

## Supplementary Tables and Figures

**Table 1.** Distribution of dates underlying the COVID date

<b>Date</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Disease onset</b>	647 564	61.3
<b>Sample date</b>	362 903	34.3
<b>Diagnosis date</b>	9646	0.9
<b>Date of report</b>	37 061	3.5

**Table 2.** International Classification of Diseases (ICD) main or contributing diagnosis codes used to identify the first event of pulmonary embolism (PE), deep vein thrombosis (DVT) and bleeding.

<b>Outcome</b>	<b>ICD9 (1987-1996)</b>	<b>ICD10 (1997 – to date)</b>
Deep vein thrombosis (DVT)	451B 451C 451W 451X 452X 453C 453D 453W 453X 671D 671E	I801 I802 I803 I808 I809 I819 I822 I823 I828 I829 O223 O871
Pulmonary embolism (PE)	415B 673C	I260 I269 O882
Bleeding	285B 286F 430 431 432A 432B 432X 511W 578A 578B 578X 599H 626G 627B 719B 786D	D629 D683 I600 I601 I602 I603 I604 I605 I606 I607 I608 I609 I610 I611 I612 I613

		I614 I615 I616 I617 I619 I620 I621 I629 J942 K920 K921 K922 N939 M250 N950 R042 R319 T140A
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**Table 3** Relative incidence of DVT, PE and Bleeding following COVID-19 using the SCCS method, with cases who died during the observation period excluded

Risk period (days)	DVT		PE		Bleeding	
	n	RI (95% CI)	n	RI (95% CI)	n	RI (95% CI)
Control period	745	1.00 (ref)	494	1.00 (ref)	4120	1.00 (ref)
-30 to -4	66	1.14 (0.88, 1.48)	99	2.37 (1.89, 2.98)	486	1.45 (1.32, 1.60)
-3 to 0	74	8.84 (6.89, 11.35)	270	43.14 (36.53, 50.94)	231	4.71 (4.11, 5.40)
1 to 7	74	5.10 (3.97, 6.55)	404	36.90 (31.68, 42.98)	255	2.99 (2.62, 3.41)
8 to 14	110	7.73 (6.23, 9.58)	545	50.05 (43.26, 57.90)	221	2.62 (2.28, 3.02)
15 to 30	172	5.54 (4.60, 6.66)	537	22.27 (19.19, 25.85)	336	1.80 (1.60, 2.03)
31 to 60	132	2.52 (2.05, 3.10)	163	4.10 (3.35, 5.02)	466	1.47 (1.32, 1.63)
61 to 90	66	1.44 (1.10, 1.90)	82	2.42 (1.86, 3.14)	282	1.02 (0.89, 1.16)
91 to 180	123	1.13 (0.90, 1.42)	115	1.51 (1.18, 1.94)	623	1.03 (0.93, 1.14)

**Note on Supplementary Tables 4-6:** In these tables, the RI for the baseline population relate to the comparison between each risk period and control periods, for that baseline population. The RI for sex, age group and wave are the interaction terms relative to the baseline population.

**Table 4.** Effect modification for deep vein thrombosis by sex; age (<50 years, 50 to <70 years, and 70+ years); and pandemic wave (wave 1: before Aug. 1, 2020; wave 2: between Aug. 1, 2020 but before Feb 1, 2021; wave 3: on or after Feb 1, 2021) in the SCCS.

Risk period	Baseline population (males under 50 in wave 1)		Sex (ref M)		Age 50 – 70 (ref < 50)		Age 70+ (ref <50)		Wave 2 (ref wave 1)		Wave 3 (ref wave 1)	
	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI
-30 to -4	1.38	0.68, 2.78	1.13	0.74, 1.74	1.08	0.59, 1.96	2.13	1.22, 3.73	0.54	0.29, 1.01	0.62	0.31, 1.25
-3 to 0	28.68	15.50, 53.09	0.99	0.62, 1.57	1.14	0.64, 2.03	1.03	0.56, 1.90	0.14	0.08, 0.26	0.17	0.09, 0.34
1 to 7	7.91	4.03, 15.52	1.14	0.74, 1.76	1.44	0.78, 2.66	2.51	1.38, 4.58	0.17	0.09, 0.32	0.46	0.24, 0.87
8 to 14	20.42	11.72, 35.57	0.60	0.39, 0.91	1.49	0.93, 2.40	0.73	0.41, 1.29	0.29	0.17, 0.51	0.24	0.13, 0.46
15 to 30	6.98	4.11, 11.85	0.84	0.60, 1.18	1.49	1.02, 2.19	0.71	0.43, 1.16	0.48	0.28, 0.83	0.86	0.47, 1.56
31 to 60	3.18	1.81, 5.59	0.98	0.68, 1.41	1.15	0.73, 1.80	1.40	0.88, 2.25	0.48	0.27, 0.85	0.81	0.42, 1.56
61 to 90	2.19	1.09, 4.39	0.97	0.59, 1.61	0.83	0.45, 1.51	0.97	0.52, 1.81	0.55	0.27, 1.09	0.83	0.33, 2.07
91 to 180	0.78	0.44, 1.40	0.89	0.60, 1.31	1.23	0.74, 2.03	1.65	1.00, 2.73	1.20	0.66, 2.16	2.25	0.60, 8.39
LRT, df p-value	-		8.461, 8df 0.3898		52.26, 16df <0.0001				96.69, 16df <0.0001			

LRT: likelihood ratio test; df: degrees of freedom.

**Table 5.** Effect modification for pulmonary embolism following COVID-19 by sex; age (<50 years, 50 to <70 years, and 70+ years); and pandemic wave (wave 1: before Aug. 1, 2020; wave 2: between Aug. 1, 2020 but before Feb 1, 2021; wave 3: on or after Feb 1, 2021) in the SCCS.

Risk period	Baseline population (males under 50 in wave 1)		Sex (ref M)		Age 50 – 70 (ref < 50)		Age 70+ (ref <50)		Wave 2 (ref wave 1)		Wave 3 (ref wave 1)	
	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI
-30 to -4	0.90	0.39, 2.08	1.11	0.77, 1.59	3.32	1.50, 7.31	6.35	3.00, 13.45	0.59	0.34, 1.02	0.63	0.33, 1.21
-3 to 0	64.06	40.04, 102.48	0.66	0.50, 0.87	1.46	0.99, 2.17	1.44	0.98, 2.11	0.37	0.23, 0.59	0.58	0.34, 1.00
1 to 7	55.42	36.41, 84.35	0.64	0.50, 0.82	1.23	0.89, 1.70	1.18	0.85, 1.62	0.48	0.31, 0.76	0.89	0.53, 1.49
8 to 14	56.97	37.71, 86.09	0.52	0.41, 0.66	1.60	1.18, 2.16	0.92	0.68, 1.26	0.65	0.41, 1.02	1.36	0.81, 2.28
15 to 30	16.00	10.38, 24.66	0.56	0.44, 0.71	1.98	1.45, 2.72	1.16	0.84, 1.62	0.91	0.57, 1.47	1.77	1.03, 3.05
31 to 60	3.47	1.96, 6.13	0.55	0.39, 0.78	1.37	0.87, 2.15	1.50	0.95, 2.35	0.99	0.56, 1.77	2.07	1.06, 4.04
61 to 90	1.47	0.69, 3.15	0.62	0.39, 0.97	1.33	0.72, 2.46	1.60	0.88, 2.91	1.69	0.82, 3.47	2.66	1.04, 6.78
91 to 180	0.87	0.46, 1.63	0.90	0.60, 1.34	1.80	1.03, 3.14	1.56	0.89, 2.75	1.32	0.72, 2.45	4.40	1.16, 16.63
LRT, df p-value	-		48.38, 8df <0.0001		95.55, 16df <0.0001				79.79, 16df <0.0001			

LRT: likelihood ratio test; df: degrees of freedom.

