Appendix

Plamen Akaliyski, Naoko Taniguchi, Joonha Park, Stefan Gehrig, Raül Tormos

1 Covariate distributions

Figure A1 and Table 1 show distributions for covariates used during analysis. All statistics are based on the samples that remained after listwise deletion of cases which had missing values in any essential variables, i.e., either in below covariates or in *both* outcome variables EVI and SVI.
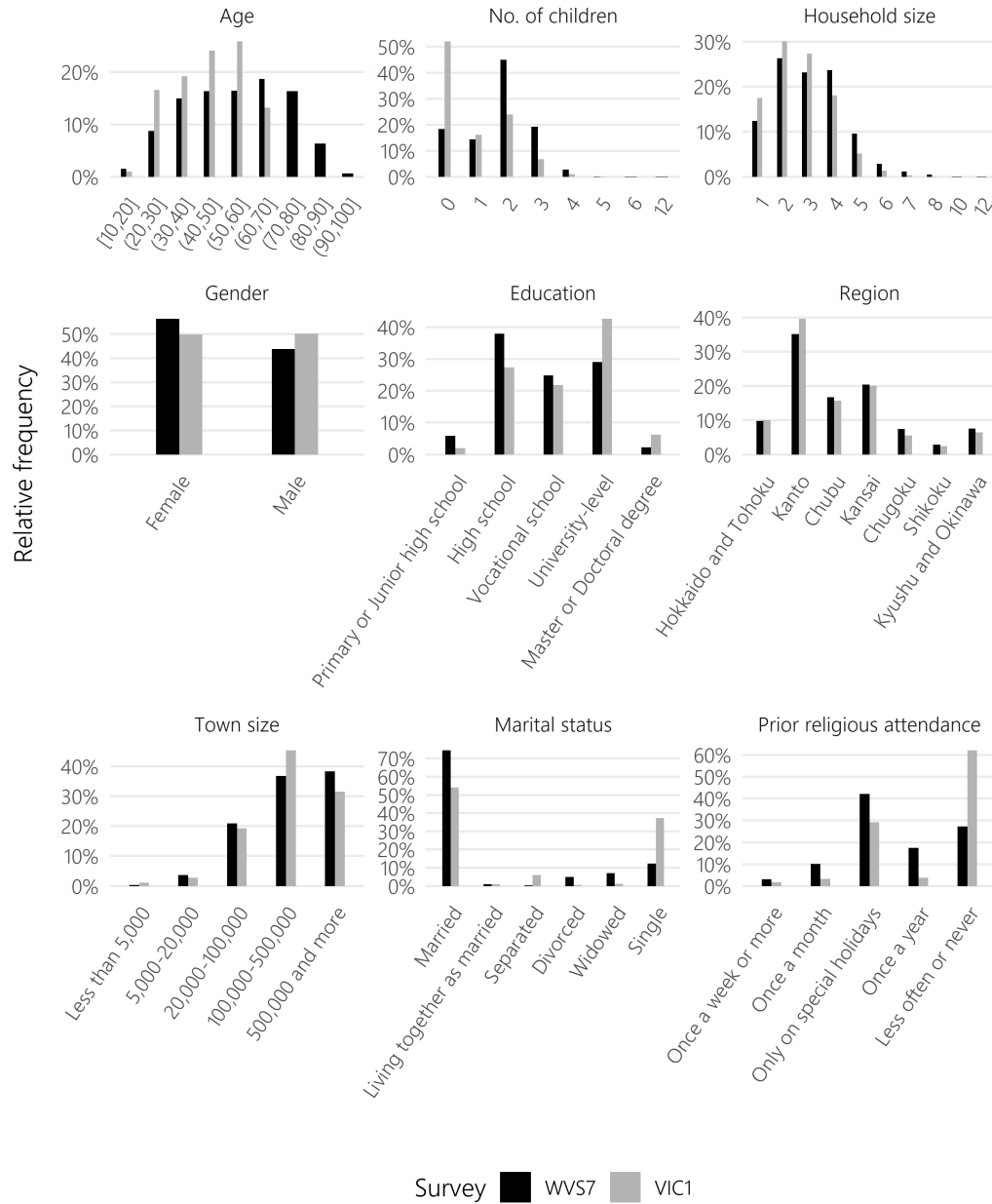

Figure A1: Relative frequencies of characteristics in the WVS7 and VIC1 samples. Raw data prior to weighting is shown.

