

Online supplementary materials

Sociodemographic and socioeconomic disparities in COVID-19 vaccine uptake in Belgium – A nationwide record linkage study

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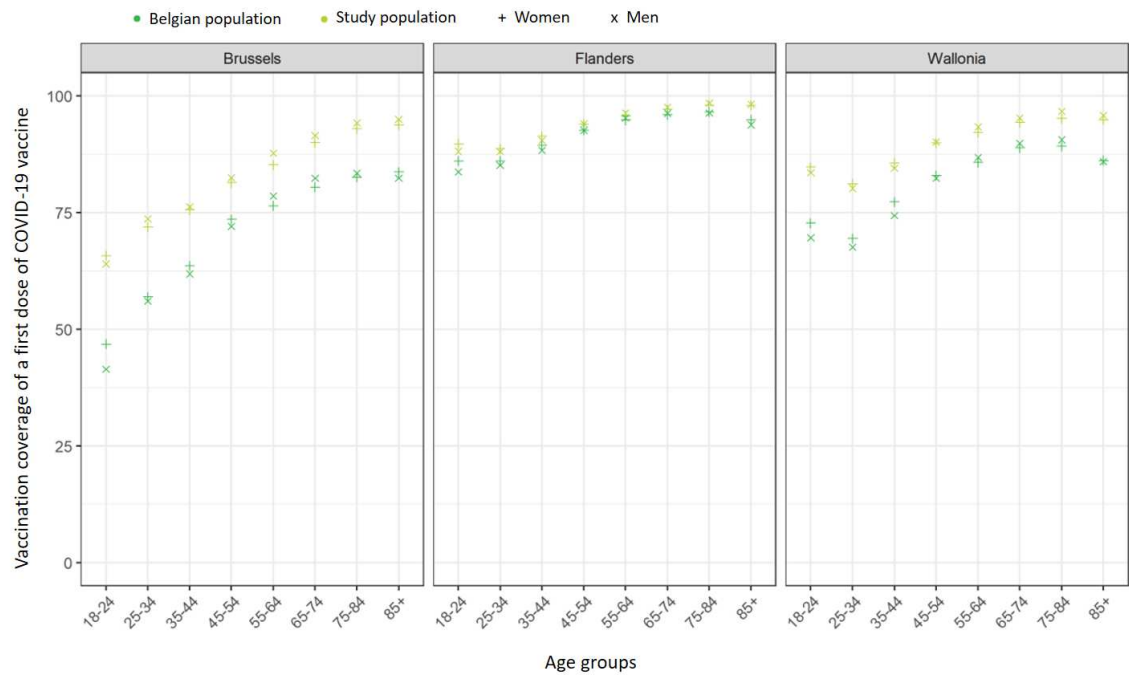
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Supplementary Figure 1: Vaccination coverage of a first dose of COVID-19 vaccine according to region, age group, and sex in the 2021 Belgian adult population and in our study population including only adults tested at least once in Belgium by August 31st 2021, Belgium, December 28th 2020 - August 31st 2021.



Supplementary Tables

Supplementary Table 1: Data holder and time frame for all sociodemographic and socioeconomic variables included as covariates in the logistic regression models, Belgium, December 28th 2020 - August 31st 2021.

Variables	Data holder	Time frame
Age	National register	March 2022
Sex	National register	March 2022
Region	National register	March 2022
Migration background	Statistics Belgium	August 2021
Household type	Statistics Belgium	August 2021
Income	Statistics Belgium	2018 (fiscal year 2019)
Education level	Statistics Belgium	Census 2017
Employment status	Statistics Belgium	Year 2019
Healthcare degree	Common Base Registry for HealthCare Actor	January 2021

Supplementary Table 2: Characterization of the population with at least one missing information regarding household type, education level, income, or employment status relative to the total population by each sociodemographic and socioeconomic characteristic.