**Table 6.** Effect modification for bleeding by sex; age (<50 years, 50 to <70 years, and 70+ years); and pandemic wave (wave 1: before Aug. 1, 2020; wave 2: between Aug. 1, 2020 but before Feb 1, 2021; wave 3: on or after Feb 1, 2021) in the SCCS.

Risk period	Baseline population (males under 50 in wave 1)		Sex (ref M)		Age 50 – 70 (ref < 50)		Age 70+ (ref <50)		Wave 2 (ref wave 1)		Wave 3 (ref wave 1)	
	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI	RI	95% CI
-30 to -4	1.57	1.17, 2.10	0.83	0.70, 0.99	1.27	1.00, 1.62	2.76	2.20, 3.46	0.60	0.47, 0.77	0.57	0.43, 0.76
-3 to 0	10.74	7.44, 15.51	0.50	0.39, 0.64	1.25	0.89, 1.76	2.21	1.60, 3.05	0.33	0.24, 0.44	0.32	0.23, 0.46
1 to 7	6.48	4.60, 9.13	0.52	0.42, 0.65	1.11	0.82, 1.50	2.10	1.58, 2.81	0.40	0.30, 0.54	0.46	0.33, 0.65
8 to 14	3.95	2.65, 5.89	0.63	0.49, 0.80	1.46	1.06, 2.01	1.75	1.25, 2.45	0.46	0.33, 0.66	0.67	0.46, 0.98
15 to 30	1.86	1.31, 2.66	0.92	0.74, 1.14	1.44	1.10, 1.88	2.07	1.56, 2.75	0.49	0.35, 0.67	0.85	0.60, 1.19
31 to 60	1.94	1.43, 2.62	0.80	0.66, 0.96	1.10	0.87, 1.38	1.51	1.19, 1.92	0.60	0.45, 0.80	0.72	0.52, 1.00
61 to 90	0.81	0.54, 1.21	1.12	0.88, 1.43	0.93	0.70, 1.23	1.21	0.90, 1.63	1.13	0.78, 1.63	1.07	0.67, 1.72
91 to 180	0.98	0.76, 1.27	0.98	0.83, 1.17	1.07	0.88, 1.32	1.20	0.96, 1.49	0.94	0.73, 1.21	0.77	0.38, 1.58
LRT, df p-value	-		74.01, 8df <0.0001		159.4, 16 df <0.0001				115.6, 16df <0.0001			

LRT: likelihood ratio test; df: degrees of freedom.

**Note on Tables 7 – 9.** The results in each table were obtained using a SCCS model with a common temporal effect

**Table 7.** Relative incidence of DVT stratified by COVID-19 disease severity using the SCCS method.

Risk period (days)	Mild		Hospitalized		Intensive care	
	n	RI (95% CI)	n	RI (95% CI)	n	RI (95% CI)
Control period	652	1.00 (ref)	157	1.00 (ref)	17	1.00 (ref)
-30 to -4	46	0.81 (0.60, 1.11)	48	3.18 (2.29, 4.42)	4	2.53 (0.85, 7.56)
-3 to 0	16	1.94 (1.17, 3.21)	58	26.27 (19.28, 35.79)	15	65.06 (32.32, 130.96)
1 to 7	9	0.64 (0.33, 1.24)	54	14.54 (10.59, 19.97)	34	85.91 (47.55, 155.22)
8 to 14	41	3.01 (2.17, 4.17)	50	14.73 (10.63, 20.43)	31	80.27 (43.95, 146.61)
15 to 30	105	3.59 (2.86, 4.50)	60	8.57 (6.30, 11.67)	17	20.88 (10.54, 41.31)
31 to 60	91	1.86 (1.46, 2.37)	40	3.36 (2.34, 4.81)	15	11.55 (5.70, 23.44)
61 to 90	48	1.12 (0.81, 1.53)	12	1.13 (0.62, 2.06)	10	8.69 (3.91, 19.30)
91 to 180	97	1.01 (0.78, 1.31)	27	0.98 (0.64, 1.50)	7	1.99 (0.81, 4.89)
1 to 30	155	2.71 (2.23, 3.30)	164	11.67 (9.27, 14.71)	82	51.79 (30.34, 88.43)



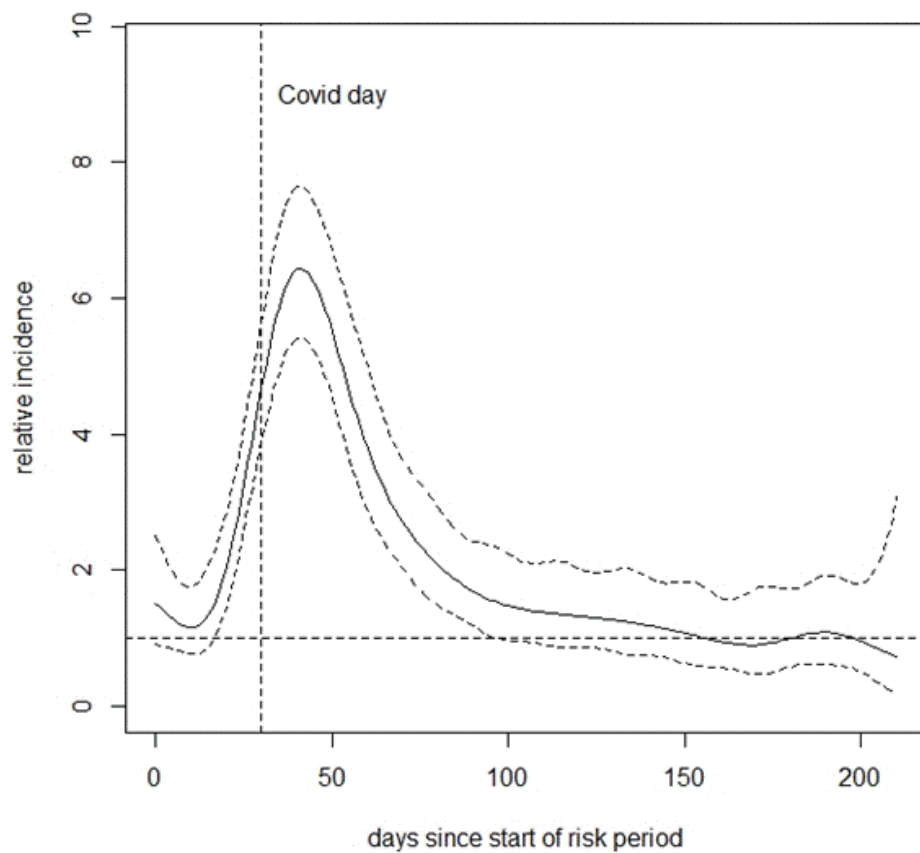
**Table 8.** Relative incidence of PE stratified by COVID-19 disease severity using the SCCS method.

