THE LANCET
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Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Widdifield J, Kwong JC, Chen S, et al. Vaccine effectiveness against SARS-CoV-2 infection and severe outcomes among individuals with immune-mediated inflammatory diseases tested between March 1 and Nov 22, 2021, in Ontario, Canada: a population-based analysis. *Lancet Rheumatol* 2022; published online April 14. https://doi.org/10.1016/S2665-9913(22)00096-0.

Supplementary Table S1. IMID case definitions

IMID TYPE	Case Definition
Rheumatoid arthritis (RA)	A patient aged 16 and older is said to have rheumatoid arthritis if s/he meets one of the following criteria: • at least 3 RA diagnosis codes (714) within 2 years, with at least one by a rheumatologist/internal medicine specialist/orthopedic surgeon, OR • at least one hospital discharge abstract with rheumatoid arthritis listed as reason for hospitalization or co-morbid condition Diagnosis codes: ICD-9: 714; ICD-10: M05, M06
Ankylosing spondylitis (AS)	A patient aged 16 and older is said to have ankylosing spondylitis if s/he meets one of the following criteria: • at least 3 AS diagnosis codes (720) within 2 years, with at least one by a rheumatologist/internal medicine specialist, OR • at least 1 hospital discharge abstract with AS diagnosis listed as reason for hospitalization or co-morbid condition Diagnosis codes: ICD-9: 720; ICD-10: M45
Psoriasis	A patient aged 16 and older is said to have Psoriasis if s/he meets one of the following criteria: • at least 3 psoriasis diagnosis codes (696) by any physician, OR • at least 1 hospital discharge abstract with psoriasis listed as reason for hospitalization or as a co-morbid condition Diagnosis codes: ICD-9: 696; ICD-10: L40.0, L40.1, L40.2, L40.3, L40.4, L40.8, L40.9
Inflammatory Bowel Disease	A patient aged 16 to 64 years old is said to have IBD if s/he meets one of the following criteria: • at least 5 IBD diagnosis codes from either hospital discharge abstracts/billing claims/ER visits within 4 years (if they had at least two years of OHIP eligibility), OR • at least 3 IBD diagnosis codes from either hospital discharge abstracts/ billing claims/ER visits with IBD diagnosis (if they did NOT have two years of OHIP eligibility) A patient aged 65+ years old is said to have IBD if s/he meets one of the following criteria: • at least 5 IBD diagnosis codes from either hospital discharge abstracts/billing claims/ER visits with IBD diagnosis within 4 years and at least 1 prescription drug claim with IBD medication (if they had at least two years of OHIP eligibility), OR • at least 3 IBD diagnosis codes from either hospital discharge abstracts/billing claims/ER visits and at least 1 prescription drug claim with IBD medication (if they did NOT have two years of OHIP eligibility) Diagnosis codes: ICD-9: 555, 556;ICD-10: K50, K51

Supplementary Table S2. List of covariates used in the analyses

Variable	Definition
Age	Age was determined from the Registered Persons Database. This variable was included *a priori* as hypothesized to be directly related to COVID-19 infection risk.
Sex	Sex was determined from the Registered Persons Database. This variable was included *a priori* as hypothesized to be directly related to COVID-19 infection risk.
Comorbidity	This variable was included a priori as hypothesized to be directly related to COVID-19 infection risk. Individuals were determined to have any comorbidity if they had at least one of the following conditions:
Chronic heart disease	Individuals were defined as having "chronic heart disease" if they had congestive heart failure (CHF), ischemic heart disease, or atrial fibrillation. The definitions for these conditions are as follows: <u>CHF:</u> An ICES-derived CHF database was used to identify patients with CHF, based on 1 NACRS, DAD, SDS, or OHIP claim and a second claim (from either) in 1 year. The CHF database is limited to those aged 40 years or older. [40] OHIP: 428 DAD, SDS: ICD-9: 428, ICD-10: I500, I501, I509 *Schultz SE, Rothwell DM, Chen Z, Tu K. Identifying cases of congestive heart failure from administrative data: A validation study using primary care patient records. Chronic Diseases and Injuries in Canada 2013;33.* <u>Cardiac ischemic disease:</u> Any comorbidity in the past 5 years (DAD, any diagnosis field) or history of procedure in past 20 years (DAD, SDS), of the following: Comorbidity (DAD, any diagnosis in the past 5 years): Angina: ICD-10: I20 Chronic Ischemic Heart Disease: ICD-10: I25; Myocardial infarction: ICD-10: I21, I22 Procedure (DAD & SDS): Coronary Artery Bypass Grafting: CCI procedure codes: 1IJ76 CCP procedure codes: 481 Percutaneous Coronary Intervention: CCI procedure codes: 1IJ50, 1IJ54, 1IJ57GQ CCP procedure codes: 4802, 4803 *Tu JV, Chu A, Donovan LR, Ko DT, Booth GL, Tu K, et al. The cardiovascular health in ambulatory care research team (CANHEART): Using big data to measure and improve cardiovascular health and healthcare services. Circ Cardiovasc Qual Outcomes 2015;8:204-12.*

Variable	Definition
	Atrial fibrillation: Individuals with 1 hospitalization or 4 physician visits within a year in the past 5 years with the following codes: ICD-9: 427.31, 427.32 ICD-10: I48 OHIP dxcode: 427 *Tu K, Nieuwlaat R, Cheng SY, Wing L, Ivers N, Atzema CL, et al. Identifying patients with atrial fibrillation in administrative data. Can J Cardiol 2016;32:1561-5.*
Hypertension	An ICES-specific hypertension database was used to identify patients with hypertension, based on 1 or more DAD diagnoses or 2 or more OHIP diagnoses in a two-year period; or 1 OHIP diagnosis followed by an OHIP/DAD diagnosis within two years. This condition was included *a priori* as hypothesized to be directly related to COVID-19 infection risk. DAD, SDS: ICD-9: 401, 402, 403, 404, 405; ICD-10: I10, I11, I12, I13, I15 OHIP diagnostic codes: 401, 402, 403, 404, or 405 *Tu K, Campbell N, Chen Z-L, Cauch-Dudek KJ, McAlister FA. Accuracy of administrative databases in identifying patients with hypertension. Open Medicine 2007;1:E18-E26.*
Diabetes	An ICES-specific diabetes database was used to identify patients with diabetes, based on 2 OHIP diagnostic codes or 1 OHIP service code or 1 DAD admission within 2 years. This condition was included *a priori* as hypothesized to be directly related to COVID-19 infection risk. DAD, SDS: ICD-9: 250; ICD-10: E10, E11, E13, E14 OHIP: 250 OHIP service codes: Q040, K029, K030, K045, K046 *Hux JE, Flintoft V, Ivis F, Bica A. Diabetes in ontario: Determination of prevalence and incidence using a validated administrative data algorithm. Diabetes Care 2002;25:512-6.*
Immunocompromised (HIV, transplant, immunosuppressive therapy)	We included other immunosuppressive conditions *a priori* as hypothesized to be directly related to COVID-19 infection risk. HIV: An ICES-specific HIV database was used to identify patients with HIV, based on 3 physician claims in 3 years with OHIP diagnostic codes: 042, 043 or 044 *Antoniou T, Zagorski B, Loutfy MR, Strike C, Glazier RH. Validation of case-finding algorithms derived from administrative data for identifying adults living with human immunodeficiency virus infection. PLoS One 2011;6:e21748.* Solid organ transplant recipients: CORRLINK is an ICES-specific database which links CORR (Canadian Organ Replacement Register) and DAD data. This database only includes patients that have received an organ transplant and does not include dialysis patients. • For transplants before December 31, 2019: individuals are a transplant recipient if they have a treatment code of 171, where the treatment was before the index date