Variables	Total (n=5,342,110)	At least one missing information (n=764,857)	At least one missing information to the total population
	n	n	% _{row}
Age groups (years)			
18-24	645,416	55,991	8.66
25-34	1,051,576	182,302	17.34
35-44	978,478	192,936	19.72
45-54	903,514	133,289	14.75
55-64	797,786	76,903	9.64
65-74	511,784	46,103	9.01
75-84	296,974	37,353	12.58
85+	156,582	39,980	25.53
Regions			
Brussels	579,687	205,993	35.53
Flemish	3,348,547	392,471	11.72
Walloon	1,413,876	166,393	11.77
Sex			
Women	2,849,932	401,457	14.09
Men	2,492,178	363,400	14.58
Migration background			
Belgian natives	3,652,357	181,359	4.97
Second-generation migrants	324,420	13,868	4.27
First-generation European migrants	607,586	265,626	43.72
First-generation non-European migrants	757,747	304,004	40.12
Household type			
One person households	878,506	135,337	15.41
Collectivity	96,213	67,015	69.65
Couples without children	1,302,576	124,823	9.58
Couples with children	2,363,467	315,030	13.33
Single parents	548,369	61,662	11.24
Missing	26,752	26,752	100
Other	126,227	34,238	27.12
Education level			
Low	1,567,744	44,076	2.81
Moderate	1,569,361	15,132	0.96
High	1,511,494	12,138	0.80
Missing	693,511	693,511	100
Income			
Low	1,815,339	352,284	19.41
Moderate	1,564,464	126,673	8.10
High	1,762,607	86,200	4.89
Missing	199,700	199,700	100
Healthcare degree			
No	4,918,258	738,114	15.01
Yes	423,852	26,743	6.31
Employment status			
Unemployed	1,874,544	277,670	14.81
Employed	3,364,795	384,416	11.42
Missing	102,771	102,771	100

n: number of individuals; %row: percentage in row

Supplementary Table 3: Conditional probabilities of not having receive a first dose of COVID-19 vaccine obtained by logistic regression models stratified by region and logistic regression models including region as an interaction term between each sociodemographic and socioeconomic characteristic, Belgium, December 28th 2020 - August 31st 2021.

Variables	Flanders		Brussels		Wallonia	
	Probabilities (CI95%)		Probabilities (CI95%)		Probabilities (CI95%)	
	Stratification	Interaction	Stratification	Interaction	Stratification	Interaction
Age (years) ^a						
18-24	0.076 (0.075-0.077)	0.086 (0.085-0.087)	0.301 (0.298-0.305)	0.197 (0.194-0.201)	0.133 (0.132-0.135)	0.133 (0.131-0.135)
25-34	0.089 (0.088-0.090)	0.010 (0.099-0.101)	0.262 (0.260-0.264)	0.169 (0.167-0.171)	0.176 (0.175-0.178)	0.176 (0.175-0.178)
35-44	0.065 (0.064-0.065)	0.073 (0.072-0.074)	0.203 (0.201-0.206)	0.129 (0.127-0.131)	0.129 (0.128-0.131)	0.129 (0.128-0.130)
45-54	0.046 (0.045-0.047)	0.052 (0.051-0.052)	0.150 (0.148-0.152)	0.093 (0.091-0.095)	0.089 (0.088-0.090)	0.089 (0.087-0.090)
55-64	0.037 (0.036-0.038)	0.041 (0.041-0.042)	0.130 (0.127-0.132)	0.079 (0.077-0.081)	0.071 (0.070-0.072)	0.071 (0.070-0.072)
65-74	0.023 (0.022-0.023)	0.026 (0.025-0.027)	0.101 (0.098-0.104)	0.061 (0.059-0.062)	0.049 (0.048-0.051)	0.050 (0.048-0.051)
75-84	0.015 (0.014-0.015)	0.017 (0.016-0.018)	0.078 (0.075-0.083)	0.047 (0.044-0.049)	0.038 (0.036-0.039)	0.038 (0.036-0.039)
85+	0.017 (0.016-0.018)	0.020 (0.019-0.020)	0.087 (0.081-0.093)	0.052 (0.048-0.056)	0.046 (0.044-0.049)	0.046 (0.044-0.049)
Sex ^a						
Women	0.047 (0.046-0.047)	0.053 (0.054-0.057)	0.190 (0.188-0.191)	0.110 (0.108-0.111)	0.096 (0.096-0.097)	0.097 (0.096-0.102)
Men	0.050 (0.049-0.050)	0.057 (0.057-0.059)	0.188 (0.186-0.189)	0.109 (0.107-0.110)	0.101 (0.100-0.102)	0.101 (0.101-0.102)
Migration background ^a						
Belgian natives	0.036 (0.036-0.037)	0.038 (0.038-0.038)	0.106 (0.104-0.107)	0.084 (0.082-0.085)	0.080 (0.079-0.080)	0.080 (0.079-0.080)
Second generation migrants	0.092 (0.090-0.093)	0.096 (0.095-0.097)	0.218 (0.215-0.222)	0.178 (0.175-0.182)	0.127 (0.126-0.129)	0.128 (0.126-0.129)
First generation European migrants	0.141 (0.140-0.143)	0.147 (0.146-0.148)	0.208 (0.206-0.210)	0.169 (0.167-0.171)	0.150 (0.149-0.152)	0.150 (0.149-0.152)
First generation non-European migrants	0.109 (0.107-0.110)	0.114 (0.113-0.115)	0.253 (0.251-0.255)	0.208 (0.206-0.210)	0.171 (0.169-0.173)	0.171 (0.169-0.173)

