

**Severe COVID-19 in people with type 1 and type 2 diabetes in
Sweden: a nationwide retrospective cohort study**

Supplementary Appendix

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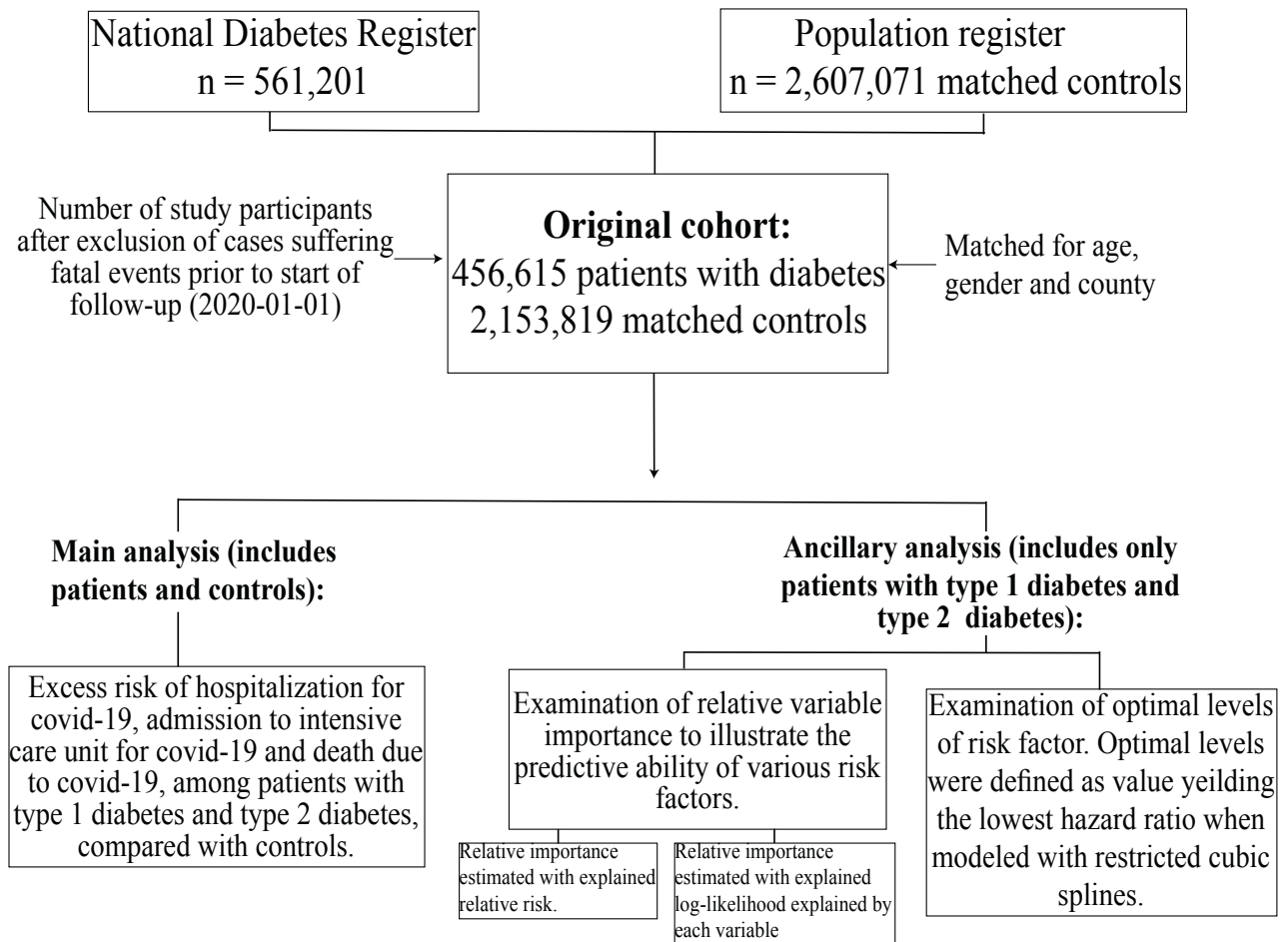
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Table S1. ICD and ATC CODES USES	
Outcomes	ICD
COVID-19 infection	U071, U072, U099, U091
Admission to intensive-care unit for COVID-19	DG016, DG018, DG020, DG022, DG023, DG026, DV023, GBB03, GBB00, DG002, DG017, DG021
Coronary heart disease	I209, I208, I200, I201, I214, I219, I210, I211, I213, I212, I229, I220, I221, I228, I230, I238, I232, I233, I236, I235, I231, I234, I249, I241, I248, I240, I259, I251, I252, I258, I255, I250, I256, I253, I254
Acute myocardial infarction	I214, I219, I210, I211, I213, I212
Chronic obstructive pulmonary disease	J449, J441, J440, J448
Dementia	F001, F002, F009, F000, F019, F012, F011, F013, F018, F010, F023, F028, F020, F039
Renal disease	N083, N179, N178, N170, N171, N172, N189, N181, N182, N183, N184, N185, N199, Z940, DR016, DR024, E112, E112C, E112W, E112X, E102, E102C, E102W, E102X, E132, E142, E122, E112A, E112B, I120, Z992, DR013, DR023, DR056, Z491, Z492
Heart failure	I420, I429, I421, I422, I428, I426, I425, I427, I423, I424, I500, I509, I501
Stroke	I619, I610, I612, I614, I611, I613, I618, I616, I615, I620, I629, I621, I639, I633, I634, I635, I638, I630, I632, I631, I636, I649
Peripheral arterial disease	I702, I739
Valvular disease	I050, I052, I051, I059, I058, I060, I061, I062, I069, I068, I071, I070, I072, I079, I078, I088, I089, I080, I083, I081, I082, I099, I092, I090, I091, I098, I340, I341, I342, I348, I349, I350, I351, I352, I359, I358, I361, I369, I360, I368, I362
Atrial fibrillation	I489, I480, I481, I482, I483, I484
Hypertension	I109, I110, I119, I120, I129, I132, I139, I130, I131, I159, I150, I151, I152, I158
Asthma	J459, J451, J451A, J451W, J450, J450A, J450B, J450W, J458, J469
Alcohol induced mental disorder	F102, F102A, F102B, F102X, F100, F103, F101, F104, F109, F105, F107, F107A, F107W, F106, F108
Drug induced mental disorder	F102, F102A, F102B, F102X, F100, F103, F101, F104, F109, F105, F107, F107A, F107W, F106, F108, F112, F110, F111, F113, F119, F115, F118, F114, F116, F117, F121, F122, F125, F120, F129, F123, F127, F128, F124, F126, F130, F132, F131, F133, F139, F134, F135, F138, F136, F137, F141, F142, F140, F145, F149, F143, F144, F146, F147, F148, F152, F155, F151, F150, F159, F153, F154, F157, F158, F156, F160, F165, F161, F169, F162, F168, F163, F164, F166, F167, F172, F179, F170, F171, F173, F174, F175, F176, F177, F178, F180, F189, F181, F182, F185, F188, F183, F184, F186, F187, F192, F191, F190, F195, F199, F193, F197, F198, F194, F196

Schizophrenia	F200, F209, F203, F201, F205, F208, F202, F206, F204, F219, F220, F229, F228, F239, F230, F238, F233, F231, F232, F249, F259, F250, F252, F251, F258, F289, F299
Cancer	C00 – C97
ATC CODES	
Blood pressure medication	C09, C08, C07
Statins	C10
Anticoagulants	B01AA, B01AE0, B01AF, B01AF, B01AB04, B01AB01
Antithrombotics	B01AC, B01AE, B01AX
Outcomes identified in hospital discharge records using the International Classification of Diseases (ICD) codes 10 th revision	

Supplementary Figure S1: Flow chart of statistical analyses and number of study participants

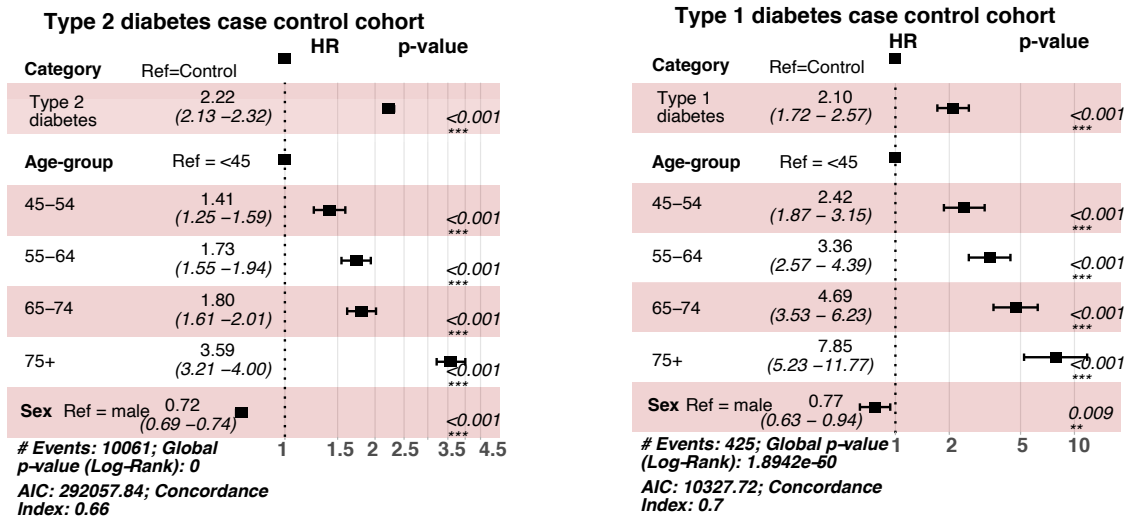
Supplementary Figure S1: Flow chart of study cohort and analyses performed.