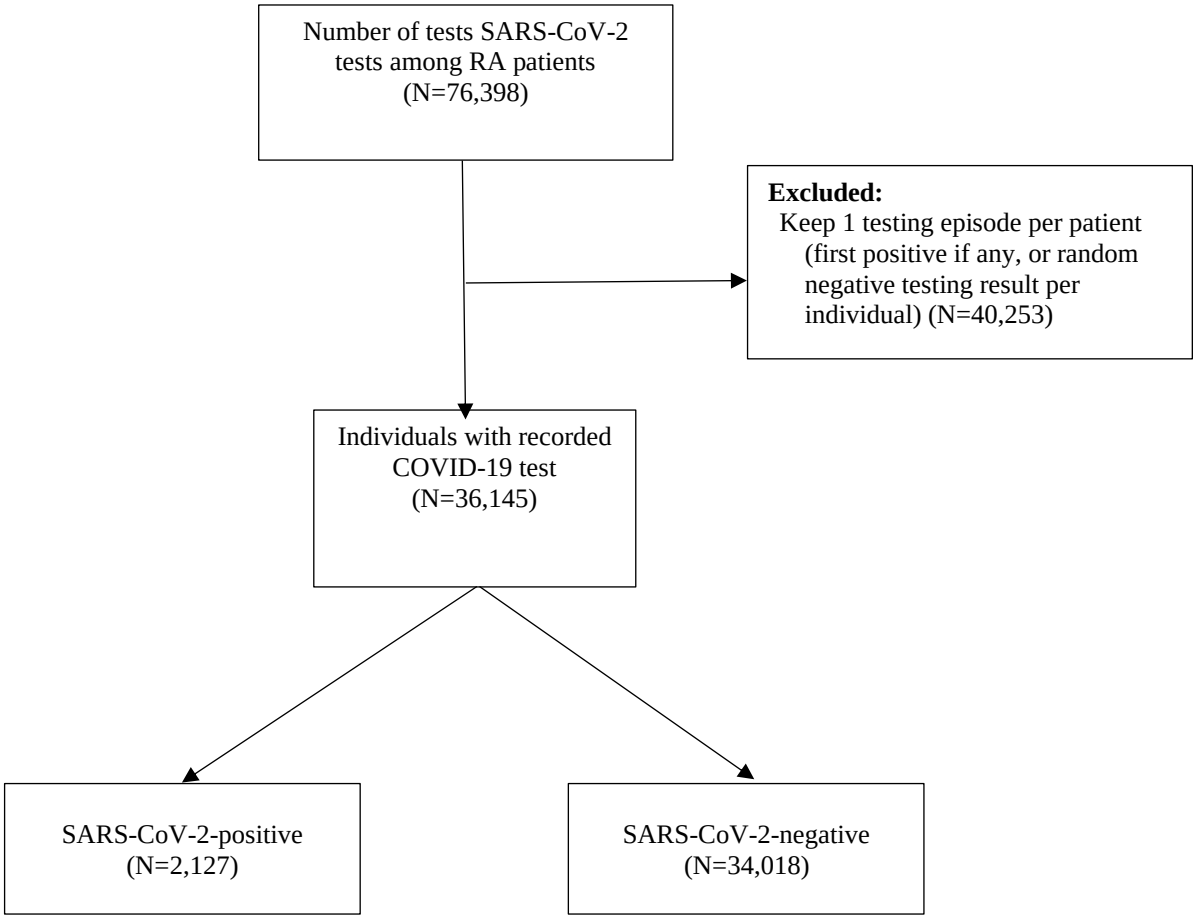
Variable	Definition
	• For transplants on/after January 1, 2020: Identify ICD-10 codes, CCI procedure codes, and OHIP feecodes from DAD, NACRS, and OHIP (codes available upon request) <u>Allogenic/autologous bone marrow transplant recipients:</u> We identified those who had a history of allogenic bone marrow transplant before the index date using the following combination of diagnostic codes: DAD: • CCP procedure codes = 53.0 • CCI procedure codes = 1WY19, 1LZ19HHU7, 1LZ19HHU8 OHIP: • Feecode = Z426 <u>Other immune disorders</u>: Individuals were identified as having disorders of the immune system based on health care encounters recorded in DAD, SDS, NACRS, and OHIP in the 2-years prior to index using the Johns Hopkins ACG® System Version 10.[41] <u>Any hospitalization (any diagnosis field) with the following codes</u>: • Sickle-cell disease (ICD-10 D57.0 – D57.2; D57.8 OR ICD-9 282.6); • Other immune system disorders (ICD-9 273.2, 279.0, 279.1, 279.2, 279.3, 279.8, 279.9, 289.8; ICD-10 D80, D81, D82, D83, D84, D89; OHIP dxcode 279) <u>Active cancer:</u> • Any of the following treatments in the past 6 months: cancer surgery (codes available upon request), radiation (if the ICD-10 code listed was Z510 in NACRS), chemotherapy (if the ICD-10 code listed was Z511 or Z512 and any evidence of cancer diagnosis in the Ontario Cancer Registry (OCR) prior to the last treatment date) • If not any of the above, individuals still classified as having cancer if they had a cancer diagnosis in OCR in the year before the index date
Chronic kidney disease (CKD)	This variable was included *a priori* as hypothesized to be directly related to COVID-19 infection risk.[40] We defined this variable as having a CKD diagnosis code in DAD, NACRS, OHIP in the past 5 years, <u>or:</u> at least 1 dialysis code in each of the 3 months prior to index OHIP: 403, 585 ICD-10: E102, E112, E132, E142, I12, I13, N08, N18, N19 *Fleet JL, Dixon SN, Shariff SZ, Quinn RR, Nash DM, Harel Z, et al. Detecting chronic kidney disease in population-based administrative databases using an algorithm of hospital encounter and physician claim codes. BMC Nephrology 2013;14:1-8.*
	Patients who were on chronic dialysis in the year before index date, identified as those with at least 2 of any of the following codes in OHIP, DAD, or SDS separated by at least 90 days, but less than 150 days OHIP service codes: R849, G323, G325, G326, G860, G862, G865 G863, G866, G330, G331, G332, G333, G861, G082, G083, G085, G090, G091, G092, G093, G094, G095, G096, G294, G295, G864, H540, H740

Variable	Definition
	DAD, SDS: CCI procedure codes: 5195, 6698 CCP procedure code: 1PZ21 *Quinn RR, Laupacis A, Austin PC, Hux JE, Garg AX, Hemmelgarn BR, et al. Using administrative datasets to study outcomes in dialysis patients: A validation study. Medical Care 2010;48:745-50.*
Advanced liver disease (Cirrhosis or Decompensated Cirrhosis)	We included advanced liver disease *a priori* as hypothesized to be directly related to COVID-19 infection risk. Defined using the Cirrhosis Algorithm: Two or more physician visits (diagnosis code 571), or one or more hospital diagnosis of cirrhosis, using the following diagnostic codes: ICD-9 : 456.1, 571.2, 571.5 ICD-10: I85.9, I98.2, K70.3,K71.7, K74.6 Defined using the Decompensated Cirrhosis Algorithm: One or more physician visits with diagnosis code 571 and (one or more hospital diagnosis or one or more procedure), using the following diagnostic codes: ICD-9: 456.0, 456.2, 572.2, 572.3, 572.4, 782.4, 789.5l; ICD-10: I85.0, I86.4, I98.20, I98.3, K721, K729, K76.6, K76.7, R17, R18 CCI: 1.NA.13.BA-FA, 1.NA.13.BA-X7, 1.NA.13.BA-BD, 1.KQ.76GP-NR, 1.OT.52.HA CCP: 1006, 6691 OHIP: J057, Z591 *Lapointe-Shaw L, Georgie F, Carlone D, Cerocchi O, Chung H, Dewit Y, et al. Identifying cirrhosis, decompensated cirrhosis and hepatocellular carcinoma in health administrative data: A validation study. PLoS One 2018;13:e0201120.*
Dementia	<u>Dementia (ICES cohort) definition:</u> 1 hospitalization for dementia and/or 3 ambulatory visits for dementia, each separated by at least 30 days, within 2 years and/or 1 prescription from ODB. This variable was included *a priori* as hypothesized to be directly related to COVID-19 infection risk, as well as a marker for healthcare access, mobility, and household-level exposures. OHIP: 290, 331 DAD, SDS: ICD-9: 0461, 290.0, 290.1, 290.2, 290.3, 290.4, 294, 331.0, 331.1, 331.5 ICD-10: F00, F01, F02, F03, G30 ODB: 1 prescription for a cholinesterase inhibitor *Jaakkimainen L, Bronskill SE, Tierney MC, Herrmann N, Green D, Young J, et al. Identification of physician-diagnosed Alzheimer's disease and related dementias in population-based administrative data: A validation study using*