Supplementary table 3: Continued

Variables	Flanders		Brussels		Wallonia	
	Probabilities (CI95%)		Probabilities (CI95%)		Probabilities (CI95%)	
	Stratification	Interaction	Stratification	Interaction	Stratification	Interaction
Household type ^a						
Couples with children	0.046 (0.046-0.047)	0.053 (0.052-0.053)	0.202 (0.200-0.204)	0.119 (0.118-0.121)	0.094 (0.093-0.095)	0.094 (0.094-0.095)
Couples	0.043 (0.043-0.044)	0.049 (0.049-0.050)	0.153 (0.151-0.156)	0.088 (0.087-0.090)	0.089 (0.088-0.091)	0.090 (0.089-0.091)
Single parents	0.061 (0.061-0.062)	0.070 (0.070-0.071)	0.216 (0.213-0.219)	0.129 (0.126-0.131)	0.116 (0.115-0.118)	0.117 (0.116-0.119)
One person households	0.059 (0.058-0.060)	0.067 (0.067-0.068)	0.186 (0.184-0.188)	0.109 (0.107-0.112)	0.119 (0.117-0.120)	0.119 (0.118-0.121)
Collectivity	0.031 (0.030-0.033)	0.035 (0.033-0.037)	0.142 (0.131-0.153)	0.083 (0.076-0.090)	0.055 (0.052-0.058)	0.055 (0.052-0.058)
Other	0.064 (0.063-0.066)	0.073 (0.071-0.074)	0.178 (0.173-0.182)	0.104 (0.102-0.108)	0.125 (0.122-0.129)	0.125 (0.121-0.129)
Missing	0.046 (0.044-0.048)	0.057 (0.054-0.059)	0.181 (0.173-0.190)	0.113 (0.107-0.119)	0.076 (0.071-0.081)	0.099 (0.093-0.105)
Income ^a						
High	0.032 (0.031-0.032)	0.036 (0.036-0.036)	0.109 (0.107-0.111)	0.068 (0.067-0.070)	0.068 (0.068-0.069)	0.069 (0.069-0.070)
Moderate	0.048 (0.048-0.049)	0.054 (0.054-0.055)	0.182 (0.180-0.185)	0.119 (0.117-0.121)	0.095 (0.094-0.096)	0.096 (0.095-0.097)
Low	0.075 (0.074-0.075)	0.083 (0.083-0.084)	0.234 (0.232-0.235)	0.155 (0.153-0.157)	0.137 (0.136-0.138)	0.138 (0.137-0.139)
Missing	0.068 (0.066-0.070)	0.075 (0.073-0.076)	0.183 (0.179-0.186)	0.119 (0.116-0.122)	0.122 (0.118-0.126)	0.122 (0.119-0.126)
Population aged 25 years and over (n=4,696,694)						
Education level ^b						
High	0.038 (0.037-0.038)	0.043 (0.042-0.043)	0.144 (0.141-0.146)	0.082 (0.081-0.084)	0.081 (0.080-0.082)	0.081 (0.081-0.083)
Moderate	0.049 (0.048-0.049)	0.055 (0.055-0.056)	0.213 (0.211-0.216)	0.127 (0.124-0.129)	0.096 (0.095-0.097)	0.098 (0.096-0.098)
Low	0.050 (0.049-0.051)	0.057 (0.056-0.057)	0.210 (0.208-0.213)	0.125 (0.123-0.128)	0.103 (0.102-0.104)	0.104 (0.102-0.105)
Missing	0.049 (0.048-0.050)	0.055 (0.055-0.056)	0.153 (0.151-0.155)	0.088 (0.087-0.090)	0.095 (0.094-0.097)	0.096 (0.094-0.097)
Healthcare degree ^b						
Yes	0.034 (0.033-0.035)	0.039 (0.038-0.039)	0.124 (0.120-0.128)	0.076 (0.073-0.078)	0.071 (0.069-0.072)	0.071 (0.069-0.072)
No	0.046 (0.046-0.046)	0.053 (0.052-0.053)	0.174 (0.172-0.175)	0.108 (0.107-0.109)	0.095 (0.095-0.096)	0.095 (0.095-0.096)

