

Main exposures	Definition	Years	Data sources*	Type of accommodation (§)/Diagnosis and drug coding system	Data authority
Homelessness during 2020	Any homeless shelter use during 2020 No homeless shelter use during 2020	2020	Postal address [†] /The Danish Homeless Register ¹	the Act of Social Services §110	Statistics Denmark
Definition used for sensitivity analysis					
History of homelessness	Any experience of homelessness No experience of homelessness	1996-2020 1996-2020	Postal address [†] /The Danish Homeless Register ¹ /The Registry of Drug Abusers Undergoing Treatment ² /The National Registry of Alcohol Treatment ³ No information on homelessness based on the sources above	the Act of Social Services §110; self-reported homelessness	Statistics Denmark/ The Danish Health Data Authority
Imprisonment during 2020	Any imprisonment during 2020 No imprisonment during 2020	2020 2020	The Danish Central Criminal Register ⁴		Statistics Denmark
Definition used for sensitivity analysis					
History of imprisonment	Any history of imprisonment No history of imprisonment	1991-2020 1991-2020			
Supported psychiatric housing	Any supported psychiatric housing postal address during 2020 No supported psychiatric housing during 2020	2020 2020	Postal address [†]	the Act of Social Services §107/108	Statistics Denmark
Psychiatric admission	Any psychiatric admission during No psychiatric admission during	2020 2020	The Danish National Patient Register ⁵	ICD-10	The Danish Health Data Authority
Severe mental illness	Any severe mental illness prior to study start No severe mental illness prior to study start	1969-2020 (Dec 27)	The Danish Psychiatric Central Research ⁶ Register/The Danish National Patient Register ⁵	ICD-8; ICD-10	The Danish Health Data Authority
Substance abuse	Any alcohol or drug use disorder prior to study start No alcohol or drug use disorder prior to study start	1969-2020 (Dec 27) 1969-2020 (Dec 27)	The Danish Psychiatric Central Research Register/The Danish National Patient Register/The Danish National Prescription Registry ⁷ /The National Registry of Alcohol Treatment/The Registry of Drug Abusers Undergoing Treatment	ICD-8; ICD-10; ATC	The Danish Health Data Authority
Chronic medical condition	Any chronic medical condition since Jan 1, 2016 and until study start	2016-2020 (Dec 27)	The Danish National Patient Register/ the Danish National Prescription Registry	ICD-10; ATC	The Danish Health Data Authority

Supplementary exposures	Definition	Years	Data sources*	Type of accommodation (§)/Diagnosis and drug coding system	Data authority
	No chronic medical condition since Jan 1, 2016 and until study start	2016-2020 (Dec 27)			
Highest completed educational level	Primary school	Sept 2019	Register information on highest educational level from the IDA database		Statistics Denmark
	Higher than primary school (missing values included)	Sept 2019			
Crisis shelter stay during 2020	Any experience of residing/staying in a crisis shelter during 2020	2020	Postal address [‡] ; Register information on women and children's stays during crisis	the Act of Social Services §109	Statistics Denmark
	No experience of residing/staying in a crisis shelter during 2020	2020			
First diagnosis of severe mental illness during 2020	Any recently diagnosed severe mental illness	2020	The Danish National Patient Register ⁵	ICD-10	The Danish Health Data Authority
	No recently diagnosed severe mental illness	2020			
Mental disorder	Any mental diagnosis prior to study start	1969-2020 (Dec 27)	The Danish Psychiatric Central Research ⁶ Register/The Danish National Patient Register ⁵	ICD-8; ICD-10	The Danish Health Data Authority
	No mental diagnosis prior to study start	1969-2020 (Dec 27)			
Medical overweight	Any pre-existing medical overweight	1977-2020 (Dec 27)	The Danish National Patient Register/ the Danish National Prescription Registry	ICD-8; ICD-10; ATC	The Danish Health Data Authority
	No pre-existing medical overweight				
History of infection with hospital contact	Any history of infection with hospital contact	1977-2020 (Dec 27)	The Danish National Patient Register	ICD-8 and ICD-10	The Danish Health Data Authority
	No history of infection with hospital contact				
*Having a postal address during 2020 was defined as the period from Jan 1, 2020 and until Nov 11, 2020 (latest update). † The addresses from the "Tilbudsportalen" ⁸ were validated by corresponding street codes in Denmark. ⁹					
Supplementary table 1: Definitions of population groups covariates used in the study					

Disease group	Coding definition	ICD-10 (Diagnosis time frame)	ICD-8	Drug codes (ATC) (Time frame for prescriptions)
Mental disorder	Diagnosis	F00, F20-F99	290-315 (excl. 291.x9, 303.x9, 303.20, 303.28, 303.90, 571.00, 571.01, 294.39, 304.x9)	
Any severe mental illness	Diagnosis	F20, F30-31, F32-33		
Any substance abuse	Diagnosis AND/OR prescriptions AND/OR self-report	F10-F19	291.x9, 303.x9, 303.20, 303.28, 303.90, 571.00, 571.01, 294.39, 304.x9	N07BB (alcohol dependence), N07BC (opioids dependence)
<i>Supplementary table 2: Definitions of psychiatric disorders based on ICD-10, ICD-8, and ATC-codes*</i>				

Category	Disease group	Definition	ICD-10 Codes	Drug codes (ATC) (Time frame for prescriptions)
Any chronic medical condition*				
Circulatory system				
	Hypertension	Diagnosis AND/OR prescriptions of antihypertensives [†]	I10-I13, I15	C02, C03, C04, C07, C08, C09 (Twice in 1 year)
	Dyslipidemia	Diagnosis AND/OR prescription of lipid-lowering drugs [‡]	E78	C10 (Twice in 1 year)
	Ischemic heart disease	Diagnosis AND/OR prescription for antianginal drug	I20-I25	C01DA (Twice in 1 year)
	Atrial fibrillation	Diagnosis	I48	
	Heart failure	Diagnosis	I50	
	Peripheral artery occlusive disease	Diagnosis	I70-I74	
	Stroke	Diagnosis	I60-I64, I69	
Endocrine system				
	Diabetes mellitus	Diagnosis AND/OR prescription of antidiabetics	E10-E14	A10A, A10B (Twice in 1 year)
	Thyroid disorder	Diagnosis AND/OR prescription of thyroid therapy drugs	E00-E05, E061-E069, E07	H03 (Twice in 1 year)
	Gout	Diagnosis	E79, M10	
Pulmonary system and allergy				
	Chronic pulmonary disease	Diagnosis AND/OR Prescription for obstructive airway disease drugs	J40-J47	R03 (Twice in 1 year)
	Allergy	Diagnosis AND/OR prescription for non-sedative antihistamines AND/OR nasal antiallergics	J30.1-J30.4, L23, L50.0, T78.0, T78.2, T78.4	R06AX, R06AE07, R06AE09, R01AC, R01AD (Twice in 1 year)
Gastrointestinal system				
	Ulcer/chronic gastritis	Diagnosis	K221, K25-K28, K293-K295	
	Chronic liver disease	Diagnosis	B16-B19, K70, K74, K766, I85	
	Inflammatory bowel disease	Diagnosis	K50-K51	
	Diverticular disease of intestine	Diagnosis	K57	
Urogenital system				
	Chronic kidney disease	Diagnosis	N03, N11, N18-N19 (ever)	
	Prostate disorders	Diagnosis AND/OR prescription of prostate hyperplasia therapy drugs	N40	C02CA, G04C (Twice in 1 year)
Musculoskeletal system				
	Connective tissue disorders		M05-M06, M08-M09, M30-M36, D86 (ever)	
	Osteoporosis	Diagnosis AND/OR prescriptions for osteoporosis drugs	M80-M82 (ever)	M05B, G03XC01, H05AA (Twice in 1 year)
	Painful condition	Repeated prescriptions of analgesics		N02A, N02BA51, N02BE, M01A, M02A (Four times in 1 year)
Hematological system				
	HIV/AIDS	Diagnosis	B20-B24	
	Anemias	Diagnosis	D50-D53, D55-D59, D60-D61, D63-D64	
Cancers				
	Cancer	Diagnosis	C00-C43, C45-C97	
Neurological system				
	Vision problem	Diagnosis	H40, H25, H54 (ever)	
	Hearing problem	Diagnosis	H90-H91, H931 (ever)	

