

Web Material

Factors Associated with Willingness to Receive a COVID-19 Vaccine among 23,819 Adults Aged 50 years and Older: An Analysis of the Canadian Longitudinal Study on Aging

Nicole E. Basta, Nazmul Sohel, Giorgia Sulis, Christina Wolfson, Geva Maimon, Lauren E. Griffith, Susan Kirkland, Jacqueline M. McMillan, Mary Thompson, Parminder Raina, on behalf of the Canadian Longitudinal Study on Aging (CLSA) Team.

Table of Contents

Web Table 1: Demographic characteristics of participants and non-participants	2
Web Table 2: Distribution of self-reported reasons for being likely to receive a COVID-19 vaccine	3
Web Table 3: Response options for survey questions about prior influenza vaccination history and pandemic-related factors of interest	4
Web Table 4: Distribution of self-reported influenza vaccination status (fall 2020), belief in having been previously infected with SARS-CoV-2, and impact of the pandemic on participant and household	5
Web Table 5: Association between participants' sociodemographic characteristics and being likely to receive a COVID-19 vaccine	6
Web Table 6: Association between prior influenza vaccination and pandemic-specific factors and being likely to receive a COVID-19 vaccine	7
Web Figure 1: Distribution of self-reported likelihood of receiving a COVID-19 vaccination, by age, sex and race.....	8
Web Figure 2: Distribution of self-reported likelihood of receiving a COVID-19 vaccination, by education and income level	9
Web Figure 3: Distribution of self-reported likelihood of receiving a COVID-19 vaccination, by province and urban/rural area of residence	10

Web Table 1: Demographic characteristics of participants and non-participants. Basic demographic characteristics of a) individuals who were invited to participate in the CLSA COVID-19 baseline survey and for whom data are available (n = 42,457), b) those who were invited but did not respond or refused (n = 13,898), c) those who completed the CLSA COVID-19 baseline survey (n = 28,559), and d) those who – after completing the COVID-19 baseline survey – also completed the COVID-19 exit survey (n = 24,112). Frequencies and proportions (with Clopper-Pearson 95% confidence intervals) are reported.

	CLSA participants who were invited to participate in the COVID-19 questionnaire study		CLSA participants who were invited to participate in the COVID-19 questionnaire study but did not respond or refused		CLSA participants who consented to the COVID-19 questionnaire study and completed the COVID-19 baseline survey		CLSA participants who completed both the COVID-19 baseline survey and the COVID-19 exit survey	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Overall	42,457(*)	100	13,898	100	28,559	100	24,112	100
Age group								
50–54	2,519	5.9 (5.7-6.2)	982	7.1 (6.6-7.5)	1,537	5.3 (5.1-5.6)	1,109	4.6 (4.3-4.9)
55–64	13,506	31.8 (31.4-32.3)	4541	32.7 (31.9-33.5)	8,965	31.4 (30.9-31.9)	7,312	30.3 (29.7-30.9)
65–74	14,129	33.3 (32.8-33.7)	4,040	29.1 (28.3-29.8)	10,089	35.3 (34.8-35.9)	8,795	36.5 (35.9-37.1)
≥75	12,302	29.0 (28.5-29.4)	4,335	31.2 (30.4-32.0)	7,967	27.9 (27.4-28.4)	6,896	28.6 (28.0-29.2)
Sex at birth								
Female	21,775	51.3 (50.8-51.8)	6,794	48.9 (48.1-49.7)	14,981	47.5 (47.0-48.1)	12,818	53.2 (52.5-53.8)
Male	20,682	48.7 (48.2-49.2)	7,104	51.1 (50.3-51.9)	13,578	52.5 (51.9-53.0)	11,294	46.8 (46.2-47.5)
Province								
Newfoundland	2,672	6.3 (6.1-6.5)	981	7.1 (6.6-7.5)	1,691	5.9 (5.7-6.2)	1,371	5.7 (5.4-6.0)
Prince Edward Island	794	1.9 (1.7-2.0)	325	2.3 (2.1-2.6)	469	1.6 (1.5-1.8)	389	1.6 (1.5-1.8)
Nova Scotia	3,784	8.9 (8.6-9.2)	1,240	8.9 (8.5-9.4)	2,544	8.9 (8.6-9.2)	2,154	8.9 (8.6-9.3)
New Brunswick	1,011	2.4 (2.2-2.5)	445	3.2 (2.9-3.5)	566	2.0 (1.8-2.2)	455	1.9 (1.7-2.1)
Quebec	8,251	19.4 (19.1-19.8)	3,051	22.0 (21.3-22.7)	5,200	18.2 (17.8-18.7)	4,353	18.1 (17.6-18.5)
Ontario	9,296	21.9 (21.5-22.3)	2,727	19.6 (19.0-20.3)	6,569	23.0 (22.5-23.5)	5,580	23.1 (22.6-23.7)
Manitoba	3,670	8.6 (8.4-8.9)	1,131	8.1 (7.7-8.6)	2,539	9.0 (8.6-9.2)	2,185	9.1 (8.7-9.4)
Saskatchewan	1,019	2.4 (2.3-2.6)	374	2.7 (2.4-3.0)	645	2.3 (2.1-2.4)	568	2.4 (2.2-2.6)
Alberta	4,216	9.9 (9.6-10.2)	1,324	9.5 (9.0-10.0)	2,892	10.1 (9.8-10.5)	2,414	10.0 (9.6-10.4)
British Columbia	7,740	18.2 (17.9-18.6)	2,299	16.5 (15.9-17.2)	5,441	19.1 (18.6-19.5)	4,643	19.3 (18.8-19.8)
Yukon	2	0.0	0	0.0	2	0.0	0	0.0
Northwest Territories	1	0.0	1	0.0	0	0.0	0	0.0
Nunavut	1	0.0	0	0.0	1	0.0	0	0.0

