Appendix “Text-Based Nudges Promoting Rubella Antibody Testing and Vaccination: Evidence from Nationwide Online Field Experiment in Japan”

2022/04/07

A Additional Tabels and Figures

表 1: List of Covariates

	Description	Mean	Std.Dev.
age	(Wave1) Age as of April 2019 based on year of birth and month of birth.	48.66	5.69
coupon2019	(Wave1) Dummy variable taking one if 40 to 46 years old as of April 2019.	0.35	0.48
married	(Wave1) Dummy variable taking one if a respondent is married.	0.58	0.49
education	(Wave1) Years of education.	14.75	2.31
exercise_w1	(Wave1) Dummy variable taking one if a respondent exercises or plays sports more than once a week.	0.22	0.42
health_check	(Wave1) Dummy variable taking one if a respondent has had medical examination at his/her city or place of employment in the past year from the time of the wave 1.	0.68	0.46
flushot	(Wave1) Dummy variable taking one if a respondent is vaccinated against influenza every year.	0.27	0.45
prob_social	(Wave1) What percentage of men in their 40s and 50s does a respondent think may be infected with rubella?	30.38	19.87
handicap	(Wave1) Dummy variable taking one if a respondent believes that if a woman in early pregnancy is infected with rubella, her child may be born with a disability.	0.63	0.48
severity	(Wave1) Dummy variable taking one if a respondent believes that if an adult male is infected with rubella, it will become more severe.	0.92	0.27
handwash	(Wave2) Five Likert scale for the question ”I wash my hands and gargle frequently during the period from the end of the previous questionnaire response to today.”	3.91	1.04
temp_check	(Wave2) Five Likert scale for the question ”I take my tempature frequently during the period from the end of the previous questionnaire response to today.”	2.26	1.22
avoid_out	(Wave2) Five Likert scale for the question ”I am refraining from going out during the end of the previous questionnaire response to today.”	2.96	1.20
avoid_crowd	(Wave2) Five Likert scale for the question ”I avoid crowded places when I go out from the end of the previous questionnaire response to today.”	3.38	1.10
wear_mask	(Wave2) Five Likert scale for the question ”I always wear a medical mask when I go out or meet people during the period from the end of the previous questionnaire response to today.”	3.14	1.38

表 2: Wave 1 セレクションデータの共変量のバランステスト（2019 年度クーポン券配布対象）

	Treatments							
	MHLW	Age expression	Altruistic	Selfish	Social comparison	Valid date	Low-cost	p-v
age	42.862	43.046	43.135	43.045	42.909	42.906	42.866	0.
avoid_crowd	3.328	3.331	3.261	3.211	3.339	3.336	3.273	0.
avoid_out	3.082	3.047	3.028	2.805	2.896	3.038	2.926	0.
education	14.654	14.473	14.595	14.205	14.099	14.348	14.575	0.
exercise_w1	0.246	0.176	0.277	0.189	0.165	0.217	0.213	0.
flushot	0.238	0.260	0.203	0.144	0.140	0.239	0.236	0.
handicap	0.638	0.550	0.595	0.568	0.537	0.543	0.520	0.
handwash	3.885	3.866	3.824	3.764	3.748	3.954	3.744	0.
health_check	0.654	0.626	0.696	0.538	0.603	0.674	0.614	0.
married	0.408	0.458	0.412	0.417	0.455	0.478	0.480	0.
prob_social	27.231	30.000	26.689	30.758	26.529	28.333	27.795	0.
severity	0.892	0.954	0.926	0.894	0.926	0.964	0.913	0.
temp_check	2.180	2.260	2.380	2.179	2.226	2.145	2.157	0.
wear_mask	2.951	3.063	3.113	3.033	2.965	3.115	3.174	0.

