

## ONLINE SUPPLEMENTAL MATERIAL

### Occupational risk of SARS-CoV-2 infection: a nationwide register-based study of the Danish workforce during the Covid-19 pandemic 2020-21

**Running head:** Occupational risk of SARS-CoV-2 infection

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#### Abstract

**Objectives** Most earlier studies on occupational risk of Covid-19 covering the entire workforce are based on relatively rare outcomes such as hospital admission and mortality. This study examines the incidence of SARS-CoV-2 infection by occupational group based upon real-time polymerase chain reaction tests (RT-PCR).

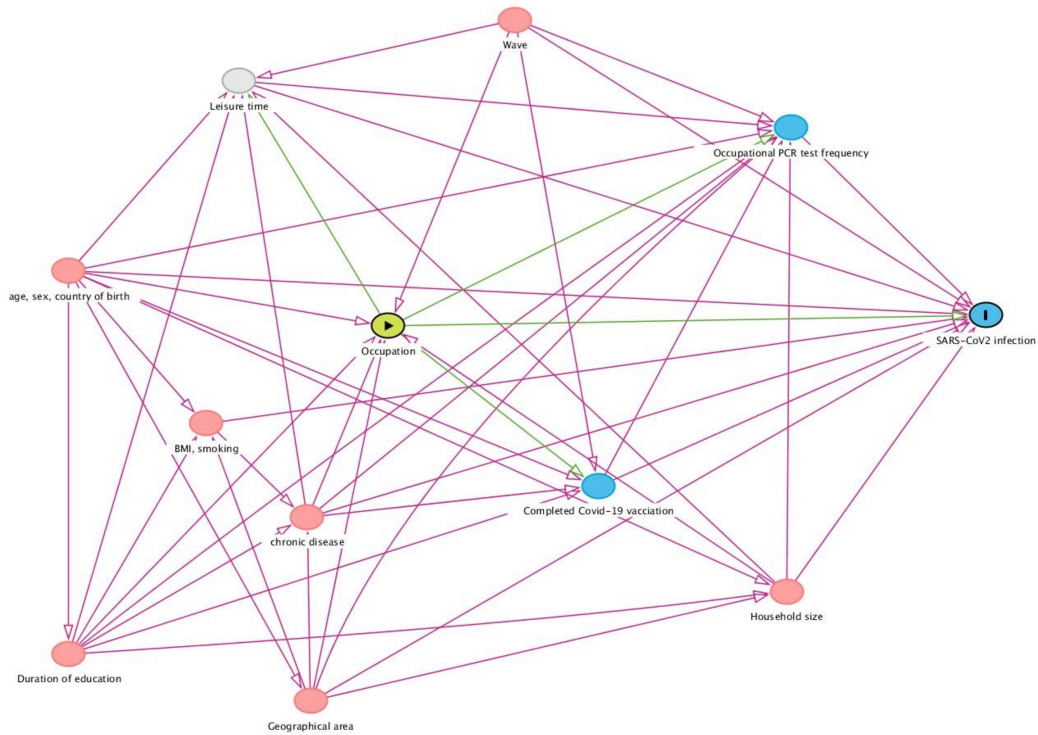
**Methods** The cohort includes 2.4 million Danish employees, 20-69 years of age. All data were retrieved from public registries. The incidence rate ratios (IRR) of first-occurring positive RT-PCR test from week 8 of 2020 through week 50 of 2021 were computed by Poisson regression for each 4-digit DISCO-08 job code with more than 100 male and 100 female employees (n=205). Occupational groups with low risk of workplace infection according to a job exposure matrix constituted the reference group. Risk estimates were adjusted by demographic, social and health characteristics including household size, completed Covid-19 vaccination, pandemic wave and occupation-specific frequency of testing.

**Results** IRRs of SARS-CoV-2 infection were elevated in seven healthcare occupations and 42 occupations in other sectors, mainly social work activities, residential care, education, defense and security, accommodation and transportation. No IRRs were exceeding 2.0. The relative risk in healthcare, residential care and defense/security declined across pandemic waves. Decreased IRRs were observed in 12 occupations.