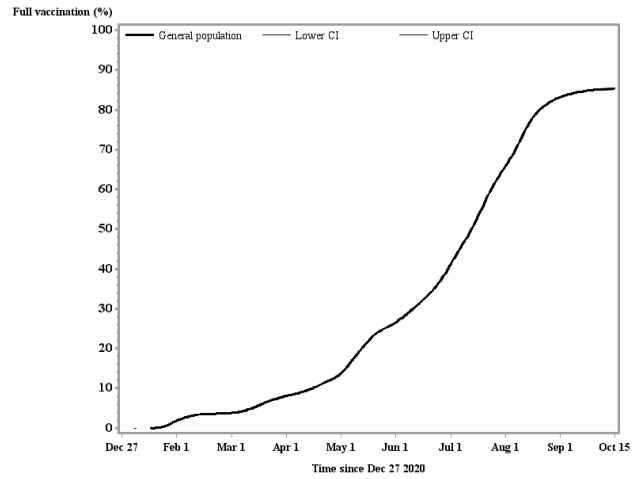
Migraine	Diagnosis AND/OR prescription of specific anti-migraine drugs	G43	N02C (Twice in 1 year)
Epilepsy	Diagnosis AND prescription of anti-epileptics	G40-G41	N03 (Twice in 1 year)
Parkinson's disease	Diagnosis	G20-G22	
Multiple sclerosis	Diagnosis	G35	
Neuropathies	Diagnosis	G50-G64	
Others			
Overweight and obesity	Diagnosis AND prescription	E66	A08
History of infectious diseases with hospital contact[§]			
Any infection	Diagnosis	All below	
Sepsis	Diagnosis	A40-A41	
Respiratory infections	Diagnosis		
Pneumonia	Diagnosis	J12-J18, A48.1, A70.9	
Other respiratory infections	Diagnosis	J00-J11	
Gastrointestinal infection	Diagnosis	A00-A09, K35	
Urinary tract infections	Diagnosis	N10, N30.0, N39.0	
Central nervous system infections	Diagnosis	A17, A32.1, A39.0, A81, A83-A89, B00.3, B00.4, B01.0, B01.1, B02.0, B02.1, B05.0, B05.1, B06.0, B26.1, B26.2, B58.2, G00-G01, G02.0, G02.1, G02.8, G03-G04, G05.0, G05.1, G05.2, G05.8, G06-G07	
HIV or hepatitis infections	Diagnosis	B15-B19, B20-24	
Other infections	Diagnosis	A00-B99 (excluding all the above-mentioned codes), L00-L08, M00, N45, N70-N72, N76-N77, O23, O26.4, O85-O86, O98	

^{*}The chronic medical conditions are defined primarily according to previous studies.^{10,11} They are based on ICD-10 diagnoses from Jan 1, 2016 and until Dec 27, 2020 (study start). [†]Ascertained only in absence of ischemic heart disease/heart failure, and by diuretics only if no kidney disease. [‡]Prescriptions used if no previous ischemic heart disease. [§]Infections with hospital contact defined according to a previous study.¹²

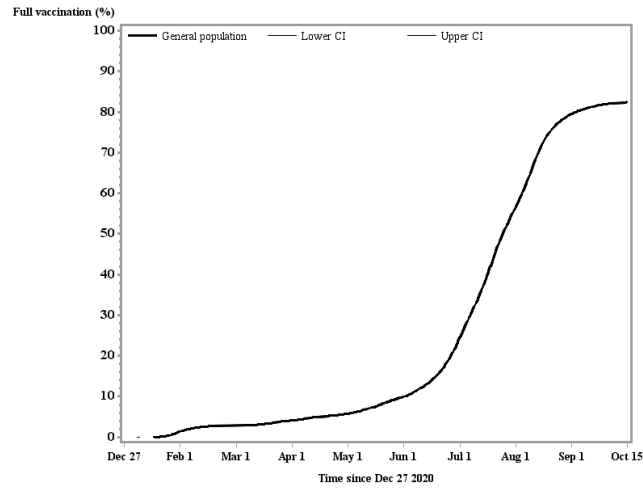
Supplementary table 3: Algorithm for chronic medical health conditions, medical overweight, and infections

Supplementary Figure 1: Cumulative vaccine uptake overall and by sex, Dec 27, 2020 to Oct 15, 2021

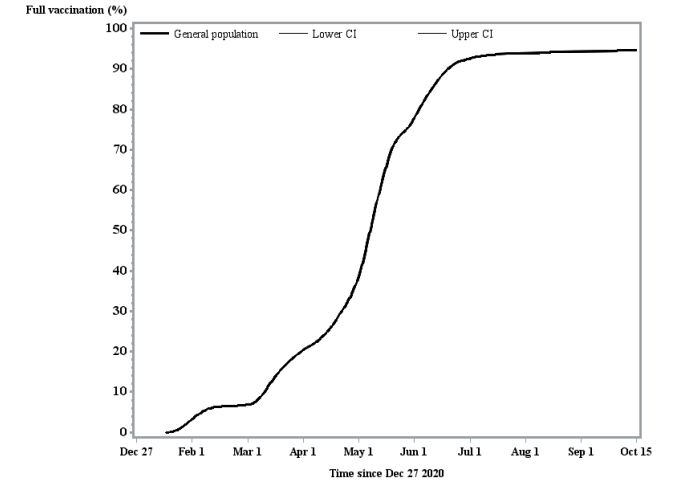
a. Overall



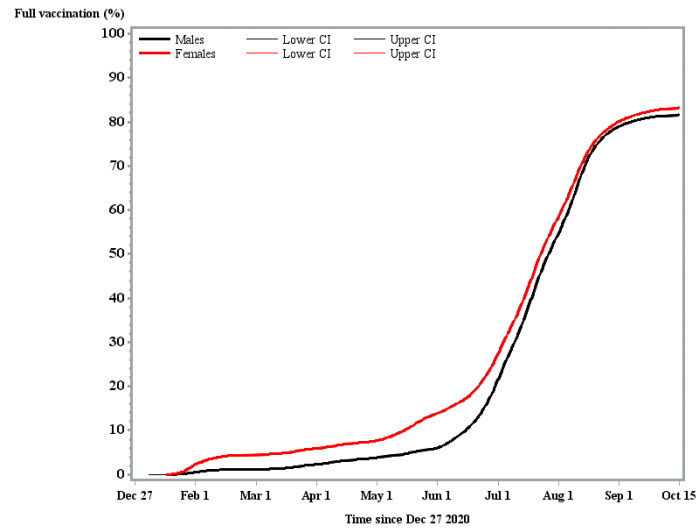
b. Overall below age 65 years



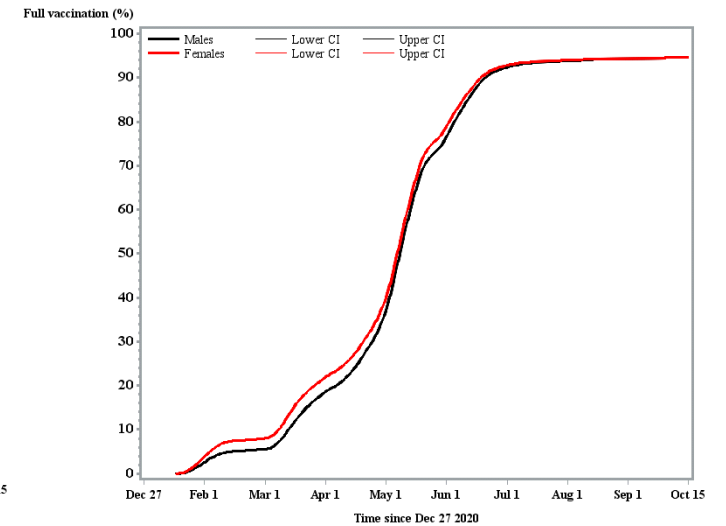
c. Overall age 65+ years



d. By sex (age below 65 years)