表 3: Wave 1 セレクションデータの共変量のバランステスト（2019 年度クーポン券配布対象）

	Treatments							
	MHLW	Age expression	Altruistic	Selfish	Social comparison	Valid date	Low-cost	p-v
age	42.861	43.059	43.102	43.036	42.893	42.898	42.964	0.
avoid_crowd	3.296	3.336	3.273	3.234	3.350	3.305	3.324	0.
avoid_out	3.096	3.034	3.047	2.793	2.932	3.025	2.928	0.
education	14.496	14.471	14.547	14.126	14.010	14.407	14.595	0.
exercise_w1	0.252	0.185	0.266	0.171	0.165	0.195	0.225	0.
flushot	0.235	0.261	0.227	0.135	0.146	0.246	0.207	0.
handicap	0.652	0.563	0.602	0.568	0.544	0.542	0.514	0.
handwash	3.861	3.916	3.797	3.757	3.767	3.915	3.829	0.
health_check	0.643	0.639	0.680	0.532	0.631	0.661	0.640	0.
married	0.391	0.454	0.391	0.360	0.437	0.466	0.477	0.
prob_social	27.739	30.504	27.031	31.982	26.311	28.729	28.018	0.
severity	0.896	0.950	0.922	0.883	0.913	0.975	0.910	0.
temp_check	2.139	2.235	2.414	2.126	2.204	2.203	2.117	0.
wear_mask	2.930	3.076	3.109	3.009	3.010	3.144	3.207	0.

表 4: 2019 年度クーポン券配布対象者に限定した抗体検査とワクチン接種の意向の線形確率モデルの推定結果

	抗体検査		ワクチン接種	
	(1)	(2)	(3)	(4)
Age expression	0.021	0.013	0.020	0.006
	(0.051)	(0.051)	(0.061)	(0.061)
Altruistic	0.144***	0.151***	0.024	0.022
	(0.053)	(0.052)	(0.059)	(0.059)
Selfish	0.073	0.091*	0.039	0.048
	(0.053)	(0.052)	(0.061)	(0.061)
Social comparison	0.040	0.079	0.014	0.021
	(0.053)	(0.052)	(0.062)	(0.061)
Valid date	0.031	0.026	-0.010	-0.021
	(0.051)	(0.050)	(0.060)	(0.060)
Low-cost	0.052	0.053	0.018	0.014
	(0.053)	(0.051)	(0.062)	(0.061)
Num.Obs.	927	881	927	881
R2	0.269	0.364	0.431	0.498
R2 Adj.	0.263	0.349	0.427	0.486
共変量		X		X

注）* p < 0.1、** p < 0.05、*** p < 0.01。頑健標準誤差を使用している。共変量は補論**??**の表**??**に示した変数をすべて使用している。

表 5: 2019 年度クーポン券配布対象者に限定した抗体検査とワクチン接種の行動の線形確率モデルの推定結果

	抗体検査		抗体検査 × ワクチン接種	
	(1)	(2)	(3)	(4)
Age expression	0.032	0.030	0.008	0.007
	(0.029)	(0.028)	(0.015)	(0.015)
Altruistic	0.075**	0.073**	0.038*	0.037*
	(0.032)	(0.032)	(0.021)	(0.021)
Selfish	0.055*	0.067**	0.018	0.022
	(0.032)	(0.032)	(0.018)	(0.018)
Social comparison	0.053	0.065**	0.040*	0.045*
	(0.033)	(0.033)	(0.023)	(0.023)
Valid date	0.008	0.008	0.000	0.001
	(0.025)	(0.025)	(0.012)	(0.012)
Low-cost	0.037	0.041	0.018	0.022
	(0.030)	(0.029)	(0.018)	(0.018)
Num.Obs.	805	805	805	805
R2	0.081	0.106	0.035	0.061
R2 Adj.	0.073	0.082	0.027	0.036
共変量		X		X

注）* p < 0.1、** p < 0.05、*** p < 0.01。頑健標準誤差を使用している。共変量は補論**??**の表**??**に示した変数をすべて使用している。

表 6: 利他強調メッセージと比較した意向に対する介入群の効果 (2019 年度クーポン券配布対象者)