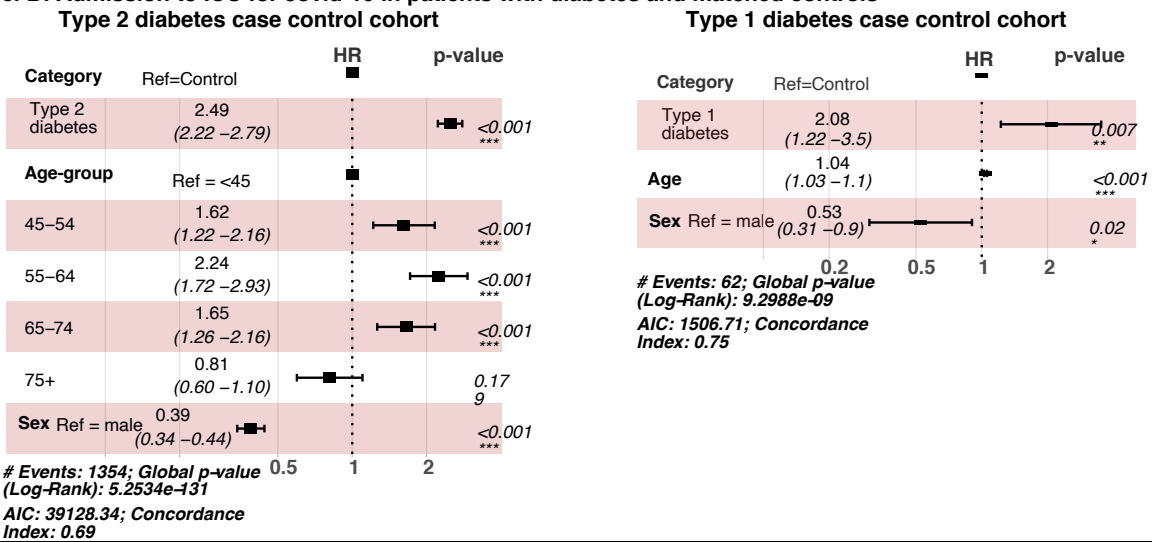
Supplementary Figure S2: Risk for hospitalization, mortality and intensive care due to covid-19 in patients with diabetes (crude measure of association)

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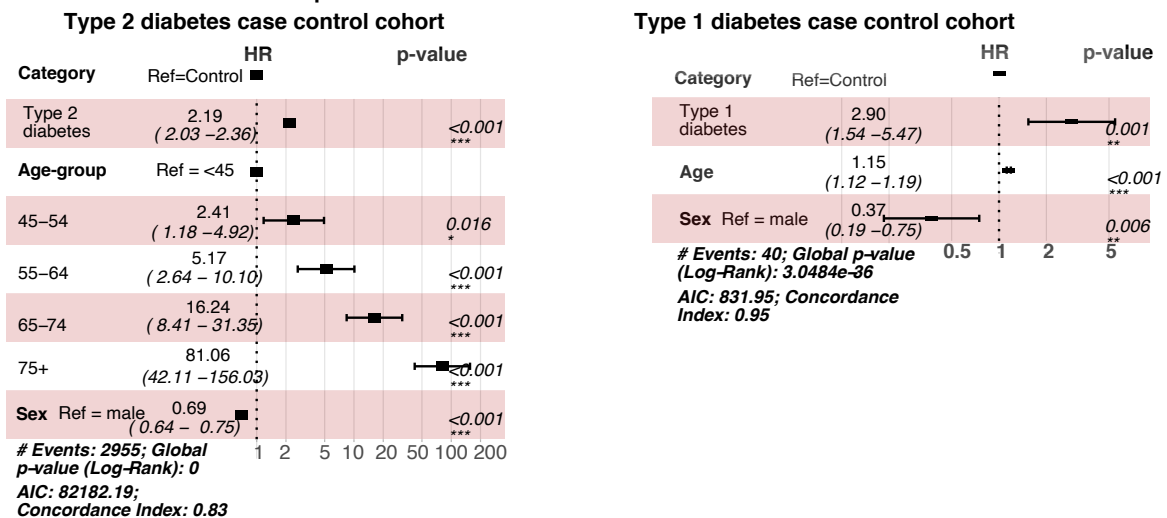
Panel A: Hospitalization for covid-19 in patients with diabetes and matched controls



Panel B: Admission to ICU for covid-19 in patients with diabetes and matched controls



Panel C: Death due to covid-19 in patients with diabetes and matched controls



Legend: Panel A – C shows excess risk for hospitalization, admission to intensive care and death for COVID-19 patients with diabetes, according to Cox regression. All models were crude measure of risk as they were only adjusted for age and sex. For type 1 diabetes, age was modeled as a continuous variable in the regression model for admission to intensive care and death due to COVID-19

Supplementary Figure S3: Relative variable importance for covid-19 related outcomes and death among patients with diabetes

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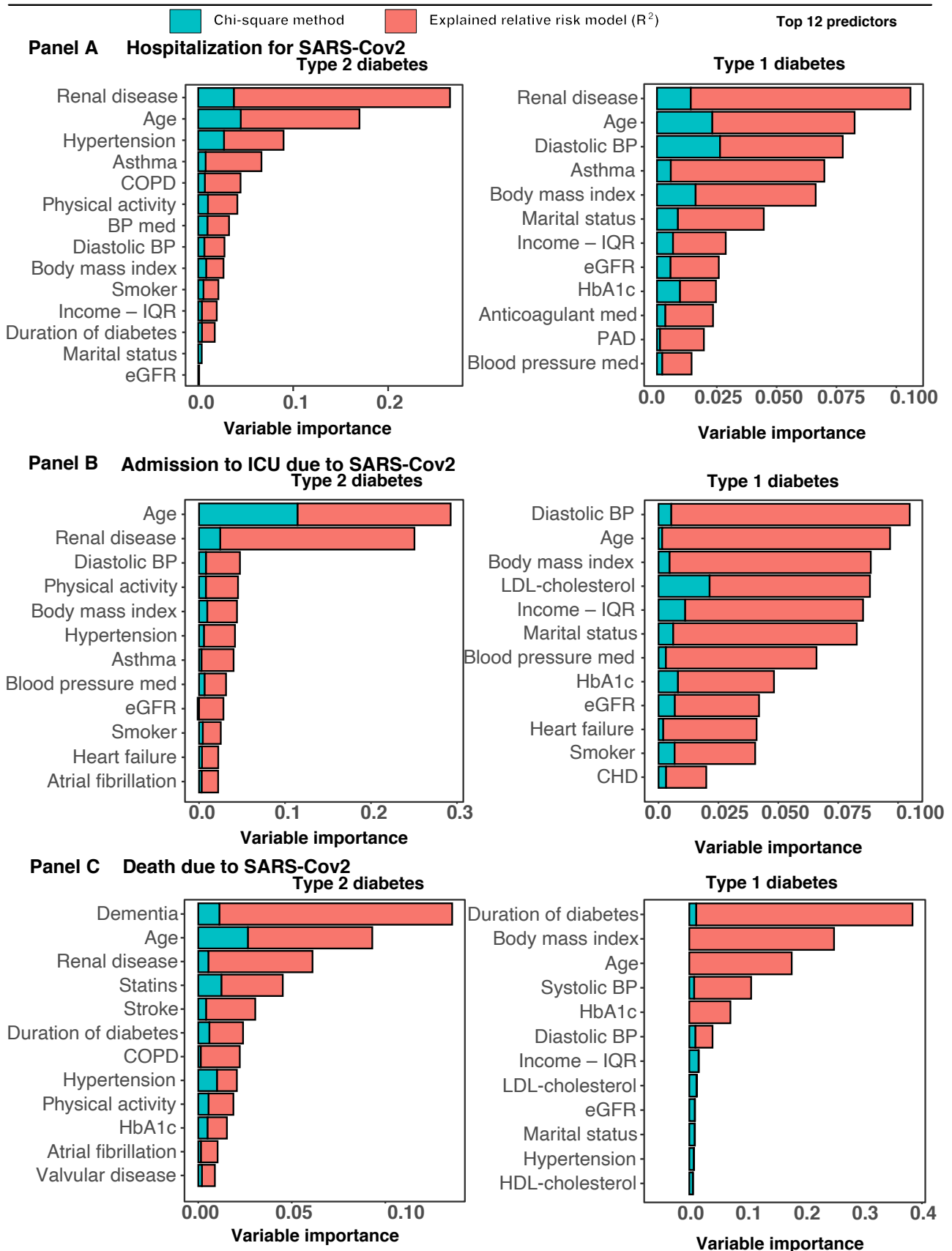


Figure legend: Relative importance for variables are measured with developed applications for the Cox regression model.

