Online Appendix

COVID-19 Enhanced Diminishing Sensitivity in Prospect-Theory Risk Preferences: A Panel Analysis

Appendix A Comparison of sample distributions in four data sets.

This appendix compares the sample distributions regarding residential location, age, and household income among the four data: (i) the first wave of our (unbalanced) panel data, (ii) our balanced panel data, (iii) NTTHID2018, and (iv) the Japanese census.

Figure A1 compares sample distributions among the four data sets regarding residential locations, where the participants' residential locations are sorted into 47 prefectures, local administrative divisions in Japan. The Japanese census data of population in 47 prefectures in October, 2019 are collected from the website for Japanese Government Statistics, e-stat.[1] Figure A1 shows that residential distributions of the data sets are fairly similar.

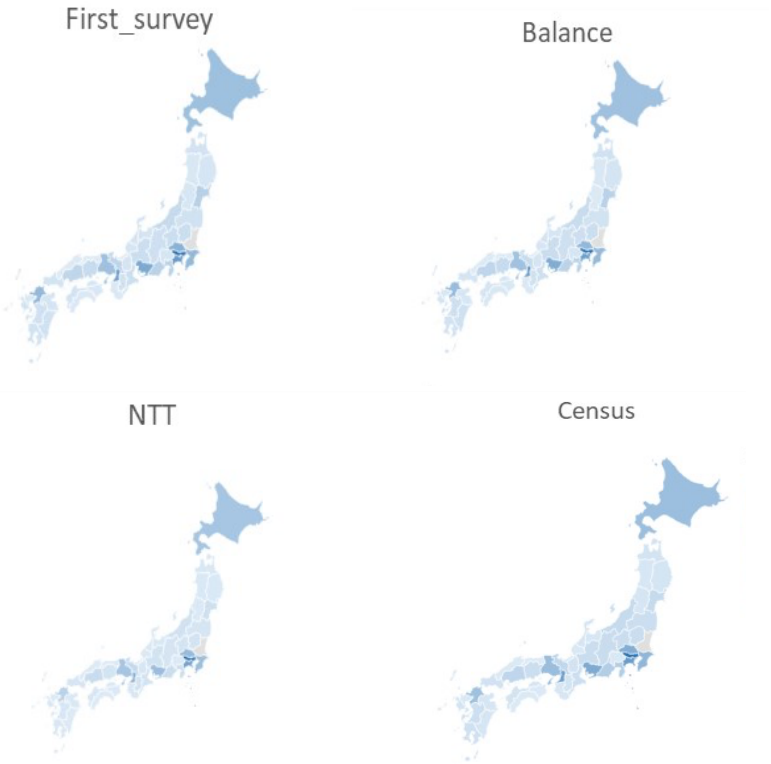


Figure A1: Comparison of location distributions among four data. *Note*: "First_survey" represents the

[1] https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&toukei=00200524&tstat=000000090001&cycle=7&year=20190&month=0&tclass1=000001011679

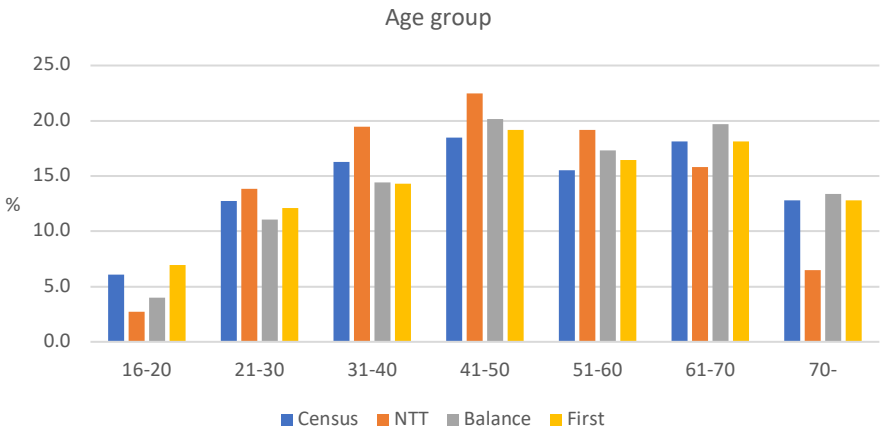
first wave sample of our (unbalanced) panel data; “Balance” represents our balanced panel data sample of our data; “NTT” represents NTTHID2018; and “Census” represents the Japanese census data, obtained from Population Estimated in 2019. Deeper color indicates higher frequency of the respondents in the corresponding prefectures.