	抗体検査		ワクチン接種	
	(1)	(2)	(3)	(4)
MHLW	-0.144***	-0.151***	-0.024	-0.022
	(0.053)	(0.052)	(0.059)	(0.059)
Age expression	-0.122**	-0.138***	-0.004	-0.016
	(0.054)	(0.052)	(0.060)	(0.058)
Selfish	-0.071	-0.061	0.015	0.026
	(0.055)	(0.054)	(0.060)	(0.058)
Social comparison	-0.103*	-0.072	-0.009	-0.001
	(0.056)	(0.054)	(0.061)	(0.058)
Valid date	-0.112**	-0.125**	-0.033	-0.043
	(0.053)	(0.052)	(0.058)	(0.058)
Low-cost	-0.092*	-0.098*	-0.006	-0.008
	(0.055)	(0.052)	(0.060)	(0.058)
Num.Obs.	927	881	927	881
R2	0.269	0.364	0.431	0.498
R2 Adj.	0.263	0.349	0.427	0.486
共変量		X		X

注）* p < 0.1、** p < 0.05、*** p < 0.01。頑健標準誤差を使用している。共変量は補論**??**の表**??**に示した変数をすべて使用している。

表 7: 利他強調メッセージと比較した意向に対する介入群の効果 (2019 年度クーポン券配布対象者)

	抗体検査		抗体検査 × ワクチン接種	
	(1)	(2)	(3)	(4)
MHLW	-0.075**	-0.073**	-0.038*	-0.037*
	(0.032)	(0.032)	(0.021)	(0.021)
Age expression	-0.042	-0.043	-0.030	-0.029
	(0.036)	(0.036)	(0.022)	(0.022)
Selfish	-0.019	-0.006	-0.020	-0.014
	(0.039)	(0.038)	(0.024)	(0.023)
Social comparison	-0.022	-0.008	0.002	0.008
	(0.039)	(0.039)	(0.028)	(0.028)
Valid date	-0.067**	-0.066**	-0.038*	-0.036*
	(0.033)	(0.033)	(0.021)	(0.021)
Low-cost	-0.037	-0.032	-0.020	-0.014
	(0.037)	(0.036)	(0.024)	(0.024)
Num.Obs.	805	805	805	805
R2	0.081	0.106	0.035	0.061
R2 Adj.	0.073	0.082	0.027	0.036
共変量		X		X

注）* p < 0.1、** p < 0.05、*** p < 0.01。頑健標準誤差を使用している。共変量は補論**??**の表**??**に示した変数をすべて使用している。

表 8: Wave 1 セレクションデータの共変量のバランステスト（2019 年度クーポン券配布対外）

	Treatments							
	MHLW	Age expression	Altruistic	Selfish	Social comparison	Valid date	Low-cost	p-v
age	51.632	51.408	51.226	51.657	51.582	51.545	51.502	0.
avoid_crowd	3.307	3.378	3.429	3.250	3.306	3.296	3.455	0.
avoid_out	2.903	2.917	2.919	2.884	2.825	2.966	2.982	0.
education	14.572	14.655	14.530	14.830	14.566	14.634	14.393	0.
exercise_w1	0.156	0.193	0.239	0.230	0.183	0.203	0.218	0.
flushot	0.228	0.244	0.197	0.270	0.275	0.228	0.251	0.
handicap	0.596	0.630	0.607	0.617	0.574	0.626	0.619	0.
handwash	3.803	3.883	3.900	3.778	3.817	3.833	3.892	0.
health_check	0.632	0.664	0.701	0.683	0.653	0.659	0.644	0.
married	0.600	0.588	0.628	0.657	0.602	0.549	0.619	0.
prob_social	26.920	31.387	30.983	28.522	29.442	27.846	31.925	0.
severity	0.920	0.933	0.919	0.970	0.940	0.931	0.908	0.
temp_check	2.139	2.248	2.210	2.083	2.192	2.086	2.270	0.
wear_mask	3.071	3.191	3.157	3.148	2.961	2.966	3.068	0.