Supplementary Table S2: Baseline characteristics for patients with diabetes and matched controls that were hospitalized due to covid-19 infection

	T1D Ctrl	T1D	T2D Ctrl	T2D	T1D Ctrl hosp	T1D hosp	T2D Ctrl hosp	T2D hosp
Number of study participants (n)	204638	44495	1942282	408533	281	144	6618	3443
Sex = women (%)	91045 (44.5)	19452 (43.7)	888246 (45.7)	181293 (44.4)	105 (37.4)	62 (43.1)	2593 (39.2)	1359 (39.5)
Age (SD)	40.48 (15.41)	42.57 (16.55)	63.36 (12.21)	66.02 (13.24)	50.05 (16.32)	54.14 (17.56)	68.37 (11.78)	68.96 (13.56)
Education (%)								
Pre-secondary education	33456 (16.3)	7782 (17.5)	451095 (23.2)	137770 (33.7)	52 (18.5)	43 (29.9)	2239 (33.8)	1467 (42.6)
Secondary education	94448 (46.2)	21008 (47.2)	861849 (44.4)	183976 (45.0)	157 (55.9)	65 (45.1)	2702 (40.8)	1362 (39.6)
Post-secondary education	76734 (37.5)	15705 (35.3)	629338 (32.4)	86787 (21.2)	72 (25.6)	36 (25.0)	1677 (25.3)	614 (17.8)
Marital status = Not married (%)	133719 (65.3)	28654 (64.4)	902931 (46.5)	204271 (50.0)	166 (59.1)	82 (56.9)	3267 (49.4)	1734 (50.4)
Ethnicity = Not Scandinavia (%)	18060 (8.8)	2826 (6.4)	233420 (12.0)	79677 (19.5)	48 (17.1)	23 (16.0)	1677 (25.3)	1254 (36.4)
Income family interquartile range (IQR) (%)								
IQR 1	32421 (15.8)	8144 (18.3)	460781 (23.7)	140091 (34.3)	65 (23.1)	48 (33.3)	2242 (33.9)	1412 (41.0)
IQR 2	48470 (23.7)	11087 (24.9)	475577 (24.5)	114661 (28.1)	80 (28.5)	43 (29.9)	1720 (26.0)	974 (28.3)
IQR 3	55406 (27.1)	11705 (26.3)	493793 (25.4)	89595 (21.9)	71 (25.3)	34 (23.6)	1365 (20.6)	630 (18.3)
IQR4	68341 (33.4)	13559 (30.5)	512131 (26.4)	64186 (15.7)	65 (23.1)	19 (13.2)	1291 (19.5)	427 (12.4)
Income – family (IQR) (%)								
IQR – family 1	79332 (38.9)	17621 (39.7)	410760 (21.2)	131091 (32.2)	94 (33.5)	53 (37.1)	2042 (30.9)	1389 (40.4)
IQR – family 2	47128 (23.1)	10896 (24.6)	476477 (24.6)	115292 (28.3)	67 (23.8)	42 (29.4)	1670 (25.3)	989 (28.8)
IQR – family 3	43623 (21.4)	9060 (20.4)	508597 (26.3)	89217 (21.9)	65 (23.1)	32 (22.4)	1424 (21.5)	594 (17.3)
IQR – family 4	33675 (16.5)	6792 (15.3)	538164 (27.8)	71963 (17.7)	55 (19.6)	16 (11.2)	1476 (22.3)	464 (13.5)
Coronary heart disease (%)	4229 (2.1)	3455 (7.8)	176756 (9.1)	84654 (20.7)	22 (7.8)	35 (24.3)	1343 (20.3)	1160 (33.7)
Acute myocardial infarction (%)	2174 (1.1)	1717 (3.9)	84862 (4.4)	41971 (10.3)	15 (5.3)	19 (13.2)	685 (10.4)	610 (17.7)
Stroke (%)	2111 (1.0)	1344 (3.0)	84330 (4.3)	35209 (8.6)	15 (5.3)	13 (9.0)	810 (12.2)	584 (17.0)
Heart failure (%)	1921 (0.9)	1445 (3.2)	80963 (4.2)	43267 (10.6)	20 (7.1)	29 (20.1)	1175 (17.8)	948 (27.5)
Valvular disease (%)	1186 (0.6)	520 (1.2)	43411 (2.2)	15040 (3.7)	7 (2.5)	8 (5.6)	354 (5.3)	238 (6.9)
Atrial fibrillation (%)	3644 (1.8)	1199 (2.7)	153896 (7.9)	55628 (13.6)	23 (8.2)	13 (9.0)	1456 (22.0)	894 (26.0)
Hypertension (%)	14083 (6.9)	15377 (34.6)	494879 (25.5)	225633 (55.2)	90 (32.0)	97 (67.4)	3793 (57.3)	2808 (81.6)
Peripheral arterial disease (%)	566 (0.3)	1490 (3.3)	24278 (1.2)	15624 (3.8)	5 (1.8)	28 (19.4)	234 (3.5)	280 (8.1)
Chronic obstructive pulmonary disease (%)	1371 (0.7)	479 (1.1)	58952 (3.0)	20766 (5.1)	11 (3.9)	10 (6.9)	896 (13.5)	444 (12.9)
Dementia (%)	377 (0.2)	239 (0.5)	29038 (1.5)	10608 (2.6)	6 (2.1)	4 (2.8)	471 (7.1)	226 (6.6)
Asthma (%)	11144 (5.4)	2946 (6.6)	81986 (4.2)	26519 (6.5)	34 (12.1)	19 (13.2)	745 (11.3)	417 (12.1)
Alcoholism (%)	7931 (3.9)	2641 (5.9)	63959 (3.3)	16614 (4.1)	19 (6.8)	10 (6.9)	394 (6.0)	171 (5.0)
Substance abuse (%)	11282 (8.0)	3706 (8.4)	97477 (6.2)	28721 (7.5)	35 (12.5)	20 (13.9)	619 (9.4)	297 (8.6)
Schizophrenia (%)	2170 (1.5)	398 (0.9)	19750 (1.2)	8883 (2.3)	13 (4.6)	1 (0.7)	160 (2.4)	80 (2.3)
Renal disease (%)	1543 (0.8)	5417 (12.2)	44482 (2.3)	34392 (8.4)	19 (6.8)	53 (36.8)	1064 (16.1)	990 (28.8)
Cancer (%)	10462 (5.1)	2683 (6.0)	337861 (17.4)	80830 (19.8)	37 (13.2)	18 (12.5)	1733 (26.2)	885 (25.7)
Antihypertensive medication (%)	30307 (14.8)	17170 (38.6)	845671 (43.5)	315383 (77.2)	107 (38.1)	92 (63.9)	4066 (61.4)	2823 (82.0)
Statins (%)	13242 (6.5)	18587 (41.8)	436510 (22.5)	268479 (65.7)	54 (19.2)	79 (54.9)	2178 (32.9)	2294 (66.6)
Anticoagulant medication (%)	5231 (2.6)	1597 (3.6)	187878 (9.7)	63282 (15.5)	49 (17.4)	23 (16.0)	1754 (26.5)	1010 (29.3)
Antithrombotic medication (%)	7196 (3.5)	6717 (15.1)	278958 (14.4)	125562 (30.7)	33 (11.7)	58 (40.3)	1718 (26.0)	1347 (39.1)
Age of onset of disease (%)		17.64 (10.26)		56.90 (13.24)		19.73 (10.06)		57.18 (13.71)
Duration of diabetes (SD)		13.65 (11.85)		3.14 (5.32)		20.89 (14.44)		4.59 (6.95)
Glycated hemoglobin (HbA1c) (SD)		65.31 (17.31)		55.34 (17.65)		68.44 (16.53)		56.79 (17.68)
Glycated hemoglobin categories (%)								
HbA1c < 48 mmol/mol		5494 (13.1)		143643 (39.1)		9 (6.7)		1007 (33.7)
HbA1c >= 48 & HbA1c <= 53 mmol/mol		4887 (11.6)		81204 (22.1)		12 (9.0)		647 (21.7)
HbA1c >= 54 & HbA1c <= 58 mmol/mol		5295 (12.6)		39705 (10.8)		19 (14.2)		381 (12.8)
HbA1c >= 59 & HbA1c <= 74 mmol/mol		15963 (38.1)		57888 (15.8)		52 (38.8)		548 (18.4)
HbA1c >= 75 & HbA1c <= 85 mmol/mol		5622 (13.4)		17768 (4.8)		25 (18.7)		177 (5.9)
HbA1c >= 86 mmol/mol		4689 (11.2)		27228 (7.4)		17 (12.7)		224 (7.5)
Smoking (%)		5624 (14.3)		52348 (16.8)		23 (18.0)		348 (14.4)
Albuminuria (%)								
Macroalbuminuria (>30)		1138 (4.0)		8987 (4.1)		10 (10.2)		119 (6.5)
Microalbuminuria (3-30)		2512 (8.9)		27063 (12.5)		20 (20.4)		368 (20.1)
No albuminuria		24594 (86.9)		179514 (82.9)		68 (69.4)		1334 (73.0)
Normalized value		65 (0.2)		1007 (0.5)		0 (0.0)		6 (0.3)
Estimated glomerular filtration rate (SD)		101.52 (29.51)		85.96 (24.74)		100.11 (33.17)		83.68 (27.05)