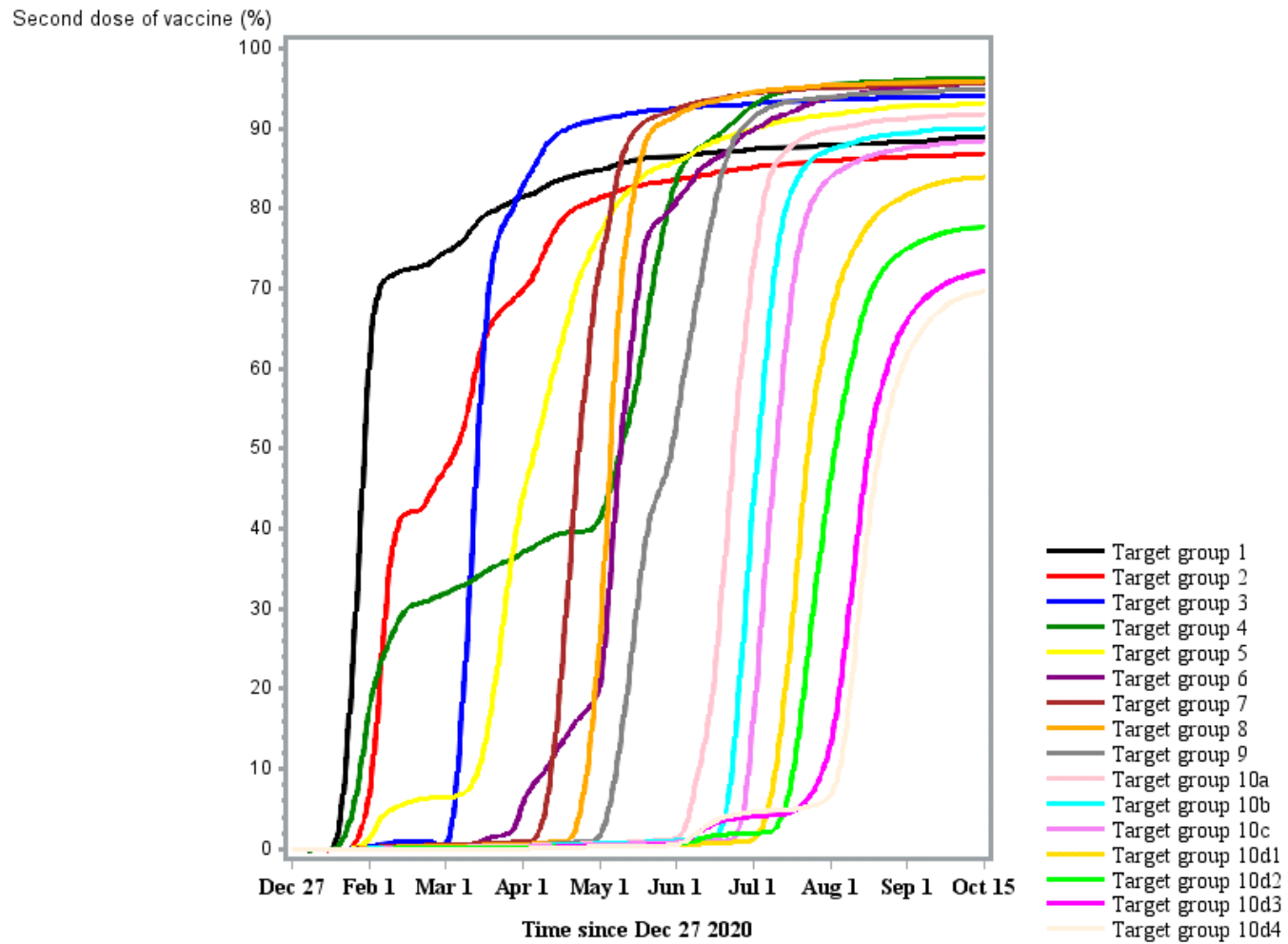


e. By sex (age 65+ years)



	Age 15-64 years					Age 65+				
	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value
The Danish general population	2,949,189	3,592,612	82.4	(82.4-82.5)		1,098,398	1,161,051	94.6	(94.6-94.7)	
Sex										
Males	1,475,579	1,815,492	81.7	(81.6-81.7)	<0.0001	505,788	534,878	94.6	(94.5-94.6)	<0.0001
Females	1,473,610	1,777,120	83.3	(83.2-83.3)		592,610	626,173	94.7	(94.6-94.7)	
CIF=cumulative incidence function										
*Analysis has considered competing risk from death and SARS-CoV-2 infection. For the Johnson & Johnson vaccine, only one vaccine was required, and thus, the first vaccine date equal to the second vaccine date.										
Supplementary table 4: Cumulative vaccine uptake overall and by sex, Dec 27, 2020 to Oct 15, 2021*										

Supplementary Figure 2: Cumulative vaccine uptake by target groups, Dec 27, 2020 to Oct 15, 2021*



*Target groups are defined in the supplementary table below.

		2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)
Target groups	Definition of target group				
1	Residents in nursing homes ect.	46,798	52,616	89.0	(88.7-89.2)
2	Citizens aged over 65 who receive both practical assistance and personal care	50,164	57,782	86.8	(86.8-87.1)
3	Citizens born up to 1936 (aged over 85 years)	90,979	96,720	94.1	(93.9-94.2)
4	Selected frontline staff in the healthcare sector, the elderly care sector, and parts of the social services sector	277,003	287,681	96.3	(96.2-96.4)
5	Selected patients at particularly high risk, e.g. cancer patients, severely immunosuppressed patients and people with very severe cardiopulmonary disease or liver disease	223,873	340,317	93.2	(93.1-93.3)
6	Selected relatives of people at particularly high risk	1963	2054	95.6	(94.6-96.4)
7	Citizens born 1937-1941 (aged 80-84 years)	121,473	127,020	95.6	(95.5-95.7)
8	Citizens born 1942-1946 (aged 75-79)	216,561	225,702	96.0	(95.9-96.0)
9	Citizens born 1947-1956 (aged 65-74 years)	504,992	532,285	94.9	(94.8-94.9)
10a	Citizens born 1957-1961	254,710	277,596	91.8	(91.7-91.9)
10b	Citizens born 1962-1966	305,422	338,868	90.2	(90.1-90.3)
10c	Citizens born 1967-1971	290,789	329,027	88.4	(88.3-88.6)
10d1	Citizens born 1972-1976 and 2002-2005	490,049	584,100	84.0	(83.9-84.1)
10d2	Citizens born 1977-1981 and 1997-2001	482,329	621,797	77.8	(77.7-77.9)
10d3	Citizens born 1982-1986 and 1992-1996	460,901	640,970	72.2	(72.0-72.3)
10d4	Citizens born 1987-1991	229,581	329,763	69.8	(69.7-70.09)
Definitions from the Danish Health Authority's vaccine strategy and calendar. ¹³					
Supplementary table 5: Cumulative vaccine uptake estimates by target groups, Dec 27, 2020 to Oct 15, 2021					

	Age 15-64 years					Age 65+				
	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value
The Danish general population	2,949,189	3,592,612	82.4	(82.4-82.5)		1,098,398	1,161,051	94.6	(94.6-94.7)	
Homelessness during 2020										
Yes	3486	6407	54.6	(53.4-55.8)	<0.0001	220	282	78.0	(72.7-82.4)	<0.0001
No	2,945,703	3,586,205	82.5	(82.5-82.5)		1,098,178	1,160,769	94.6	(94.6-94.7)	
Imprisonment during 2020										
Yes	22680	40,469	56.2	(55.7-56.7)	<0.0001	2277	2718	83.9	(82.4-85.2)	<0.0001
No	2,926,509	3,552,143	82.7	(82.7-82.8)		1,096,121	1,158,333	94.6	(94.6-94.7)	
Substance abuse										
Yes	158,404	214,181	74.1	(73.9-74.2)	<0.0001	60,233	66,804	90.2	(89.0-90.4)	<0.0001
No	2,790,785	3,378,431	83.0	(82.9-83.0)		1,038,165	1,094,247	94.9	(94.9-94.9)	
Severe mental illness										
Yes	160,798	203,822	79.0	(78.8-79.2)	<0.0001	58,499	64,373	90.9	(90.7-91.1)	<0.0001
No	2,788,391	3,388,790	82.7	(82.6-82.7)		1,039,899	1,096,678	94.8	(94.8-94.9)	
Supported psychiatric housing during 2020										
Yes	6527	8523	76.7	(75.8-77.6)	<0.0001	607	706	86.0	(83.2-88.3)	0.024
No	2,942,662	3,584,089	82.5	(82.4-82.5)		1,097,791	1,160,345	94.6	(94.6-94.7)	
Psychiatric hospital admission during 2020										
Yes	6197	8502	73.1	(72.2-74.1)	<0.0001	4034	4659	86.6	(85.6-87.5)	<0.0001
No	2,942,992	3,584,110	82.5	(82.4-82.5)		1,094,364	1,156,392	94.7	(94.6-94.7)	
Chronic medical condition										
Yes	1,303,223	1,502,983	86.8	(86.8-86.9)	<0.0001	964,951	1,015,431	95.0	(95.0-95.1)	<0.0001
No	1,645,966	2,089,629	79.3	(79.2-79.3)		133,447	145,620	91.7	(91.5-91.8)	
CIF=cumulative incidence function										
*Analysis has considered competing risk from death and SARS-CoV-2 infection. For the Johnson & Johnson vaccine, only one vaccine was required, and thus, the first vaccine date equal to the second vaccine date.										
Supplementary table 6: Cumulative vaccine uptake estimates by population groups and age-groups (15-64 and 65+ years), Dec 27, 2020 to Oct 15, 2021*										