**Discussion** We observed a modestly increased risk of SARS-CoV-2 infection among employees in numerous occupations indicating a large potential for preventive actions. Cautious interpretation of observed risk in specific occupations is needed because of methodological issues inherent in analyses of RT-PCR test results and because of multiple statistical tests.

Journal reference main text

**Supplemental Figure S1.** Directed acyclic graph (DAG). A national follow-up study of occupational risk of SARS-CoV2 infection 2020-2021.



Red circles symbolize potential confounders (ancestor of both exposure *and* outcomes). Grey circle named “leisure time” symbolizes an unobserved mediating factor (on the causal path from exposure (occupation) to outcome (infection)). Blue circles “occupational PCR test Frequency” and “Completed Covid-19 vaccination” symbolize observed potential mediating factors. In order to estimate the direct effect of occupation on SARS-CoV2 infection not mediated by occupational PCR test frequency and Covid-19 vaccination, we adjust for all potential confounders and mediators except for the unobserved variable “leisure time”.

**Supplemental table S1.** Characteristics of the reference population<sup>1</sup> in a Danish follow-up study of occupational risk of SARS-CoV-2 infection.

Occupation	DISCO-08 code	N employees	% Women	Mean PCR-tests <sup>2</sup>
General Office Clerks	4110	96 640	74.8	12.4
Commercial Sales Representatives	3322	33 549	35.5	12.7
Software Developers	2512	25 789	23.3	10.3
Accounting Associate Professionals	3313	20 991	69.7	13.0
Stock Clerks	4321	14 390	22.8	9.9
Systems Analysts	2511	13 923	21.7	9.6
Accountants	2411	13 234	44.5	12.7
Clerical Support Workers Not Elsewhere Classified	4419	12 768	65.1	12.0
Sales and Marketing Managers	1221	11 240	23.8	12.8
Accounting and Bookkeeping Clerks	4311	11 158	78.7	13.5
Advertising and Marketing Professionals	2431	10 733	57.7	11.8
Buyers	3323	10 393	50.3	13.7
Payroll Clerks	4322	8677	31.9	9.5
Statistical, Finance and Insurance Clerks	4312	8660	67.4	11.8
Management and Organization Analysts	2421	8561	45.5	11.6
Information and Communications Technology User Support	3512	8048	22.8	10.7
Credit and Loans Officers	3312	7564	55.9	12.4
Financial Analysts	2413	7196	38.7	10.8
Contact Centre Salespersons	5244	6297	49.3	11.6
Draughtspersons	3118	6231	50.8	11.8
Finance Managers	1211	5940	35.8	13.3
Policy and Planning Managers	1213	5482	46.4	11.5
Personnel and Careers Professionals	2423	5448	64.3	12.2
Contact Centre Information Clerks	4222	5045	50.5	9.8
Building Architects	2161	4992	44.6	10.8
Technical and Medical Sales Professionals (excluding ICT)	2433	4932	33.2	12.1
Economists	2631	4855	48.9	11.6
Policy Administration Professionals	2422	4574	48.1	11.2
Software and Applications Developers and Analysts Not Elsewhere	2519	4398	27.9	10.6
Education Methods specialists	2351	4243	70.8	13.4
Employment Agents and Contractors	3333	4193	66.7	10.7
Systems Administrators	2522	4084	17.2	10.9
Transport Clerks	4323	3796	34.3	12.8
Government Tax and Excise Officials	3352	3602	66.8	8.3
Information and Communications Technology Sales Professionals	2434	3460	30.3	10.8
Web and Multimedia Developers	2513	3270	30.6	10.0
Information Technology Services Managers	1330	3094	15.4	12.1
Public Relations Professionals	2432	3040	60.3	11.7
Insurance Representatives	3321	3031	33.8	11.5
Database and Network Professionals Not Elsewhere Classified	2529	2870	21.6	10.6
Personnel Clerks	4416	2696	79.9	13.0
Applications Programmers	2514	2452	20.4	9.5
Research and Development Managers	1223	2291	24.9	12.2
Securities and Finance Dealers and Brokers	3311	2238	36.7	11.1
Product and Garment Designers	2163	2215	73.5	13.1
Computer Network and Systems Technicians	3513	2044	11.0	11.2
Graphic and Multimedia Designers	2166	2039	52.0	11.1
Data Entry Clerks	4132	1930	56.5	12.1
Training and Staff Development Professionals	2424	1862	70.8	12.6
Payroll Clerks	4313	1688	87.8	13.8