Retinopathy (%)	4553 (28.4)	18581 (17.5)	17 (45.9)	213 (26.5)
Systolic blood pressure (SD)	123.25 (14.71)	136.53 (16.83)	131.18 (17.04)	137.44 (18.50)
Diastolic blood pressure (SD)	73.23 (8.91)	79.94 (9.96)	75.83 (8.08)	79.79 (10.19)
Total-cholesterol (SD)	4.61 (1.00)	5.10 (1.18)	4.89 (1.11)	5.02 (1.24)
High-density lipoprotein cholesterol (SD)	1.35 (0.31)	1.24 (0.30)	1.30 (0.24)	1.22 (0.30)
Triglycerides (SD)	1.14 (0.94)	2.05 (1.62)	1.66 (1.15)	2.06 (1.45)
Physical activity (%)				
< 1/week	2247 (14.0)	31595 (13.5)	6 (19.4)	240 (14.8)
Daily	3660 (22.8)	71576 (30.6)	8 (25.8)	440 (27.2)
Never	1148 (7.1)	29346 (12.6)	4 (12.9)	299 (18.5)
Regularly 1-2/week	3666 (22.8)	47907 (20.5)	7 (22.6)	319 (19.7)
Regularly 3-5/week	5344 (33.3)	53297 (22.8)	6 (19.4)	319 (19.7)
Insulin treatment method = insulin pump (%)	4576 (19.4)	151 (0.4)	7 (12.7)	0 (0.0)
LDL-cholesterol (SD)	2.61 (0.83)	3.00 (1.00)	2.80 (1.08)	2.92 (1.01)
S-creatinine (SD)	73.00 (29.24)	74.96 (22.30)	72.81 (21.11)	79.25 (31.54)
Body mass index (SD)	24.77 (6.27)	30.84 (7.47)	26.84 (7.41)	31.12 (6.91)

Supplementary Table S3: Baseline characteristics for patients with diabetes and matched controls that were admitted to intensive care due to covid-19

	T1D Ctrl	T1D	T2D Ctrl	T2D	T1D Ctrl ICU	T1D ICU	T2D Ctrl ICU	T2D ICU
Number of study participants (n)	204878	44618	1947994	411528	41	21	906	448
Sex = women (%)	91141 (44.5)	19504 (43.7)	890641 (45.7)	182537 (44.4)	9 (22.0)	10 (47.6)	198 (21.9)	115 (25.7)
Age (SD)	40.49 (15.42)	42.60 (16.56)	63.37 (12.21)	66.05 (13.25)	53.71 (12.67)	47.33 (15.45)	63.45 (9.18)	59.91 (10.39)
Education (%)								
Pre-secondary education	33501 (16.4)	7818 (17.5)	453061 (23.3)	139093 (33.8)	7 (17.1)	7 (33.3)	273 (30.1)	144 (32.1)
Secondary education	94580 (46.2)	21063 (47.2)	864169 (44.4)	185132 (45.0)	25 (61.0)	10 (47.6)	382 (42.2)	206 (46.0)
Post-secondary education	76797 (37.5)	15737 (35.3)	630764 (32.4)	87303 (21.2)	9 (22.0)	4 (19.0)	251 (27.7)	98 (21.9)
Marital status = Not married (%)	133866 (65.3)	28720 (64.4)	905832 (46.5)	205818 (50.0)	19 (46.3)	16 (76.2)	366 (40.4)	187 (41.7)
Ethnicity = Not Scandinavia (%)	18099 (8.8)	2846 (6.4)	234778 (12.1)	80712 (19.6)	9 (22.0)	3 (14.3)	319 (35.2)	219 (48.9)
Income family interquartile range (IQR) (%)								
IQR 1	32475 (15.9)	8182 (18.3)	462781 (23.8)	141354 (34.3)	11 (26.8)	10 (47.6)	242 (26.7)	149 (33.3)
IQR 2	48540 (23.7)	11123 (24.9)	477060 (24.5)	115509 (28.1)	10 (24.4)	7 (33.3)	237 (26.2)	126 (28.1)
IQR 3	55467 (27.1)	11737 (26.3)	494938 (25.4)	90130 (21.9)	10 (24.4)	2 (9.5)	220 (24.3)	95 (21.2)
IQR4	68396 (33.4)	13576 (30.4)	513215 (26.3)	64535 (15.7)	10 (24.4)	2 (9.5)	207 (22.8)	78 (17.4)
Income – family (IQR) (%)								
IQR – family 1	79415 (38.9)	17663 (39.7)	412576 (21.3)	132335 (32.2)	11 (26.8)	11 (55.0)	226 (24.9)	145 (32.4)
IQR – family 2	47185 (23.1)	10933 (24.6)	477930 (24.6)	116155 (28.3)	10 (24.4)	5 (25.0)	217 (24.0)	126 (28.2)
IQR – family 3	43677 (21.4)	9090 (20.4)	509794 (26.3)	89711 (21.9)	11 (26.8)	2 (10.0)	227 (25.1)	100 (22.4)
IQR – family 4	33721 (16.5)	6806 (15.3)	539404 (27.8)	72351 (17.6)	9 (22.0)	2 (10.0)	236 (26.0)	76 (17.0)
Coronary heart disease (%)	4250 (2.1)	3489 (7.8)	177976 (9.1)	85726 (20.8)	1 (2.4)	1 (4.8)	123 (13.6)	88 (19.6)
Acute myocardial infarction (%)	2188 (1.1)	1735 (3.9)	85480 (4.4)	42533 (10.3)	1 (2.4)	1 (4.8)	67 (7.4)	48 (10.7)
Stroke (%)	2122 (1.0)	1356 (3.0)	85069 (4.4)	35747 (8.7)	4 (9.8)	1 (4.8)	71 (7.8)	46 (10.3)
Heart failure (%)	1940 (0.9)	1471 (3.3)	82046 (4.2)	44165 (10.7)	1 (2.4)	3 (14.3)	92 (10.2)	50 (11.2)
Valvular disease (%)	1193 (0.6)	528 (1.2)	43736 (2.2)	15264 (3.7)	0 (0.0)	0 (0.0)	29 (3.2)	14 (3.1)
Atrial fibrillation (%)	3664 (1.8)	1211 (2.7)	155206 (8.0)	56463 (13.7)	3 (7.3)	1 (4.8)	146 (16.1)	59 (13.2)
Hypertension (%)	14160 (6.9)	15464 (34.7)	498202 (25.6)	228104 (55.4)	13 (31.7)	10 (47.6)	470 (51.9)	337 (75.2)
Peripheral arterial disease (%)	571 (0.3)	1518 (3.4)	24499 (1.3)	15889 (3.9)	0 (0.0)	0 (0.0)	13 (1.4)	15 (3.3)
Chronic obstructive pulmonary disease (%)	1382 (0.7)	489 (1.1)	59772 (3.1)	21183 (5.1)	0 (0.0)	0 (0.0)	76 (8.4)	27 (6.0)
Dementia (%)	383 (0.2)	243 (0.5)	29504 (1.5)	10832 (2.6)	0 (0.0)	0 (0.0)	5 (0.6)	2 (0.4)
Asthma (%)	11175 (5.5)	2963 (6.6)	82620 (4.2)	26881 (6.5)	3 (7.3)	2 (9.5)	111 (12.3)	55 (12.3)
Alcoholism (%)	7948 (3.9)	2650 (5.9)	64313 (3.3)	16764 (4.1)	2 (4.9)	1 (4.8)	40 (4.4)	21 (4.7)
Substance abuse (%)	11312 (8.0)	3724 (8.4)	98032 (6.2)	28983 (7.5)	5 (12.2)	2 (9.5)	64 (7.1)	35 (7.8)
Schizophrenia (%)	2180 (1.5)	399 (0.9)	19898 (1.3)	8954 (2.3)	3 (7.3)	0 (0.0)	12 (1.3)	9 (2.0)
Renal disease (%)	1554 (0.8)	5464 (12.2)	45314 (2.3)	35248 (8.6)	8 (19.5)	6 (28.6)	232 (25.6)	134 (29.9)
Cancer (%)	10491 (5.1)	2700 (6.1)	339457 (17.4)	81647 (19.8)	8 (19.5)	1 (4.8)	137 (15.1)	68 (15.2)
Antihypertensive medication (%)	30403 (14.8)	17255 (38.7)	849234 (43.6)	317861 (77.2)	11 (26.8)	7 (33.3)	503 (55.5)	345 (77.0)
Statins (%)	13293 (6.5)	18657 (41.8)	438418 (22.5)	270475 (65.7)	3 (7.3)	9 (42.9)	270 (29.8)	298 (66.5)
Anticoagulant medication (%)	5272 (2.6)	1619 (3.6)	189477 (9.7)	64218 (15.6)	8 (19.5)	1 (4.8)	155 (17.1)	74 (16.5)
Antithrombotic medication (%)	7225 (3.5)	6769 (15.2)	280516 (14.4)	126774 (30.8)	4 (9.8)	6 (28.6)	160 (17.7)	135 (30.1)
Age of onset of disease (%)		17.65 (10.26)		56.91 (13.25)		14.80 (8.88)		51.28 (11.00)
Duration of diabetes (SD)		13.67 (11.87)		3.15 (5.34)		20.45 (14.53)		3.35 (5.04)
Glycated hemoglobin (HbA1c) (SD)		65.32 (17.31)		55.35 (17.64)		72.55 (16.04)		60.01 (20.60)
Glycated hemoglobin categories (%)								
HbA1c < 48 mmol/mol		5502 (13.1)		144531 (39.1)		1 (5.0)		119 (30.2)
HbA1c >= 48 & HbA1c <= 53 mmol/mol		4898 (11.6)		81779 (22.1)		1 (5.0)		72 (18.3)
HbA1c >= 54 & HbA1c <= 58 mmol/mol		5313 (12.6)		40034 (10.8)		1 (5.0)		52 (13.2)
HbA1c >= 59 & HbA1c <= 74 mmol/mol		16007 (38.1)		58357 (15.8)		8 (40.0)		79 (20.1)
HbA1c >= 75 & HbA1c <= 85 mmol/mol		5641 (13.4)		17922 (4.8)		6 (30.0)		23 (5.8)
HbA1c >= 86 mmol/mol		4703 (11.2)		27403 (7.4)		3 (15.0)		49 (12.4)
Smoking (%)		5646 (14.3)		52659 (16.8)		1 (5.0)		37 (11.1)
Albuminuria (%)								
Macroalbuminuria (>30)		1148 (4.0)		9086 (4.2)		0 (0.0)		20 (8.4)
Microalbuminuria (3-30)		2529 (8.9)		27378 (12.5)		3 (21.4)		53 (22.2)
No albuminuria		24651 (86.8)		180683 (82.8)		11 (78.6)		165 (69.0)
Normalized value		65 (0.2)		1012 (0.5)		0 (0.0)		1 (0.4)