Risk period (days)	Mild		Hospitalized		Intensive care	
	n	RI (95% CI)	n	RI (95% CI)	n	RI (95% CI)
Control period	412		168		23	
-30 to -4	37	0.90 (0.64, 1.27)	112	6.65 (5.20, 8.51)	8	3.50 (1.56, 7.84)
-3 to 0	19	3.05 (1.91, 4.87)	228	88.99 (72.17, 109.73)	89	254.81 (160.50, 404.54)
1 to 7	19	1.81 (1.14, 2.89)	346	79.62 (65.45, 96.85)	165	270.22 (173.89, 419.90)
8 to 14	51	5.11 (3.77, 6.92)	391	97.24 (80.09, 118.05)	199	329.88 (213.04, 510.80)
15 to 30	169	7.83 (6.40, 9.59)	313	36.48 (29.81, 44.66)	108	84.77 (53.70, 133.80)
31 to 60	62	1.70 (1.28, 2.27)	83	5.90 (4.47, 7.79)	45	24.51 (14.70, 40.86)
61 to 90	38	1.21 (0.85, 1.73)	41	3.31 (2.32, 4.74)	17	11.63 (6.14, 22.00)
91 to 180	81	1.21 (0.91, 1.61)	32	1.07 (0.71, 1.59)	11	2.99 (1.44, 6.22)
1 to 30	239	5.87 (4.88, 7.05)	1050	64.49 (53.91, 77.15)	472	196.98 (128.71, 301.46)

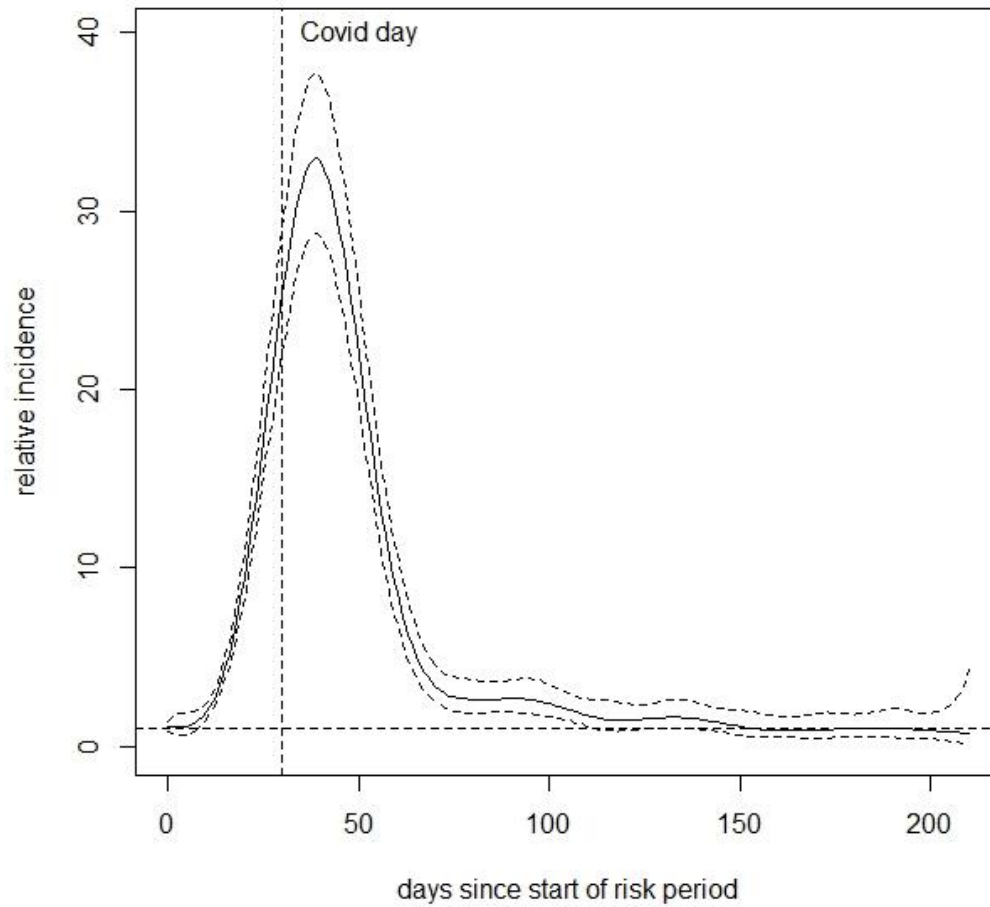
**Table 9.** Relative incidence of Bleeding stratified by COVID-19 disease severity using the SCCS method.

Risk period	Mild		Hospitalized		Intensive care	
	n	RI (95% CI)	n	RI (95% CI)	n	RI (95% CI)
Control period	3636	1.00 (ref)	788	1.00 (ref)	75	1.00 (ref)
-30 to -4	358	1.08 (0.96, 1.21)	258	3.23 (2.80, 3.73)	30	4.04 (2.64, 6.18)
-3 to 0	63	1.29 (1.00, 1.66)	199	16.90 (14.42, 19.82)	43	39.28 (26.92, 57.32)
1 to 7	66	0.78 (0.61, 1.00)	220	11.10 (9.52, 12.94)	71	38.47 (27.71, 53.43)
8 to 14	80	0.98 (0.78, 1.22)	134	7.58 (6.29, 9.13)	53	30.38 (21.27, 43.40)
15 to 30	203	1.14 (0.98, 1.32)	122	3.43 (2.82, 4.16)	53	14.67 (10.26, 20.97)
31 to 60	329	1.10 (0.98, 1.25)	142	2.38 (1.98, 2.86)	30	5.77 (3.75, 8.88)
61 to 90	238	0.93 (0.81, 1.07)	56	1.04 (0.79, 1.37)	12	2.56 (1.38, 4.75)
91 to 180	502	0.92 (0.82, 1.04)	145	1.12 (0.92, 1.35)	21	1.74 (1.06, 2.87)
1 to 30	349	1.02 (0.90, 1.14)	476	6.55 (5.82, 7.38)	177	24.78 (18.80, 32.66)