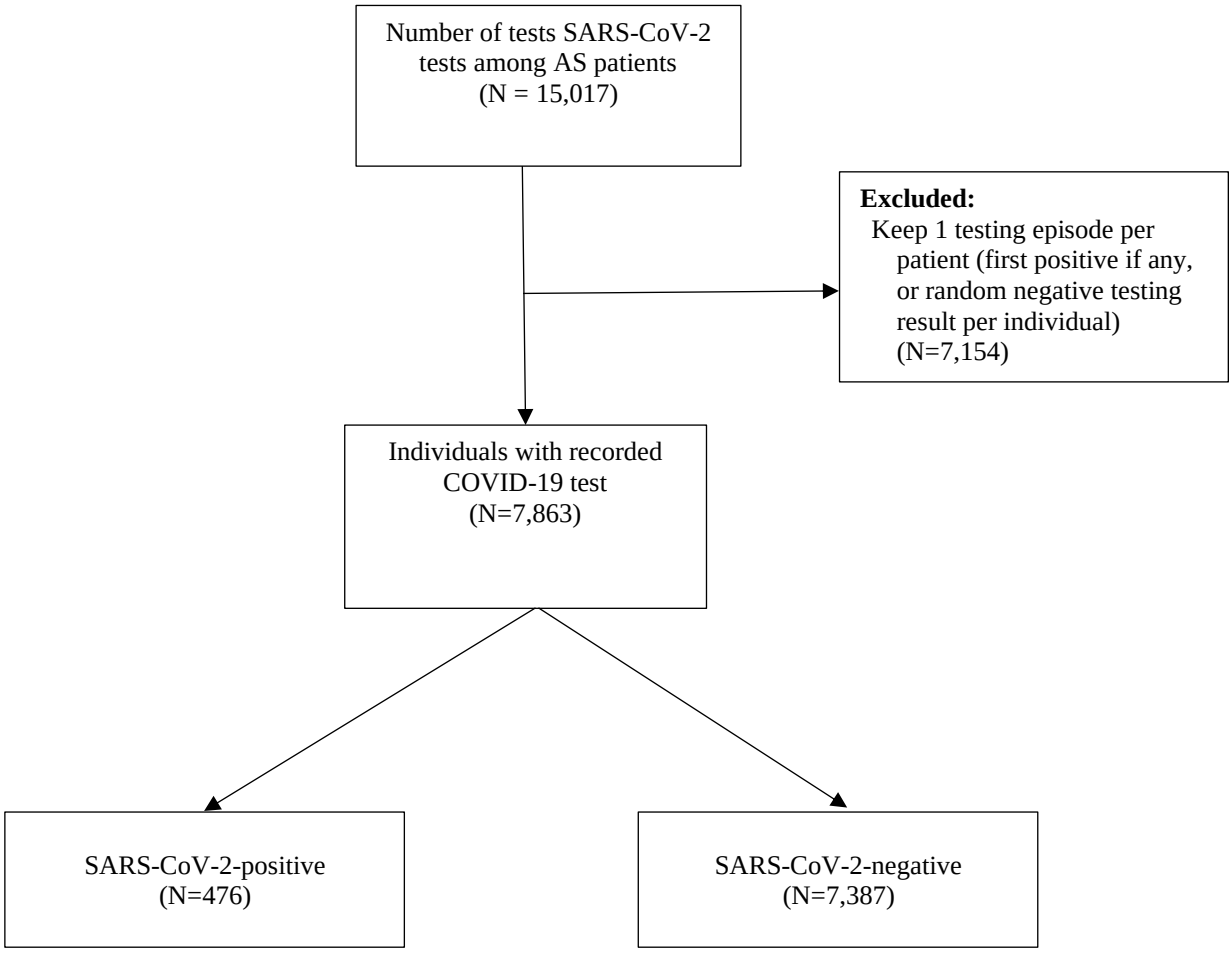
Variable	Definition
	family physicians' electronic medical records. Journal of Alzheimer's Disease 2016;54:337-49.
Frailty	Frailty: Individuals were identified as having medical conditions associated with frailty based on health care encounters recorded in DAD, SDS, NACRS, and OHIP in the 2-years prior to index using the Johns Hopkins ACG® System Version 10.
History of transient ischemic attack or acute ischemic stroke	This variable was included *a priori* as hypothesized to be directly related to COVID-19 infection risk. Transient Ischemic Attack: DAD and NACRS were used to identify patients with a history of a transient ischemic attack, based on at least 1 hospitalization or ED visit with a diagnosis coded with one of the following codes: ICD-9: 435, 3623 ICD-10: G450, G451, G452, G453, G458, G459, H340 Acute Ischemic Stroke: DAD was used to identify patients with a history of acute ischemic stroke, based on at least 1 hospitalization with a main diagnosis coded with one of the following codes: ICD-9: 434, 436; ICD-10: I63, I64, H34.1
Influenza vaccine received, 2019-2020 season or 2020-2021 season	An OHIP billing with any of the following fee codes from October 1, 2019 to September 30, 2020, or October 1, 2020 up to 14 days before the index date: G590, G591, G592, Q130, Q590, Q690, Q691; or, an ODB billing with any of the following Drug Identification Numbers (DINs)/Product Identification Number (PINs) from October 1, 2019 up to September 30, 2020: 02420643, 02420783, 02432730, 02473283, or October 1, 2020 up to 14 days before the index date: 02420643, 02420783, 02432730, 02445646, 02494248, 09857645, 09857646
Public health unit region	Identified from Public Health Unit (PHU) information using postal code of residence as recorded in the Registered Persons Database and Statistics Canada Postal Code Conversion File Plus (version 7B). Patients were identified to live in one of 10 PHU regions.
Household income quintile	Calculated at the dissemination area (DA) level using Census data by multiplying the median income (before-tax) by the number of households and dividing by the sum of single-person equivalent to obtain income per single person equivalent. A DA is the smallest standard geographic area for which all census data are disseminated. A DA generally comprises approximately 400-700 people, but in densely populated cities may contain several thousand people. We assigned subjects to a DA using postal code, as recorded in the Registered Persons Database. For DAs where median income was unavailable, neighbouring DAs were used to estimate income per single person equivalent. DA-based income quintiles were constructed separately for each census metropolitan area or census agglomeration (one or more adjacent municipalities integrated via commuting flows). DAs within each such area were ranked from the lowest average income per single-person equivalent to the highest, and DAs were assigned to five groups, such that each group contained approximately one-fifth the total in-scope population of each area.

Variable	Definition
Household density quintile	Average number of persons in private households, calculated at the DA level using Census data. DAs across the province were ranked by average number of persons per household into 5 categories (quintiles), such that each group contained approximately one-fifth of the DAs.
Essential work quintile	Calculated at the DA level, using Census data. For each DA, we calculated the number of individuals ≥15 years old that were working in one of the following Census-defined work categories: Sales and service occupations; trades, transport and equipment operators and related occupations; natural resources, agriculture and related production occupations; and occupations in manufacturing and utilities. DAs across the province were then ranked by these percentages into quintiles, with the lowest 1/5 of DAs comprising the first quintile, and so on.
Visible minority quintile	Calculated at the DA level, using Census data. An individual was marked as "self-identify as a visible minority" if they reported being one or more of the following (wording from the Census): "South Asian (e.g., East Indian, Pakistani, Sri Lankan, etc.), Chinese, Black, Filipino, Latin American, Arab, Southeast Asian (e.g., Vietnamese, Cambodian, Laotian, Thai, etc.), West Asian (e.g., Iranian, Afghan, etc.), Korean, Japanese, or Other—specify". DAs across the province were then ranked by these percentages into quintiles, with the lowest 1/5 of DAs comprising the first quintile, and so on.
Abbreviations of Data Sources: DAD: discharge abstract database; ODB: Ontario Drug Benefit database OHIP: Ontario Health Insurance Plan claims database; SDS: Same data surgery database;	