(*) Demographic characteristics not available for 54/42,511 individuals who were invited to participate in the COVID-19 survey (all non-responders).

Web Table 2: Distribution of self-reported reasons for being likely to receive a COVID-19 vaccine. The 19,961 participants who reported that they were very or somewhat likely to receive a COVID-19 vaccine could select their primary reason from a list of five options or select 'other'. The percentage of participants providing each response and 95% CIs are shown by demographic category.

	Responders	I want to protect myself	I want to protect my family and loved ones	I am concerned about COVID-19 in general	I want to contribute to ending COVID-19 outbreaks	My doctor or other health care professional recommends vaccines	Other
	N	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Overall	19,961	37.5 (36.8,38.2)	25.7 (25.1,26.3)	10.3 (9.9,10.7)	24.0 (23.4,24.6)	1.9 (1.7,2.1)	0.6 (0.5,0.8)
Age group							
50–54	897	26.1 (23.3,29.1)	33.0 (30.0,36.1)	8.4 (6.7,10.4)	30.2 (27.3,33.3)	1.0 (0.5,1.9)	1.3 (0.8,2.3)
55–64	5,849	29.2 (28.1,30.4)	29.9 (28.8,31.1)	10.1 (9.3,10.8)	28.6 (27.4,29.8)	1.6 (1.3,1.9)	0.6 (0.5,0.9)
65–74	7,464	40.2 (39.1,41.3)	24.2 (23.3,25.2)	10.3 (9.6,11.0)	23.2 (22.2,24.2)	1.6 (1.4,1.9)	0.5 (0.3,0.7)
≥75	5,731	44.2 (42.9,45.5)	22.1 (21.0,23.1)	10.8 (10.0,11.6)	19.5 (18.5,20.5)	2.8 (2.4,3.2)	0.7 (0.5,1.0)
Sex at birth							
Male	9,855	36.6 (35.6,37.5)	28.8 (27.9,29.7)	9.6 (9.0,10.1)	22.5 (21.7,23.4)	1.9 (1.7,2.2)	0.6 (0.5,0.8)
Female	10,106	38.4 (37.4,39.3)	22.7 (21.9,23.5)	10.9 (10.3,11.5)	25.5 (24.6,26.3)	1.9 (1.6,2.2)	0.7 (0.5,0.9)
Education							
Less than secondary school graduation	779	41.8 (38.4,45.3)	25.7 (22.7,28.9)	9.5 (7.6,11.8)	19.0 (16.4,21.9)	3.3 (2.3,4.9)	0.6 (0.3,1.5)
Secondary school graduation	1804	36.1 (34.0,38.4)	27.8 (25.8,29.9)	11.9 (10.5,13.5)	21.5 (19.6,23.4)	2.2 (1.6,3.0)	0.5 (0.3,1.0)
Some post-secondary education	1,383	34.9 (32.4,37.4)	26.0 (23.8,28.4)	12.9 (11.3,14.8)	22.8 (20.6,25.1)	2.7 (1.9,3.7)	0.7 (0.4,1.3)
Post-secondary degree/diploma	15,963	37.7 (36.9,38.4)	25.4 (24.7,26.1)	9.9 (9.4,10.3)	24.7 (24.0,25.3)	1.7 (1.6,2.0)	0.7 (0.5,0.8)
Not available	32	34.4 (20.2,52.1)	21.9 (10.8,39.3)	15.6 (6.7,32.5)	28.1 (15.3,45.8)	0.0	0.0
Annual household income							
<\$20,000	562	45.9 (41.8,50.0)	16.9 (14.0,20.2)	9.4 (7.3,12.1)	22.6 (19.3,26.2)	4.1 (2.7,6.1)	1.1 (0.5,2.4)