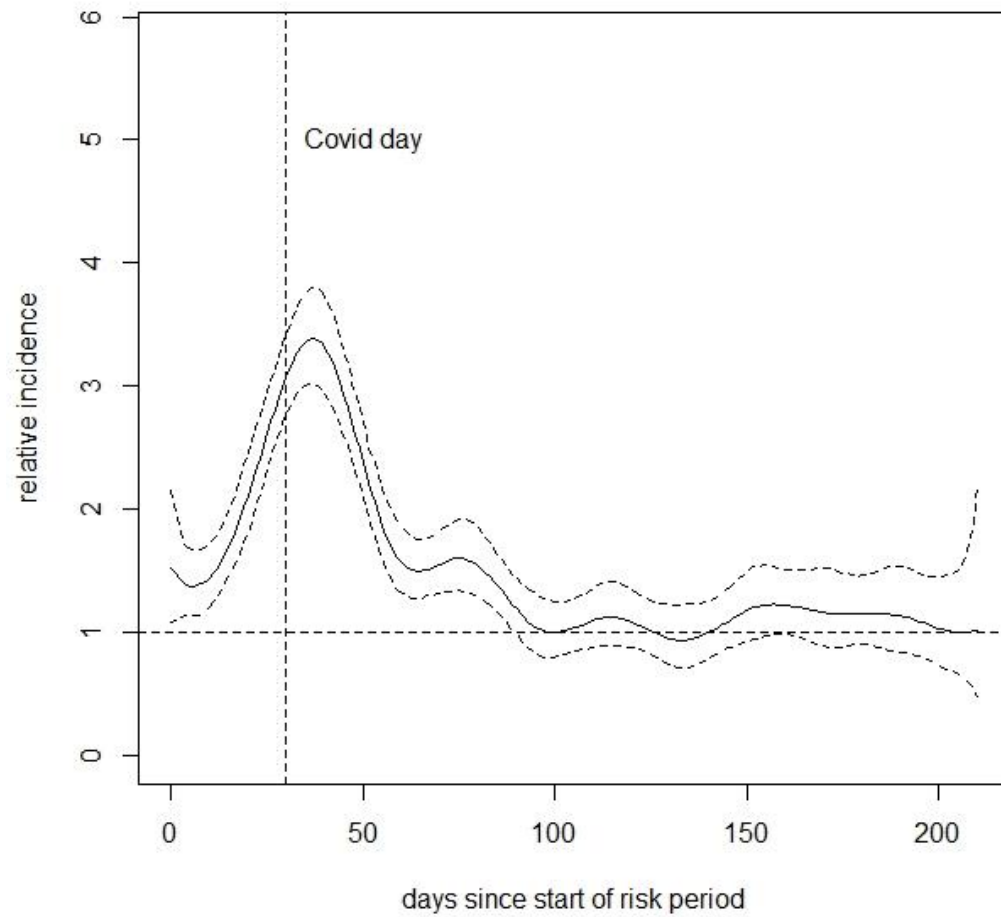
**Note on Supplementary Figures 1 – 3.** These figures were obtained using the SCCS spline model for exposures. The risk period begins 30 days before the Covid-19 date and ends 180 days after it.



**Supplementary Figure 1.** Relative incidence of DVT during the risk period Covid day – 30 to Covid day +180, with 95% confidence bands. The horizontal dashed line is at RI = 1, the vertical dashed line marks the Covid day.



**Supplementary Figure 2.** Relative incidence of PE during the risk period, Covid day – 30 to Covid day +180, with 95% confidence bands. The horizontal dashed line is at RI = 1, the vertical dashed line marks the Covid day.



**Supplementary Figure 3.** Relative incidence of Bleeding during the risk period, Covid day – 30 to Covid day +180, with 95% confidence bands. The horizontal dashed line is at RI = 1, the vertical dashed line marks the Covid day.

**Table 10.** Unadjusted and adjusted conditional Poisson regression models for deep venous thrombosis (DVT), pulmonary embolism (PE) and bleeding within 30 days following COVID-19 onset in the matched cohort study.

Outcome	Variables	Categories	No event (%)	Event (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>DVT</b>	COVID-19	Negative	3931211 (99.993)	267 (0.007)	1 (ref)		1 (ref)	
		Positive	1035519 (99.961)	401 (0.039)	5.63 (4.82-6.57)	0.0000	4.98 (4.96-5.01)	0.0000
	wCCI	Mean (SD)	0.72 (1.73)	1.70 (2.49)	1.13 (1.09-1.17)	0.0000	1.08 (1.08-1.08)	0.0000
	Cancer	No	4895045 (99.988)	592 (0.012)	1 (ref)		1 (ref)	
		Yes	71685 (99.894)	76 (0.106)	3.53 (2.54-4.91)	0.0000	4.80 (4.74-4.85)	0.0000
	Surgery	No	4946040 (99.989)	546 (0.011)	1 (ref)		1 (ref)	
		Yes	20690 (99.414)	122 (0.586)	37.19 (20.54-67.34)	0.0000	19.28 (18.95-19.62)	0.0000
	Anticoagulant	No	4937117 (99.987)	652 (0.013)	1 (ref)		-	
		Yes	29613 (99.946)	16 (0.054)	1.45 (0.8-2.63)	0.2199	-	-
	<b>PE</b>	COVID-19	Negative	3931307 (99.996)	171 (0.004)	1 (ref)		1 (ref)
Positive			1034159 (99.830)	1761 (0.170)	38.03 (32.5-44.5)	0.0000	33.05 (32.8-33.3)	0.0000
wCCI		Mean (SD)	0.72 (1.73)	1.55 (2.39)	1.08 (1.06-1.11)	0.0000	1.09 (1.09-1.1)	0.0000
Cancer		No	4893864 (99.964)	1773 (0.036)	1 (ref)		1 (ref)	
		Yes	71602 (99.778)	159 (0.222)	1.54 (1.26-1.88)	0.0000	2.31 (2.27-2.36)	0.0000
Surgery		No	4945110 (99.970)	1476 (0.030)	1 (ref)		1 (ref)	
		Yes	20356 (97.809)	456 (2.191)	57.06 (39.19-83.09)	0.0000	17.76 (17.31-18.22)	0.0000
Anticoagulant		No	4935869 (99.962)	1900 (0.038)	1 (ref)		1 (ref)	
		Yes	29597 (99.892)	32 (0.108)	0.57 (0.39-0.83)	0.0038	0.3 (0.29-0.31)	0.0000
<b>Bleeding</b>		COVID-19	Negative	3648254 (99.965)	1292 (0.035)	1 (ref)		1 (ref)
	Positive		992875 (99.899)	1002 (0.101)	2.67 (2.46-2.9)	0.0000	1.88 (1.71-2.07)	0.0000
	wCCI	Mean (SD)	0.66 (1.67)	1.73 (2.54)	1.15 (1.12-1.17)	0.0000	1.1 (1.08-1.13)	0.0000
	Cancer	No	4582941 (99.954)	2099 (0.046)	1 (ref)		1 (ref)	
		Yes	58188 (99.666)	195 (0.334)	2.12 (1.75-2.57)	0.0000	1.96 (1.56-2.46)	0.0000
	Surgery	No	4623806 (99.961)	1827 (0.039)	1 (ref)		1 (ref)	
		Yes	17323 (97.375)	467 (2.625)	34.3 (25.24-46.61)	0.0000	24.1 (17.59-33.03)	0.0000
	Anticoagulant	No	4615151 (99.953)	2160 (0.047)	1 (ref)		1 (ref)	
		Yes	25978 (99.487)	134 (0.513)	2.61 (2.06-3.3)	0.0000	2.37 (1.79-3.14)	0.0000

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous event were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.