Estimated glomerular filtration rate (SD)		101.51 (29.51)		85.94 (24.76)		116.35 (56.37)		92.05 (27.46)
Retinopathy (%)		4569 (28.5)		18760 (17.6)		1 (25.0)		34 (28.3)
Systolic blood pressure (SD)		123.27 (14.72)		136.54 (16.85)		123.21 (12.01)		135.30 (16.61)
Diastolic blood pressure (SD)		73.24 (8.91)		79.94 (9.96)		72.84 (7.98)		81.77 (10.35)
Total-cholesterol (SD)		4.61 (1.00)		5.10 (1.18)		4.73 (0.52)		5.16 (1.30)
High-density lipoprotein cholesterol (SD)		1.35 (0.31)		1.24 (0.30)		1.30 (0.27)		1.18 (0.28)
Triglycerides (SD)		1.15 (0.94)		2.04 (1.62)		1.05 (0.48)		2.44 (2.21)
Physical activity (%)								
< 1/week		2253 (14.0)		31792 (13.5)		0 (0.0)		43 (17.8)
Daily		3667 (22.8)		71947 (30.6)		1 (50.0)		69 (28.5)
Never		1152 (7.2)		29613 (12.6)		0 (0.0)		32 (13.2)
Regularly 1-2/week		3673 (22.8)		48183 (20.5)		0 (0.0)		43 (17.8)
Regularly 3-5/week		5349 (33.2)		53561 (22.8)		1 (50.0)		55 (22.7)
Insulin treatment method = insulin pump (%)		4582 (19.4)		151 (0.4)		1 (14.3)		0 (0.0)
LDL-cholesterol (SD)		2.61 (0.83)		3.00 (1.00)		3.00 (0.50)		3.05 (1.09)
S-creatinine (SD)		73.01 (29.22)		74.99 (22.39)		66.25 (17.68)		76.96 (29.70)
Body mass index (SD)		24.78 (6.28)		30.84 (7.47)		28.33 (4.98)		32.35 (6.18)

Supplementary Table S4: Baseline characteristics for patients with diabetes and matched controls that died due to covid-19

	T1D Ctrl	T1D	T2D Ctrl	T2D	T1D Ctrl death	T1D death	T2D Ctrl death	T2D death
Number of study participants (n)	204900	44618	1947099	410822	19	21	1801	1154
Sex = women (%)	91147 (44.5)	19506 (43.7)	890029 (45.7)	182179 (44.3)	3 (15.8)	8 (38.1)	810 (45.0)	473 (41.0)
Age (SD)	40.49 (15.41)	42.59 (16.55)	63.36 (12.21)	66.01 (13.23)	69.79 (10.78)	70.81 (8.47)	77.75 (8.76)	78.92 (9.91)
Education (%)								
Pre-secondary education	33502 (16.4)	7817 (17.5)	452584 (23.2)	138696 (33.8)	6 (31.6)	8 (38.1)	750 (41.6)	541 (46.9)
Secondary education	94597 (46.2)	21064 (47.2)	863862 (44.4)	184887 (45.0)	8 (42.1)	9 (42.9)	689 (38.3)	451 (39.1)
Post-secondary education	76801 (37.5)	15737 (35.3)	630653 (32.4)	87239 (21.2)	5 (26.3)	4 (19.0)	362 (20.1)	162 (14.0)
Marital status = Not married (%)	133876 (65.3)	28728 (64.4)	905165 (46.5)	205315 (50.0)	9 (47.4)	8 (38.1)	1033 (57.4)	690 (59.8)
Ethnicity = Not Scandinavia (%)	18105 (8.8)	2847 (6.4)	234846 (12.1)	80699 (19.6)	3 (15.8)	2 (9.5)	251 (13.9)	232 (20.1)
Income family interquartile range (IQR) (%)								
IQR 1	32480 (15.9)	8185 (18.3)	462213 (23.7)	140937 (34.3)	6 (31.6)	7 (33.3)	810 (45.0)	566 (49.0)
IQR 2	48544 (23.7)	11121 (24.9)	476826 (24.5)	115291 (28.1)	6 (31.6)	9 (42.9)	471 (26.2)	344 (29.8)
IQR 3	55474 (27.1)	11734 (26.3)	494863 (25.4)	90071 (21.9)	3 (15.8)	5 (23.8)	295 (16.4)	154 (13.3)
IQR4	68402 (33.4)	13578 (30.4)	513197 (26.4)	64523 (15.7)	4 (21.1)	0 (0.0)	225 (12.5)	90 (7.8)
Income – family (IQR) (%)								
IQR – family 1	79423 (38.9)	17664 (39.7)	412111 (21.3)	131970 (32.2)	3 (15.8)	10 (47.6)	691 (38.4)	510 (44.3)
IQR – family 2	47187 (23.1)	10928 (24.6)	477626 (24.6)	115949 (28.3)	8 (42.1)	10 (47.6)	521 (29.0)	332 (28.8)
IQR – family 3	43684 (21.4)	9091 (20.4)	509706 (26.3)	89636 (21.9)	4 (21.1)	1 (4.8)	315 (17.5)	175 (15.2)
IQR – family 4	33726 (16.5)	6808 (15.3)	539368 (27.8)	72292 (17.6)	4 (21.1)	0 (0.0)	272 (15.1)	135 (11.7)
Coronary heart disease (%)	4244 (2.1)	3482 (7.8)	177654 (9.1)	85337 (20.8)	7 (36.8)	8 (38.1)	445 (24.7)	477 (41.3)
Acute myocardial infarction (%)	2183 (1.1)	1732 (3.9)	85330 (4.4)	42318 (10.3)	6 (31.6)	4 (19.0)	217 (12.0)	263 (22.8)
Stroke (%)	2119 (1.0)	1352 (3.0)	84749 (4.4)	35493 (8.6)	7 (36.8)	5 (23.8)	391 (21.7)	300 (26.0)
Heart failure (%)	1938 (0.9)	1468 (3.3)	81712 (4.2)	43806 (10.7)	3 (15.8)	6 (28.6)	426 (23.7)	409 (35.4)
Valvular disease (%)	1192 (0.6)	528 (1.2)	43639 (2.2)	15163 (3.7)	1 (5.3)	0 (0.0)	126 (7.0)	115 (10.0)
Atrial fibrillation (%)	3661 (1.8)	1208 (2.7)	154816 (8.0)	56107 (13.7)	6 (31.6)	4 (19.0)	536 (29.8)	415 (36.0)
Hypertension (%)	14162 (6.9)	15454 (34.6)	497519 (25.6)	227463 (55.4)	11 (57.9)	20 (95.2)	1153 (64.0)	978 (84.7)
Peripheral arterial disease (%)	569 (0.3)	1509 (3.4)	24413 (1.3)	15747 (3.8)	2 (10.5)	9 (42.9)	99 (5.5)	157 (13.6)
Chronic obstructive pulmonary disease (%)	1380 (0.7)	487 (1.1)	59592 (3.1)	21064 (5.1)	2 (10.5)	2 (9.5)	256 (14.2)	146 (12.7)
Dementia (%)	379 (0.2)	238 (0.5)	28931 (1.5)	10557 (2.6)	4 (21.1)	5 (23.8)	578 (32.1)	277 (24.0)
Asthma (%)	11178 (5.5)	2961 (6.6)	82588 (4.2)	26828 (6.5)	0 (0.0)	4 (19.0)	143 (7.9)	108 (9.4)
Alcoholism (%)	7949 (3.9)	2651 (5.9)	64236 (3.3)	16732 (4.1)	1 (5.3)	0 (0.0)	117 (6.5)	53 (4.6)
Substance abuse (%)	11315 (8.0)	3726 (8.4)	97926 (6.2)	28926 (7.5)	2 (10.5)	0 (0.0)	170 (9.5)	92 (8.0)
Schizophrenia (%)	2181 (1.5)	398 (0.9)	19839 (1.2)	8934 (2.3)	2 (10.5)	1 (4.8)	71 (4.0)	29 (2.5)
Renal disease (%)	1559 (0.8)	5460 (12.2)	45147 (2.3)	34979 (8.5)	3 (15.8)	10 (47.6)	399 (22.2)	403 (34.9)
Cancer (%)	10491 (5.1)	2696 (6.0)	339018 (17.4)	81332 (19.8)	8 (42.1)	5 (23.8)	576 (32.0)	383 (33.2)
Antihypertensive medication (%)	30402 (14.8)	17244 (38.6)	848537 (43.6)	317226 (77.2)	12 (63.2)	18 (85.7)	1200 (66.6)	980 (84.9)
Statins (%)	13287 (6.5)	18651 (41.8)	438099 (22.5)	270115 (65.7)	9 (47.4)	15 (71.4)	589 (32.7)	658 (57.0)
Anticoagulant medication (%)	5271 (2.6)	1616 (3.6)	189106 (9.7)	63896 (15.6)	9 (47.4)	4 (19.0)	526 (29.2)	396 (34.3)
Antithrombotic medication (%)	7222 (3.5)	6762 (15.2)	280072 (14.4)	126368 (30.8)	7 (36.8)	13 (61.9)	604 (33.5)	541 (46.9)
Age of onset of disease (%)		17.64 (10.26)		56.88 (13.24)		22.35 (10.28)		64.13 (13.24)
Duration of diabetes (SD)		13.66 (11.86)		3.14 (5.33)		31.55 (10.21)		6.15 (7.94)
Glycated hemoglobin (HbA1c) (SD)		65.32 (17.31)		55.35 (17.65)		69.58 (13.21)		55.63 (15.65)
Glycated hemoglobin categories (%)								
HbA1c < 48 mmol/mol		5503 (13.1)		144315 (39.1)		0 (0.0)		335 (33.3)
HbA1c >= 48 & HbA1c <= 53 mmol/mol		4897 (11.6)		81624 (22.1)		2 (10.5)		227 (22.5)
HbA1c >= 54 & HbA1c <= 58 mmol/mol		5313 (12.6)		39946 (10.8)		1 (5.3)		140 (13.9)
HbA1c >= 59 & HbA1c <= 74 mmol/mol		16006 (38.1)		58236 (15.8)		9 (47.4)		200 (19.9)
HbA1c >= 75 & HbA1c <= 85 mmol/mol		5642 (13.4)		17896 (4.8)		5 (26.3)		49 (4.9)
HbA1c >= 86 mmol/mol		4704 (11.2)		27396 (7.4)		2 (10.5)		56 (5.6)
Smoking (%)		5643 (14.3)		52596 (16.8)		4 (21.1)		100 (12.1)
Albuminuria (%)								
Macroalbuminuria (>30)		1146 (4.0)		9060 (4.2)		2 (16.7)		46 (7.3)
Microalbuminuria (3-30)		2529 (8.9)		27306 (12.5)		3 (25.0)		125 (19.7)
No albuminuria		24655 (86.8)		180387 (82.8)		7 (58.3)		461 (72.7)
Normalized value		65 (0.2)		1011 (0.5)		0 (0.0)		2 (0.3)