\$20,000–\$49,999	3,713	40.2 (38.6,41.7)	22.5 (21.2,23.9)	10.9 (9.9,12.0)	22.9 (21.6,24.3)	2.6 (2.1,3.1)	0.9 (0.7,1.3)
\$50,000–\$99,999	7,217	37.2 (36.1,38.3)	26.2 (25.2,27.2)	10.4 (9.7,11.1)	23.8 (22.8,24.8)	1.9 (1.6,2.2)	0.5 (0.4,0.7)
\$100,000–\$149,999	3,989	35.5 (34.0,37.0)	27.7 (26.3,29.0)	10.2 (9.3,11.1)	24.8 (23.5,26.2)	1.5 (1.2,1.9)	0.4 (0.2,0.6)
≥\$150,000	3,375	34.9 (33.3,36.6)	28.0 (26.5,29.6)	9.4 (8.4,10.4)	25.8 (24.4,27.3)	1.2 (0.8,1.6)	0.7 (0.5,1.1)
Not available	1,105	41.1 (38.2,44.0)	22.7 (20.3,25.3)	11.0 (9.2,12.9)	21.7 (19.4,24.2)	2.5 (1.8,3.6)	1.0 (0.6,1.8)
Race							
Non-white	671	30.0 (26.6,33.5)	30.4 (27.0,34.0)	11.6 (9.4,14.3)	24.7 (21.6,28.1)	2.5 (1.6,4.0)	0.7 (0.3,1.8)
white	19,266	37.8 (37.1,38.4)	25.5 (24.9,26.1)	10.2 (9.8,10.7)	24.0 (23.4,24.6)	1.9 (1.7,2.1)	0.6 (0.5,0.8)
Not available	24	29.2 (14.6,49.8)	37.5 (20.8,57.8)	4.2 (0.6,24.4)	25.0 (11.7,45.6)	4.2 (0.6,24.4)	0.0
Province							
Newfoundland	1,159	38.1 (35.4,41.8)	27.7 (25.2,30.3)	11.0 (9.4,13.0)	20.9 (18.6,23.3)	1.8 (1.2,2.8)	0.4 (0.2,1.0)
Prince Edward Island	317	39.1 (33.9,44.6)	22.7 (18.4,27.7)	9.8 (7.0,13.6)	28.1 (23.4,33.3)	0.3 (0.0,2.2)	0.0
Nova Scotia	1,872	34.4 (32.3,36.6)	27.8 (25.8,29.9)	11.6 (10.3,13.2)	23.7 (21.8,25.7)	2.0 (1.5,2.8)	0.4 (0.2,0.8)
New Brunswick	360	31.1 (26.5,36.1)	31.9 (27.3,36.9)	9.7 (7.1,13.2)	22.5 (18.5,27.1)	4.2 (2.5,6.8)	0.6 (0.1,2.2)
Quebec	3,411	43.1 (41.5,44.8)	22.2 (20.9,23.6)	8.0 (7.1,9.0)	25.1 (23.7,26.6)	1.3 (1.0,1.8)	0.2 (0.1,0.4)
Ontario	4,688	37.2 (35.9,38.6)	26.6 (25.4,27.9)	9.5 (8.7,10.4)	24.1 (22.9,25.3)	2.0 (1.6,2.4)	0.6 (0.4,0.8)
Manitoba	1,794	36.5 (34.3,38.7)	25.2 (23.2,27.3)	11.0 (9.7,12.6)	23.9 (22.0,25.9)	2.6 (2.0,3.5)	0.8 (0.5,1.3)
Saskatchewan	451	35.3 (31.0,39.8)	31.5 (27.4,35.9)	11.5 (8.9,14.8)	19.7 (16.3,23.7)	1.1 (0.5,2.6)	0.9 (0.3,2.3)
Alberta	1,955	35.0 (33.0,37.2)	27.1 (25.2,29.1)	11.5 (10.2,13.0)	24.0 (22.2,26.0)	1.5 (1.0,2.1)	0.8 (0.5,1.3)
British Columbia	3,954	36.5 (35.1,38.1)	24.4 (23.1,25.8)	11.2 (10.3,12.3)	24.4 (23.1,25.8)	2.2 (1.8,2.7)	1.2 (0.9,1.6)
Urban/Rural							
Rural	3,315	34.8 (33.2,36.4)	26.9 (25.4,28.4)	11.2 (10.1,12.3)	24.8 (23.3,26.3)	1.8 (1.4,2.4)	0.6 (0.4,0.9)
Urban	16,540	38.0 (37.3,38.8)	25.4 (24.8,26.1)	10.1 (9.6,10.5)	23.9 (23.3,24.6)	1.9 (1.7,2.1)	0.7 (0.5,0.8)
Not available	106	38.7 (29.9,48.3)	28.3 (20.6,37.6)	12.3 (7.3,20.0)	17.9 (11.7,26.4)	1.9 (0.5,7.2)	0.9 (0.1,6.4)