	Days between first and second vaccine dose uptake				
	1 st percentile	5 th percentile	50 th percentile	95 th percentile	99 th percentile
General population	21	21	35	43	86
Main population groups					
Homelessness during 2020	21	21	29	46	90
Imprisonment during 2020	21	21	35	43	81
Substance abuse	21	21	35	44	86
Severe mental illness	21	21	35	44	86
Supported psychiatric housing during 2020	21	21	28	42	79
Psychiatric hospital admission during 2020	21	21	28	42	85
Chronic medical condition	21	21	33	42	85
Supplementary population groups					
Low educational level	21	21	35	42	80
Crisis shelter stay	21	21	35	43	86
Severe mental illness diagnosed during 2020	21	21	35	42	85
Any mental disorder	21	21	35	45	87
Medical overweight	21	21	35	76	89
History of infection with hospital contact	21	21	35	46	86
*Individuals with the Johnson & Johnson vaccine only had one vaccine and these individuals were excluded from this analysis.					
Supplementary table 7: Percentiles of the number of days between first and second vaccine uptake by population groups, Dec 27, 2020 to Oct 15, 2021*					

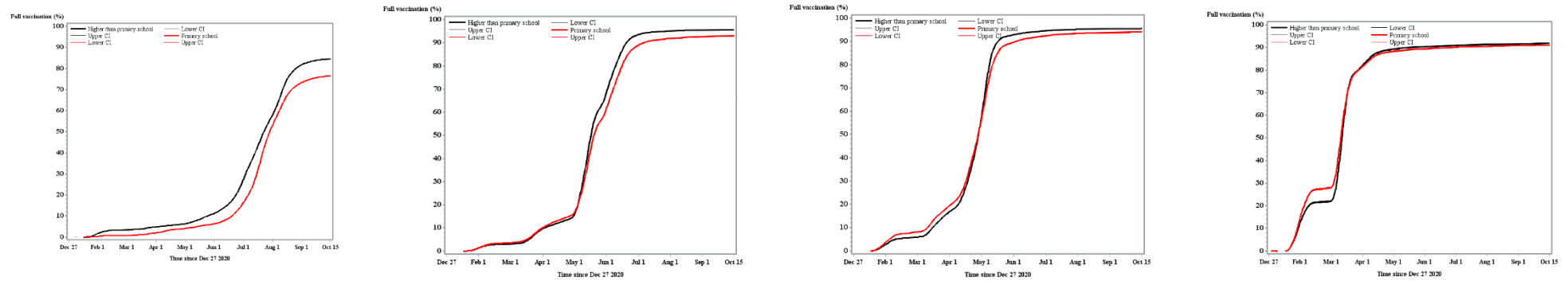
	2 nd vaccine (n)/person-years	Male				Female				
		Model 1 [†] IRR	95% CI	Model 2 [‡] IRR	95% CI	Model 1 [†] IRR	95% CI	Model 2 [‡] IRR	95% CI	
Overall	2,095,180/1,302,020					2,182,200/1,258,961				
Homelessness during 2020										
Any	2929/3050	0.5	(0.5-0.6)	0.6	(0.5-0.6)	900/1034	0.4	(0.4-0.5)	0.4	(0.4-0.5)
No	2,092,251/1,298,970	1		1		2,181,300/1,257,927	1		1	
Imprisonment during 2020										
Any	24,110/26,204	0.5	(0.5-0.5)	0.5	(0.5-0.5)	1654/1524	0.5	(0.5-0.5)	0.5	(0.5-0.5)
No	2,071,070/1,275,815	1		1		2,180,546/1,257,438	1		1	
Substance abuse[¶]										
Any	131,249/91,251	0.7	(0.7-0.7)	0.7	(0.7-0.7)	94,418/61,436	0.8	(0.8-0.8)	0.7	(0.7-0.7)
No	1,963,931/1,210,768	1		1		2,087,782/1,197,525	1		1	
Severe mental illness^{§¶}										
Any	85,495/55,794	0.8	(0.8-0.8)	0.8	(0.8-0.8)	142,318/86,399	0.8	(0.8-0.8)	0.8	(0.8-0.8)
No	2,009,685/1,246,226	1		1		2,039,882/1,172,562	1		1	
Supported psychiatric housing during 2020										
Any	4617/3005	1.2	(1.1-1.2)	1.2	(1.1-1.2)	2826/1697	1.2	(1.1-1.2)	1.2	(1.1-1.2)
No	2,090,563/1,299,015	1		1		2,179,374/1,257,264	1		1	
Psychiatric hospital admission during 2020										
Any	5122/3172	0.8	(0.8-0.8)	0.8	(0.8-0.8)	5731/3285	0.9	(0.9-0.9)	0.9	(0.8-0.9)
No	2,090,058/1,298,848	1		1		2,176,469/1,255,677	1		1	
Chronic medical condition[¶]										
1+	896,652/442,430	1.3	(1.3-1.3)	1.3	(1.3-1.3)	1,076,597/519,022	1.2	(1.2-1.2)	1.2	(1.2-1.2)
0	1,198,528/859,590	1		1		1,105,603/739,940	1		1	

IRR=incidence rate ratio
*Person-years are rounded. All p-values are <0.0001. [†]Adjusted for age (5-years groups) and calendar time (months). [‡]Model 2 is additionally adjusted for country of origin.
[§]Severe mental illness is defined as at least one of the following diagnoses: schizophrenia, bipolar disorder, or depressive disorders. [¶]Diagnosed prior to study start and for chronic medical conditions since Jan 1, 2016.

Supplementary table 8: Incidence rate ratios for vaccine uptake by population group, Dec 27, 2020 to Oct 15, 2021*

Supplementary figure 3: Cumulative vaccine uptake by educational level and age-groups (15-64, 65-74, 75-84, and 85+ years), Dec 27, 2020 to Oct 15, 2021

a. Educational level (15-64 years, 65-74 years, 75-84 years, and 85+ years)

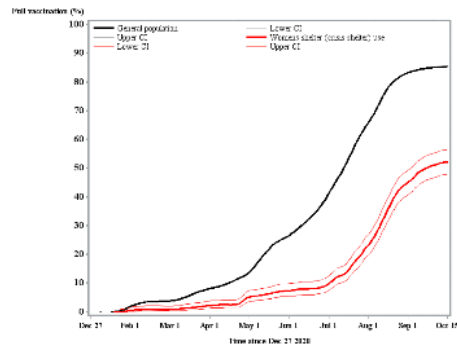


	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value
	Age 15-64 years					Age 65-74 years				
Primary school education	2,231,372	2,652,633	76.5	(76.4-76.6)	<0.0001	155,741	167,423	93.0	(92.9-93.2)	<0.0001
Higher than primary school	717,817	939,979	84.6	(84.5-84.6)		441,372	461,324	95.7	(95.6-95.8)	
	Age 75-84					Age 85+				
Primary school education	142,941	151,959	94.1	(94.0-94.2)	<0.0001	58,357	64,083	91.1	(90.8-91.3)	<0.0001
Higher than primary school	243,517	254,736	95.6	(95.5-95.7)		56,470	61,526	91.8	(91.6-92.0)	
CIF=cumulative incidence function										
* Analysis has considered competing risk from death and SARS-CoV-2 infection. For the Johnson & Johnson vaccine, only one vaccine was required, and thus, the first vaccine date equal to the second vaccine date.										
Supplementary table 9: Cumulative vaccine uptake estimates by educational level and age-groups, Dec 27, 2020 to Oct 15, 2021*										