Estimated glomerular filtration rate (SD)		101.52 (29.52)		85.97 (24.75)		68.10 (23.66)		74.01 (24.87)
Retinopathy (%)		4568 (28.5)		18712 (17.5)		2 (66.7)		82 (27.8)
Systolic blood pressure (SD)		123.26 (14.72)		136.52 (16.84)		142.95 (15.69)		141.19 (17.69)
Diastolic blood pressure (SD)		73.24 (8.91)		79.95 (9.96)		75.81 (8.38)		78.05 (10.02)
Total-cholesterol (SD)		4.61 (1.00)		5.10 (1.18)		4.54 (0.80)		4.92 (1.11)
High-density lipoprotein cholesterol (SD)		1.35 (0.31)		1.24 (0.30)		1.42 (0.35)		1.26 (0.31)
Triglycerides (SD)		1.15 (0.94)		2.05 (1.62)		1.04 (0.52)		1.90 (1.10)
Physical activity (%)								
< 1/week		2253 (14.0)		31769 (13.5)		0 (0.0)		66 (12.3)
Daily		3667 (22.8)		71860 (30.6)		1 (50.0)		156 (29.1)
Never		1152 (7.2)		29535 (12.6)		0 (0.0)		110 (20.5)
Regularly 1-2/week		3673 (22.8)		48122 (20.5)		0 (0.0)		104 (19.4)
Regularly 3-5/week		5349 (33.2)		53515 (22.8)		1 (50.0)		101 (18.8)
Insulin treatment method = insulin pump (%)		4583 (19.4)		151 (0.4)		0 (0.0)		0 (0.0)
LDL-cholesterol (SD)		2.61 (0.83)		3.00 (1.01)		2.11 (0.69)		2.83 (0.96)
S-creatinine (SD)		73.00 (29.22)		74.97 (22.35)		79.00 (23.24)		85.22 (32.49)
Body mass index (SD)		24.78 (6.28)		30.85 (7.47)		25.95 (3.54)		29.85 (5.94)

Supplementary Table S5: Incidence rates for hospitalization of covid-19 infection among patients with diabetes and controls, according to age-categories

Supplementary Table. Incidence for hospitalization of covid-19 in patients with T2D

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	159	17356	9.16	7.79	10.70	9.10	7.74	10.64
45-54	390	36150	10.79	9.74	11.91	10.69	9.64	11.83
55-64	656	60450	10.85	10.04	11.72	10.51	9.71	11.36
65-74	905	83436	10.85	10.15	11.58	10.59	9.90	11.31
>75	1333	75522	17.65	16.72	18.62	17.48	16.55	18.46

Supplementary Table. Incidence for hospitalization of covid-19 in T2D matched controls

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	191	94704	2.02	1.74	2.32	2.01	1.73	2.31
45-54	655	197494	3.32	3.07	3.58	3.16	2.92	3.42
55-64	1552	345620	4.49	4.27	4.72	4.27	4.06	4.50
65-74	1990	430299	4.62	4.42	4.83	4.54	4.34	4.74
>75	2230	226123	9.86	9.46	10.28	9.96	9.55	10.38

Supplementary Table. Incidence for hospitalization of covid-19 in T1D matched controls

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	91	82752	1.10	0.89	1.35	1.11	0.89	1.36
45-54	75	25781	2.91	2.29	3.65	2.77	2.17	3.47
55-64	57	16790	3.39	2.57	4.40	3.36	2.54	4.35
65-74	45	9173	4.91	3.58	6.56	4.92	3.59	6.59
>75	13	1724	7.54	4.02	12.89	7.52	4.00	12.87

Supplementary Table. Incidence for hospitalization of covid-19 in T1D matched controls

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	91	82752	1.10	0.89	1.35	1.11	0.89	1.36
45-54	75	25781	2.91	2.29	3.65	2.77	2.17	3.47
55-64	57	16790	3.39	2.57	4.40	3.36	2.54	4.35
65-74	45	9173	4.91	3.58	6.56	4.92	3.59	6.59
>75	13	1724	7.54	4.02	12.89	7.52	4.00	12.87

Figure legend:

T1D denotes Type 1 diabetes

T2D denotes Type 2 diabetes

Supplementary Table S6: Incidence rates for admission to intensive care of covid-19 infection among patients with diabetes and controls, according to age-categories

Supplementary Table S6.1. Incidence for ICU-care in T2D

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	33	17398	1.90	1.31	2.66	1.88	1.30	2.65
45-54	94	36249	2.59	2.10	3.17	2.48	1.99	3.05
55-64	153	60615	2.52	2.14	2.96	2.38	2.02	2.80
65-74	139	83684	1.66	1.40	1.96	1.56	1.31	1.84
>75	29	75942	0.38	0.26	0.55	0.35	0.23	0.50

Supplementary Table S6.2 Incidence matched controls T2D

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	27	94757	0.28	0.19	0.41	0.28	0.19	0.41
45-54	117	197669	0.59	0.49	0.71	0.53	0.43	0.63
55-64	347	346006	1.00	0.90	1.11	0.91	0.81	1.01
65-74	312	430833	0.72	0.65	0.81	0.70	0.62	0.78
>75	103	226804	0.45	0.37	0.55	0.47	0.38	0.57

Supplementary Table S6.3. Incidence for ICU-care in T1D

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	6	16593	0.36	0.13	0.79	0.36	0.13	0.78
45-54	5	5502	0.91	0.30	2.12	0.94	0.30	2.20
55-64	8	3978	2.01	0.87	3.96	2.04	0.87	4.03
65-74	2	2782	0.72	0.09	2.60	0.73	0.09	2.64
>75	0	831	0.00	NaN	NaN	0.00	NaN	NaN

Supplementary Table S6.4. Incidence for ICU-care in T1D matched controls

Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	8	82778	0.10	0.04	0.19	0.09	0.04	0.18
45-54	10	25801	0.39	0.19	0.71	0.37	0.18	0.68
55-64	15	16804	0.89	0.50	1.47	0.87	0.49	1.43
65-74	8	9185	0.87	0.38	1.72	0.88	0.38	1.73
>75	0	1728	0.00	NaN	NaN	0.00	NaN	NaN

Figure legend:

T1D denotes Type 1 diabetes

T2D denotes Type 2 diabetes

Supplementary Table S7: Incidence rates for mortality from covid-19 infection among patients with diabetes and controls, according to age-categories

Supplementary Table S7.1. Incidence for covid-19 related mortality in T1D								
Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	4	17408	0.23	0.06	0.59	0.23	0.06	0.60
45-54	23	36272	0.63	0.40	0.95	0.56	0.36	0.85
55-64	67	60647	1.10	0.86	1.40	1.05	0.81	1.34
65-74	240	83653	2.87	2.52	3.26	2.71	2.38	3.08
>75	820	75686	10.83	10.11	11.60	10.76	10.03	11.53