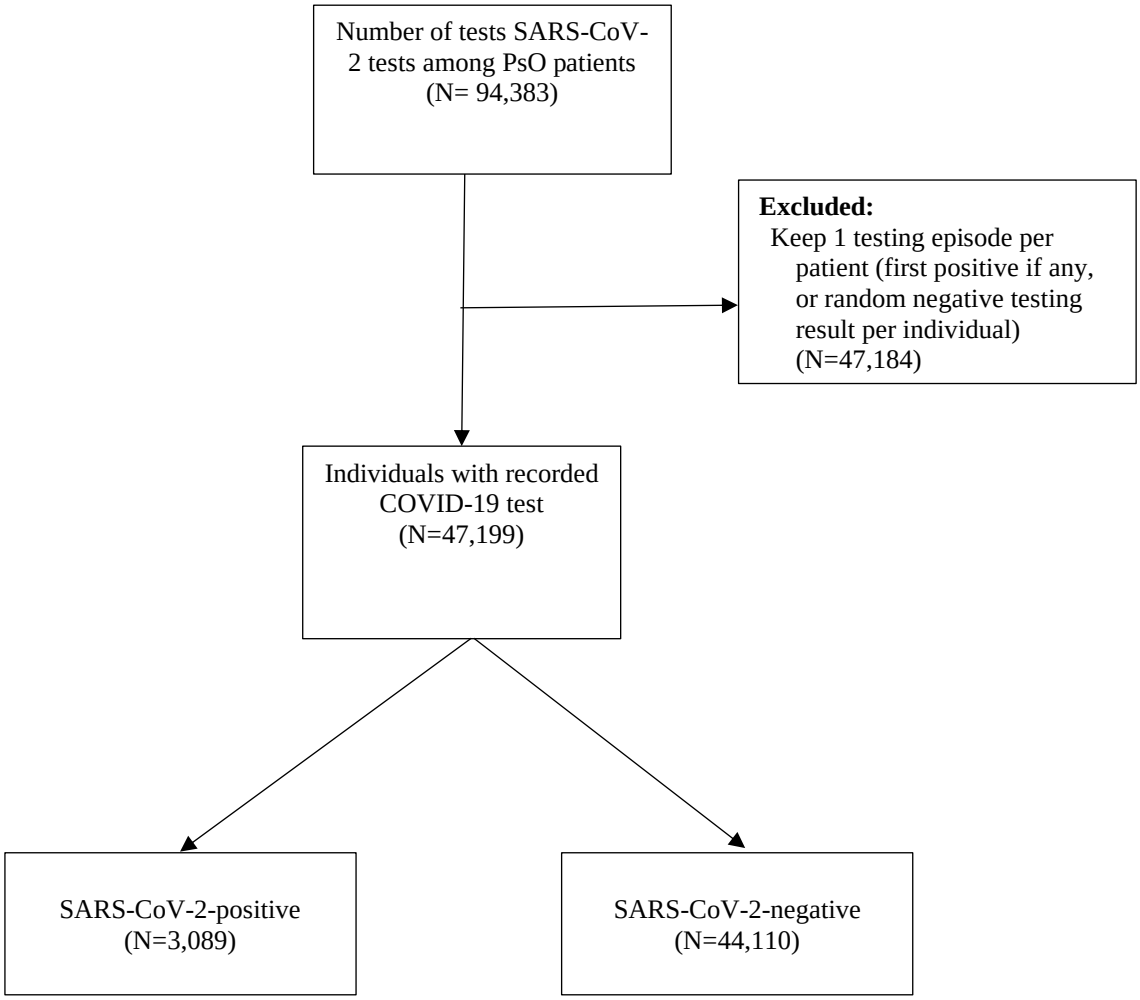
Supplementary Figure S1. Selection of Individuals with Rheumatoid Arthritis in Ontario, Canada included in tested cohort between 01 March 2021 and 22 November 2021 in Ontario, Canada



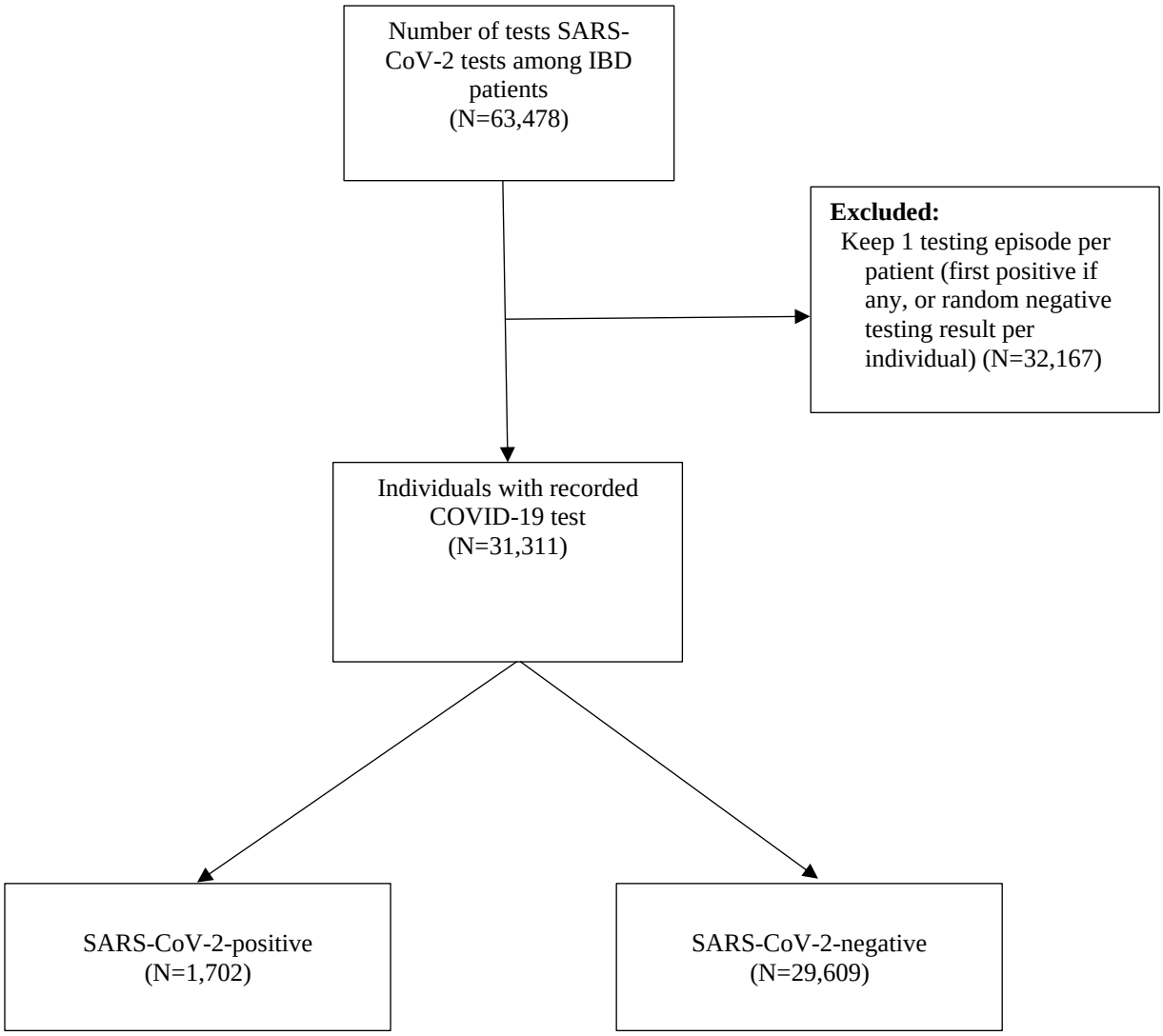
Supplementary Figure S2. Selection of Individuals with Ankylosing Spondylitis in Ontario, Canada included in tested cohort between 01 March 2021 and 22 November 2021 in Ontario, Canada



Supplementary Figure S3. Selection of Individuals with Psoriasis in Ontario, Canada included in tested cohort between 01 March 2021 and 22 November 2021 in Ontario, Canada



Supplementary Figure S3. Selection of Individuals with Inflammatory Bowel Disease in Ontario, Canada included in tested cohort between 01 March 2021 and 22 November 2021 in Ontario, Canada



Supplementary Table S3. Additional Patients Characteristics (omitted from Table 1) According to SARS-CoV-2 Test Results at Time of Testing between March and November 2021, n (%) unless otherwise stated