Legal and Related Associate Professionals	3411	1605	78.2	12.8
Information and Communications Technology Operations	3511	1511	15.0	11.0
Client Information Workers Not Elsewhere Classified	4229	1424	59.8	12.5
Telephone Switchboard Operators	4223	1349	83.7	13.7
Valuers and Loss Assessors	3315	1188	17.3	11.4
Translators, Interpreters and Other Linguists	2643	1184	69.5	11.8
Database Designers and Administrators	2521	994	23.0	9.6
Landscape Architects	2162	972	58.3	10.5
Government Social Benefits Officials	3353	968	88.0	11.8
Cartographers and Surveyors	2165	962	25.7	13.3
Computer Network Professionals	2523	958	14.4	11.9
Advertising and Public Relations Managers	1222	818	45.4	11.0
Conference and Event Planners	3332	764	71.6	12.8
Survey and Market Research Interviewers	4227	740	51.8	10.0
Statistical, Mathematical and Related Associate Professionals	3314	668	39.1	10.7
Debt Collectors and Related Workers	4214	663	68.9	13.0
Trade Brokers	3324	536	37.9	11.9
Inquiry Clerks	4225	465	57.0	11.6
Town and Traffic Planners	2164	369	38.5	11.8
Authors and Related Writers	2641	312	55.4	10.2
Web Technicians	3514	295	35.9	11.0
Typists and Word Processing Operators	4131	257	48.6	12.6
Library Clerks	4411	241	62.2	11.9
Coding, Proofreading and Related Clerks	4413	202	75.7	9.5
Medical Records and Health Information Technicians	3252	166	65.1	14.2
Meteorologists	2112	153	32.7	11.9
Visual Artists	2651	152	48.7	8.8

<sup>1</sup> The reference group comprised occupations defined at the 4-digit DISCO-08 level that according to the job exposure matrix<sup>1</sup> are not expected to be associated with exposure to SARS-CoV-2 (sumscore of 4 dimensions on virus transmission = 0).

<sup>2</sup> The average number of PCR tests per employee and occupation during the follow-up period.

**Supplemental table S2.** Occupations with increased risk of SARS-CoV2 infection (incidence rate ratio IRR with 99% CI) relative to occupations with low likelihood of exposure according to a Covid-19 job exposure matrix. Upper panel: 49 occupations with fully adjusted elevated IRR ; lower panel: 15 occupations where adjustment for occupational test frequency attenuated risk to a non-significant level.