Supplementary table 3: Continued

Variables	Flanders		Brussels		Wallonia	
	Probabilities (CI95%)		Probabilities (CI95%)		Probabilities (CI95%)	
	Stratification	Interaction	Stratification	Interaction	Stratification	Interaction
Population aged between 25 and 65 years (n=3,792,100)						
Employment status ^c						
Employed	0.055 (0.055-0.056)	0.062 (0.062-0.063)	0.193 (0.191-0.194)	0.122 (0.120-0.123)	0.109 (0.108-0.109)	0.111 (0.110-0.111)
Unemployed	0.084 (0.083-0.085)	0.094 (0.093-0.095)	0.242 (0.239-0.244)	0.155 (0.153-0.158)	0.146 (0.144-0.147)	0.149 (0.147-0.150)
Missing	0.074 (0.072-0.077)	0.082 (0.080-0.084)	0.184 (0.179-0.189)	0.116 (0.112-0.120)	0.134 (0.129-0.140)	0.136 (0.130-0.141)

^a Logistic regression model applied on all age groups (Flanders, n=3,348,547; Brussel, n=579,687; Wallonia, n=1,413,876). Probabilities are adjusted for age, sex, region, migration background, household type, and income.

^b Logistic regression model applied only to individuals aged over 25 years (Flanders, n=2,955,807; Brussel, n=505,082; Wallonia, n=1,235,805). Probabilities are adjusted for age, sex, region, migration background, household type, income, education level, and healthcare degree.

^c Logistic regression model applied only to individuals aged 25 to 65 years (Flanders, n=2,357,375; Brussel, n=436,356; Wallonia, n=998,369). Probabilities are adjusted for age, sex, region, migration background, household type, and employment status. Income being strongly correlated with employment status, probabilities are not adjusted for income when employment status is included in the model.

Supplementary Table 4: Adjusted OR and their 95% confidence interval (CI) for the association between sociodemographic and socioeconomic characteristics and the odds of not having received a first dose of COVID-19 vaccine stratified by region, Belgium, December 28th 2020 - August 31st 2021.

Variables	Flanders			Brussels			Wallonia		
	Adjusted OR (CI95%)			Adjusted OR (CI95%)			Adjusted OR (CI95%)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c
Age (years)									
18-24	5.46 (5.26-5.66)	-	-	5.01 (4.73-5.32)	-	-	3.91 (3.75-4.07)	-	-
25-34	6.46 (6.24-6.69)	7.02 (6.77-7.27)	2.79 (2.74-2.83)	4.15 (3.92-4.39)	4.64 (4.38-4.91)	2.44 (2.38-2.50)	5.45 (5.24-5.67)	5.70 (5.48-5.93)	3.03 (2.97-3.09)
35-44	4.57 (4.41-4.74)	4.91 (4.73-5.09)	2.02 (1.98-2.05)	3.01 (2.85-3.19)	3.48 (3.39-3.69)	1.76 (1.72-1.81)	3.77 (3.63-3.93)	3.97 (3.81-4.13)	2.11 (2.06-2.15)
45-54	3.19 (3.07-3.30)	3.35 (3.23-3.47)	1.39 (1.36-1.41)	2.08 (1.97-2.21)	2.34 (2.21-2.48)	1.24 (1.20-1.27)	2.47 (2.38-2.57)	2.58 (2.47-2.68)	1.37 (1.34-1.40)
55-64	2.51 (2.43-2.61)	2.60 (2.51-2.70)	1.00	1.75 (1.65-1.86)	1.88 (1.77-1.99)	1.00	1.94 (1.87-2.02)	1.99 (1.91-2.08)	1.00
65-74	1.55 (1.49-1.61)	1.59 (1.53-1.66)	-	1.32 (1.24-1.41)	1.36 (1.28-1.45)	-	1.32 (1.27-1.38)	1.35 (1.29-1.41)	-
75-84	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
85+	1.16 (1.10-1.23)	1.13 (1.07-1.19)	-	1.12 (1.02-1.24)	1.07 (0.97-1.17)	-	1.24 (1.17-1.32)	1.21 (1.14-1.29)	-
Sex									
Women	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Men	1.07 (1.06-1.08)	1.00 (0.99-1.01)	1.08 (1.07-1.10)	0.99 (0.98-1.00)	0.94 (0.93-0.96)	1.01 (1.00-1.03)	1.05 (1.04-1.06)	0.99 (0.98-1.01)	1.06 (1.05-1.08)
Migration background									
Belgian natives	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Second generation migrants	2.68 (2.63-2.72)	2.33 (2.28-2.38)	2.55 (2.49-2.60)	2.37 (2.31-2.44)	1.83 (1.77-1.90)	2.20 (2.12-2.28)	1.69 (1.66-1.72)	1.54 (1.51-1.57)	1.62 (1.59-1.66)
First-generation European migrants	4.35 (4.29-4.40)	3.77 (3.71-3.82)	4.76 (4.70-4.83)	2.22 (2.17-2.27)	2.14 (2.08-2.19)	2.45 (2.39-2.51)	2.04 (2.01-2.07)	1.90 (1.87-1.93)	2.11 (2.07-2.14)
First-generation non-European migrants	3.23 (3.20-3.27)	2.83 (2.79-2.87)	3.75 (3.70-3.79)	2.87 (2.81-2.93)	2.63 (2.57-2.70)	3.51 (3.43-3.60)	2.38 (2.34-2.41)	2.24 (2.21-2.28)	2.62 (2.58-2.66)