表 9: Wave 1 セレクションデータの共変量のバランステスト（2019 年度クーポン券配布対象外）

	Treatments							
	MHLW	Age expression	Altruistic	Selfish	Social comparison	Valid date	Low-cost	p-v
age	51.695	51.394	51.179	51.662	51.421	51.605	51.512	0.
avoid_crowd	3.295	3.361	3.447	3.239	3.313	3.309	3.433	0.
avoid_out	2.886	2.889	2.932	2.866	2.855	2.964	2.941	0.
education	14.505	14.620	14.553	14.876	14.593	14.610	14.345	0.
exercise_w1	0.159	0.194	0.232	0.229	0.173	0.211	0.202	0.
flushot	0.223	0.245	0.189	0.264	0.280	0.215	0.241	0.
handicap	0.609	0.634	0.637	0.617	0.584	0.628	0.606	0.
handwash	3.823	3.889	3.926	3.751	3.836	3.861	3.867	0.
health_check	0.632	0.667	0.684	0.677	0.645	0.673	0.631	0.
married	0.591	0.560	0.611	0.652	0.598	0.547	0.596	0.
prob_social	27.409	31.296	30.368	29.055	30.187	28.072	32.118	0.
severity	0.923	0.935	0.926	0.970	0.935	0.933	0.921	0.
temp_check	2.095	2.204	2.221	2.100	2.136	2.085	2.182	0.
wear_mask	3.082	3.176	3.116	3.144	2.977	2.942	3.010	0.

表 10: 2019 年度クーポン券配布対象外の男性に限定した抗体検査とワクチン接種の意向の線形確率モデルの推定結果

	抗体検査		ワクチン接種	
	(1)	(2)	(3)	(4)
Age expression	-0.024	-0.036	-0.066	-0.101**
	(0.040)	(0.038)	(0.045)	(0.043)
Altruistic	0.053	0.053	-0.028	-0.059
	(0.042)	(0.042)	(0.045)	(0.045)
Selfish	0.041	0.026	-0.028	-0.053
	(0.042)	(0.040)	(0.046)	(0.043)
Social comparison	-0.037	-0.043	-0.082*	-0.098**
	(0.039)	(0.038)	(0.045)	(0.042)
Valid date	0.029	0.029	-0.028	-0.043
	(0.041)	(0.039)	(0.045)	(0.042)
Low-cost	0.063	0.034	-0.030	-0.052
	(0.042)	(0.040)	(0.045)	(0.043)
Num.Obs.	1688	1578	1688	1578
R2	0.298	0.367	0.492	0.550
R2 Adj.	0.295	0.358	0.490	0.544
共変量		X		X

注）* $p < 0.1$、** $p < 0.05$、*** $p < 0.01$。頑健標準誤差を使用している。共変量は補論**??**の表**??**に示した変数をすべて使用している。

表 11: 2019 年度クーポン券配布対象外の男性に限定した抗体検査とワクチン接種の行動の線形確率モデルの推定結果

	抗体検査		抗体検査 × ワクチン接種	
	(1)	(2)	(3)	(4)
Age expression	0.005	0.004	0.005	0.005
	(0.008)	(0.008)	(0.005)	(0.005)
Altruistic	0.017	0.016	0.005	0.005
	(0.011)	(0.011)	(0.005)	(0.005)
Selfish	0.010	0.009	0.005	0.005
	(0.010)	(0.010)	(0.005)	(0.005)
Social comparison	0.023*	0.022*	0.000	0.000
	(0.012)	(0.012)		(0.001)
Valid date	0.009	0.009	0.004	0.005
	(0.009)	(0.009)	(0.004)	(0.005)
Low-cost	0.005	0.006	0.000	0.000
	(0.008)	(0.008)		(0.001)
Num.Obs.	1467	1467	1467	1467
R2	0.018	0.033	0.005	0.015
R2 Adj.	0.013	0.019	0.000	0.001
共変量		X		X

注）* p < 0.1、** p < 0.05、*** p < 0.01。頑健標準誤差を使用している。共変量は補論**??**の表**??**に示した変数をすべて使用している。