MAIN ECONOMIC SECTOR (DB07 2- digit codes)												
Occupation. 4-digit DISCO-08 codes (descending number employees)	Code	N	% women	Tests <sup>0</sup>	IRR <sup>1</sup>	IRR <sup>2</sup>	99% CI	IRR <sup>3</sup>	99% CI			
<b>SOCIAL WORK ACTIVITIES, n = 138 888</b>												
Early childhood educators	2343	70 233	80.1	14.4	1.41	1.46	1.4	1.5	1.34	1.3	1.4	
Childcare workers	5311	48 101	80.7	12.6	1.43	1.34	1.3	1.4	1.26	1.2	1.3	
Social Work and Counselling Professionals	2635	15 861	88.2	12.1	1.03	1.12	1.0	1.2	1.15	1.1	1.2	
Child Care Services Managers	1341	4693	76.5	14.4	1.50	1.59	1.4	1.8	1.45	1.3	1.6	
<b>RESIDENTIAL CARE ACTIVITIES, n=138 118</b>												
Home-based Personal Care Workers	5322	86 458	90.4	21.5	1.46	1.30	1.3	1.3	1.14	1.1	1.2	
Health Care Assistants	5321	44 641	78.9	18.1	1.37	1.34	1.3	1.4	1.17	1.1	1.3	
Social Work Associate Professionals	3412	7019	73.4	10.7	1.22	1.15	1.0	1.3	1.14	1.0	1.3	
<b>EDUCATION, n = 112 564</b>												
Primary school teachers	2341	76 740	66.8	13.0	1.42	1.56	1.5	1.6	1.48	1.4	1.5	
Secondary Education Teachers	2330	15 128	55.3	10.9	1.05	1.18	1.1	1.3	1.22	1.1	1.3	
Vocational Education Teachers	2320	10 245	44.4	11.4	1.06	1.21	1.1	1.3	1.25	1.1	1.4	
Education Managers	1345	4772	45.2	11.9	1.28	1.43	1.3	1.6	1.47	1.3	1.6	
Special Needs Teachers	2352	3895	63.3	14.5	1.34	1.61	1.4	1.8	1.45	1.3	1.7	
Other Music Teachers	2354	1784	46.7	11.2	1.32	1.39	1.2	1.7	1.43	1.2	1.7	
<b>HEALTH CARE, n = 110 663</b>												
Nursing Professionals	2221	63 600	96.0	21.3	1.39	1.58	1.5	1.6	1.45	1.4	1.5	
Generalist Medical Practitioners	2211	19 826	57.5	15.9	1.28	1.47	1.4	1.6	1.33	1.2	1.5	
Physiotherapists	2264	9615	77.2	25.5	1.18	1.39	1.3	1.5	1.27	1.1	1.4	
Health Professionals Not Elsewhere Classified	2269	8856	89.8	22.8	1.09	1.31	1.2	1.4	1.20	1.1	1.3	
Medical and Pathology Laboratory Technicians	3212	6785	89.3	19.5	1.28	1.30	1.2	1.4	1.19	1.1	1.3	
Specialist Medical Practitioners	2212	1222	39.9	12.3	1.41	1.37	1.1	1.7	1.40	1.1	1.8	
Nursing Associates Professionals	3221	759	62.1	17.2	1.80	1.40	1.1	1.7	1.26	1.0	1.6	
<b>DEFENSE AND SECURITY, n=34 404</b>												
Police Officers	5412	9913	17.8	14.5	1.43	1.47	1.4	1.6	1.34	1.2	1.5	
Armed Forces Occupations. Other Ranks	0310	9046	12.3	13.2	0.90	1.24	1.1	1.4	1.18	1.1	1.3	
Science and Engineering Professionals	0210	4398	6.8	14.2	0.93	1.31	1.1	1.5	1.18	1.0	1.4	
Commissioned Armed Forces Officers	0110	4004	8.6	13.4	1.05	1.34	1.2	1.5	1.26	1.1	1.4	
Protective Services Workers Not Elsewhere Classified	5419	3745	22.1	9.5	1.38	1.30	1.2	1.5	1.47	1.3	1.7	
Ambulance Workers	3258	1771	10.6	10.2	1.31	1.75	1.5	2.1	1.80	1.5	2.1	
Legislators	1111	1527	38.2	11.1	1.41	1.47	1.2	1.8	1.52	1.2	1.8	
<b>ACCOMODATION AND FOOD, n = 15 366</b>												
Waiters	5131	10 921	59.0	9.9	1.43	1.29	1.2	1.4	1.45	1.3	1.6	
Food Service Counter Attendants	5246	2293	58.5	9.5	1.21	1.17	1.0	1.3	1.31	1.1	1.5	
Bartenders	5132	1094	44.3	9.3	1.60	1.38	1.1	1.7	1.55	1.3	1.9	
Restaurant Managers	1412	701	37.2	10.2	1.56	1.34	1.1	1.7	1.32	1.0	1.7	
Hotel Managers	1411	357	51.5	11.9	1.50	1.46	1.0	2.1	1.51	1.0	2.2	
<b>TRANSPORTATION, n = 11 688</b>												
Bus and Tram Drivers	8331	10 879	15.3	7.9	1.47	1.16	1.1	1.3	1.46	1.3	1.6	
Transport Conductors	5112	809	37.9	12.3	1.82	1.52	1.2	1.9	1.49	1.2	1.9	
<b>OTHER ACTIVITIES, n = 88 251</b>												
Managing Directors and Chief Executives	1120	21 681	14.9	11.5	1.21	1.21	1.1	1.3	1.25	1.2	1.3	
Food and Related Products Machine Operators	8160	17 038	28.5	7.9	1.52	1.59	1.5	1.7	2.00	1.8	2.2	
Civil Engineering Technicians	3112	11 501	15.0	12.1	1.01	1.11	1.0	1.2	1.13	1.0	1.2	
Journalists	2642	9748	49.5	11.4	1.19	1.15	1.1	1.2	1.18	1.1	1.3	
Lawyers	2611	5640	48.7	11.0	1.15	1.14	1.0	1.3	1.17	1.1	1.3	
Hairdressers	5141	5466	88.9	10.3	1.24	1.20	1.1	1.3	1.22	1.1	1.3	
Personal Services Workers Not Elsewhere Classified	5169	4408	39.7	10.1	1.43	1.23	1.1	1.4	1.22	1.1	1.4	
Musicians. Singers and Composers	2652	2818	57.7	12.9	1.43	1.47	1.3	1.7	1.37	1.2	1.6	
Business Services Agents	3339	2623	55.6	12.1	1.27	1.22	1.1	1.4	1.26	1.1	1.5	