Supplementary Table 4: Continued

Variables	Flanders			Brussels			Wallonia		
	Adjusted OR (95% CI)			Adjusted OR (95% CI)			Adjusted OR (95% CI)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c
Household type									
Couples with children	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Couples without children	0.93 (0.92-0.94)	0.87 (0.86-0.89)	0.87 (0.86-0.88)	0.72 (0.70-0.73)	0.71 (0.69-0.73)	0.67 (0.65-0.69)	0.95 (0.93-0.96)	0.89 (0.88-0.91)	0.90 (0.88-0.92)
Single parents	1.35 (1.33-1.37)	1.41 (1.39-1.44)	1.60 (1.57-1.62)	1.09 (1.07-1.11)	1.13 (1.10-1.15)	1.25 (1.22-1.28)	1.27 (1.25-1.29)	1.30 (1.27-1.32)	1.47 (1.44-1.49)
One-person households	1.29 (1.27-1.31)	1.27 (1.25-1.29)	1.39 (1.37-1.41)	0.90 (0.89-0.92)	0.92 (0.90-0.93)	0.93 (0.92-0.95)	1.30 (1.28-1.32)	1.26 (1.24-1.28)	1.39 (1.37-1.42)
Collectivity	0.65 (0.62-0.69)	0.64 (0.60-0.67)	0.58 (0.54-0.63)	0.67 (0.61-0.73)	0.63 (0.57-0.69)	0.56 (0.49-0.63)	0.56 (0.52-0.60)	0.55 (0.51-0.59)	0.46 (0.42-0.51)
Other	1.41 (1.37-1.44)	1.42 (1.38-1.46)	1.41 (1.37-1.45)	0.86 (0.84-0.89)	0.89 (0.86-0.92)	0.83 (0.80-0.86)	1.37 (1.32-1.42)	1.33 (1.28-1.38)	1.30 (1.25-1.36)
Missing	1.08 (1.03-1.13)	1.09 (1.03-1.15)	1.03 (0.97-1.09)	0.94 (0.89-0.99)	0.93 (0.87-0.99)	0.94 (0.91-0.98)	1.06 (0.99-1.13)	1.07 (0.99-1.16)	1.00 (0.92-1.09)
Income									
High	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Moderate	1.54 (1.52-1.56)	1.45 (1.43-1.47)	-	1.84 (1.79-1.88)	1.66 (1.62-1.71)	-	1.43 (1.41-1.45)	1.35 (1.32-1.37)	-
Low	2.44 (2.41-2.47)	2.17 (2.14-2.20)	-	2.51 (2.45-2.57)	2.17 (2.12-2.23)	-	2.15 (2.12-2.18)	1.91 (1.88-1.94)	-
Missing	2.17 (2.12-2.22)	1.84 (1.79-1.90)	-	1.83 (1.78-1.89)	1.69 (1.63-1.75)	-	1.87 (1.81-1.94)	1.61 (1.55-1.68)	-
Education level									
High	-	1.00	-	-	1.00	-	-	1.00	-
Moderate	-	1.31 (1.29-1.32)	-	-	1.61 (1.57-1.65)	-	-	1.20 (1.18-1.22)	-
Low	-	1.35 (1.33-1.37)	-	-	1.59 (1.55-1.63)	-	-	1.30 (1.28-1.32)	-
Missing	-	1.31 (1.29-1.33)	-	-	1.08 (1.05-1.11)	-	-	1.18 (1.16-1.21)	-
Healthcare degree									
Yes	-	1.00	-	-	1.00	-	-	1.00	-
No	-	1.38 (1.35-1.41)	-	-	1.48 (1.43-1.54)	-	-	1.39 (1.35-1.42)	-

