), and “Recovery” (2018-2017 difference)
- X'_{it} : vector associated with heterogeneity of household food consumption behaviors
- Z'_i : vector depicting socio-demographic characteristics
- ε_{it} : error term

Results

| | Shock | Recovery |
|---------------------------------|-----------------|-----------------|
| Perception in 2017 (before) | -0.53*** | |
| Age | 0.06 | 0.02 |
| Male | 0.44 | -0.48 |
| College | 0.64 | 0.84 |
| Mid-income | -0.18 | 2.60 |
| High-income | -0.86 | 1.24 |
| Double-income | -0.12 | 1.24 |
| Elderly Household Members | 0.41 | -0.17 |
| Adolescent Household Members | 1.59* | 0.31 |
| Subjective Health Status | 1.20 | -0.49 |
| Convenience-oriented lifestyle | 0.64 | 0.56 |
| Health-oriented lifestyle | 0.13 | 1.58** |
| Price-oriented lifestyle | 0.56 | 0.32 |
| Organic-oriented lifestyle | -0.66 | -0.84 |
| Satisfaction with Food Label | -0.11 | 1.27 |
| Satisfaction with Food Policies | 0.01 | 0.23*** |
| Perception in 2017 (after) | | -1.01*** |
| Intercept | 19.48*** | 43.92*** |
| N | 1249 | 1249 |
| R-sq. | 0.15 | 0.57 |

Introduction

In August 2017, Fipronil contamination delivered a tremendous shock to consumers as well as egg market in South Korea. Major supermarkets stopped selling eggs, and a consumer group seriously casted doubt on food safety.



Figure 1. Disposal of Contaminated Eggs
Source: Yonhap News



Figure 2. Cessation of Selling Eggs in Supermarkets
Source: Money Today

Methods and Materials

- We conducted a national food consumption survey consecutively in 2017 right before and after the egg scandal.
- 3,043 household meal planners in ages between 18 and 74 participated in this survey through Computer Assisted Personal Interviewing.
- The participants are asked to evaluate 1) the level of food safety, 2) policies on food labeling, 3) dietary education, and 4) consumer protection act.

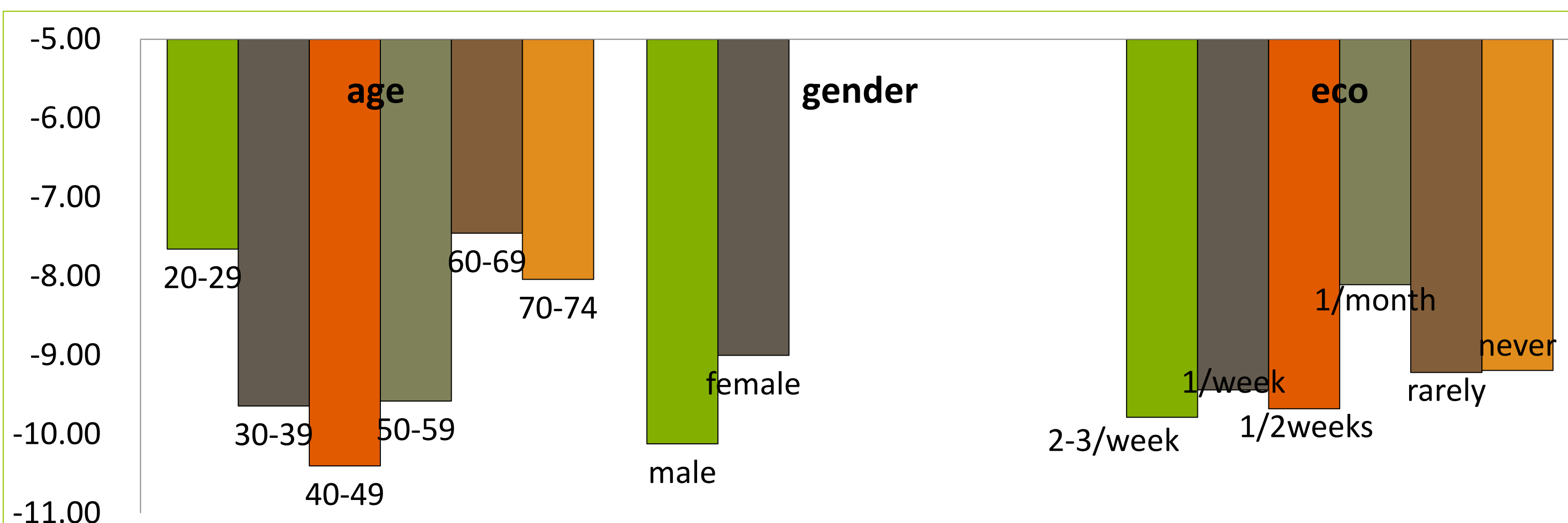


Chart 1. Change in Perception and Evaluation on Food Safety between Before and Right After the Egg Scandal in 2017