Supplementary Table S7.2. Incidence for covid-19 related mortality in T2D matched controls								
Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	5	94764	0.05	0.02	0.12	0.05	0.02	0.12
45-54	23	197702	0.12	0.07	0.17	0.10	0.06	0.15
55-64	103	346089	0.30	0.24	0.36	0.27	0.22	0.33
65-74	430	430801	1.00	0.91	1.10	0.97	0.88	1.07
>75	1240	226437	5.48	5.18	5.79	5.54	5.23	5.86

Supplementary Table S7.3. Incidence for covid-19 related mortality in patients with T1D								
Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	0	16595	0.00	NaN	NaN	0.00	NaN	NaN
45-54	1	5503	0.18	0.00	1.01	0.16	0.00	0.92
55-64	3	3979	0.75	0.16	2.20	0.79	0.16	2.33
65-74	8	2781	2.88	1.24	5.67	2.91	1.25	5.75
>75	9	829	10.86	4.96	20.61	9.92	4.49	18.97

Supplementary Table S7.4. Incidence for covid-19 related mortality in T1D matched controls								
Subgroup	Numerator	Denominator	Crude Rate (per 1000)	95% LCL (Crude)	95% UCL (Crude)	Std Rate (per 1000)	95% LCL (Std)	95% UCL (Std)
<45	0	82781	0.00	NaN	NaN	0.00	NaN	NaN
45-54	2	25803	0.08	0.01	0.28	0.07	0.01	0.26
55-64	3	16808	0.18	0.04	0.52	0.18	0.04	0.51
65-74	7	9185	0.76	0.31	1.57	0.77	0.31	1.58
>75	7	1726	4.06	1.63	8.36	4.24	1.70	8.75

Figure legend:

T1D denotes Type 1 diabetes

T2D denotes Type 2 diabetes

Supplementary Table S8: Cox regression model for hospitalization of covid-19 in diabetes and controls

Characteristic	Type 1 diabetes			Matched controls T1D			Type 2 diabetes			Matched controls T12D		
	HR [†]	95% CI [†]	p-value	HR [†]	95% CI [†]	p-value	HR [†]	95% CI [†]	p-value	HR [†]	95% CI [†]	p-value
Age-categories												
<45	—	—		—	—		—	—		—	—	
45-54	2.00	1.10, 3.62	0.022	2.53	1.79, 3.58	<0.001	1.08	0.90, 1.31	0.4	1.63	1.39, 1.92	<0.001
55-64	3.21	1.74, 5.90	<0.001	2.16	1.45, 3.24	<0.001	0.89	0.74, 1.07	0.2	1.83	1.56, 2.13	<0.001
65-74	3.00	1.54, 5.85	0.001	1.99	1.23, 3.20	0.005	0.65	0.54, 0.78	<0.001	1.33	1.14, 1.55	<0.001
>75	3.96	1.83, 8.61	<0.001	1.71	0.84, 3.49	0.14	0.70	0.58, 0.84	<0.001	1.67	1.43, 1.96	<0.001
Sex	0.90	0.64, 1.28	0.6	0.72	0.56, 0.93	0.013	0.78	0.72, 0.84	<0.001	0.68	0.64, 0.72	<0.001
Income IQR												
IQR 1	—	—		—	—		—	—		—	—	
IQR 2	0.97	0.64, 1.50	>0.9	0.83	0.60, 1.15	0.3	0.84	0.77, 0.91	<0.001	0.77	0.72, 0.82	<0.001
IQR 3	0.92	0.56, 1.49	0.7	0.74	0.52, 1.05	0.093	0.71	0.64, 0.79	<0.001	0.69	0.64, 0.75	<0.001
IQR4	0.57	0.30, 1.08	0.085	0.71	0.48, 1.06	0.092	0.69	0.61, 0.77	<0.001	0.67	0.62, 0.72	<0.001
Education												
Pre-secondary edu	—	—		—	—		—	—		—	—	
Secondary edu	0.69	0.46, 1.03	0.069	1.22	0.88, 1.68	0.2	0.81	0.75, 0.88	<0.001	0.84	0.80, 0.90	<0.001
Post-secondary edu	0.69	0.43, 1.13	0.14	0.83	0.57, 1.22	0.3	0.88	0.80, 0.98	0.017	0.89	0.83, 0.95	<0.001
Marital status												
Married	—	—		—	—		—	—		—	—	
Not married	0.97	0.68, 1.38	0.9	0.97	0.75, 1.25	0.8	0.91	0.85, 0.98	0.008	1.01	0.96, 1.06	0.7
Coronary heart disease	0.79	0.48, 1.31	0.4	0.81	0.47, 1.40	0.5	1.05	0.97, 1.14	0.2	1.01	0.94, 1.08	0.9
Stroke	0.96	0.53, 1.75	>0.9	1.28	0.72, 2.26	0.4	1.32	1.20, 1.45	<0.001	1.32	1.22, 1.43	<0.001
Heart failure	2.04	1.20, 3.46	0.008	1.60	0.92, 2.80	0.10	1.49	1.36, 1.64	<0.001	1.50	1.38, 1.62	<0.001
Valvular disease	1.28	0.60, 2.71	0.5	0.88	0.40, 1.93	0.7	1.03	0.90, 1.18	0.7	0.90	0.81, 1.01	0.072
Atrial fibrillation	0.53	0.25, 1.11	0.090	0.48	0.27, 0.84	0.010	0.91	0.81, 1.03	0.14	0.94	0.86, 1.03	0.2
Hypertension	2.05	1.18, 3.55	0.010	2.95	1.95, 4.45	<0.001	3.04	2.73, 3.38	<0.001	2.76	2.57, 2.96	<0.001
Peripheral arterial disease	1.84	1.13, 3.00	0.014	1.26	0.50, 3.16	0.6	1.15	1.01, 1.30	0.033	1.03	0.90, 1.18	0.7
Chronic obstructive pulmonary disease	1.44	0.72, 2.90	0.3	1.19	0.62, 2.29	0.6	1.52	1.37, 1.70	<0.001	2.10	1.94, 2.27	<0.001
Asthma	1.96	1.19, 3.23	0.008	2.15	1.48, 3.12	<0.001	1.45	1.30, 1.62	<0.001	1.76	1.63, 1.91	<0.001
Dementia	1.46	0.52, 4.09	0.5	3.93	1.66, 9.28	0.002	1.73	1.50, 1.99	<0.001	2.58	2.34, 2.84	<0.001
Alcohol	1.24	0.64, 2.39	0.5	1.32	0.82, 2.12	0.3	0.93	0.80, 1.09	0.4	1.14	1.03, 1.27	0.013
Renal disease	1.99	1.34, 2.95	<0.001	2.42	1.46, 4.02	<0.001	2.53	2.34, 2.75	<0.001	3.16	2.94, 3.40	<0.001
Cancer	0.94	0.56, 1.57	0.8	1.29	0.89, 1.89	0.2	1.08	1.00, 1.17	0.049	1.16	1.09, 1.23	<0.001
Antihypertensive med	0.72	0.42, 1.24	0.2	0.95	0.64, 1.41	0.8	0.61	0.55, 0.68	<0.001	0.70	0.66, 0.76	<0.001
Statins	0.53	0.35, 0.81	0.003	0.96	0.64, 1.42	0.8	0.89	0.82, 0.96	0.003	0.82	0.77, 0.88	<0.001
Anticoagulant med	2.76	1.55, 4.92	<0.001	4.23	2.83, 6.32	<0.001	1.46	1.30, 1.64	<0.001	1.79	1.65, 1.94	<0.001
Antithrombotic med	1.57	1.00, 2.46	0.049	1.13	0.70, 1.81	0.6	1.10	1.01, 1.20	0.024	1.25	1.17, 1.34	<0.001

[†] HR = Hazard Ratio, CI = Confidence Interval

Supplementary Table S9: Cox regression model for admission to intensive care due to covid-19 in diabetes and controls