**Table 11.** Unadjusted and adjusted conditional Poisson regression models for deep venous thrombosis (DVT), pulmonary embolism (PE) and bleeding within 30 days following COVID-19 onset in the matched cohort study stratified by COVID-19 severity.

Outcome	Variable	Category	Not event	Event	Multivariable RR (95%CI)	p-value
<b>DVT</b>	Severity	Uninfected	3931211 (99.993)	267 (0.007)	1 (ref)	
		Mild	982981 (99.984)	155 (0.016)	2.8 (2.26 - 3.47)	0.0000
		Hospitalized	45564 (99.644)	163 (0.356)	20.21 (13.07 - 31.25)	0.0000
		Intensive care	6974 (98.824)	83 (1.176)	30.58 (10.57 - 88.46)	0.0000
	wCCI	Mean (SD)	0.72 (1.73)	1.70 (2.49)	1.08 (1.03 - 1.14)	0.0017
	Cancer	No	4895045 (99.988)	592 (0.012)	1 (ref)	
		Yes	71685 (99.894)	76 (0.106)	4.81 (3.08 - 7.51)	0.0000
	Surgery	No	4946040 (99.989)	546 (0.011)	1 (ref)	
		Yes	20690 (99.414)	122 (0.586)	10.03 (4.92 - 20.45)	0.0000
	Anticoagulant	No	4937117 (99.987)	652 (0.013)	1 (ref)	
		Yes	29613 (99.946)	16 (0.054)	1.15 (0.46 - 2.87)	0.7676
	<b>PE</b>	Severity	Uninfected	3931307 (99.996)	171 (0.004)	1 (ref)
Mild			982897 (99.976)	239 (0.024)	6.77 (5.43 - 8.45)	0.0000
Hospitalized			44690 (97.732)	1037 (2.268)	139.16 (94.32 - 205.31)	0.0000
Intensive care			6572 (93.127)	485 (6.873)	289.38 (91.55 - 914.73)	0.0000
wCCI		Mean (SD)	0.72 (1.73)	1.55 (2.39)	1.1 (1.03 - 1.17)	0.0029
Cancer		No	4893864 (99.964)	1773 (0.036)	1 (ref)	
		Yes	71602 (99.778)	159 (0.222)	2.17 (1.34 - 3.51)	0.0016
Surgery		No	4945110 (99.970)	1476 (0.030)	1 (ref)	
		Yes	20356 (97.809)	456 (2.191)	11.99 (5.71 - 25.17)	0.0000
Anticoagulant		No	4935869 (99.962)	1900 (0.038)	1 (ref)	
		Yes	29597 (99.892)	32 (0.108)	0.22 (0.07 - 0.7)	0.0103
<b>Bleeding</b>		Severity	Uninfected	3648254 (99.965)	1292 (0.035)	1 (ref)
	Mild		947246 (99.963)	349 (0.037)	1.03 (0.91 - 1.17)	0.6433
	Hospitalized		39279 (98.825)	467 (1.175)	7.4 (6 - 9.12)	0.0000
	Intensive care		6350 (97.154)	186 (2.846)	22.68 (10.67 - 48.2)	0.0000
	wCCI	Mean (SD)	0.66 (1.67)	1.73 (2.54)	1.09 (1.06 - 1.12)	0.0000
	Cancer	No	4582941 (99.954)	2099 (0.046)	1 (ref)	
		Yes	58188 (99.666)	195 (0.334)	2.19 (1.72 - 2.79)	0.0000
	Surgery	No	4623806 (99.961)	1827 (0.039)	1 (ref)	
		Yes	17323 (97.375)	467 (2.625)	14.23 (10.17 - 19.91)	0.0000
	Anticoagulant	No	4615151 (99.953)	2160 (0.047)	1 (ref)	
		Yes	26405 (99.469)	141 (0.531)	2.33 (1.72 - 3.16)	0.0000

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous event were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.



**Table 12.** Unadjusted and adjusted conditional Poisson regression models for deep venous thrombosis (DVT) within 1 to 30 days following COVID-19 onset in the matched cohort study stratified by pandemic wave.

Waves	Variable	Categories	No DVT (%)	DVT (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value	
<b>Wave 1</b>	COVID-19	No	254734 (99.992)	20 (0.008)	1 (ref)		1 (ref)		
		Yes	73282 (99.842)	116 (0.158)	<b>20.5 (12.74-32.98)</b>	<b>0.0000</b>	<b>14.86 (8.54-25.86)</b>	<b>0.0000</b>	
	wCCI	Mean (SD)	1.02 (2.02)	1.39 (2.17)	1.03 (0.94-1.13)	0.5477	0.88 (0.74-1.03)	0.1132	
	Cancer	No	317527 (99.961)	125 (0.039)	1 (ref)		1 (ref)		
		Yes	10489 (99.895)	11 (0.105)	1.3 (0.63-2.68)	0.4733	2.53 (0.66-9.66)	0.1747	
	Surgery	No	324373 (99.972)	91 (0.028)	1 (ref)		1 (ref)		
		Yes	3643 (98.780)	45 (1.220)	-	0.9331	-	0.9437	
	Anticoagulant	No	321880 (99.958)	134 (0.042)	1 (ref)		1 (ref)		
		Yes	6136 (99.967)	2 (0.033)	0.77 (0.17-3.59)	0.7446	1.14 (0.13-10.24)	0.9054	
	<b>Wave 2</b>	COVID-19	No	1814741 (99.992)	141 (0.008)	1 (ref)		1 (ref)	
			Yes	490871 (99.970)	145 (0.030)	<b>3.8 (3.01-4.79)</b>	<b>0.0000</b>	<b>3.42 (2.63-4.46)</b>	<b>0.0000</b>
		wCCI	Mean (SD)	0.73 (1.75)	2.04 (2.81)	<b>1.15 (1.09-1.21)</b>	<b>0.0000</b>	<b>1.08 (1.02-1.16)</b>	<b>0.0153</b>
Cancer		No	2269063 (99.989)	239 (0.011)	1 (ref)		1 (ref)		
		Yes	36549 (99.872)	47 (0.128)	<b>6.2 (3.79-10.13)</b>	<b>0.0000</b>	<b>6.63 (3.72-11.82)</b>	<b>0.0000</b>	
Surgery		No	2297484 (99.989)	243 (0.011)	1 (ref)		1 (ref)		
		Yes	8128 (99.474)	43 (0.526)	<b>30.79 (12.18-77.86)</b>	<b>0.0000</b>	<b>15.82 (5.72-43.75)</b>	<b>0.0000</b>	
Anticoagulant		No	2289791 (99.988)	275 (0.012)	1 (ref)		1 (ref)		
		Yes	15821 (99.931)	11 (0.069)	1.73 (0.81-3.67)	0.1538	1.04 (0.35-3.04)	0.9477	
<b>Wave 3</b>		COVID-19	No	1861736 (99.994)	106 (0.006)	1 (ref)		1 (ref)	
			Yes	471366 (99.970)	140 (0.030)	<b>5.2 (4.04-6.7)</b>	<b>0.0000</b>	<b>5.15 (3.91-6.79)</b>	<b>0.0000</b>
		wCCI	Mean (SD)	0.66 (1.67)	1.49 (2.23)	<b>1.16 (1.08-1.23)</b>	<b>0.0000</b>	<b>1.12 (1.03-1.22)</b>	<b>0.0055</b>
	Cancer	No	2308455 (99.990)	228 (0.010)	1 (ref)		1 (ref)		
		Yes	24647 (99.927)	18 (0.073)	<b>3.1 (1.62-5.93)</b>	<b>0.0006</b>	<b>4.54 (1.98-10.41)</b>	<b>0.0004</b>	
	Surgery	No	2324183 (99.991)	212 (0.009)	1 (ref)		1 (ref)		
		Yes	8919 (99.620)	34 (0.380)	<b>19.18 (8.5-43.28)</b>	<b>0.0000</b>	<b>16.48 (6.74-40.29)</b>	<b>0.0000</b>	
	Anticoagulant	No	2325446 (99.990)	243 (0.010)	1 (ref)		1 (ref)		
		Yes	7656 (99.961)	3 (0.039)	1.5 (0.4-5.65)	0.5492	1.47 (0.28-7.74)	0.6479	