We further compare sample distributions among four data with respect to age and household income. Age distribution in the Japanese census is obtained from Population Estimated in 2019, as in Figure A1. Data of the number of households by household income class are from Comprehensive Survey of Living Conditions in 2018, collected from the website of e-stat.[2] We define the number of female (male) households of each household income class as the total number of households minus the number of single-male (single female) households.

Figure A2 shows the results. Panel (a) indicates that the age distributions are also reasonably similar, except that for the NTT data, the rates of respondents under age 21 and over age 71 are smaller than for the other data sets. Panel (b) also shows the similarity of the four data sets in the household income distribution, except that the proportions of low income groups with less than JPY 200 million income are smaller, compared to the Japanese census data. This skewness could take place, first because the three data sets are collected using web survey, so that it can be hard for poor people to access the internet surveys, and second, because poorer people may be reluctant to answer their income amounts.

[2] https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&toukei=00450061&kikan=00450&tstat=000001129675&cycle=7&tclass1=000001130605&result_page=1&tclass2val=0

(a) Age



(b) Household income

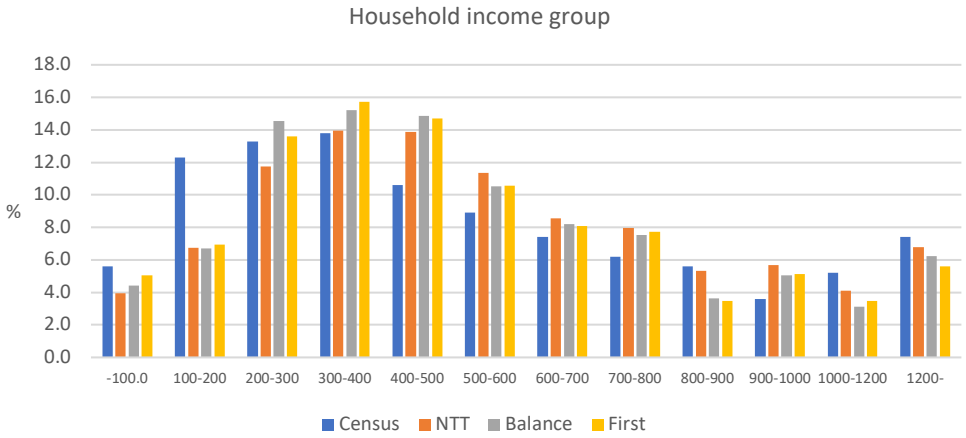


Figure A2: Comparison of sample distributions among four data sets**.** *Note*: "Census" represents the Japanese census data, obtained from Population Estimated in 2019 for (a) and Comprehensive Survey of Living Conditions in 2018 for (b); "NTT" represents NTTHID2018; "Balance" represents our balanced panel data sample of our data; and "First" represents the first wave sample of our (unbalanced) panel data.

Appendix B Risky choice questions and acceptable insurance premiums.

B1 Questions Q1 and Q2.

Q1. Assume that there is a 50% risk of losing JPY 100,000 on a given day. You can take out insurance to cover this amount in case of a loss. What is the maximum amount you would pay to purchase the insurance? (Place an X in ONE box.)

□ 1. Not purchase even if the price is JPY 0.
□ 2. Purchase if the price is less than or equal to JPY 1,000.
□ 3. Purchase if the price is less than or equal to JPY 5,000.
□ 4. Purchase if the price is less than or equal to JPY 10,000.
□ 5. Purchase if the price is less than or equal to JPY 15,000.
□ 6. Purchase if the price is less than or equal to JPY 20,000.
□ 7. Purchase if the price is less than or equal to JPY 30,000.
□ 8. Purchase if the price is less than or equal to JPY 40,000.
□ 9. Purchase if the price is less than or equal to JPY 45,000.
□ 10. Purchase if the price is less than or equal to JPY 50,000.
□ 11. Purchase even if the price is more than JPY 50,000.

Q2. Assume that there is a 0.1% risk of losing JPY 5 million on a given day. You can take out insurance to cover this amount in case of a loss. What is the maximum amount you would pay to purchase the insurance? (Place an X in ONE box.)

□ 1. Not purchase even if the price is JPY 0.
□ 2. Purchase if the price is less than or equal to JPY 1,000.
□ 3. Purchase if the price is less than or equal to JPY 5,000.
□ 4. Purchase if the price is less than or equal to JPY 10,000.
□ 5. Purchase if the price is less than or equal to JPY 20,000.
□ 6. Purchase if the price is less than or equal to JPY 30,000.
□ 7. Purchase if the price is less than or equal to JPY 50,000.
□ 8. Purchase if the price is less than or equal to JPY 100,000.
□ 9. Purchase if the price is less than or equal to JPY 500,000.
□ 10. Purchase if the price is less than or equal to JPY 1 million.
□ 11. Purchase even if the price is more than JPY 1 million.

