How Much Is a Pet's Life Worth?

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1. Introduction

The number of dogs and cats kept in Japan exceeds the population of children under 15 years old, with the monthly cost of pet ownership increasing. Thus, while many Japanese regard pets as family members and value them highly, no study has yet been conducted to evaluate the value of pet lives economically. The concept of the value of a statistical life, VSL, is commonly used to reveal the economic value of human life.   In this study, we applied Kuriyama et al. **(2009)** which estimates human VSL to assemble theoretical models for pet VSL, and calculated pet VSL based on data from an online survey.

2. Estimation Methods

For estimation, we employed the contingent evaluation method and the scenario asked, "Assuming you have a new puppy or kitten, how much would you be willing to pay per year for a new preventive drug (with no side effects) that would reduce cancer mortality risk if used continuously for 10 years?" Each respondent was asked about a 15% reduction and a 50% reduction in random order, and a double-bound format was used with five different combinations of offer amounts.

The random utility model and the logit model were used to estimate the willingness-to-pay, WTP. In addition, for more accurate estimation, protest responses, or responses from those who do not understand the scenario or those who are hesitant to the unrealistic scenario or to give medicines, were identified and eliminated.

3. Estimations

The results of an online survey we conducted in February 2024 targeted at residents in Japan were used to estimate the WTP. We obtained 3,203 responses and by excluding protest responses, the sample size decreased to 2,550.

We analyzed WTP with the logit model and the results showed that the constant terms and the coefficients on the natural logarithm of the stated amount were all significant at the 1% level. Therefore, we adopted the median WTP and divided it by the risk reduction to calculate

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pet VSL. The results are shown in the table.

Table 1: Estimated WTP and VSL

Mortality risk reduction rate	Mortality risk reduction	Median WTP	VSL
50%	1.7/1,000	14,034	¥8,255,294
15%	0.5/1,000	10,411	¥28,068,000

Table 2: Estimation results of full-model analysis

Furthermore, a full-model analysis was performed to identify the factors that impact WTP.

As indicated in the table, WTP is significantly higher for those who have owned a dog or cat now or in the past, those who have never owned a dog or cat but would like to in the future, and those enrolled in pet insurance.

	Excluding protest respondents	
	coefficient	p-value
Constant	0.829	0.000
ln (Bid)	-0.468	0.000
50% reduction	0.067	0.086
2nd question	-0.050	0.164
Male	-0.170	0.000
Current owner	0.410	0.000
Used to own	0.464	0.000
Insured	0.518	0.000
Willing to own	0.634	0.000
Income-A	0.051	0.678
Income-B	0.150	0.234
Income-C	0.244	0.105
Log-likelihood	-5064.4046	
# of observations	4,900	

4. Results

The results suggest that dogs and cats are worth more than their sale prices, so policies should be developed regarding this VSL for pets. In the property division, for instance, the value of the pets should appreciate these prices. Also, when analyzing the costs and benefits of constructing a disaster shelter, the value of the pets saved by it can be incorporated using the VSL.

However, since many protest responses were unwilling to drug or extend life expectancy, other scenarios may need to be considered.

References

Kuriyama, K., Kishimoto, A., and Kanemoto, Y. (2009), "Valuing Mortality Risk Reductions: A Scope Test for Validity in the Contingent Valuation Method," *Review of Environmental Economics and Policy Studies*, 2: 48-63. (Japanese)