Web Table 3: Response options for survey questions about prior influenza vaccination history and pandemic-related factors of interest.

Survey question	Possible responses	Categorization for analysis	Covariate
Have you received a seasonal flu vaccination since September 1st 2020?	No, and I do not plan to receive a flu vaccine No, but I plan to receive a flu vaccine Yes Don't know/No answer/Refused/Missing	No/Not planning to Planning to Vaccinated Not available	Influenza vaccination status (Fall 2020)
How likely do you think it is that you have ever been infected with the virus that causes COVID-19?	Very likely Somewhat likely Uncertain Somewhat unlikely Very unlikely Don't know/No answer/Refused/Missing	Likely Uncertain Unlikely Not available	Believe previously infected with SARS-CoV-2
Taking everything about COVID-19 into account, how would you describe the consequences of COVID-19 on you and your household?	Very positive Positive No effect Negative Very negative Don't know/No answer/Refused/Missing	Positive No effect Negative Not available	Consequences of COVID-19 on participant and household

Web Table 4: Distribution of self-reported influenza vaccination status (fall 2020), belief in having been previously infected with SARS-CoV-2, and impact of the pandemic on participant and household. The percentage of participants providing each response and 95% CIs are shown by response category; participants who provided a response about their likelihood of receiving a COVID-19 vaccine were included in this analysis (n = 23,819).

	Total	Likely to Receive COVID-19 vaccine		Unlikely to receive COVID-19 vaccine	
	N (%)	N	% (95% CI)	N	% (95% CI)
Influenza vaccination status (Fall 2020)					
No/Not planning to	4,221 (17.7)	2,139	50.7 (49.2,52.2)	2,082	49.3 (47.8,50.8)
Planning to	12,201 (51.2)	11,102	91.0 (90.5,91.5)	1,099	9.0 (8.5,9.5)
Vaccinated	7,192 (30.2)	6,680	92.9 (92.3,93.5)	512	7.1 (6.5,7.7)
Not available	205 (0.9)	123	60.0 (53.1,66.5)	82	40.0 (33.5,46.9)
Believe previously infected with SARS-CoV-2					
Likely	1,063 (4.5)	836	78.6 (76.1,81.0)	227	21.4 (19.0,23.9)
Uncertain	1,893 (8.1)	1,494	78.9 (77.0,80.7)	399	21.1 (19.3,23.0)
Unlikely	20,487 (87.4)	17,421	85.0 (84.5,85.5)	3,066	15.0 (14.5,15.5)
Not available	376 (1.6)	293	77.9 (73.5,81.8)	83	22.1 (18.2,26.5)
Consequences of COVID-19 on participant and household					
Positive	1,534 (6.4)	1,233	80.4 (78.3,82.3)	301	19.6 (17.7,21.7)
No effect	6,941 (29.1)	5,616	80.9 (80.0,81.8)	1,325	19.1 (18.2,20.0)
Negative	14,529 (61.0)	12,561	86.5 (85.9,87.0)	1,968	13.5 (13.0,14.1)
Not available	815 (3.4)	634	77.8 (74.8,80.5)	181	22.2 (19.5,25.2)

Web Table 5: Association between participants' sociodemographic characteristics and being likely to receive a COVID-19 vaccine. Unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) are drawn from logistic regression models.