Characteristic*	RA			AS			PsO			IBD		
	SARS-CoV-2-positive N=2,127	SARS-CoV-2-negative N=34,018	Standardized difference**	SARS-CoV-2-positive N=476	SARS-CoV-2-negative N=7,387	Standardized difference**	SARS-CoV-2-positive N=3,089	SARS-CoV-2-negative N=44,110	Standardized difference**	SARS-CoV-2-positive N=1,702	SARS-CoV-2-negative N=29,609	Standardized difference**
Age group (years)												
16–29	118 (5.5%)	1,488 (4.4%)	0.05	41 (8.6%)	542 (7.3%)	0.05	405 (13.1%)	4,304 (9.8%)	0.11	306 (18.0%)	3,531 (11.9%)	0.17
30–39	195 (9.2%)	2,339 (6.9%)	0.08	72 (15.1%)	1,150 (15.6%)	0.01	527 (17.1%)	6,477 (14.7%)	0.07	301 (17.7%)	4,985 (16.8%)	0.02
40–49	315 (14.8%)	3,893 (11.4%)	0.10	100 (21.0%)	1,496 (20.3%)	0.02	599 (19.4%)	7,388 (16.7%)	0.07	351 (20.6%)	5,454 (18.4%)	0.06
50–59	505 (23.7%)	6,610 (19.4%)	0.10	140 (29.4%)	1,707 (23.1%)	0.14	704 (22.8%)	8,841 (20.0%)	0.07	348 (20.4%)	5,992 (20.2%)	0.01
60–69	508 (23.9%)	8,135 (23.9%)	0.00	84 (17.6%)	1,322 (17.9%)	0.01	484 (15.7%)	8,278 (18.8%)	0.08	242 (14.2%)	4,878 (16.5%)	0.06
70–79	302 (14.2%)	6,846 (20.1%)	0.16	30 (6.3%)	826 (11.2%)	0.17	255 (8.3%)	5,692 (12.9%)	0.15	98 (5.8%)	3,040 (10.3%)	0.17
80 and older	184 (8.7%)	4,707 (13.8%)	0.16	9 (1.9%)	344 (4.7%)	0.16	115 (3.7%)	3,130 (7.1%)	0.15	56 (3.3%)	1,729 (5.8%)	0.12
Biweekly period of test												
1 Mar - 14 Mar	162 (7.6%)	2,830 (8.3%)	0.03	31 (6.5%)	608 (8.2%)	0.07	229 (7.4%)	3,552 (8.1%)	0.02	112 (6.6%)	2,280 (7.7%)	0.04
15 Mar - 28 Mar	221 (10.4%)	2,401 (7.1%)	0.12	49 (10.3%)	545 (7.4%)	0.1	297 (9.6%)	3,234 (7.3%)	0.08	138 (8.1%)	2,128 (7.2%)	0.03
29 Mar - 11 Apr	318 (15.0%)	2,486 (7.3%)	0.24	79 (16.6%)	591 (8.0%)	0.26	529 (17.1%)	3,619 (8.2%)	0.27	274 (16.1%)	2,390 (8.1%)	0.25
12 Apr - 25 Apr	424 (19.9%)	2,549 (7.5%)	0.37	85 (17.9%)	619 (8.4%)	0.28	589 (19.1%)	3,682 (8.3%)	0.32	296 (17.4%)	2,254 (7.6%)	0.30
26 Apr - 9 May	266 (12.5%)	2,279 (6.7%)	0.20	71 (14.9%)	473 (6.4%)	0.28	380 (12.3%)	2,973 (6.7%)	0.19	195 (11.5%)	1,942 (6.6%)	0.17
10 May - 23 May	166 (7.8%)	1,812 (5.3%)	0.10	41 (8.6%)	388 (5.3%)	0.13	256 (8.3%)	2,279 (5.2%)	0.12	138 (8.1%)	1,469 (5.0%)	0.13
24 May - 6 Jun	71 (3.3%)	1,524 (4.5%)	0.06	11 (2.3%)	287 (3.9%)	0.09	110 (3.6%)	1,798 (4.1%)	0.03	63 (3.7%)	1,238 (4.2%)	0.02
7 Jun - 20 Jun	43 (2.0%)	1,398 (4.1%)	0.12	7 (1.5%)	250 (3.4%)	0.12	42 (1.4%)	1,634 (3.7%)	0.15	28 (1.6%)	1,140 (3.9%)	0.14
21 Jun - 4 Jul	22 (1.0%)	1,209 (3.6%)	0.17	<6	233 (3.2%)	0.19	26 (0.8%)	1,375 (3.1%)	0.16	19 (1.1%)	1,038 (3.5%)	0.16
5 Jul - 18 Jul	19 (0.9%)	1,297 (3.8%)	0.19	<6	266 (3.6%)	0.19	16 (0.5%)	1,475 (3.3%)	0.21	11 (0.6%)	1,050 (3.5%)	0.20
19 Jul -1 Aug	10 (0.5%)	1,205 (3.5%)	0.22	6 (1.3%)	257 (3.5%)	0.15	16 (0.5%)	1,571 (3.6%)	0.22	14 (0.8%)	1,043 (3.5%)	0.19
2 Aug - 15 Aug	37 (1.7%)	1,406 (4.1%)	0.14	8 (1.7%)	325 (4.4%)	0.16	55 (1.8%)	1,747 (4.0%)	0.13	37 (2.2%)	1,265 (4.3%)	0.12

16 Aug - 29 Aug	41 (1.9%)	1,540 (4.5%)	0.15	12 (2.5%)	343 (4.6%)	0.11	88 (2.8%)	2,024 (4.6%)	0.09	57 (3.3%)	1,400 (4.7%)	0.07
30 Aug - 12 Sep	61 (2.9%)	1,512 (4.4%)	0.08	18 (3.8%)	346 (4.7%)	0.04	98 (3.2%)	1,980 (4.5%)	0.07	66 (3.9%)	1,335 (4.5%)	0.03
13 Sep - 26 Sep	57 (2.7%)	1,689 (5.0%)	0.12	9 (1.9%)	380 (5.1%)	0.18	81 (2.6%)	2,247 (5.1%)	0.13	56 (3.3%)	1,486 (5.0%)	0.09
27 Sep - 10 Oct	59 (2.8%)	1,655 (4.9%)	0.11	17 (3.6%)	392 (5.3%)	0.08	67 (2.2%)	2,269 (5.1%)	0.16	45 (2.6%)	1,525 (5.2%)	0.13
11 Oct - 24 Oct	42 (2.0%)	1,630 (4.8%)	0.16	8 (1.7%)	342 (4.6%)	0.17	49 (1.6%)	2,002 (4.5%)	0.17	42 (2.5%)	1,409 (4.8%)	0.12
25 Oct - 7 Nov	35 (1.6%)	1,665 (4.9%)	0.18	<6	333 (4.5%)	0.25	65 (2.1%)	2,128 (4.8%)	0.15	43 (2.5%)	1,494 (5.0%)	0.13
8 Nov - 22 Nov	73 (3.4%)	1,931 (5.7%)	0.11	14 (2.9%)	409 (5.5%)	0.13	96 (3.1%)	2,521 (5.7%)	0.13	68 (4.0%)	1,723 (5.8%)	0.08
Essential workers quintile [a, b]												
1 (0%–32.5%)	300 (14.1%)	6,292 (18.5%)	0.12	96 (20.2%)	1,880 (25.5%)	0.13	572 (18.5%)	10,039 (22.8%)	0.10	329 (19.3%)	6,587 (22.2%)	0.07
2 (32.5%–42.3%)	447 (21.0%)	7,543 (22.2%)	0.03	101 (21.2%)	1,752 (23.7%)	0.06	684 (22.1%)	10,273 (23.3%)	0.03	384 (22.6%)	6,615 (22.3%)	0.01
3 (42.3%–49.8%)	453 (21.3%)	7,028 (20.7%)	0.02	109 (22.9%)	1,459 (19.8%)	0.08	599 (19.4%)	8,722 (19.8%)	0.01	322 (18.9%)	6,011 (20.3%)	0.03
4 (50.0%–57.5%)	447 (21.0%)	6,688 (19.7%)	0.03	74 (15.5%)	1,223 (16.6%)	0.03	615 (19.9%)	7,878 (17.9%)	0.05	338 (19.9%)	5,461 (18.4%)	0.04
5 (57.5%–100%)	463 (21.8%)	6,250 (18.4%)	0.08	91 (19.1%)	1,039 (14.1%)	0.14	604 (19.6%)	6,978 (15.8%)	0.10	320 (18.8%)	4,790 (16.2%)	0.07
Persons per dwelling quintile [a, c]												
1 (0–2.1)	352 (16.5%)	7,361 (21.6%)	0.13	69 (14.5%)	1,419 (19.2%)	0.13	488 (15.8%)	9,000 (20.4%)	0.12	249 (14.6%)	6,035 (20.4%)	0.15
2 (2.2–2.4)	282 (13.3%)	6,454 (19.0%)	0.16	73 (15.3%)	1,284 (17.4%)	0.06	456 (14.8%)	7,803 (17.7%)	0.08	259 (15.2%)	5,674 (19.2%)	0.10
3 (2.5–2.6)	220 (10.3%)	4,971 (14.6%)	0.13	51 (10.7%)	1,021 (13.8%)	0.09	352 (11.4%)	6,290 (14.3%)	0.09	202 (11.9%)	4,378 (14.8%)	0.09
4 (2.7–3.0)	500 (23.5%)	7,929 (23.3%)	0.00	112 (23.5%)	1,814 (24.6%)	0.02	727 (23.5%)	10,700 (24.3%)	0.02	409 (24.0%)	7,033 (23.8%)	0.01
5 (3.1–5.7)	756 (35.5%)	7,074 (20.8%)	0.33	166 (34.9%)	1,810 (24.5%)	0.23	1,049 (34.0%)	10,085 (22.9%)	0.25	574 (33.7%)	6,333 (21.4%)	0.28
Self-identified visible minority quintile [a, d]												
1 (0.0-2.2%)	224 (10.5%)	6,772 (19.9%)	0.26	42 (8.8%)	1,127 (15.3%)	0.20	260 (8.4%)	7,066 (16.0%)	0.23	189 (11.1%)	5,621 (19.0%)	0.22
2 (2.2-7.5%)	283 (13.3%)	6,833 (20.1%)	0.18	58 (12.2%)	1,236 (16.7%)	0.13	383 (12.4%)	8,156 (18.5%)	0.17	254 (14.9%)	5,953 (20.1%)	0.14
3 (7.5-18.7%)	289 (13.6%)	6,757 (19.9%)	0.17	70 (14.7%)	1,583 (21.4%)	0.18	498 (16.1%)	9,087 (20.6%)	0.12	321 (18.9%)	6,165 (20.8%)	0.05
4 (18.7-43.5%)	461 (21.7%)	6,582 (19.3%)	0.06	131 (27.5%)	1,749 (23.7%)	0.09	817 (26.4%)	10,263 (23.3%)	0.07	415 (24.4%)	6,562 (22.2%)	0.05
5 (43.5-100%)	853 (40.1%)	6,861 (20.2%)	0.45	170 (35.7%)	1,658 (22.4%)	0.30	1,116 (36.1%)	9,322 (21.1%)	0.34	514 (30.2%)	5,164 (17.4%)	0.30