Supplementary Table 4: Continued

Variables	Flanders			Brussels			Wallonia		
	Adjusted OR (CI95%)			Adjusted OR (CI95%)			Adjusted OR (CI95%)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c
Employment status									
Employed	-	-	1.00	-	-	1.00	-	-	1.00
Unemployed	-	-	1.56 (1.54-1.58)	-	-	1.32 (1.30-1.35)	-	-	1.40 (1.38-1.42)
Missing	-	-	1.35 (1.31-1.39)	-	-	0.94 (0.91-0.98)	-	-	1.26 (1.20-1.32)

^a Logistic regression model applied on all age groups (Flanders, n=3,348,547; Brussel, n=579,687; Wallonia, n=1,413,876). OR are adjusted for age, sex, region, migration background, household type, and income.

^b Logistic regression model applied only to individuals aged over 25 years (Flanders, n=2,955,807; Brussel, n=505,082; Wallonia, n=1,235,805). OR are adjusted for age, sex, region, migration background, household type, income, education level, and healthcare degree.

^c Logistic regression model applied only to individuals aged 25 to 65 years (Flanders, n=2,357,375; Brussel, n=436,356; Wallonia, n=998,369). OR are adjusted for age, sex, region, migration background, household type, and employment status. Income being strongly correlated with employment status, OR are not adjusted for income when employment status is included in the model.

Supplementary Table 5: Crude odds ratio (OR) and their 95% confidence interval (CI) for the association between sociodemographic and socioeconomic characteristics and the odds of not having received a first dose of COVID-19 vaccine, Belgium, December 28th 2020 - August 31st 2021.

Variables	Model 1 ^a	Model 2 ^b	Model 3 ^c
	Crude OR (CI95%)	Crude OR (CI95%)	Crude OR (CI95%)
Age groups			
18-24	6.41 (6.26-6.56)	-	-
25-34	6.68 (6.53-6.83)	6.68 (6.53-6.83)	3.13 (3.10-3.16)
35-44	5.09 (4.98-5.21)	5.09 (4.98-5.21)	2.39 (2.36-2.41)
45-54	3.28 (3.20-3.36)	3.28 (3.20-3.36)	1.54 (1.52-1.56)
55-64	2.16 (2.12-2.21)	2.16 (2.11-2.21)	1.00
65-74	1.44 (1.40-1.48)	1.14 (1.40-1.48)	-
75-84	1.00	1.00	-
85+	1.09 (1.05-1.13)	1.09 (1.05-1.13)	-
Sex^a			
Women	1.00	1.00	1.00
Men	1.02 (1.01-1.02)	0.99 (0.99-1.00)	0.99 (0.98-0.99)
Region			
Flemish	1.00	1.00	1.00
Brussels	3.65 (3.62-3.68)	3.52 (3.49-3.55)	3.34 (3.31-3.37)
Walloon	1.76 (1.75-1.77)	1.81 (1.80-1.82)	1.77 (1.75-1.78)
Migration background			
Belgian natives	1.00	1.00	1.00
Second-generation migrants	4.29 (4.25-4.33)	3.70 (3.65-3.75)	3.29 (3.25-3.34)
First-generation European migrants	4.22 (4.19-4.26)	3.98 (3.95-4.01)	3.73 (3.70-3.76)
First-generation non-European migrants	5.249 (5.211-5.286)*	5.12 (5.08-5.16)	4.52 (4.48-4.55)
Household type			
Couples with children	1.00	1.00	1.00
Couples	0.48 (0.48-0.49)	0.47 (0.46-0.47)	0.63 (0.62-0.63)
Single parents	1.50 (1.48-1.51)	1.48 (1.46-1.49)	1.53 (1.51-1.54)
One-person households	0.96 (0.95-0.96)	0.94 (0.93-0.95)	1.22 (1.21-1.23)
Collectivity	0.29 (0.28-0.30)	0.27 (0.26-0.28)	0.62 (0.58-0.65)
Other	1.50 (1.48-1.53)	1.46 (1.44-1.49)	1.59 (1.56-1.62)
Missing	2.45 (2.38-2.52)	2.31 (2.23-2.39)	2.33 (2.25-2.41)
Income			
High	1.00	1.00	-
Moderate	1.74 (1.72-1.75)	1.70 (1.68-1.72)	-
Low	3.43 (3.40-3.46)	3.12 (3.10-3.15)	-
Missing	3.92 (3.87-3.97)	3.35 (3.30-3.40)	-
Education level			
High	-	1.00	-
Moderate	-	1.65 (1.64-1.67)	-
Low	-	1.56 (1.54-1.57)	-
Missing	-	3.54 (3.51-3.57)	-

Supplementary Table 5: Continued

Variables	Model 1*	Model 2**	Model 3***
	Crude OR (CI95%)	Crude OR (CI95%)	Crude OR (CI95%)
Healthcare degree			
Yes	-	1.00	-
No	-	1.71 (1.69-1.73)	-
Employment status			
Employed	-	-	1.00
Unemployed	-	-	1.67 (1.65-1.68)
Missing	-	-	2.72 (2.68-2.77)

^a Logistic regression model applied on all age groups (n=5,342,110).