Supplementary figure 4: Cumulative vaccine uptake by supplementary population groups and age-groups (15-64 and 65+ years), Dec 27, 2020 to Oct 15, 2021*

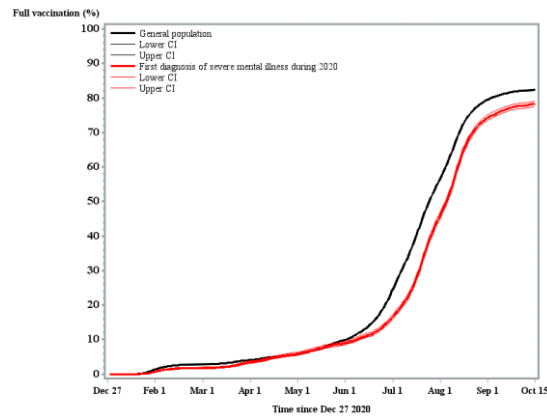
a. Crisis shelter stay during 2020†

(15-65 years of age)

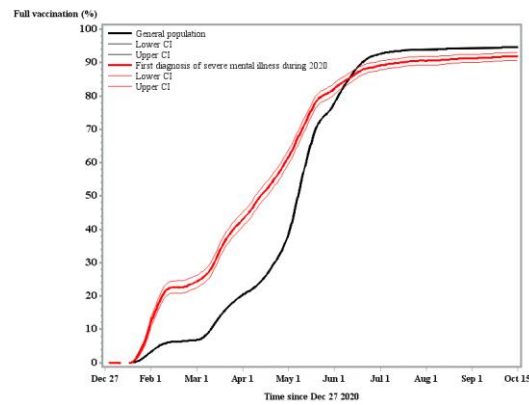


b. New-onset severe mental illness (diagnosed during 2020)

(15-65 years of age)

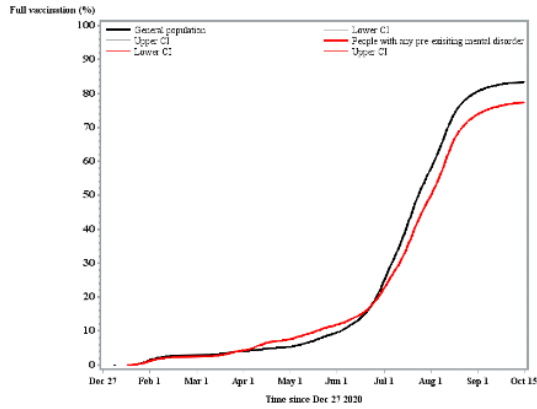


(65+ years of age)

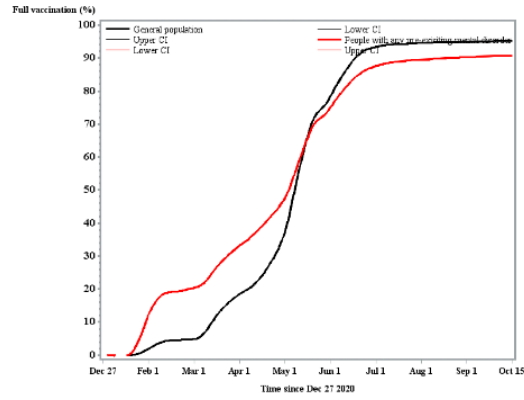


c. Any mental disorder

(15-65 years of age)

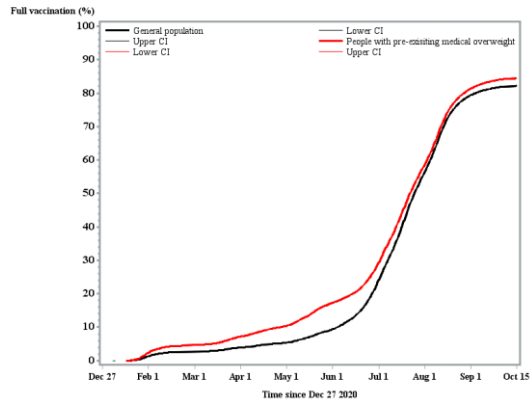


(65+ years of age)

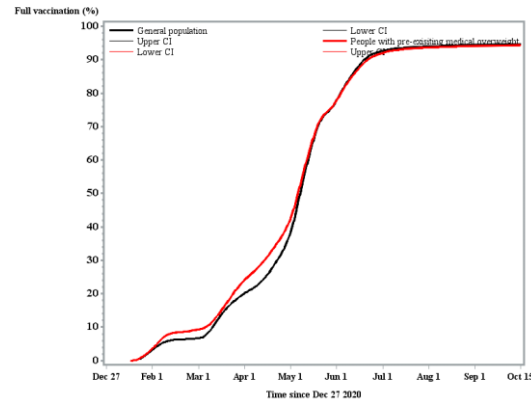


d. Medical overweight

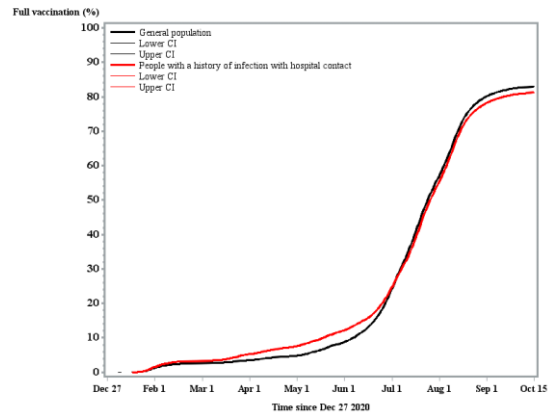
(15-65 years of age)



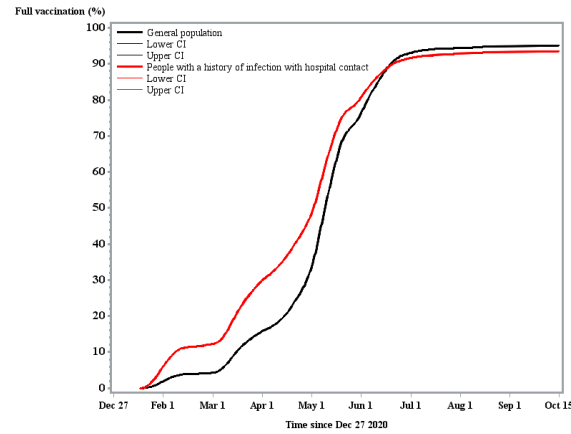
(65+ years of age)



**e. History of infection with hospital contact
(15-65 years of age)**



(65+ years of age)



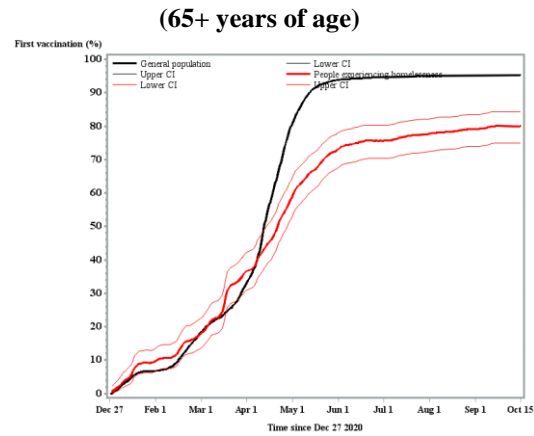
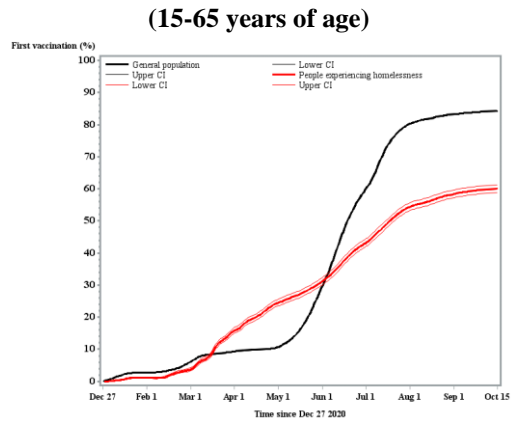
* Analysis has considered competing risk from death and SARS-CoV-2 infection. For the Johnson & Johnson vaccine, only one vaccine was required, and thus, the first vaccine date equal to the second vaccine date. † Too few cases to present for age 65+.