B2 Acceptable insurance premiums $(\boldsymbol{R_1}, \boldsymbol{R_2})$

In the price list of questions Q1 and Q2, we could not elicit the prospect-theory preference parameters for participants who chose "1. No purchase even if the price is JPY 0." if their acceptable insurance premium R_i were considered zero. Instead of considering the choice as irrational behavior not to exploit the free opportunity of taking out the insurance, we assume that they are reluctant to incur some fixed costs, mental or pecuniary, required for insurance contacts. The fixed costs for insurance contracts are assumed to amount to JPY 450, half of the average minimum hourly wage in Japan (JPY 901).

Participants who chose option 1, i.e., those who choose not to buy insurance even when the price is JPY 0, are assumed to be willing to buy it for JPY 0 if the fixed cost is reduced by half, to JPY 225. For the other respondents, i.e., those who chose options 2 through 11, acceptable insurance premiums are elicited as the corresponding prices in the price list plus the fixed cost JPY 450.

In sum, acceptable insurance premiums R_1 and R_2 are obtained as in the following tables:

Table A1: Prospect prices and the corresponding acceptable insurance premiums.

Q1	Chosen prices (JPY)	acceptable premiums including fixed costs R_1 (JPY)
1	< 0	225
2	1000	1450
3	5000	5450
4	10000	10450
5	15000	15450
6	20000	20450
7	30000	30450
8	40000	40450
9	45000	45450
10	50000	50450
11	60000	60450

Q2	Chosen prices (JPY)	acceptable premiums including fixed costs R_2 (JPY)
1	< 0	225
2	1000	1450
3	5000	5450
4	10000	10450
5	20000	20450
6	30000	30450
7	50000	50450
8	100000	100450
9	500000	500450
10	1000000	1000450
11	1200000	1200450

Appendix C Stability of imputed risk attitudes.

Stability of imputed risk attitudes are shown in terms of correlation coefficients across waves and between the underlying survey questions for acceptable insurance premiums and prospect theory parameters. Table A2 shows that risk attitudes measured by R_1, R_2, α, and δ all have significant positive cross-wave correlation of weak to moderate magnitudes. Table A3 summarizes correlations between acceptable insurance premiums R_1 and R_2 imputed from responses to different questions Q1 and Q2 in each wave. The table implies that risk attitudes implied from responses to two different questions are relatively consistent.

Table A2: Cross-wave correlation of measured risk attitudes.

(a-1) Acceptable insurance premium R_1

	Wave 1	Wave 2	Wave 3	Wave 4
Wave 1	1			
Wave 2	0.467 ***	1		
Wave 3	0.457 ***	0.565 ***	1	
Wave 4	0.495 ***	0.569 ***	0.647 ***	1
Wave 5	0.449 ***	0.558 ***	0.621 ***	0.659 ***

(a-2) Acceptable insurance premium R_2

	Wave 1	Wave 2	Wave 3	Wave 4
Wave 1	1			
Wave 2	0.224 ***	1		
Wave 3	0.168 ***	0.206 ***	1	
Wave 4	0.216 ***	0.265 ***	0.293 ***	1
Wave 5	0.160 ***	0.238 ***	0.453 ***	0.595 ***

(b-1) Value function parameter α

	Wave 1	Wave 2	Wave 3	Wave 4
Wave 1	1			
Wave 2	0.444 ***	1		
Wave 3	0.420 ***	0.503 ***	1	
Wave 4	0.449 ***	0.508 ***	0.611 ***	1
Wave 5	0.400 ***	0.512 ***	0.622 ***	0.684 ***

(b-2) Probability weighting function parameter δ

	Wave 1	Wave 2	Wave 3	Wave 4
Wave 1	1			
Wave 2	0.379 ***	1		
Wave 3	0.394 ***	0.533 ***	1	
Wave 4	0.439 ***	0.541 ***	0.577 ***	1
Wave 5	0.413 ***	0.518 ***	0.564 ***	0.604 ***

Note: Using the balanced panel samples (#obs. 14,470), cross-wave correlation coefficients are elicited for acceptable insurance premiums imputed from the responses to Questions Q1 and Q2 in panels (a-1) and (a-2), respectively, and the prospect theory parameters α and δ in panels (b-1) and (b-2), respectively. *** indicates statistical significance at 1% level.

Table A3: Cross-question correlation of measured risk attitudes.

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Correlation coefficients btw. R_1 and R_2	0.381 ***	0.413 ***	0.370 ***	0.392 ***	0.393 ***

Note: The balanced panel samples (#obs. 14,470) are used.