Table 1: Summary statistics for respondent characteristics in WVS7, VIC1 and VIC2. Distribution for the weighted samples (propensity weights combined with post-stratification weights) for WVS7 and VIC1 are also presented. For some variables, we show results for the adult population from the Japanse census 2020 for comparison.

Characteristic	WVS7	VIC1	VIC2	WVS7 (weighted)	VIC1 (weighted)	Census 2020
N	1138	2920	2827			
Age	54.8 (17.8)	45.5 (12.8)	45.6 (12.9)	53.8 (18.4)	50.7 (12.0)	53.6
No. of children	1.8 (1.1)	0.9 (1.1)	0.8 (1.1)	1.7 (1.1)	1.7 (1.1)	
Household size	3.1 (1.4)	2.7 (1.2)	2.6 (1.2)	3.1 (1.4)	3.2 (1.3)	
Gender						
Female	640 (56%)	1,456 (50%)	1,404 (50%)	53%	52%	52%
Male	498 (44%)	1,464 (50%)	1,423 (50%)	47%	48%	48%
Education						
Primary or Junior high school	67 (6%)	59 (2%)	54 (2%)	6%	10%	
High school	432 (38%)	800 (27%)	763 (27%)	37%	36%	
Vocational school	283 (25%)	636 (22%)	599 (21%)	24%	20%	
University-level	331 (29%)	1,243 (43%)	1,258 (44%)	30%	31%	
Master or Doctoral degree	25 (2%)	182 (6%)	153 (5%)	2%	3%	
Region						
Hokkaido and Tohoku	112 (10%)	294 (10%)	262 (9%)	11%	9%	11%
Kanto	401 (35%)	1,157 (40%)	1,136 (40%)	38%	37%	35%
Chubu	190 (17%)	458 (16%)	449 (16%)	16%	17%	17%
Kansai	232 (20%)	588 (20%)	603 (21%)	19%	22%	18%
Chugoku	85 (7%)	163 (6%)	152 (5%)	5%	6%	6%
Shikoku	32 (3%)	72 (2%)	68 (2%)	2%	1%	3%
Kyushu and Okinawa	86 (8%)	188 (6%)	157 (6%)	9%	8%	11%
Town size						
Less than 5,000	4 (0%)	33 (1%)	27 (1%)	0%	0%	
5,000-20,000	41 (4%)	82 (3%)	56 (2%)	3%	3%	
20,000-100,000	238 (21%)	561 (19%)	505 (18%)	22%	21%	
100,000-500,000	419 (37%)	1,324 (45%)	1,329 (47%)	34%	31%	
500,000 and more	436 (38%)	920 (32%)	910 (32%)	41%	46%	
Marital status						
Married	847 (74%)	1,580 (54%)	1,472 (52%)	73%	70%	
Living together as married	10 (1%)	29 (1%)	30 (1%)	1%	1%	
Separated	4 (0%)	174 (6%)	162 (6%)	0%	0%	
Divorced	57 (5%)	17 (1%)	9 (0%)	4%	7%	
Widowed	81 (7%)	32 (1%)	34 (1%)	7%	8%	
Single	139 (12%)	1,088 (37%)	1,120 (40%)	15%	14%	
Prior religious attendance						
Once a week or more	35 (3%)	50 (2%)	40 (1%)	3%	2%	
Once a month	114 (10%)	93 (3%)	83 (3%)	9%	7%	
Only on special holidays	481 (42%)	854 (29%)	932 (33%)	42%	42%	
Once a year	198 (17%)	109 (4%)	115 (4%)	18%	23%	
Less often or never	310 (27%)	1,814 (62%)	1,657 (59%)	28%	26%	
Big Five: Extraversion		2.6 (0.9)	2.6 (0.9)		2.7 (0.8)	
Big Five: Agreeableness		3.1 (0.7)	3.1 (0.7)		3.1 (0.7)	
Big Five: Conscientiousness		2.8 (0.7)	2.8 (0.7)		2.8 (0.7)	
Big Five: Neuroticism		3.2 (0.7)	3.3 (0.8)		3.2 (0.7)	
Big Five: Openness		3.0 (0.8)	3.0 (0.8)		3.0 (0.8)	
Psychological distress		1.7 (0.8)	1.7 (0.8)		1.7 (0.8)	