	Age 15-64 years					Age 65+				
	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value	2 nd vaccine (n)	Individuals for analysis	CIF (%)	(95% CI)	P value
The Danish general population	2,949,189	3,592,612	82.4	(82.4-82.5)		1,098,398	1,161,051	94.6	(94.6-94.7)	
Crisis shelter during 2020										
Yes [†]	271	530	51.6	(47.3-55.8)	<0.0001	...	...	...	...	...
No	2,948,918	3,592,082	82.5	(82.4-82.5)		...	...	...	...	...
Severe mental illness diagnosed during 2020										
Yes	8512	10,912	78.3	(77.5-79.0)	<0.0001	1889	2056	91.9	(90.6-93.0)	<0.0001
No	2,940,677	3,581,700	82.5	(82.4-82.5)		1,096,509	1,158,995	94.6	(94.6-94.7)	
Mental disorder[‡]										
Yes	446,499	577,967	77.4	(77.3-77.5)	<0.0001	136,090	150,113	90.7	(90.5-90.82)	<0.0001
No	2,502,690	3,014,645	83.4	(83.4-83.5)		962,308	1,010,938	95.2	(95.2-95.3)	
Medical overweight[‡]										
Yes	211,854	250,859	85.9	(85.9-86.0)	<0.0001	65,476	69,399	94.9	(94.9-95.0)	<0.0001
No	2,737,335	3,341,753	79.0	(78.9-79.0)		1,032,922	1,091,652	91.4	(91.2-91.6)	
History of infection with hospital contact[‡]										
Yes	957,848	1,180,669	81.3	(81.2-81.3)	<0.0001	354,335	378,734	93.6	(93.5-93.7)	<0.0001
No	1,991,341	2,411,943	83.0	(82.8-83.1)		744,063	782,317	95.1	(95.1-95.2)	
CIF=cumulative incidence function										
*Analysis has considered competing risk from death and SARS-CoV-2 infection. For the Johnson & Johnson vaccine, only one vaccine was required, and thus, the first vaccine date equal to the second vaccine date. [†] Too few cases to present for age 65+. [‡] Prior to study start.										
Supplementary table 10: Cumulative vaccine uptake estimates by supplementary population groups and age-groups, Dec 27, 2020 to Oct 15, 2021*										

	2 nd vaccine (n)/person-years	Male Model 1* IRR	95% CI	P value	2 nd vaccine (n)/person-years	Female Model 1* IRR	95% CI	P value
Overall	2,095,180/1,302,020				2,182,200/1,258,961			
Educational level								
Primary school	563,076/385,640	0.8	(0.8-0.8)	<0.0001	596,455/349,981	0.8	(0.8-0.8)	<0.0001
Higher than primary school	1,532,104/916,379	1			1,585,745/908,980	1		
Crisis shelter use during 2020								
Yes	31/46	0.4	(0.3-0.6)	<0.0001	514/663	0.5	(0.4-0.5)	<0.0001
No	2,095,149/1,301,974	1			2,181,686/1,258,298	1		
Severe mental illness diagnosed during 2020								
Yes	4202/2936	0.9	(0.9-1.0)	<0.0001	6704/4421	1.0	(0.9-1.0)	<0.0001
No	2,090,978/1,299,084	1			2,175,496/1,254,541	1		
Any mental disorder[†]								
Yes	259,158/179,121	0.8	(0.8-0.8)	<0.0001	352,261/221,061	0.8	(0.8-0.8)	<0.0001
No	1,836,022/1,122,899	1			1,829,939/1037,901	1		
Medical overweight[†]								
Yes	64164/33031	1.2	(1.1-1.2)	<0.0001	226864/133857	1.0	(1.0-1.0)	<0.0001
No	2031016/1268989	1			1955336/1125105	1		
History of infection with hospital contact[†]								
Yes	651944/396594	1.1	(1.1-1.1)	<0.0001	747788/437290	1.0	(1.0-1.0)	<0.0001
No	1443236/905425	1			1434412/821672	1		
IRR=incidence rate ratio								
Person-years are rounded. *Adjusted for age (5-years groups) and calendar time (months). [†] Prior to study start.								
Supplementary table 11: Incidence rate ratios of vaccine uptake by supplementary population groups, Dec 27, 2020 to Oct 15, 2021								

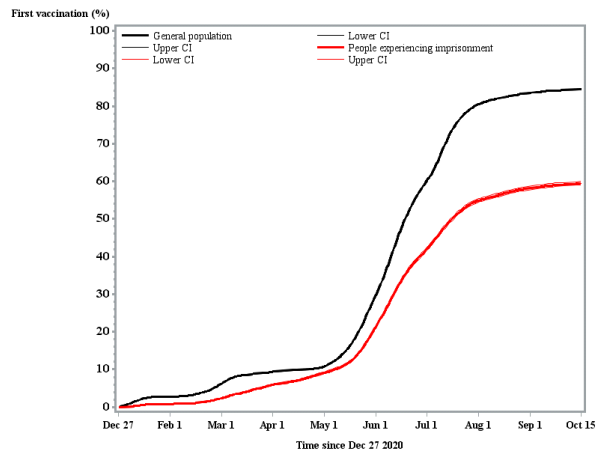
Supplementary figure 5: Cumulative vaccine uptake of first vaccine dose by population groups and age-groups (15-64 and 65+ years), Dec 27, 2020 to Oct 15, 2021*

a. Homelessness

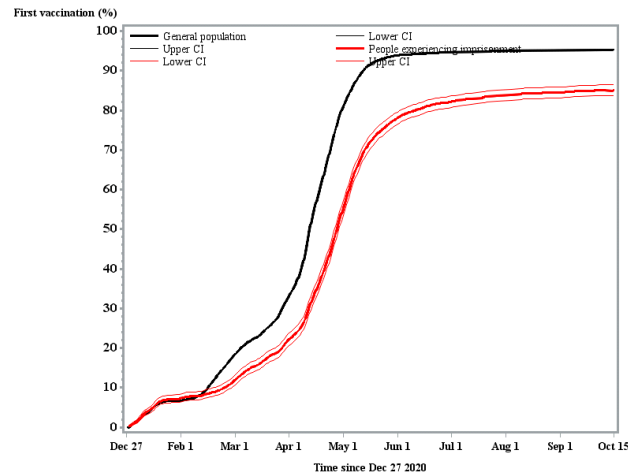


b. Imprisonment

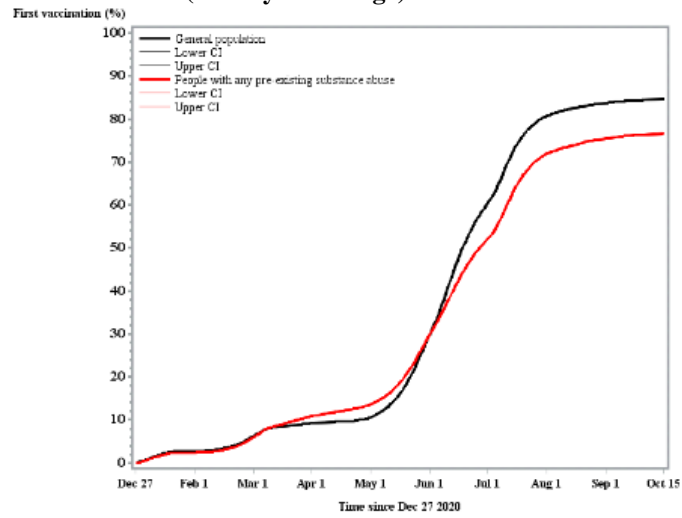
(15-65 years of age)