Comorbidity [e]												
Chronic respiratory disease	659 (31.0%)	12,774 (37.6%)	0.14	120 (25.2%)	2,304 (31.2%)	0.13	852 (27.6%)	13,605 (30.8%)	0.07	478 (28.1%)	9,589 (32.4%)	0.09
Asthma	470 (22.1%)	8,241 (24.2%)	0.05	93 (19.5%)	1,702 (23.0%)	0.09	654 (21.2%)	9,513 (21.6%)	0.01	374 (22.0%)	7,039 (23.8%)	0.04
COPD	333 (15.7%)	7,592 (22.3%)	0.17	45 (9.5%)	1,004 (13.6%)	0.13	311 (10.1%)	6,579 (14.9%)	0.15	161 (9.5%)	4,226 (14.3%)	0.15
Chronic heart disease	329 (15.5%)	6,519 (19.2%)	0.1	29 (6.1%)	891 (12.1%)	0.21	263 (8.5%)	5,321 (12.1%)	0.12	156 (9.2%)	3,465 (11.7%)	0.08
Congestive heart failure	124 (5.8%)	3,137 (9.2%)	0.13	12 (2.5%)	349 (4.7%)	0.12	93 (3.0%)	2,113 (4.8%)	0.09	65 (3.8%)	1,446 (4.9%)	0.05
Ischemic heart disease	138 (6.5%)	2,603 (7.7%)	0.05	13 (2.7%)	351 (4.8%)	0.11	141 (4.6%)	2,436 (5.5%)	0.04	63 (3.7%)	1,362 (4.6%)	0.05
Atrial fibrillation	175 (8.2%)	3,266 (9.6%)	0.05	13 (2.7%)	498 (6.7%)	0.19	125 (4.0%)	2,753 (6.2%)	0.10	79 (4.6%)	1,913 (6.5%)	0.08
Hypertension	984 (46.3%)	17,530 (51.5%)	0.11	161 (33.8%)	2,739 (37.1%)	0.07	1,010 (32.7%)	16,589 (37.6%)	0.10	471 (27.7%)	9,278 (31.3%)	0.08
Diabetes	539 (25.3%)	7,900 (23.2%)	0.05	85 (17.9%)	1,293 (17.5%)	0.01	650 (21.0%)	8,603 (19.5%)	0.04	271 (15.9%)	4,464 (15.1%)	0.02
Active cancer	30 (1.4%)	808 (2.4%)	0.07	<6	118 (1.6%)	0.09	32 (1.0%)	826 (1.9%)	0.07	19 (1.1%)	569 (1.9%)	0.07
Chronic kidney disease	154 (7.2%)	2,956 (8.7%)	0.05	23 (4.8%)	422 (5.7%)	0.04	112 (3.6%)	2,295 (5.2%)	0.08	97 (5.7%)	1,884 (6.4%)	0.03
Advanced liver disease	44 (2.1%)	874 (2.6%)	0.03	<6	182 (2.5%)	0.13	62 (2.0%)	936 (2.1%)	0.01	68 (4.0%)	1,132 (3.8%)	0.01
Dementia	59 (2.8%)	1,484 (4.4%)	0.09	<6	156 (2.1%)	0.09	49 (1.6%)	1,130 (2.6%)	0.07	30 (1.8%)	666 (2.2%)	0.03
Frailty	121 (5.7%)	3,082 (9.1%)	0.13	14 (2.9%)	392 (5.3%)	0.12	102 (3.3%)	2,348 (5.3%)	0.10	85 (5.0%)	1,743 (5.9%)	0.04
History of stroke or TIA	57 (2.7%)	1,338 (3.9%)	0.07	8 (1.7%)	166 (2.2%)	0.04	55 (1.8%)	1,034 (2.3%)	0.04	32 (1.9%)	661 (2.2%)	0.02

***** These characteristics were omitted from Table 1 only due to space limitations; ** Values >0.10 are considered clinically relevant differences.

[a] The sum of counts may not equal the column total because of individuals with missing information (<1.0%) for this characteristic.

[b] Percentage of people in the area working in the following occupations: sales and service occupations; trades, transport and equipment operators and related occupations; natural resources, agriculture, and related production occupations; and occupations in manufacturing and utilities. Census counts for people are randomly rounded up or down to the nearest number divisible by 5, which causes some minor imprecision.

[c] Range of persons per dwelling.

[d] Percentage of people in the area who self-identified as a visible minority. Census counts for people are randomly rounded up or down to the nearest number divisible by 5, which causes some minor imprecision.

[e] Comorbidity definitions are provided in Supplementary Table S2.

Abbreviations: COPD: Chronic obstructive pulmonary disease; TIA: transient ischemic attack

Supplementary Table S4. Additional Patients Characteristics (omitted from Table 2) According to Vaccination Status at Time of Testing between March and November 2021, n (%) unless otherwise stated, n (%) unless otherwise stated