^b Logistic regression model applied only to individuals aged over 25 years (n=4,696,694).

^c Logistic regression model applied only to individuals aged 25 to 65 years (n=3,792,100).

Supplementary Table 6: Crude odds ratio (OR) and their 95% confidence interval (CI) for the association between sociodemographic and socioeconomic characteristics and the odds of not having received a first dose of COVID-19 vaccine stratified by region, Belgium, December 28th 2020 - August 31st 2021.

Variables	Flanders			Brussels			Wallonia		
	Crude OR (CI95%)			Crude OR (CI95%)			Crude OR (CI95%)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c
Age (years)									
18-24	6.90 (6.67-7.15)	-	-	7.74 (7.32-8.19)	-	-	4.31 (4.14-4.47)	-	-
25-34	7.29 (7.04-7.54)	7.29 (7.04-7.54)	3.22 (3.17-3.27)	5.38 (5.09-5.68)	5.38 (5.09-5.68)	2.42 (2.36-2.48)	5.48 (5.28-5.69)	5.48 (5.28-5.69)	3.10 (3.04-3.15)
35-44	5.52 (5.34-5.71)	5.52 (5.33-5.71)	2.44 (2.40-2.48)	4.55 (4.31-4.81)	4.55 (4.31-4.81)	2.05 (2.00-2.10)	4.01 (3.86-4.17)	4.01 (3.86-4.16)	2.27 (2.22-2.31)
45-54	3.53 (3.41-3.66)	3.53 (3.41-3.66)	1.56 (1.54-1.59)	3.16 (2.99-3.34)	3.16 (2.99-3.34)	1.42 (1.38-1.46)	2.54 (2.45-2.64)	2.54 (2.45-2.64)	1.44 (1.41-1.47)
55-64	2.29 (2.21-2.37)	2.29 (2.21-2.37)	1.00	2.25 (2.13-2.39)	2.25 (2.13-2.39)	1.00	1.79 (1.72-1.86)	1.79 (1.72-1.86)	1.00
65-74	1.49 (1.43-1.55)	1.49 (1.43-1.55)	-	1.47 (1.38-1.56)	1.47 (1.38-1.56)	-	1.26 (1.21-1.32)	1.26 (1.21-1.32)	-
75-84	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
85+	1.08 (1.02-1.14)	1.08 (1.02-1.14)	-	0.89 (0.81-0.98)	0.89 (0.81-0.98)	-	1.16 (1.10-1.23)	1.16 (1.10-1.23)	-
Sex									
Women	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Men	1.05 (1.04-1.06)	1.02 (1.01-1.03)	1.02 (1.01-1.03)	0.96 (0.94-0.97)	0.93 (0.92-0.94)	0.91 (0.90-0.92)	1.02 (1.01-1.03)	1.01 (0.99-1.02)	1.01 (0.99-1.02)
Migration background									
Belgian natives	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Second generation migrants	4.55 (4.48-4.62)	3.96 (3.88-4.04)	3.51 (3.44-3.59)	4.80 (4.68-4.93)	3.26 (3.15-3.38)	2.88 (2.78-2.99)	2.59 (2.55-2.63)	2.49 (2.44-2.54)	2.22 (2.17-2.26)
First-generation European migrants	5.63 (5.56-5.69)	5.30 (5.23-5.37)	5.02 (4.95-5.08)	3.07 (3.01-3.14)	2.83 (2.76-2.89)	2.51 (2.45-2.58)	2.18 (2.15-2.22)	2.13 (2.10-2.16)	2.03 (2.00-2.06)
First-generation non-European migrants	5.54 (5.49-5.60)	5.36 (5.30-5.42)	4.64 (4.58-4.69)	4.38 (4.29-4.47)	4.25 (4.16-4.34)	3.85 (3.77-3.94)	3.40 (3.35-3.45)	3.34 (3.29-3.39)	2.95 (2.91-3.00)