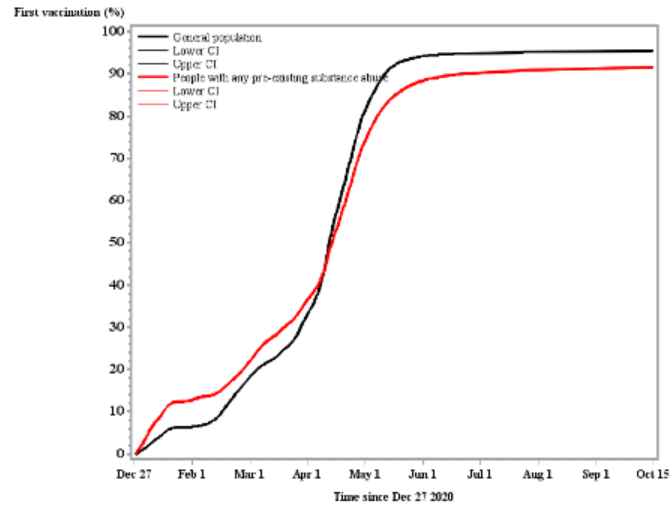
(65+ years of age)



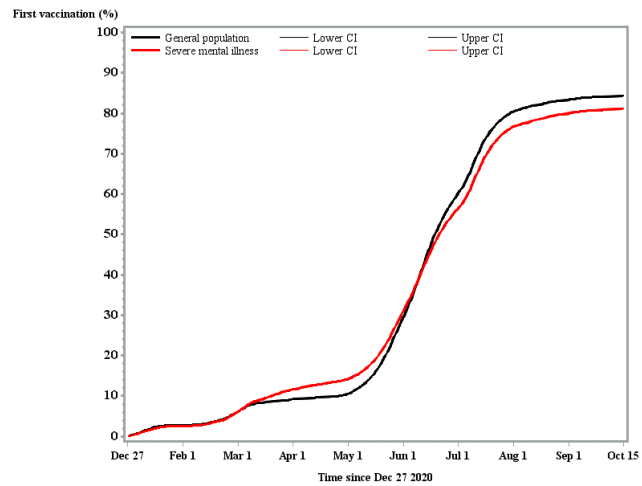
**c. Substance abuse
(15-65 years of age)**



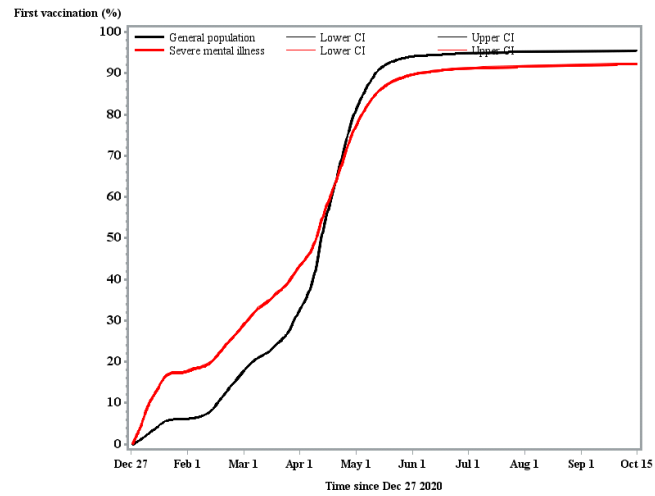
(65+ years of age)



**d. Severe mental illness
(15-65 years of age)**

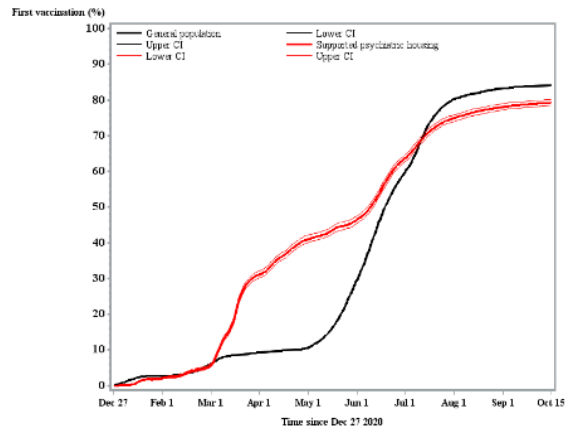


(65+ years of age)

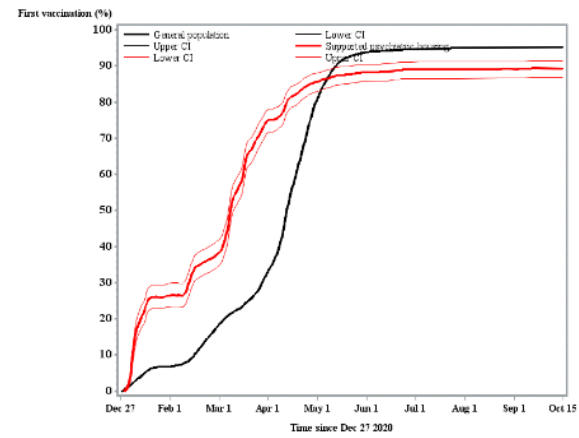


e. Supported psychiatric housing during 2020

(15-65 years of age)

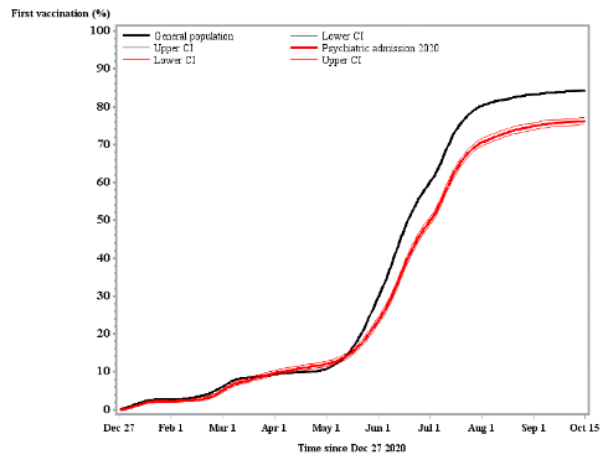


(65+ years of age)

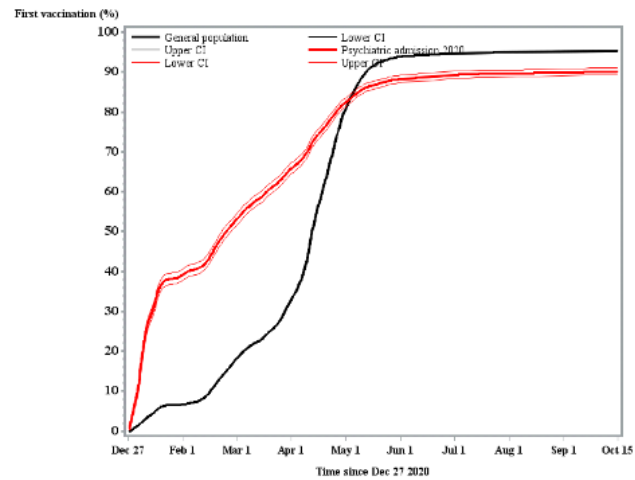


f. Psychiatric hospital admission during 2020

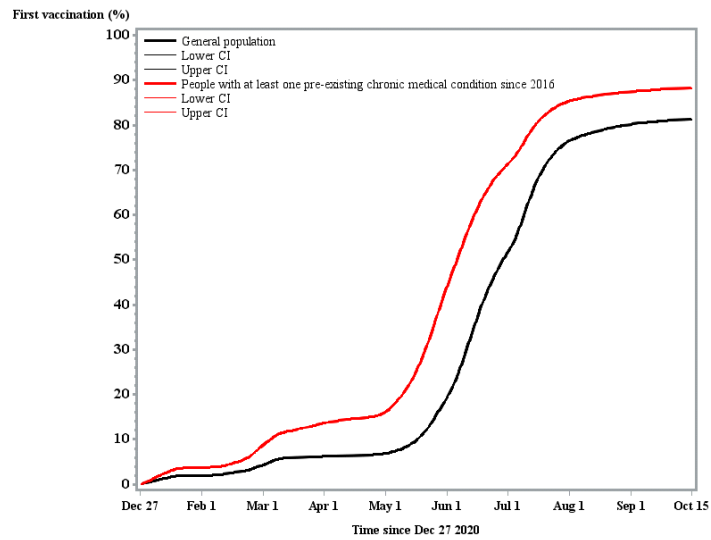
(15-65 years of age)