2 Propensity score regression model

Table 2 shows coefficient estimates and their standard errors from the logistic regression model used for estimation of propensity scores. The outcome variable was whether a respondent was surveyed in WVS7 (coded as 1) or in VIC1 (coded as 0) and the preidcted probabilities were used to contruct inverse probability of treatment weights for the WVS7-VIC1 comparison. Note that the size of estimates for two prefectures (Miyazaki, Tottori) and their uncertainty are extremely large, which is because the WVS7 sample does not include respondents from these two prefectures, which are rather small in terms of population. Hence, the model predicts low propensity scores for the few respondents from those prefectures in the VIC1 sample.

Table 2: Estimated coefficients in the logistic regression model for propensity scores.

Term	Estimate	Standard error
Intercept	-0.226	0.400
Age	0.004	0.003
No. of children	0.357	0.050
Household size	0.248	0.036
Gender		
Female	-	
Male	0.094	0.080
Education		
High school	-	
Master or Doctoral degree	-1.140	0.214
Primary or Junior high school	1.235	0.241
University-level education	-0.553	0.094
Vocational school/University-preparator	-0.167	0.104
Prefecture		
Aichi	-	
Akita	-0.585	0.453
Aomori	-0.416	0.489
Chiba	0.257	0.221
Ehime	-0.472	0.409
Fukui	-0.944	0.788
Fukuoka	0.068	0.239
Fukushima	-0.136	0.347
Gifu	0.036	0.325
Gunma	0.191	0.354
Hiroshima	0.220	0.284
Hokkaido	0.064	0.237
Hyogo	0.104	0.226
Ibaragi	-0.064	0.290
Ishikawa	-0.492	0.480
Iwate	-0.193	0.458
Kagawa	0.304	0.452
Kagoshima	0.427	0.349
Kanagawa	-0.008	0.200
Kochi	0.090	0.590
Kumamoto	-0.710	0.361
Kyoto	-0.538	0.317
Mie	-0.168	0.353
Miyagi	-0.691	0.325
Miyazaki	-15.555	307.453
Nagano	0.158	0.326
Nagasaki	-1.470	0.598
Nara	0.181	0.374
Niigata	0.405	0.311

Okayama	-0.059	0.331
Okinawa	-1.728	0.733
Ooita	0.388	0.460
Osaka	0.186	0.204
Saga	-0.439	0.499
Saitama	0.310	0.211
Shiga	-0.044	0.377
Shimane	-0.804	0.724
Shizuoka	-0.126	0.264
Tochigi	0.155	0.332
Tokushima	-1.430	0.589
Tokyo	0.120	0.188
Tottori	-14.630	402.377
Toyama	-0.163	0.434
Wakayama	0.346	0.459
Yamagata	-0.374	0.461
Yamaguchi	0.282	0.403
Yamanashi	-1.015	0.615
Town size		
100,000-500,000	**-**	
20,000-100,000	0.152	0.107
5,000-20,000	0.110	0.235
500,000 and more	0.593	0.098
Less than 5,000	-1.114	0.491
Marital status		
Divorced	-	
Living together as married	-1.854	0.505
Married	-2.075	0.308
Separated	-5.208	0.537
Single	-2.197	0.321
Widowed	-0.523	0.384
Prior religious attendance		
Less often or never	-	
Once a month	1.680	0.174
Once a week or more	1.086	0.241
Once a year	2.326	0.149
Only on special holidays	1.037	0.083
No. Obs.	4058	
Log-likelihood	-2018.962	
Deviance	4257.029	
Residual df	3990	
Null deviance	5614.326	
Null df	4057	
AUC	0.825	