Characteristic*	RA			AS			PsO			IBD		
	Unvaccinated	≥1 mRNA dose	Standardized difference**	Unvaccinated	≥1 mRNA dose	Standardized difference**	Unvaccinated	≥1 mRNA dose	Standardized difference**	Unvaccinated	≥1 mRNA dose	Standardized difference**
	N=11,238	N=22,990		N=2,857	N=4,470		N=17,338	N=26,693		N=11,246	N=18,159	
Age group (years)												
16–29	748 (6.7%)	853 (3.7%)	0.13	270 (9.5%)	310 (6.9%)	0.09	2,408 (13.9%)	2,296 (8.6%)	0.17	1,735 (15.4%)	2,098 (11.6%)	0.11
30–39	1,135 (10.1%)	1,385 (6.0%)	0.15	551 (19.3%)	656 (14.7%)	0.12	3,272 (18.9%)	3,635 (13.6%)	0.14	2,333 (20.7%)	2,914 (16.0%)	0.12
40–49	1,792 (15.9%)	2,218 (9.6%)	0.19	691 (24.2%)	782 (17.5%)	0.17	3,609 (20.8%)	3,752 (14.1%)	0.18	2,473 (22.0%)	2,921 (16.1%)	0.15
50–59	2,677 (23.8%)	3,844 (16.7%)	0.18	704 (24.6%)	966 (21.6%)	0.07	3,697 (21.3%)	4,783 (17.9%)	0.09	2,390 (21.3%)	3,325 (18.3%)	0.07
60–69	2,632 (23.4%)	5,087 (22.1%)	0.03	409 (14.3%)	807 (18.1%)	0.10	2,601 (15.0%)	4,979 (18.7%)	0.10	1,417 (12.6%)	2,974 (16.4%)	0.11
70–79	1,614 (14.4%)	5,369 (23.4%)	0.23	187 (6.5%)	644 (14.4%)	0.26	1,345 (7.8%)	4,423 (16.6%)	0.27	673 (6.0%)	2,373 (13.1%)	0.24
80 and older	640 (5.7%)	4,234 (18.4%)	0.40	45 (1.6%)	305 (6.8%)	0.26	406 (2.3%)	2,825 (10.6%)	0.34	225 (2.0%)	1,554 (8.6%)	0.30
Biweekly period of test												
1 Mar - 14 Mar	2,364 (21.0%)	628 (2.7%)	0.59	505 (17.7%)	134 (3.0%)	0.50	3,112 (17.9%)	669 (2.5%)	0.53	1,925 (17.1%)	467 (2.6%)	0.50
15 Mar - 28 Mar	2,015 (17.9%)	581 (2.5%)	0.53	488 (17.1%)	101 (2.3%)	0.52	2,908 (16.8%)	573 (2.1%)	0.52	1,880 (16.7%)	372 (2.0%)	0.52
29 Mar - 11 Apr	1,884 (16.8%)	859 (3.7%)	0.44	526 (18.4%)	131 (2.9%)	0.52	3,048 (17.6%)	1,005 (3.8%)	0.46	2,031 (18.1%)	586 (3.2%)	0.50
12 Apr - 25 Apr	1,541 (13.7%)	1,303 (5.7%)	0.27	422 (14.8%)	247 (5.5%)	0.31	2,672 (15.4%)	1,424 (5.3%)	0.34	1,587 (14.1%)	874 (4.8%)	0.32
26 Apr - 9 May	906 (8.1%)	1,471 (6.4%)	0.06	244 (8.5%)	259 (5.8%)	0.11	1,556 (9.0%)	1,541 (5.8%)	0.12	977 (8.7%)	1,013 (5.6%)	0.12
10 May - 23 May	475 (4.2%)	1,374 (6.0%)	0.08	125 (4.4%)	264 (5.9%)	0.07	796 (4.6%)	1,517 (5.7%)	0.05	511 (4.5%)	966 (5.3%)	0.04
24 May - 6 Jun	246 (2.2%)	1,228 (5.3%)	0.17	73 (2.6%)	196 (4.4%)	0.10	455 (2.6%)	1,300 (4.9%)	0.12	275 (2.4%)	920 (5.1%)	0.14
7 Jun - 20 Jun	197 (1.8%)	1,146 (5.0%)	0.18	49 (1.7%)	190 (4.3%)	0.15	293 (1.7%)	1,258 (4.7%)	0.17	220 (2.0%)	868 (4.8%)	0.16
21 Jun - 4 Jul	140 (1.2%)	1,006 (4.4%)	0.19	23 (0.8%)	192 (4.3%)	0.22	224 (1.3%)	1,043 (3.9%)	0.16	155 (1.4%)	830 (4.6%)	0.19
5 Jul - 18 Jul	141 (1.3%)	1,089 (4.7%)	0.21	40 (1.4%)	198 (4.4%)	0.18	213 (1.2%)	1,155 (4.3%)	0.19	157 (1.4%)	816 (4.5%)	0.18
19 Jul -1 Aug	121 (1.1%)	1,023 (4.4%)	0.21	39 (1.4%)	192 (4.3%)	0.18	207 (1.2%)	1,231 (4.6%)	0.20	154 (1.4%)	803 (4.4%)	0.18

2 Aug - 15 Aug	146 (1.3%)	1,192 (5.2%)	0.22	41 (1.4%)	258 (5.8%)	0.23	243 (1.4%)	1,400 (5.2%)	0.22	196 (1.7%)	995 (5.5%)	0.20
16 Aug - 29 Aug	178 (1.6%)	1,298 (5.6%)	0.22	35 (1.2%)	287 (6.4%)	0.27	273 (1.6%)	1,666 (6.2%)	0.24	195 (1.7%)	1,152 (6.3%)	0.24
30 Aug - 12 Sep	171 (1.5%)	1,298 (5.6%)	0.22	54 (1.9%)	278 (6.2%)	0.22	264 (1.5%)	1,619 (6.1%)	0.24	187 (1.7%)	1,096 (6.0%)	0.23
13 Sep - 26 Sep	170 (1.5%)	1,468 (6.4%)	0.25	41 (1.4%)	318 (7.1%)	0.28	269 (1.6%)	1,833 (6.9%)	0.27	192 (1.7%)	1,233 (6.8%)	0.25
27 Sep - 10 Oct	146 (1.3%)	1,452 (6.3%)	0.26	50 (1.8%)	318 (7.1%)	0.26	209 (1.2%)	1,903 (7.1%)	0.30	168 (1.5%)	1,263 (7.0%)	0.27
11 Oct - 24 Oct	129 (1.1%)	1,413 (6.1%)	0.27	35 (1.2%)	282 (6.3%)	0.27	172 (1.0%)	1,678 (6.3%)	0.29	162 (1.4%)	1,159 (6.4%)	0.26
25 Oct - 7 Nov	126 (1.1%)	1,460 (6.4%)	0.28	36 (1.3%)	267 (6.0%)	0.25	232 (1.3%)	1,724 (6.5%)	0.27	120 (1.1%)	1,278 (7.0%)	0.31
8 Nov - 22 Nov	142 (1.3%)	1,701 (7.4%)	0.30	31 (1.1%)	358 (8.0%)	0.34	192 (1.1%)	2,154 (8.1%)	0.34	154 (1.4%)	1,468 (8.1%)	0.32
Essential workers quintile [a, b]												
1 (0%–32.5%)	1,760 (15.7%)	4,383 (19.1%)	0.09	605 (21.2%)	1,173 (26.2%)	0.12	3,359 (19.4%)	6,192 (23.2%)	0.09	2,122 (18.9%)	4,202 (23.1%)	0.10
2 (32.5%–42.3%)	2,355 (21.0%)	5,206 (22.6%)	0.04	626 (21.9%)	1,112 (24.9%)	0.07	3,944 (22.7%)	6,235 (23.4%)	0.01	2,440 (21.7%)	4,146 (22.8%)	0.03
3 (42.3%–49.8%)	2,344 (20.9%)	4,744 (20.6%)	0.01	607 (21.2%)	865 (19.4%)	0.05	3,492 (20.1%)	5,305 (19.9%)	0.01	2,372 (21.1%)	3,596 (19.8%)	0.03
4 (50.0%–57.5%)	2,333 (20.8%)	4,482 (19.5%)	0.03	529 (18.5%)	700 (15.7%)	0.08	3,294 (19.0%)	4,743 (17.8%)	0.03	2,181 (19.4%)	3,333 (18.4%)	0.03
5 (57.5%–100%)	2,367 (21.1%)	4,028 (17.5%)	0.09	474 (16.6%)	599 (13.4%)	0.09	3,165 (18.3%)	4,078 (15.3%)	0.08	2,073 (18.4%)	2,794 (15.4%)	0.08
Persons per dwelling quintile [a, c]												
1 (0–2.1)	2,251 (20.0%)	5,047 (22.0%)	0.05	512 (17.9%)	866 (19.4%)	0.04	3,238 (18.7%)	5,635 (21.1%)	0.06	2,137 (19.0%)	3,765 (20.7%)	0.04
2 (2.2–2.4)	2,036 (18.1%)	4,340 (18.9%)	0.02	518 (18.1%)	752 (16.8%)	0.03	3,093 (17.8%)	4,638 (17.4%)	0.01	2,164 (19.2%)	3,427 (18.9%)	0.01
3 (2.5–2.6)	1,617 (14.4%)	3,289 (14.3%)	0.00	404 (14.1%)	605 (13.5%)	0.02	2,365 (13.6%)	3,773 (14.1%)	0.01	1,609 (14.3%)	2,664 (14.7%)	0.01
4 (2.7–3.0)	2,632 (23.4%)	5,339 (23.2%)	0.00	683 (23.9%)	1,085 (24.3%)	0.01	4,266 (24.6%)	6,324 (23.7%)	0.02	2,690 (23.9%)	4,276 (23.5%)	0.01
5 (3.1–5.7)	2,621 (23.3%)	4,818 (21.0%)	0.06	723 (25.3%)	1,137 (25.4%)	0.00	4,287 (24.7%)	6,174 (23.1%)	0.04	2,586 (23.0%)	3,931 (21.6%)	0.03
Self-identified visible minority quintile [a, d]												
1 (0.0-2.2%)	2,023 (18.0%)	4,633 (20.2%)	0.05	414 (14.5%)	675 (15.1%)	0.02	2,640 (15.2%)	4,304 (16.1%)	0.02	2,049 (18.2%)	3,456 (19.0%)	0.02
2 (2.2-7.5%)	2,130 (19.0%)	4,613 (20.1%)	0.03	484 (16.9%)	717 (16.0%)	0.02	3,060 (17.6%)	4,923 (18.4%)	0.02	2,197 (19.5%)	3,645 (20.1%)	0.01
3 (7.5-18.7%)	2,061 (18.3%)	4,560 (19.8%)	0.04	554 (19.4%)	948 (21.2%)	0.05	3,433 (19.8%)	5,425 (20.3%)	0.01	2,263 (20.1%)	3,783 (20.8%)	0.02