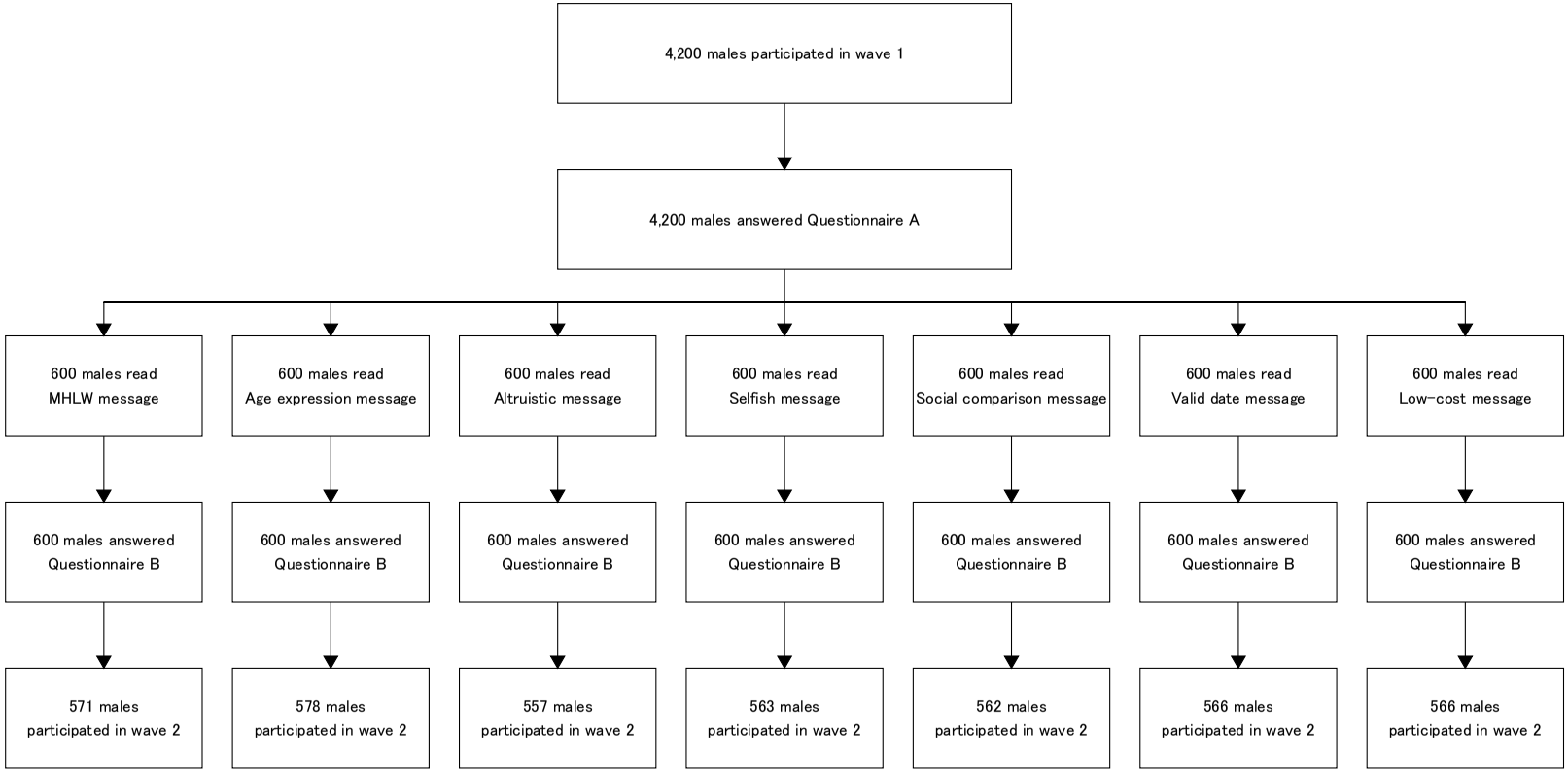

図 1: オンライン調査の概要

Questionnaire A investigated daily health behaviors, knowledge of rubella, infection history, and vaccination history. Questionnaire B investigated the intention to be tested for antibody to rubella and to be vaccinated, as well as socioeconomic attributes. Wave 2 surveyed the behavior of antibody testing and vaccination against rubella since Wave 1.