	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Sex at birth		
Female	Ref.	Ref.
Male	1.9 (1.8, 2.0)	1.7 (1.5, 1.8)
Age group		
50–54	Ref.	Ref.
55–64	1.0 (0.8, 1.1)	1.0 (0.9, 1.2)
65–74	1.3 (1.1, 1.6)	1.8 (1.5, 2.1)
≥75	1.2 (1.0, 1.4)	1.9 (1.6, 2.3)
Race		
Non-white	Ref.	Ref.
white	1.9 (1.6, 2.2)	2.0 (1.7, 2.3)
Highest education		
Less than secondary school graduation	Ref.	Ref.
Secondary school graduation	1.3 (1.1, 1.5)	1.1 (1.0, 1.4)
Some post-secondary education	1.6 (1.4, 2.0)	1.3 (1.1, 1.6)
Post-secondary degree/diploma	2.2 (2.0, 2.6)	1.7 (1.4, 2.0)
Annual household income		
<\$20,000	Ref.	Ref.
\$20,000–\$49,999	1.7 (1.4, 2.0)	1.5 (1.2, 1.7)
\$50,000–\$99,999	2.8 (2.4, 3.2)	2.3 (1.9, 2.7)
\$100,000–\$149,999	3.4 (2.8, 4.0)	3.0 (2.5, 3.6)
≥\$150,000	4.6 (3.8, 5.5)	4.3 (3.6, 5.3)
Province		
Ontario	Ref.	Ref.
Newfoundland	1.0 (0.9, 1.2)	1.1 (0.9, 1.3)
Prince Edward Island	0.9 (0.7, 1.2)	1.2 (0.9, 1.6)
Nova Scotia	1.3 (1.1, 1.5)	1.5 (1.2, 1.7)
New Brunswick	0.7 (0.6, 0.9)	0.9 (0.7, 1.2)
Quebec	0.7 (0.6, 0.8)	0.8 (0.7, 0.9)
Manitoba	0.9 (0.8, 1.0)	1.0 (0.9, 1.2)
Saskatchewan	0.8 (0.6, 0.9)	0.8 (0.7, 1.1)
Alberta	0.8 (0.7, 0.9)	0.7 (0.7, 0.9)
British Columbia	1.1 (1.0, 1.3)	1.1 (1.0, 1.3)
Urban/Rural		
Rural	Ref.	Ref.
Urban	1.5 (3.5, 4.1)	1.4 (1.3, 1.6)