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous DVT were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.

**Table 13.** Unadjusted and adjusted conditional Poisson regression models for pulmonary embolism (PE) within 1 to 30 days following COVID-19 onset in the matched cohort study stratified by pandemic waves.

Waves	Variable	Categories	No PE (%)	PE (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value	
<b>Wave 1</b>	COVID-19	No	254736 (99.993)	18 (0.007)	1 (ref)		1 (ref)		
		Yes	73006 (99.466)	392 (0.534)	<b>75.87 (47.28-121.74)</b>	<b>0.0000</b>	<b>54.43 (32.06-92.4)</b>	<b>0.0000</b>	
	wCCI	Mean (SD)	1.01 (2.02)	1.66 (2.57)	<b>1.08 (1.03-1.14)</b>	<b>0.0014</b>	1.14 (0.99-1.32)	0.0714	
	Cancer	No	317274 (99.881)	378 (0.119)	1 (ref)		1 (ref)		
		Yes	10468 (99.695)	32 (0.305)	<b>1.62 (1.04-2.52)</b>	<b>0.0339</b>	1.8 (0.43-7.6)	0.4221	
	Surgery	No	324200 (99.919)	264 (0.081)	1 (ref)		1 (ref)		
		Yes	3542 (96.041)	146 (3.959)	<b>513.34 (71.81-3669.74)</b>	<b>0.0000</b>	<b>10.79 (1.4-82.94)</b>	<b>0.0222</b>	
	Anticoagulant	No	321612 (99.875)	402 (0.125)	1 (ref)		1 (ref)		
		Yes	6130 (99.870)	8 (0.130)	<b>0.64 (0.3-1.39)</b>	<b>0.2598</b>	0.16 (0.02-1.24)	0.0800	
	<b>Wave 2</b>	COVID-19	No	1814788 (99.995)	94 (0.005)	1 (ref)		1 (ref)	
			Yes	490260 (99.846)	756 (0.154)	<b>29.42 (23.73-36.46)</b>	<b>0.0000</b>	<b>25.27 (20.17-31.67)</b>	<b>0.0000</b>
		wCCI	Mean (SD)	0.73 (1.75)	1.73 (2.45)	<b>1.09 (1.05-1.12)</b>	<b>0.0000</b>	1.04 (0.97-1.12)	0.2752
Cancer		No	2268542 (99.967)	760 (0.033)	1 (ref)		1 (ref)		
		Yes	36506 (99.754)	90 (0.246)	<b>1.74 (1.32-2.28)</b>	<b>0.0001</b>	<b>2.41 (1.39-4.18)</b>	<b>0.0018</b>	
Surgery		No	2297040 (99.970)	687 (0.030)	1 (ref)		1 (ref)		
		Yes	8008 (98.005)	163 (1.995)	<b>72.21 (35.49-146.92)</b>	<b>0.0000</b>	<b>12.17 (4.57-32.38)</b>	<b>0.0000</b>	
Anticoagulant		No	2289235 (99.964)	831 (0.036)	1 (ref)		1 (ref)		
		Yes	15813 (99.880)	19 (0.120)	0.67 (0.41-1.11)	0.1173	0.59 (0.21-1.7)	0.3308	
<b>Wave 3</b>		COVID-19	No	1861783 (99.997)	59 (0.003)	1 (ref)		1 (ref)	
			Yes	470893 (99.870)	613 (0.130)	<b>40.19 (30.77-52.51)</b>	<b>0.0000</b>	<b>44.35 (32.09-61.29)</b>	<b>0.0000</b>
		wCCI	Mean (SD)	0.66 (1.67)	1.27 (2.18)	<b>1.07 (1.03-1.12)</b>	<b>0.0020</b>	<b>1.19 (1.08-1.32)</b>	<b>0.0009</b>
	Cancer	No	2308048 (99.972)	635 (0.028)	1 (ref)		1 (ref)		
		Yes	24628 (99.850)	37 (0.150)	1.18 (0.8-1.74)	0.3967	2.18 (0.96-4.96)	0.0643	
	Surgery	No	2323870 (99.977)	525 (0.023)	1 (ref)		1 (ref)		
		Yes	8806 (98.358)	147 (1.642)	<b>28.08 (17.59-44.82)</b>	<b>0.0000</b>	<b>26.96 (12.36-58.82)</b>	<b>0.0000</b>	
	Anticoagulant	No	2325022 (99.971)	667 (0.029)	1 (ref)		1 (ref)		
		Yes	7654 (99.935)	5 (0.065)	<b>0.33 (0.13-0.83)</b>	<b>0.0180</b>	<b>0.03 (0-0.39)</b>	<b>0.0068</b>	

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous PE were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.

**Table 14.** Unadjusted and adjusted conditional Poisson regression models for bleeding within 1 to 30 days following COVID-19 onset in the matched cohort study stratified by pandemic waves.