Religious Professionals	2636	2591	55.3	11.7	1.19	1.36	1.2	1.6	1.40	1.2	1.6
Bank Tellers and Related Clerks	4211	2122	68.0	12.2	1.30	1.26	1.1	1.5	1.29	1.1	1.5
Athletes and Sports Players	3421	1129	15.5	19.8	1.52	1.81	1.5	2.2	1.65	1.4	2.0
Senior Officials of Special Interest Organisations	1114	878	40.9	13.0	1.48	1.40	1.1	1.8	1.30	1.0	1.7
Filing and Copying Clerks	4415	608	62.0	12.0	1.36	1.36	1.0	1.8	1.41	1.1	1.8
MISSING 4-DIGIT DISCO-08 CODE	-	337 353	40.0	9.2	1.07	1.12	1.1	1.2	1.30	1.2	1.4
Table S2 continued											
<b>ADJUSTMENT BY OCCUPATIONAL PCR TEST FREQUENCY ATTENUATES IRR TO NON-SIGNIFICANT LEVELS, n = 97 700</b>											
Special Teaching Professionals	2357	33 881	72.4	14.5	1.10	1.19	1.1	1.3	1.04	1.0	1.1
Financial and Investment Advisers	2412	18 636	47.7	12.7	1.07	1.11	1.0	1.2	1.06	1.0	1.1
Dental assistants and therapists	3251	8253	98.7	14.3	1.26	1.14	1.0	1.2	1.03	0.9	1.1
Psychological Therapists	2634	8072	78.1	15.1	0.97	1.13	1.0	1.2	1.03	0.9	1.1
Clearing and Forwarding Agents	3331	7257	37.7	14.3	1.07	1.20	1.1	1.3	1.06	1.0	1.2
Travel Attendants and Travel Stuarts	5111	3811	62.5	13.1	1.50	1.19	1.1	1.3	1.09	1.0	1.2
Receptionists (general)	4226	3620	87.5	13.1	1.31	1.20	1.1	1.4	1.11	1.0	1.3
Real Estate Agents and Property Managers	3334	3134	52.4	13.8	1.20	1.19	1.0	1.4	1.09	0.9	1.3
Prison Guards	5413	2742	35.2	13.6	1.27	1.32	1.1	1.5	1.16	1.0	1.3
Personal Care Workers in Health Services	5329	2654	77.9	15.8	1.34	1.19	1.0	1.4	1.04	0.9	1.2
Medical Imaging and Equipment Operators	3211	2646	71.1	20.0	1.14	1.23	1.1	1.4	1.12	1.0	1.3
Financial and Insurance Services Branch Managers	1346	1332	25.6	14.0	1.21	1.33	1.1	1.7	1.20	1.0	1.5
Film, Stage and Related Directors and Producers	2654	1315	48.6	13.9	1.43	1.30	1.1	1.6	1.14	0.9	1.4
Actors	2655	347	49.0	17.7	1.81	1.55	1.1	2.1	1.36	1.0	1.9

<sup>0</sup> Average number of PCR tests per employees and occupation from start of follow-up.