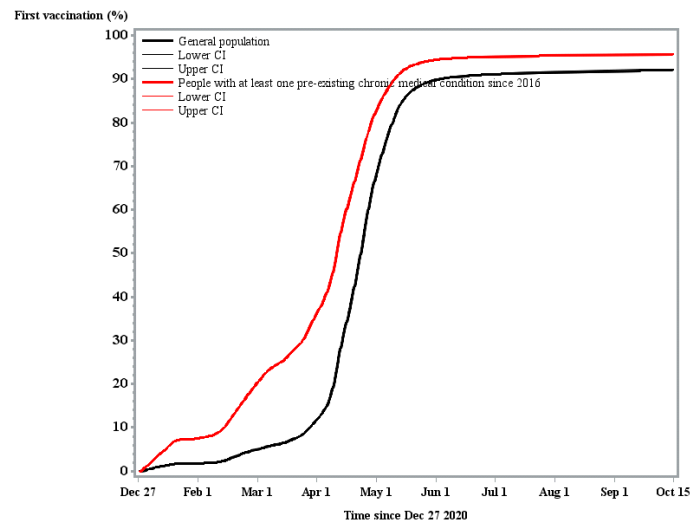
(65+ years of age)



**g. Chronic medical condition
(15-65 years of age)**



(65+ years of age)



*Analysis has considered competing risk from death and SARS-CoV-2 infection.

	Age 15-64 years					Age 65+				
	1 st vaccine	Individuals for analysis	CIF (%)	(95% CI)	P value	1 st vaccine	Individuals for analysis	CIF (%)	(95% CI)	P value
The Danish general population	3,010,088	3,588,836	84.2	(84.2-84.2)		1,103,566	1,158,361	95.3	(95.2-95.3)	
Homelessness during 2020										
Yes	3838	6405	60.1	(58.9-61.3)	<0.0001	225	281	80.1	(74.9-84.3)	<0.0001
No	3,006,250	3,582,431	84.2	(84.2-84.3)		1,103,341	1,158,080	95.3	(95.3-95.3)	
Imprisonment during 2020										
Yes	24,011	40,458	59.5	(59.0-60.0)	<0.0001	2303	2709	85.1	(83.7-86.4)	<0.0001
No	2,986,077	3,548,378	84.5	(84.4-84.5)		1,101,263	1,155,652	95.3	(95.3-95.4)	
Substance abuse[†]										
Yes	163,886	213,999	76.7	(76.5-76.9)	<0.0001	60,811	66,420	91.6	(91.4-91.8)	<0.0001
No	2,846,202	3,374,837	84.7	(84.6-84.7)		1,042,755	1,091,941	95.5	(95.5-95.6)	
Severe mental illness[†]										
Yes	165,169	203,652	81.2	(81.0-81.4)	<0.0001	58,834	63,782	92.3	(92.0-92.5)	<0.0001
No	2,844,919	3,385,184	84.4	(84.3-84.4)		1,044,732	1,094,579	95.5	(95.4-95.5)	
Supported psychiatric housing during 2020										
Yes	6753	8523	79.4	(78.5-80.2)	<0.0001	631	706	89.4	(86.9-91.4)	<0.0001
No	3,003,335	3,580,313	84.2	(84.2-84.2)		1,102,935	1,157,655	95.3	(95.3-95.3)	
Psychiatric hospital admission during 2020										
Yes	6458	8493	76.3	(75.3-77.2)	<0.0001	4118	4567	90.2	(89.3-91.0)	<0.0001
No	3,003,630	3,580,343	84.2	(84.2-82.3)		1,099,448	1,153,794	95.3	(95.3-95.3)	
Chronic medical condition[‡]										
Yes	1,322,460	1,501,001	88.2	(88.1-88.2)	<0.0001	969,598	1,012,859	95.7	(95.7-95.8)	<0.0001
No	1,687,628	2,087,835	81.3	(81.2-81.4)		133,968	145,502	92.1	(92.0-92.3)	

CIF=cumulative incidence function
*Analysis has considered competing risk from death and SARS-CoV-2 infection. [†]Any diagnosis prior to study start. [‡]Defined as any diagnosis from Jan 1, 2016 to study start.

Supplementary table 12: Cumulative vaccine uptake estimates of first dose by population groups and age-groups (15-64 and 65+ years), Dec 27, 2020 to Oct 15, 2021*

	Male Model 1*			Female Model 1*		
	1 st vaccine/person -years	IRR	95% CI	1 st vaccine/person -years	IRR	95% CI
Overall	2,124,344/1,110,112			2,208,086/1,047,785		
Homelessness during 2020						
Yes	3207/2726	0.6	(0.6-0.6)	998/927	0.5	(0.5-0.5)
No	2,121,137/1,107,386	1		2,207,088/1,046,858	1	
Imprisonment during 2020						
Yes	25,404/23,711	0.5	(0.5-0.5)	1736/1348	0.5	(0.5-0.6)
No	2,098,940/1,086,402	1		2,206,350/1,046,437	1	
Substance abuse[†]						
Yes	134,780/78,974	0.7	(0.7-0.7)	96,635/52,085	0.8	(0.8-0.8)
No	1,989,564/1,031,138	1		2,111,451/995,700	1	
Severe mental illness[†]						
Yes	87,336/47,869	0.8	(0.8-0.8)	144,787/72,690	0.8	(0.8-0.9)
No	2,037,008/1,062,243	1		2,063,299/975,095	1	
Psychiatric housing during 2020						
Yes	4788/2588	1.2	(1.2-1.2)	2906/1446	1.2	(1.2-1.2)
No	2,119,556/1,107,525	1		2,205,180/1,046,339	1	
Psychiatric hospital admission during 2020						
Yes	5290/2701	0.9	(0.8-0.9)	5867/2750	0.9	(0.9-0.9)
No	2,119,054/1,107,411	1		2,202,219/1,045,035	1	
Chronic medical condition[‡]						
Yes	903,540/364,536	1.3	(1.3-1.3)	1,084,423/420,695	1.2	(1.2-1.2)
No	1,220,804/745,577	1		1,123,663/627,090	1	
IRR=incidence rate ratio						
Person-years are rounded. *Adjusted for age (5-years groups) and calendar time (months). All p-values were <0.0001. †Any diagnosis prior to study start. ‡Defined as any diagnosis from Jan 1, 2016 to study start.						
Supplementary table 13: Incidence rate ratio of vaccine uptake of first dose by population groups, Dec 27, 2020 to Oct 15, 2021						

	2 nd vaccine (n)/person-years	Male Model 1* IRR	95% CI	P value	2 nd vaccine (n)/person-years	Female Model 1* IRR	95% CI	P value
Overall	2,095,180/1,302,020				2,182,200/1,258,961			
History of homelessness								
Yes	19,816/18,055	0.5	(0.5-0.5)	<0.0001	9188/8452	0.5	(0.5-0.5)	<0.0001
No	2,075,364/1,283,964	1			2,173,012/1,250,509	1		
History of imprisonment								
Yes	64,031/57,016	0.5	(0.5-0.6)	<0.0001	5346/4439	0.5	(0.5-0.5)	<0.0001
No	2,031,149/1,245,004	1			2,176,854/1,254,522	1		
Numbers of chronic medical conditions[†]								
3+	99,032/37,234	1.5	(1.5-1.5)	<0.0001	131,879/50,716	1.3	(1.3-1.3)	<0.0001
2	245,825/106,764	1.3	(1.3-1.4)		308,849/133,804	1.2	(1.2-1.2)	
1	551,795/298,432	1.2	(1.2-1.2)		635,869/334,503	1.2	(1.2-1.2)	
0	1,198,528/859,590	1			1,105,603/739,940	1		
IRR=incidence rate ratio								
Person-years are rounded. *Adjusted for age (5-years groups) and calendar time (months). [†] From Jan 1, 2016 to study start.								
Supplementary table 14: Incidence rate ratios vaccine uptake by population groups using other definitions, Dec 27, 2020 to Oct 15, 2021								

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