Waves	Variable	Categories	No bleeding (%)	Bleeding (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>Wave 1</b>	COVID-19	No	222649 (99.953)	105 (0.047)	1 (ref)		1 (ref)	
		Yes	67347 (99.645)	240 (0.355)	<b>7.5 (5.95-9.44)</b>	<b>0.0000</b>	<b>3.65 (2.76-4.83)</b>	<b>0.0000</b>
	wCCI	Mean (SD)	0.88 (1.89)	1.96 (2.65)	<b>1.15 (1.09-1.22)</b>	<b>0.0000</b>	<b>1.12 (1.05-1.21)</b>	<b>0.0015</b>
	Cancer	No	282462 (99.891)	308 (0.109)	1 (ref)		1 (ref)	
		Yes	7534 (99.511)	37 (0.489)	<b>2.38 (1.52-3.73)</b>	<b>0.0002</b>	<b>2.43 (1.33-4.46)</b>	<b>0.0041</b>
	Surgery	No	287014 (99.923)	220 (0.077)	1 (ref)		1 (ref)	
		Yes	2982 (95.977)	125 (4.023)	<b>104.01 (38.41-281.68)</b>	<b>0.0000</b>	<b>28.67 (10.17-80.87)</b>	<b>0.0000</b>
	Anticoagulant		285464 (99.889)	316 (0.111)	1 (ref)		1 (ref)	
			4532 (99.364)	29 (0.636)	<b>2.54 (1.54-4.21)</b>	<b>0.0003</b>	<b>2.62 (1.4-4.93)</b>	<b>0.0028</b>
	<b>Wave 2</b>	COVID-19	No	1677052 (99.959)	684 (0.041)	1 (ref)		1 (ref)
Yes			469622 (99.913)	409 (0.087)	<b>2.02 (1.78-2.28)</b>	<b>0.0000</b>	<b>1.44 (1.25-1.66)</b>	<b>0.0000</b>
wCCI		Mean (SD)	0.68 (1.68)	1.83 (2.57)	<b>1.14 (1.11-1.18)</b>	<b>0.0000</b>	<b>1.1 (1.06-1.14)</b>	<b>0.0000</b>
Cancer		No	2117120 (99.954)	980 (0.046)	1 (ref)		1 (ref)	
		Yes	29554 (99.619)	113 (0.381)	<b>2.4 (1.86-3.11)</b>	<b>0.0000</b>	<b>2.22 (1.65-2.98)</b>	<b>0.0000</b>
Surgery		No	2140065 (99.958)	897 (0.042)	1 (ref)		1 (ref)	
		Yes	6609 (97.120)	196 (2.880)	<b>25.06 (16.5-38.07)</b>	<b>0.0000</b>	<b>20.55 (13.37-31.58)</b>	<b>0.0000</b>
Anticoagulant			2132985 (99.952)	1026 (0.048)	1 (ref)		1 (ref)	
			13689 (99.513)	67 (0.487)	<b>2.44 (1.76-3.39)</b>	<b>0.0000</b>	<b>2.13 (1.45-3.14)</b>	<b>0.0001</b>
<b>Wave 3</b>		COVID-19	No	1748553 (99.971)	503 (0.029)	1 (ref)		1 (ref)
	Yes		455906 (99.923)	353 (0.077)	<b>2.53 (2.21-2.9)</b>	<b>0.0000</b>	<b>2.09 (1.79-2.44)</b>	<b>0.0000</b>
	wCCI	Mean (SD)	0.62 (1.62)	1.50 (2.45)	<b>1.14 (1.1-1.18)</b>	<b>0.0000</b>	<b>1.12 (1.07-1.16)</b>	<b>0.0000</b>
	Cancer	No	2183359 (99.963)	811 (0.037)	1 (ref)		1 (ref)	
		Yes	21100 (99.787)	45 (0.213)	<b>1.54 (1.07-2.23)</b>	<b>0.0217</b>	1.26 (0.8-2)	0.3184
	Surgery	No	2196727 (99.968)	710 (0.032)	1 (ref)		1 (ref)	
		Yes	7732 (98.147)	146 (1.853)	<b>31.3 (18.66-52.51)</b>	<b>0.0000</b>	<b>24.13 (14.2-40.99)</b>	<b>0.0000</b>
	Anticoagulant		2196702 (99.963)	818 (0.037)	1 (ref)		1 (ref)	
			7757 (99.513)	38 (0.487)	<b>3.02 (1.93-4.72)</b>	<b>0.0000</b>	<b>3.00 (1.74-5.19)</b>	<b>0.0001</b>

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous bleeding event were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.

**Table 15.** Unadjusted and adjusted conditional Poisson regression models for first and recurrent deep venous thrombosis (DVT) from 1 to 30 days following COVID-19 onset in the matched cohort study.

<b>Variable</b>	<b>Categories</b>	<b>No DVT (%)</b>	<b>DVT (%)</b>	<b>Univariable RR (95% CI)</b>	<b>p-value</b>	<b>Multivariable RR (95% CI)</b>	<b>p-value</b>
<b>COVID-19</b>	No	4075763 (99.986)	579 (0.014)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	1056580 (99.944)	594 (0.056)	<b>3.98 (3.55-4.47)</b>	<b>0.0000</b>	<b>4.5 (3.84-5.29)</b>	<b>0.0000</b>
<b>Previous VTE</b>	No	5048915 (99.986)	718 (0.014)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	83428 (99.458)	455 (0.542)	<b>21.09 (16.54-26.88)</b>	<b>0.0000</b>	<b>27.53 (20.48-37.01)</b>	<b>0.0000</b>
<b>wCCI</b>	Mean (SD)	0.75 (1.77)	1.99 (2.73)	<b>1.17 (1.14-1.21)</b>	<b>0.0000</b>	<b>1.1 (1.05-1.14)</b>	<b>0.0000</b>
<b>Cancer</b>	No	5049565 (99.980)	1024 (0.020)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	82778 (99.820)	149 (0.180)	<b>3.67 (2.89-4.66)</b>	<b>0.0000</b>	<b>3.06 (2.11-4.42)</b>	<b>0.0000</b>
<b>Surgery</b>	No	5109505 (99.980)	1004 (0.020)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	549 (76.462)	169 (23.538)	<b>325.11 (80.64-1310.72)</b>	<b>0.0000</b>	<b>234.18 (53.86-1018.18)</b>	<b>0.0000</b>
<b>Anticoagulant</b>	No	5089455 (99.979)	1065 (0.021)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	42888 (99.749)	108 (0.251)	<b>4.46 (3.35-5.95)</b>	<b>0.0000</b>	1.45 (0.87-2.41)	0.1539

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population. Day 0 is excluded from the study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.

**Table 16.** Unadjusted and adjusted conditional Poisson regression models for first and recurrent pulmonary embolism (PE) from 1 to 30 days following COVID-19 onset in the matched cohort study.