Characteristic	Type 1 diabetes			Matched controls T1D			Type 2 diabetes			Matched controls T12D		
	HR ¹	95% CI ¹	p-value	HR ¹	95% CI ¹	p-value	HR ¹	95% CI ¹	p-value	HR ¹	95% CI ¹	p-value
Age	1.04	1.00, 1.07	0.033	1.05	1.02, 1.07	<0.001						
Sex	1.09	0.44, 2.71	0.8	0.32	0.15, 0.69	0.004	0.43	0.34, 0.54	<0.001	0.72	0.56, 0.93	0.013
Income IQR												
<i>IQR 1</i>	—	—		—	—		—	—		—	—	
<i>IQR 2</i>	0.62	0.20, 1.88	0.4	0.98	0.40, 2.39	>0.9	0.89	0.70, 1.14	0.4	0.83	0.60, 1.15	0.3
<i>IQR 3</i>	0.32	0.07, 1.58	0.2	0.90	0.37, 2.18	0.8	0.74	0.57, 0.96	0.024	0.74	0.52, 1.05	0.093
<i>IQR 4</i>	0.46	0.09, 2.43	0.4	0.78	0.29, 2.09	0.6	0.63	0.47, 0.86	0.003	0.71	0.48, 1.06	0.092
Education												
Pre-secondary edu	—	—		—	—		—	—		—	—	
Secondary edu	0.78	0.27, 2.22	0.6	1.78	0.73, 4.32	0.2	0.90	0.73, 1.12	0.4	1.22	0.88, 1.68	0.2
Post-secondary edu	0.49	0.13, 1.88	0.3	0.90	0.31, 2.61	0.8	0.97	0.74, 1.27	0.8	0.83	0.57, 1.22	0.3
Marital status												
<i>Married</i>	—	—					—	—		—	—	
Not married	1.83	0.63, 5.36	0.3				0.67	0.55, 0.81	<0.001	0.97	0.75, 1.25	0.8
Coronary heart disease	0.11	0.01, 1.05	0.055				0.78	0.59, 1.03	0.085	0.81	0.47, 1.40	0.5
Stroke	0.55	0.07, 4.53	0.6	2.86	0.88, 9.31	0.080	1.19	0.86, 1.64	0.3	1.28	0.72, 2.26	0.4
Heart failure	5.00	1.10, 22.7	0.037	0.40	0.05, 3.38	0.4	0.79	0.56, 1.11	0.2	1.60	0.92, 2.80	0.10
Atrial fibrillation	1.15	0.10, 13.6	>0.9	0.47	0.11, 2.04	0.3	0.90	0.61, 1.35	0.6	0.48	0.27, 0.84	0.010
Hypertension	2.42	0.68, 8.69	0.2	3.86	1.31, 11.3	0.014	3.60	2.75, 4.73	<0.001	2.95	1.95, 4.45	<0.001
Asthma	1.48	0.34, 6.46	0.6	1.79	0.55, 5.87	0.3	1.88	1.40, 2.52	<0.001	2.15	1.48, 3.12	<0.001
Alcohol	0.68	0.09, 5.21	0.7	0.90	0.21, 3.76	0.9	0.67	0.43, 1.04	0.075	1.32	0.82, 2.12	0.3
End-stage renal disease	2.52	0.82, 7.70	0.11	12.1	4.71, 31.3	<0.001	4.76	3.82, 5.94	<0.001	2.42	1.46, 4.02	<0.001
Cancer	0.40	0.05, 3.21	0.4	1.63	0.69, 3.86	0.3	0.86	0.66, 1.12	0.3	1.29	0.89, 1.89	0.2
Antihypertensive med	0.18	0.05, 0.67	0.011	0.27	0.10, 0.78	0.015	0.58	0.44, 0.76	<0.001	0.95	0.64, 1.41	0.8
Statins	0.92	0.31, 2.75	0.9	0.20	0.05, 0.77	0.019	0.91	0.73, 1.13	0.4	0.96	0.64, 1.42	0.8
Anticoagulant med	0.80	0.07, 9.05	0.9	4.60	1.75, 12.1	0.002	1.24	0.87, 1.78	0.2	4.23	2.83, 6.32	<0.001
Antithrombotic med	2.24	0.66, 7.59	0.2	1.28	0.38, 4.29	0.7	0.97	0.75, 1.25	0.8	1.13	0.70, 1.81	0.6
Chronic obstructive pulmonary disease				0.00	0.00, Inf	>0.9	0.99	0.65, 1.49	>0.9	1.19	0.62, 2.29	0.6
Age-categories												
<45							—	—		—	—	
45-54							1.26	0.84, 1.88	0.3	2.53	1.79, 3.58	<0.001
55-64							1.10	0.74, 1.64	0.6	2.16	1.45, 3.24	<0.001
65-74							0.61	0.40, 0.92	0.019	1.99	1.23, 3.20	0.005
>75							0.12	0.07, 0.20	<0.001	1.71	0.84, 3.49	0.14
Valvular disease							0.88	0.51, 1.51	0.6	0.88	0.40, 1.93	0.7
Peripheral arterial disease							0.74	0.44, 1.26	0.3	1.26	0.50, 3.16	0.6
Dementia							0.27	0.07, 1.11	0.070	3.93	1.66, 9.28	0.002

¹ HR = Hazard Ratio, CI = Confidence Interval. Age was modeled as a continuous predictor.

Supplementary Table S10: Cox regression model for mortality due to covid-19 in diabetes and controls

Characteristic	Type 1 diabetes			Matched controls T1D			Type 2 diabetes			Matched controls T12D		
	HR ¹	95% CI ¹	p-value	HR ¹	95% CI ¹	p-value	HR ¹	95% CI ¹	p-value	HR ¹	95% CI ¹	p-value
Age	1.10	1.05, 1.15	<0.001	1.11	1.05, 1.17	<0.001						
Sex	0.71	0.29, 1.75	0.5	0.19	0.05, 0.69	0.012	0.68	0.59, 0.77	<0.001	0.58	0.53, 0.65	<0.001
Education												
Pre-secondary edu	—	—		—	—		—	—		—	—	
Secondary edu	0.75	0.28, 2.00	0.6	0.92	0.31, 2.78	0.9	1.00	0.88, 1.14	>0.9	0.93	0.83, 1.03	0.2
Post-secondary edu	0.59	0.17, 2.05	0.4	1.15	0.30, 4.39	0.8	0.89	0.74, 1.07	0.2	0.95	0.82, 1.09	0.4
Marital status												
<i>Married</i>	—	—		—	—		—	—		—	—	
Not married	0.75	0.30, 1.87	0.5	1.07	0.42, 2.72	0.9	1.29	1.14, 1.46	<0.001	1.30	1.18, 1.43	<0.001
Coronary heart disease	0.83	0.29, 2.40	0.7	2.52	0.74, 8.53	0.14	1.14	0.99, 1.30	0.063	1.00	0.88, 1.14	>0.9
Stroke	1.70	0.58, 4.98	0.3	5.01	1.65, 15.2	0.005	1.60	1.39, 1.84	<0.001	1.72	1.52, 1.94	<0.001
Heart failure	1.54	0.49, 4.85	0.5	0.88	0.20, 3.87	0.9	1.44	1.24, 1.66	<0.001	1.47	1.28, 1.68	<0.001
Atrial fibrillation	0.85	0.16, 4.57	0.8	0.86	0.21, 3.58	0.8	1.24	1.03, 1.50	0.025	1.30	1.11, 1.52	<0.001
Chronic obstructive pulmonary disease	1.28	0.27, 6.08	0.8	1.91	0.40, 9.06	0.4	1.22	1.01, 1.46	0.036	1.71	1.49, 1.98	<0.001
Asthma	3.36	1.04, 10.9	0.043				1.17	0.95, 1.44	0.13	1.16	0.97, 1.38	0.11
Dementia	8.10	2.75, 23.9	<0.001	7.01	2.04, 24.2	0.002	4.65	4.03, 5.37	<0.001	9.02	8.11, 10.0	<0.001
Renal disease	2.54	1.01, 6.36	0.047	1.94	0.51, 7.32	0.3	2.54	2.23, 2.90	<0.001	3.31	2.93, 3.74	<0.001
Cancer	1.08	0.38, 3.08	0.9	2.09	0.78, 5.62	0.15	1.10	0.97, 1.25	0.12	1.11	1.00, 1.23	0.043
Antihypertensive med	1.47	0.38, 5.64	0.6	0.45	0.11, 1.80	0.3	0.72	0.60, 0.86	<0.001	0.72	0.63, 0.81	<0.001
Statins	0.52	0.19, 1.47	0.2	0.81	0.25, 2.71	0.7	0.60	0.53, 0.68	<0.001	0.67	0.60, 0.75	<0.001
Anticoagulant med	1.16	0.22, 6.10	0.9	5.32	1.51, 18.8	0.009	1.07	0.88, 1.29	0.5	1.14	0.98, 1.33	0.092
Antithrombotic med	1.72	0.61, 4.85	0.3	1.45	0.43, 4.92	0.6	1.24	1.08, 1.43	0.002	1.26	1.12, 1.42	<0.001
Income IQR												
<i>IQR 1</i>				—	—		—	—		—	—	
<i>IQR 2</i>				1.99	0.51, 7.70	0.3	0.80	0.70, 0.93	0.003	0.80	0.72, 0.91	<0.001
<i>IQR 3</i>				1.06	0.22, 5.00	>0.9	0.75	0.62, 0.90	0.002	0.70	0.61, 0.81	<0.001
<i>IQR4</i>				0.78	0.15, 4.13	0.8	0.70	0.57, 0.87	0.001	0.60	0.51, 0.71	<0.001
Valvular disease				0.69	0.08, 5.71	0.7	1.17	0.96, 1.43	0.12	0.94	0.78, 1.13	0.5
Hypertension				1.19	0.31, 4.60	0.8	1.69	1.40, 2.03	<0.001	1.72	1.51, 1.95	<0.001
Alcohol				0.70	0.08, 5.79	0.7	1.10	0.83, 1.46	0.5	1.31	1.08, 1.59	0.006
Age-categories												
<45							—	—		—	—	
45-54							3.86	1.16, 12.9	0.028	2.29	0.87, 6.05	0.095
55-64							5.98	1.87, 19.1	0.003	5.62	2.29, 13.8	<0.001
65-74							11.8	3.74, 37.0	<0.001	14.8	6.11, 35.9	<0.001
>75							24.9	7.94, 78.2	<0.001	42.1	17.4, 102	<0.001
Peripheral arterial disease							1.63	1.36, 1.94	<0.001	1.26	1.02, 1.55	0.032

¹ HR = Hazard Ratio, CI = Confidence Interval. Age was modeled as a continuous predictor.