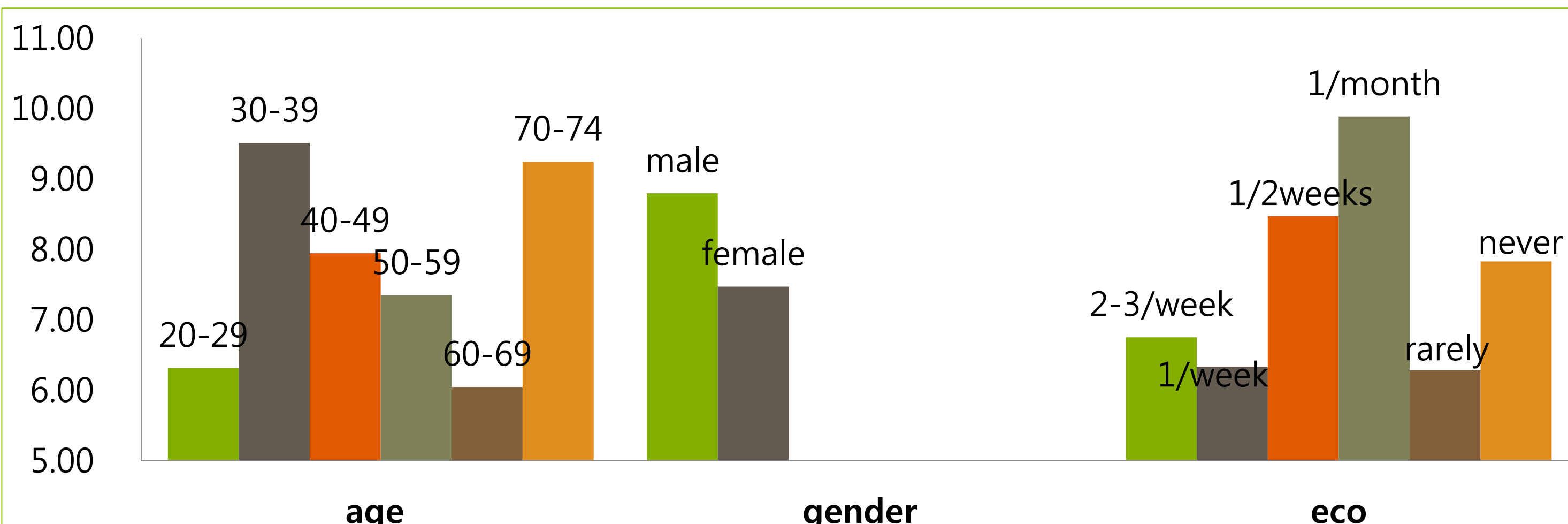


Chart 2. Change in Perception and Evaluation on Food Safety between 2017 and 2018

Key Findings

- The “shock” measured by the difference between after and before the egg scandal in 2017 is affected by the initial perception level on food safety as well as the number of adolescent household members.
- The “recovery” measured by the difference between 2018 and 2017 is affected by the initial perception on food safety as well as other factors including level of satisfaction with food policies and whether or not s/he is health-oriented.
- It seems that socio-demographic variables have limited impact on the change in perception observed from a food safety scandal. Moreover, the recovery process is also not significantly affected by those variables.

Conclusions

- The 2017 Fipronil Egg Scandal was a critical food safety event in Korea. Consumers' reaction to this scandal, to both the shock process and recovery process, was heterogeneous. Better understanding on this heterogeneity could provide a set of insights on food safety, food label, dietary education, and public relation policies.
- These results are preliminary, thus need to be more investigated in various perspectives.

Contact

Sanghyo Kim
Division of Food and Marketing Division
Korea Rural Economic Institute
Email: skim@krei.re.kr
Phone: +82-61-820-2218

References

- Chen, M.F., 2008. Consumer trust in food safety—a multidisciplinary approach and empirical evidence from Taiwan. *Risk Analysis: An International Journal*, 28(6), 1553-1569.
- Dosman, D.M., Adamowicz, W.L. and Hrudefy, S.E., 2001. Socioeconomic determinants of health-and food safety-related risk perceptions. *Risk analysis*, 21(2), 307-318.
- Grunert, K.G., 2005. Food quality and safety: consumer perception and demand. *European review of agricultural economics*, 32(3), 369-391.
- McCluskey, J.J., Grimsrud, K.M., Ouchi, H. and Wahl, T.I., 2005. Bovine spongiform encephalopathy in Japan: consumers' food safety perceptions and willingness to pay for tested beef. *Australian Journal of Agricultural and Resource Economics*, 49(2), 197-209.
- Ortega, D.L., Wang, H.H., Wu, L. and Olynk, N.J., 2011. Modeling heterogeneity in consumer preferences for select food safety attributes in China. *Food Policy*, 36(2), 318-324.
- Park, M., Jin, Y.H. and Bessler, D.A., 2008. The impacts of animal disease crises on the Korean meat market. *Agricultural Economics*, 39(2), 183-195.
- Sjöberg, L., 2000. Factors in risk perception. *Risk analysis*, 20(1), 1-12.
- Tonsor, G.T., Schroeder, T.C. and Pennings, J.M., 2009. Factors impacting food safety risk perceptions. *Journal of Agricultural Economics*, 60(3), 625-644.