Supplementary Table 6: continued

Variables	Flanders			Brussels			Wallonia		
	Crude OR (CI95%)			Crude OR (CI95%)			Crude OR (CI95%)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c
Household type									
Couples with children	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Couples	0.49 (0.48-0.49)	0.47 (0.46-0.48)	0.64 (0.63-0.65)	0.47 (0.47-0.48)	0.49 (0.48-0.50)	0.59 (0.58-0.61)	0.56 (0.55-0.57)	0.53 (0.52-0.54)	0.71 (0.70-0.72)
Single parents	1.52 (1.51-1.54)	1.51 (1.49-1.53)	1.56 (1.54-1.59)	1.19 (1.17-1.21)	1.18 (1.16-1.21)	1.20 (1.18-1.23)	1.38 (1.36-1.40)	1.36 (1.33-1.38)	1.40 (1.37-1.42)
One-person households	0.95 (0.94-0.96)	0.93 (0.92-0.94)	1.24 (1.22-1.26)	0.70 (0.69-0.71)	0.72 (0.71-0.74)	0.83 (0.81-0.85)	0.97 (0.95-0.98)	0.94 (0.93-0.96)	1.21 (1.19-1.23)
Collectivity	0.30 (0.29-0.32)	0.28 (0.26-0.29)	0.72 (0.67-0.78)	0.23 (0.21-0.25)	0.22 (0.20-0.24)	0.45 (0.39-0.51)	0.31 (0.29-0.33)	0.29 (0.27-0.31)	0.54 (0.49-0.59)
Other	1.70 (1.66-1.74)	1.66 (1.62-1.71)	1.84 (1.79-1.89)	0.83 (0.81-0.86)	0.84 (0.81-0.87)	0.84 (0.81-0.87)	1.37 (1.32-1.41)	1.30 (1.26-1.35)	1.45 (1.39-1.50)
Missing	2.98 (2.85-3.11)	2.86 (2.72-3.00)	2.89 (2.75-3.04)	1.08 (1.03-1.14)	1.02 (0.96-1.08)	1.01 (0.95-1.07)	2.20 (2.07-2.34)	2.11 (1.97-2.27)	2.15 (2.00-2.31)
Income									
High	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Moderate	1.73 (1.71-1.76)	1.69 (1.67-1.72)	-	2.23 (2.18-2.29)	2.15 (2.10-2.21)	-	1.53 (1.51-1.55)	1.50 (1.48-1.53)	-
Low	3.33 (3.29-3.36)	3.01 (2.98-3.05)	-	3.62 (3.54-3.69)	3.24 (3.17-3.32)	-	2.47 (2.43-2.50)	2.31 (2.28-2.35)	-
Missing	4.54 (4.45-4.63)	3.91 (3.82-3.99)	-	2.94 (2.86-3.03)	2.53 (2.46-2.61)	-	2.30 (2.24-2.37)	2.00 (1.93-2.06)	-
Education level									
High		1.00	-	-	1.00	-	-	1.00	-
Moderate		1.58 (1.56-1.60)	-	-	2.48 (2.42-2.53)	-	-	1.59 (1.57-1.62)	-
Low	-	1.44 (1.42-1.46)	-	-	2.25 (2.20-2.30)	-	-	1.44 (1.42-1.47)	-
Missing	-	4.31 (4.25-4.36)	-	-	2.19 (2.15-2.24)	-	-	2.42 (2.38-2.46)	-

Supplementary Table 6: continued

Variables	Flanders			Brussels			Wallonia		
	Crude OR (CI95%)			Crude OR (CI95%)			Crude OR (CI95%)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c
Healthcare degree									
Yes	-	1.00	-	-	1.00	-	-	1.00	-
No	-	1.73 (1.70-1.77)	-	-	1.74 (1.68-1.80)	-	-	1.45 (1.42-1.48)	-
Employment status									
Employed	-	-	1.00	-	-	1.00	-	-	1.00
Unemployed	-	-	1.70 (1.68-1.72)	-	-	1.49 (1.47-1.51)	-	-	1.33 (1.31-1.35)
Missing	-	-	3.56 (3.47-3.65)	-	-	1.26 (1.22-1.29)	-	-	2.26 (2.17-2.35)

^a Logistic regression model applied on all age groups (Flanders, n=3,348,547; Brussel, n=579,687; Wallonia, n=1,413,876).

^b Logistic regression model applied only to individuals aged over 25 years (Flanders, n=2,955,807; Brussel, n=505,082; Wallonia, n=1,235,805).

^c Logistic regression model applied only to individuals aged 25 to 65 years (Flanders, n=2,357,375; Brussel, n=436,356; Wallonia, n=998,369).