3   Variation between prefectures

Variation between prefectures in pandemic severity, defined as number of COVID-19 infections, at the time of the VIC survey in May 2020 is shown in Figure A2.
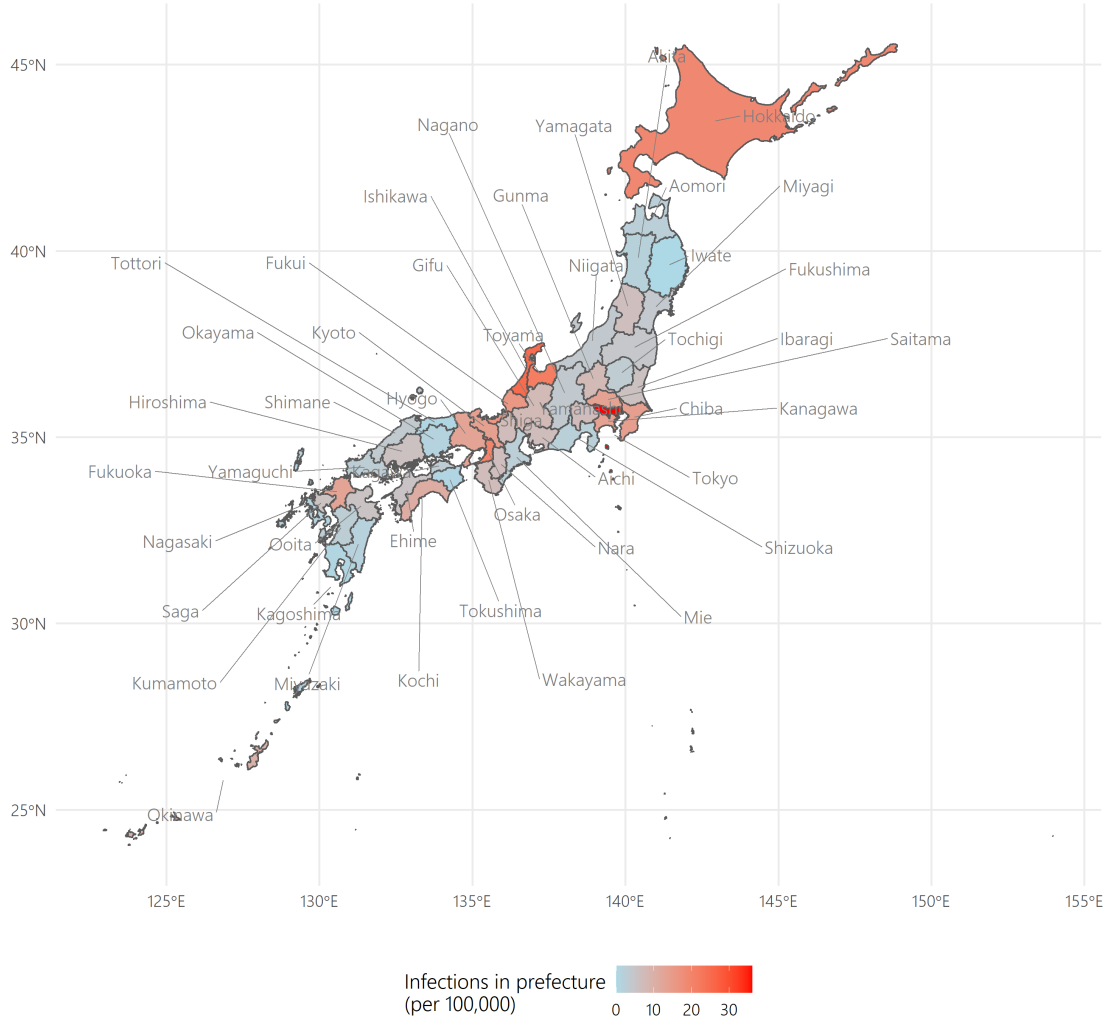