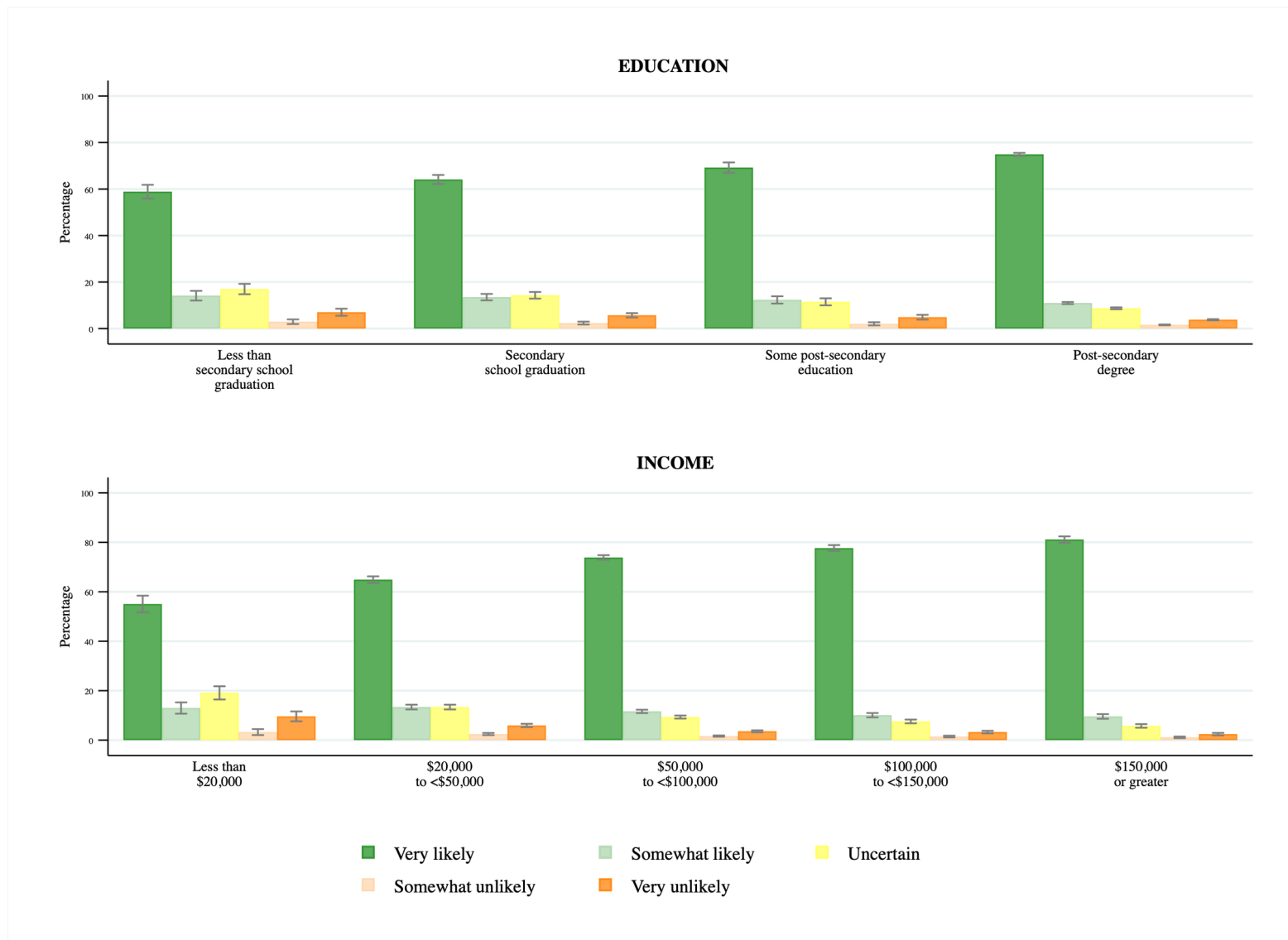
Web Table 6: Association between prior influenza vaccination and pandemic-specific factors and being likely to receive a COVID-19 vaccine. Association between three covariates of interest (self-reported influenza vaccination status during fall 2020, belief in having been infected with SARS-CoV-2, and impact of COVID-19 on the participant and their household) with being likely to receive a COVID-19 vaccine. Unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) were drawn from logistic regression models. Adjusted ORs were estimated from a model adjusted for age, sex, race, education, income, province and urban/rural area of residence as described in the methods.

	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Influenza vaccination status (Fall 2020)		
No/Not planning to	Ref.	Ref.
Planning to	9.8 (9.0, 10.7)	10.5 (9.5, 11.6)
Vaccinated	12.7 (11.4, 14.2)	14.3 (12.5, 16.2)
Believe previously infected with SARS-CoV-2		
Likely	Ref.	Ref.
Uncertain	1.0 (0.8, 1.2)	1.1 (0.9, 1.4)
Unlikely	1.5 (1.3, 1.8)	1.6 (1.3, 1.9)
Impact of COVID-19 on participant and household		
Positive	Ref.	Ref.
No effect	1.0 (0.9, 1.2)	1.0 (0.8, 1.1)
Negative	1.6 (1.4, 1.8)	1.3 (1.1, 1.6)

Web Figure 1: Distribution of self-reported likelihood of receiving a COVID-19 vaccination, by age, sex and race. Survey participants (n=23,819) reported whether they were very likely, somewhat likely, uncertain, somewhat unlikely, or very unlikely to receive COVID-19 vaccine.



Web Figure 2: Distribution of self-reported likelihood of receiving a COVID-19 vaccination, by education and income level. Survey participants (n=23,819) reported whether they were very likely, somewhat likely, uncertain, somewhat unlikely, or very unlikely to receive COVID-19 vaccine.



Web Figure 3: Distribution of self-reported likelihood of receiving a COVID-19 vaccination, by province and urban/rural area of residence. Survey participants (n=23,819) reported whether they were very likely, somewhat likely, uncertain, somewhat unlikely, or very unlikely to receive COVID-19 vaccine.