<sup>1</sup> Adjusted for sex and age (10 year groups).

<sup>2</sup> In addition to sex and age, adjusted for duration of education at baseline (5 groups), number of hospital admissions for one or more of 11 chronic diseases in the 10 years preceding start of the pandemic (3 groups), country of birth (4 groups), geographical region (5 groups), number of household members (4 groups), probability of tobacco smoking (3 groups), bodymass index (2 groups), completed Covid-19 vaccination (time varying variable, yes/no) and pandemic wave (4 groups).

<sup>3</sup> In addition to the above fully adjusted risk estimates, adjusted for the occupation-specific average number of PCR-tests during follow-up (up to and including last week before censoring) per employee (quintiles).

**Supplemental table S3.** Occupations with reduced risk of SARS-CoV2 infection ordered by descending size.

FULLY ADJUSTED IRR WITH p-value < 0.01, N = 121 785												
Occupation. 4-digit DISCO-08 codes (descending number employees)	Code	N	% Women	Tests <sup>0</sup>	IRR <sup>1</sup>	IRR <sup>2</sup>	99% CI		IRR <sup>3</sup>	99% CI		
Civil Engineering Labourers	9312	24 198	11.2	7.5	0.65	0.69	0.6	0.7	0.87	0.8	1.0	
Building and Related Electricians	7411	23 498	1.5	10.4	0.87	0.91	0.9	1.0	0.90	0.8	1.0	
Heavy Truck and Lorry Drivers	8332	23 114	1.6	6.0	0.59	0.66	0.6	0.7	0.83	0.8	0.9	
Engineering Professionals Not Elsewhere Classified	2149	10 145	27.4	12.2	0.80	0.88	0.8	1.0	0.91	0.8	1.0	
Chemical and Physical Science Technicians	3111	9663	73.9	14.3	0.93	0.85	0.8	0.9	0.78	0.7	0.9	
Industrial and Production Engineers	2141	8130	16.9	12.4	0.72	0.82	0.7	0.9	0.85	0.8	0.9	
Mechanical Engineers	2144	5817	9.5	12.4	0.79	0.85	0.8	1.0	0.81	0.7	0.9	
Gardeners Horticultural and Nursery Growers	6113	5180	28.4	8.0	0.64	0.66	0.6	0.8	0.84	0.7	1.0	
Electronics Engineering Technicians	3114	4745	8.8	12.0	0.80	0.83	0.7	1.0	0.86	0.7	1.0	
Electrical and Electronic Equipment Assemblers	8212	4086	52.3	11.5	0.86	0.86	0.7	1.0	0.85	0.7	1.0	
Mathematicians, Actuaries, and Statisticians	2120	2028	37.1	10.5	0.90	0.78	0.6	0.9	0.80	0.7	1.0	
Sociologists, Anthropologists and Related Professionals	2632	1181	63.8	11.1	0.72	0.73	0.6	1.0	0.75	0.6	1.0	
ADJUSTMENT WITH OCCUPATIONAL TEST FREQUENCY ATTENUATES IRR TO NON-SIGNIFICANT LEVELS. N = 213 846												
Carpenters and Joiners	7115	29 978	1.2	7.4	0.80	0.87	0.8	0.9	1.13	1.0	1.2	
University and Higher Education Teachers	2310	29 501	47.8	9.8	0.81	0.82	0.8	0.9	0.96	0.9	1.0	
Motor Vehicle Mechanics and Repairers	7231	18 033	1.6	8.9	0.76	0.80	0.7	0.9	1.01	0.9	1.1	
Cooks	5120	13 072	36.6	8.5	1.00	0.88	0.8	0.9	1.11	1.0	1.2	
Plumbers and Pipe Fitters	7126	12 712	1.0	8.2	0.92	0.90	0.8	1.0	1.13	1.0	1.2	
Metal Working Machine Tool Setters and Operators	7223	12 200	7.6	9.1	0.72	0.83	0.8	0.9	1.04	0.9	1.2	