Figure A2: Cumulative COVID-19 infections in Japanese prefectures per 100,000 until initial VIC1 survey date (May 15, 2020).

In Figure A3, we visualize the estimated effect of pandemic severity on change in societal values. In particular, we show how for an 'typical individual' from WVS7, defined by having the (marginal) median or mode in all covariates, the number of cumulative COVID-19 infections in the prefecture affects change in EVI and SVI, based on our outcome regressions shown in the main text. The difference in slopes displays the interaction effect of both variables (see Fig. 6 in the main text for estimated coefficients of the interaction effect). As should be expected under a well-specified model, the estimated number of infections that a prefecture *will* have at the point in time when the VIC1 survey is conducted (May 2020) is not related to societal values at the point in time when the WVS7

survey is conducted (September 2019), given the variables included in the model. This is indicated by the flat solid line.
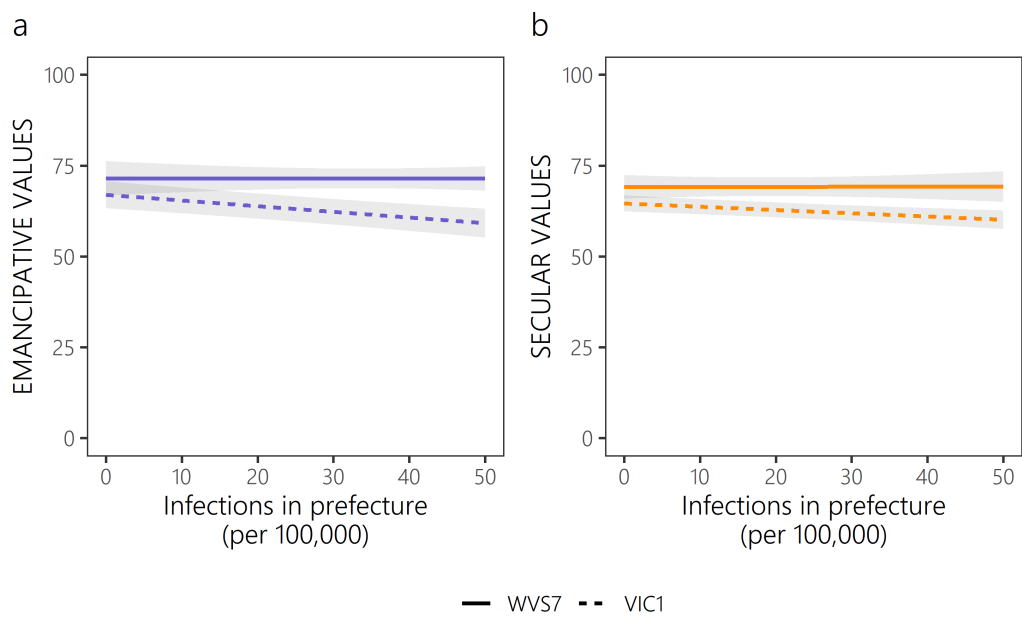

Figure A3: Predicted values for a typical individual as a function of COVID-19 pandemic severity (cumulative infections in the prefecture per 100,000 until the VIC1 survey date) and survey time point. Pointwise 95% confidence intervals are shown.