4 (18.7-43.5%)	2,155 (19.2%)	4,495 (19.6%)	0.01	708 (24.8%)	1,054 (23.6%)	0.03	4,035 (23.3%)	6,153 (23.1%)	0.01	2,446 (21.7%)	4,049 (22.3%)	0.01
5 (43.5-100%)	2,792 (24.8%)	4,544 (19.8%)	0.12	681 (23.8%)	1,055 (23.6%)	0.01	4,087 (23.6%)	5,751 (21.5%)	0.05	2,234 (19.9%)	3,138 (17.3%)	0.07
Comorbidity [e]												
Chronic respiratory disease	3,889 (34.6%)	8,844 (38.5%)	0.08	866 (30.3%)	1,397 (31.3%)	0.02	4,950 (28.6%)	8,643 (32.4%)	0.08	3,407 (30.3%)	6,069 (33.4%)	0.07
Asthma	2,664 (23.7%)	5,591 (24.3%)	0.01	639 (22.4%)	1,041 (23.3%)	0.02	3,721 (21.5%)	5,857 (21.9%)	0.01	2,653 (23.6%)	4,360 (24.0%)	0.01
COPD	2,039 (18.1%)	5,476 (23.8%)	0.14	347 (12.1%)	629 (14.1%)	0.06	1,925 (11.1%)	4,516 (16.9%)	0.17	1,233 (11.0%)	2,839 (15.6%)	0.14
Chronic heart disease	1,603 (14.3%)	5,003 (21.8%)	0.20	248 (8.7%)	610 (13.6%)	0.16	1,382 (8.0%)	3,905 (14.6%)	0.21	938 (8.3%)	2,474 (13.6%)	0.17
Congestive heart failure	685 (6.1%)	2,484 (10.8%)	0.17	79 (2.8%)	268 (6.0%)	0.16	498 (2.9%)	1,628 (6.1%)	0.16	369 (3.3%)	1,077 (5.9%)	0.13
Ischemic heart disease	646 (5.7%)	1,988 (8.6%)	0.11	94 (3.3%)	241 (5.4%)	0.10	665 (3.8%)	1,767 (6.6%)	0.13	368 (3.3%)	953 (5.2%)	0.1
Atrial fibrillation	801 (7.1%)	2,526 (11.0%)	0.13	134 (4.7%)	342 (7.7%)	0.12	678 (3.9%)	2,049 (7.7%)	0.16	507 (4.5%)	1,373 (7.6%)	0.13
Hypertension	4,749 (42.3%)	12,874 (56.0%)	0.28	850 (29.8%)	1,843 (41.2%)	0.24	4,923 (28.4%)	11,438 (42.9%)	0.31	2,690 (23.9%)	6,385 (35.2%)	0.25
Diabetes	2,330 (20.7%)	5,713 (24.8%)	0.10	410 (14.4%)	884 (19.8%)	0.14	2,704 (15.6%)	5,961 (22.3%)	0.17	1,380 (12.3%)	3,019 (16.6%)	0.12
Active cancer	218 (1.9%)	585 (2.5%)	0.04	37 (1.3%)	78 (1.7%)	0.04	236 (1.4%)	575 (2.2%)	0.06	165 (1.5%)	394 (2.2%)	0.05
Chronic kidney disease	666 (5.9%)	2,346 (10.2%)	0.16	103 (3.6%)	320 (7.2%)	0.16	540 (3.1%)	1,756 (6.6%)	0.16	490 (4.4%)	1,382 (7.6%)	0.14
Advanced liver disease	269 (2.4%)	592 (2.6%)	0.01	62 (2.2%)	112 (2.5%)	0.02	317 (1.8%)	604 (2.3%)	0.03	389 (3.5%)	743 (4.1%)	0.03
Dementia	241 (2.1%)	1,274 (5.5%)	0.18	37 (1.3%)	115 (2.6%)	0.09	167 (1.0%)	989 (3.7%)	0.18	118 (1.0%)	557 (3.1%)	0.14
Frailty	660 (5.9%)	2,450 (10.7%)	0.17	116 (4.1%)	274 (6.1%)	0.09	579 (3.3%)	1,792 (6.7%)	0.15	510 (4.5%)	1,244 (6.9%)	0.10
History of stroke or TIA	293 (2.6%)	1,065 (4.6%)	0.11	37 (1.3%)	126 (2.8%)	0.11	240 (1.4%)	799 (3.0%)	0.11	181 (1.6%)	480 (2.6%)	0.07

***** These characteristics were omitted from Table 2 only due to space limitations; ** Values >0.10 are considered clinically relevant differences.

[a] The sum of counts may not equal the column total because of individuals with missing information (<1.0%) for this characteristic.

[b] Percentage of people in the area working in the following occupations: sales and service occupations; trades, transport and equipment operators and related occupations; natural resources, agriculture, and related production occupations; and occupations in manufacturing and utilities. Census counts for people are randomly rounded up or down to the nearest number divisible by 5, which causes some minor imprecision.

[c] Range of persons per dwelling.

[d] Percentage of people in the area who self-identified as a visible minority. Census counts for people are randomly rounded up or down to the nearest number divisible by 5, which causes some minor imprecision.

[e] Comorbidity definitions are provided in Supplementary Table S2.

Abbreviations: COPD: Chronic obstructive pulmonary disease; TIA: transient ischemic attack

Supplementary Table S5. Adjusted vaccine effectiveness estimates against SARS-CoV-2 infection by vaccine product.

	Adjusted[a] VE% (95% CI)	
	BNT162b2	mRNA-1273
RA		
≥14 days after Dose 1	51 (43, 58)	64 (50, 74)
≥7 days after Dose 2	82 (78, 85)	86 (80, 90)
AS		
≥14 days after Dose 1	45 (23, 60)	77 (41, 91)
≥7 days after Dose 2	88 (82, 93)	93 (83, 97)
PsO		
≥14 days after Dose 1	50 (43, 57)	75 (64, 82)
≥7 days after Dose 2	82 (79, 85)	87 (82, 91)
IBD		
≥14 days after Dose 1	50 (43, 57)	75 (64, 82)
≥7 days after Dose 2	82 (79, 85)	87 (82, 91)

[a] Vaccine effectiveness estimates adjusted for: age (in 10-year age bands), sex, region, biweekly period of test, number of previous sars-cov-2 tests, past sars-cov-2 infection, presence of any comorbidity, prior receipt influenza vaccination, and area-level sociodemographic variables.
abbreviations: AS: ankylosing spondylitis; CI: confidence interval; IBD: inflammatory bowel disease; PsO: psoriasis; RA: rheumatoid arthritis; VE: vaccine effectiveness.
3 doses could not be precisely estimated and therefore are not included in this table.