Blacksmiths, Hammersmiths and Forging Press Workers	7221	11 270	2.5	8.9	0.71	0.85	0.8	0.9	1.07	1.0	1.2	
Building Construction Labourers	9313	11 123	2.2	6.7	0.80	0.77	0.7	0.8	0.97	0.9	1.1	
Manufacturing Labourers Not Elsewhere Classified	9329	10 663	25.6	8.0	0.79	0.83	0.8	0.9	1.04	0.9	1.2	
Painters and Related Workers	7131	9332	31.9	7.3	0.82	0.78	0.7	0.9	0.99	0.9	1.1	
Assemblers Not Elsewhere Classified	8219	7062	26.4	9.5	0.74	0.87	0.8	1.0	0.98	0.9	1.1	
Stationary Plant and Machine Operators Not Elsewhere Classified	8189	6962	15.9	8.9	0.82	0.87	0.8	1.0	1.10	1.0	1.3	
Metal Processing Plant Operators	8121	5859	19.0	7.2	0.64	0.74	0.6	0.9	0.93	0.8	1.1	
Toolmakers and Related Workers	7222	4465	2.8	9.1	0.64	0.76	0.7	0.9	0.96	0.8	1.1	
Chemical Products Plant and Machine Operators	8131	4368	26.2	9.4	1.01	0.85	0.7	1.0	0.96	0.8	1.1	
Occupations with <100 male and <100 female employees	9998	4140	37.9	10.4	0.85	0.90	0.9	0.9	1.00	1.0	1.1	
Wood Processing Plant Operators	8172	3853	18.3	7.0	0.61	0.76	0.6	0.9	0.96	0.8	1.2	
Service Station Attendants	5245	3798	54.6	9.2	0.92	0.83	0.7	0.9	0.94	0.8	1.1	
Butchers, Fishmongers and Related Food Preparers	7511	3688	35.5	7.9	0.77	0.82	0.7	1.0	1.03	0.9	1.2	
Bakers, Pastry-cooks and Confectionery Makers	7512	3403	35.0	8.1	0.72	0.74	0.6	0.9	0.93	0.8	1.1	
Packing, Bottling and Labelling Machine Operators	8183	2166	47.8	8.8	0.84	0.81	0.7	1.0	1.04	0.8	1.3	
Livestock and Dairy Producers	6121	1662	22.7	4.7	0.48	0.66	0.5	0.9	0.87	0.7	1.1	
Woodworking Machine Tool Setters and Operators	7523	1588	12.3	6.8	0.45	0.60	0.4	0.8	0.76	0.6	1.0	
Mixed Crop and Animal Producers	6130	1078	27.9	5.7	0.61	0.73	0.5	1.0	0.94	0.7	1.3	
Printers	7322	936	16.2	8.4	0.55	0.63	0.4	0.9	0.80	0.6	1.2	
Garden and Horticultural Labourers	9214	934	32.1	8.1	0.61	0.66	0.5	0.9	0.86	0.6	1.2	

<sup>0</sup> Average number of PCR tests per employees and occupation from start of follow-up.

<sup>1</sup> Adjusted for sex and age (10 year groups).

<sup>2</sup> In addition to sex and age, adjusted for duration of education at baseline (5 groups), number of hospital admissions for one or more of 11 chronic diseases in the 10 years preceding start of the pandemic (3 groups), country of birth (4 groups), geographical region (5 groups), number of household members (4 groups), probability of tobacco smoking (3 groups), bodymass index (2 groups), completed Covid-19 vaccination (time varying variable, yes/no) and pandemic wave (4 groups).

<sup>3</sup> In addition to above fully adjusted risk estimates adjusted for the occupation-specific average number of PCR-tests during follow-up (up to and including last week before censoring) per employee (quintiles).



**Supplemental table S4.** Adjusted incidence rate ratio (IRR with 99% CI) of SARS-CoV-2 infection across pandemic waves for at-risk occupations grouped by economic sector compared with a job-exposure matrix derived reference group<sup>1</sup>.

Economic sector (2-digit DB07 codes)	Pandemic wave	N	Tests <sup>0</sup>	IRR <sup>1</sup>	IRR <sup>2</sup>	99% CI		IRR <sup>3</sup>	99% CI	
<b>SOCIAL WORK</b>										
	1	138 877	0.42	1.09	1.12	0.9	1.3	0.98	0.8	1.2
	2	137 390	2.87	1.41	1.45	1.4	1.5	1.26	1.2	1.3
	3	130 847	5.74	1.34	1.37	1.3	1.5	1.24	1.2	1.3
	4	127 775	4.37	1.39	1.45	1.4	1.5	1.36	1.3	1.4
<b>RESIDENTIAL CARE</b>										
	1	138 101	0.62	4.82	3.37	2.9	4.0	3.05	2.3	4.0
	2	134 501	4.52	1.92	1.67	1.6	1.8	1.32	1.2	1.4
	3	125 933	6.84	0.97	0.83	0.8	0.9	0.71	0.6	0.8
	4	123 907	4.79	1.07	1.08	1.0	1.1	0.97	0.9	1.0
<b>EDUCATION</b>										
	1	112 551	0.36	0.98	1.13	0.9	1.4	1.07	0.9	1.3
	2	110 626	2.77	1.30	1.46	1.4	1.5	1.41	1.3	1.5
	3	105 623	4.98	1.20	1.39	1.3	1.5	1.33	1.2	1.4
	4	103 481	4.02	1.42	1.57	1.5	1.6	1.52	1.5	1.6
<b>HEALTHCARE</b>										
	1	109 890	0.68	7.67	10.78	9.5	12.3	8.24	6.7	10.1
	2	106 577	4.92	1.82	2.16	2.1	2.3	1.72	1.6	1.8
	3	100 188	8.16	0.62	0.76	0.7	0.8	0.65	0.6	0.7
	4	99 151	5.79	0.93	1.04	1.0	1.1	0.96	0.9	1.0
<b>DEFENSE AND SECURITY</b>										
	1	34 399	0.44	1.74	2.59	2.0	3.3	2.41	1.9	3.1
	2	33 831	2.86	1.32	1.62	1.5	1.8	1.48	1.4	1.6
	3	32 148	5.10	1.03	1.13	1.0	1.3	1.07	0.9	1.2
	4	31 474	3.88	1.05	1.20	1.1	1.3	1.15	1.1	1.2
<b>OTHER ACTIVITIES</b>										
	1	116 046	0.35	1.84	1.64	1.4	1.9	1.33	1.1	1.6
	2	112 911	2.52	1.41	1.34	1.3	1.4	1.32	1.3	1.4
	3	106 990	4.91	1.44	1.35	1.3	1.4	1.36	1.3	1.5
	4	104 170	3.86	1.19	1.18	1.1	1.2	1.27	1.2	1.3
<b>MISSING DISCO-08 CODE</b>										
	1	337 306	0.30	1.11	1.91	1.5	2.5	2.40	1.7	3.3
	2	327 234	2.03	1.06	1.26	1.2	1.4	1.51	1.4	1.7
	3	313 270	3.72	1.08	1.04	0.9	1.2	1.22	1.1	1.4
	4	306 842	3.12	1.07	1.15	1.1	1.2	1.26	1.2	1.4

<sup>0</sup> Average number of PCR tests per employees and occupation from start of follow-up.

<sup>1</sup> Adjusted for sex and age (10 year groups)

<sup>2</sup> In addition to sex and age, adjusted for duration of education at baseline (5 groups), number of hospital admissions for one or more of 11 chronic diseases in the 10 years preceding start of the pandemic (3 groups), country of birth (4 groups), geographical region (5 groups), number of household members (4 groups), probability of tobacco smoking (3 groups), bodymass index (2 groups), completed Covid-19 vaccination (time varying variable, yes/no) and pandemic wave (4 groups).

<sup>3</sup> In addition to above fully adjusted risk estimates adjusted for the occupation-specific average number of PCR-tests during follow-up (up to and including last week before censoring) per employee (quintiles).

## Reference

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