Variable	Categories	No PE (%)	PE (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>COVID-19</b>	No	4075898 (99.989)	444 (0.011)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	1054948 (99.789)	2226 (0.211)	<b>19.39 (17.51-21.47)</b>	<b>0.0000</b>	<b>34.68 (30.05-40.02)</b>	<b>0.0000</b>
<b>Previous VTE</b>	No	5047544 (99.959)	2089 (0.041)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	83302 (99.307)	581 (0.693)	<b>6.32 (5.5-7.26)</b>	<b>0.0000</b>	<b>22.66 (18.17-28.26)</b>	<b>0.0000</b>
<b>wCCI</b>	Mean (SD)	0.75 (1.77)	1.76 (2.55)	<b>1.09 (1.07-1.11)</b>	<b>0.0000</b>	1.03 (1-1.07)	0.0753
<b>Cancer</b>	No	5048182 (99.952)	2407 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	82664 (99.683)	263 (0.317)	<b>1.68 (1.44-1.97)</b>	<b>0.0000</b>	<b>1.95 (1.47-2.59)</b>	<b>0.0000</b>
<b>Surgery</b>	No	5108416 (99.959)	2093 (0.041)	1 (ref)		-	
	Yes	141 (19.638)	577 (80.362)	NA	0.6390	-	-
<b>Anticoagulant</b>	No	5087988 (99.950)	2532 (0.050)	1 (ref)		1 (ref)	
	Yes	42858 (99.679)	138 (0.321)	<b>1.56 (1.27-1.91)</b>	<b>0.0000</b>	1.12 (0.81-1.55)	0.5058

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population. Day 0 is excluded from the study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.

**Table 17.** Unadjusted and adjusted conditional Poisson regression models for first and recurrent bleeding events from 1 to 90 days following COVID-19 onset in the matched cohort study.

<b>Variable</b>	<b>Categories</b>	<b>No bleeding (%)</b>	<b>Bleeding (%)</b>	<b>Univariable RR (95%CI)</b>	<b>p-value</b>	<b>Multivariable RR (95%CI)</b>	<b>p-value</b>
<b>COVID-19</b>	No	4073972 (99.942)	2370 (0.058)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	1055497 (99.841)	1677 (0.159)	<b>2.74 (2.57-2.92)</b>	<b>0.0000</b>	<b>1.9 (1.76-2.05)</b>	<b>0.0000</b>
<b>Previous bleeding</b>	No	4869147 (99.948)	2547 (0.052)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	260322 (99.427)	1500 (0.573)	<b>4.68 (4.29-5.1)</b>	<b>0.0000</b>	<b>4.24 (3.84-4.69)</b>	<b>0.0000</b>
<b>wCCI</b>	Mean (SD)	0.75 (1.77)	2.27 (2.86)	<b>1.16 (1.14-1.17)</b>	<b>0.0000</b>	<b>1.07 (1.05-1.08)</b>	<b>0.0000</b>
<b>Cancer</b>	No	5046985 (99.929)	3604 (0.071)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	82484 (99.466)	443 (0.534)	<b>2.05 (1.81-2.32)</b>	<b>0.0000</b>	<b>1.74 (1.48-2.04)</b>	<b>0.0000</b>
<b>Surgery</b>	No	5107362 (99.937)	3197 (0.063)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	22107 (96.297)	850 (3.703)	<b>23.93 (19.96-28.68)</b>	<b>0.0000</b>	<b>16.08 (13.23-19.55)</b>	<b>0.0000</b>
<b>Anticoagulant</b>	No	5086803 (99.927)	3717 (0.073)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	42666 (99.232)	330 (0.768)	<b>2.29 (1.98-2.65)</b>	<b>0.0000</b>	<b>1.5 (1.25-1.8)</b>	<b>0.0000</b>

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population. Day 0 is excluded from the study period due to risk of selection bias. RR=relative risk. CI= Confidence interval. wCCI=weighted Charlson Comorbidity Index.

**Table 18.** Unadjusted and adjusted conditional Poisson regression models for deep vein thrombosis within 1 to 30 days following COVID-19 onset in the matched cohort study with individual comorbidity groupings displayed from the Charlson Comorbidity Index.

Variable	Categories	Not DVT (%)	DVT (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>COVID19</b>	No	3931211 (99.993)	267 (0.007)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	1035519 (99.961)	401 (0.039)	<b>5.63 (4.82-6.57)</b>	<b>0.0000</b>	<b>5.09 (5.06-5.11)</b>	<b>0.0000</b>
<b>Surgery</b>	No	4946040 (99.989)	546 (0.011)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	20690 (99.414)	122 (0.586)	<b>37.19 (20.54-67.34)</b>	<b>0.0000</b>	<b>17.04 (16.75-17.33)</b>	<b>0.0000</b>
<b>Anticoagulant</b>	No	4937117 (99.987)	652 (0.013)	1 (ref)		-	
	Yes	29613 (99.946)	16 (0.054)	1.45 (0.8-2.63)	0.2199	-	-
<b>Myocardial infarction</b>	No	4901902 (99.987)	636 (0.013)	1 (ref)		-	
	Yes	64828 (99.951)	32 (0.049)	1.35 (0.88-2.07)	0.1721	-	-
<b>Congestive heart failure</b>	No	4909897 (99.987)	637 (0.013)	1 (ref)		-	
	Yes	56833 (99.945)	31 (0.055)	1.55 (1-2.4)	0.0522	-	-
<b>Peripheral vascular disease</b>	No	4934814 (99.987)	652 (0.013)	1 (ref)		-	
	Yes	31916 (99.950)	16 (0.050)	1.44 (0.81-2.59)	0.2164	-	-
<b>Cerebrovascular disease</b>	No	4868189 (99.987)	628 (0.013)	1 (ref)		-	
	Yes	98541 (99.959)	40 (0.041)	1.22 (0.84-1.78)	0.3033	-	-
<b>Chronic obstructive pulmonary disease</b>	No	4931729 (99.987)	647 (0.013)	1 (ref)		-	
	Yes	35001 (99.940)	21 (0.060)	1.42 (0.85-2.38)	0.1800	-	-
<b>Chronic other pulmonary disease</b>	No	4642266 (99.987)	610 (0.013)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	324464 (99.982)	58 (0.018)	<b>1.91 (1.38-2.65)</b>	<b>0.0001</b>	<b>1.54 (1.53-1.56)</b>	<b>0.0000</b>
<b>Rheumatic disease</b>	No	4837821 (99.987)	619 (0.013)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	128909 (99.962)	49 (0.038)	<b>1.59 (1.13-2.25)</b>	<b>0.0075</b>	<b>1.69 (1.67-1.71)</b>	<b>0.0000</b>
<b>Dementia</b>	No	4945034 (99.987)	656 (0.013)	1 (ref)		-	
	Yes	21696 (99.945)	12 (0.055)	1.02 (0.52-1.99)	0.9588	-	-
<b>Hemiplegia</b>	No	4940863 (99.987)	658 (0.013)	1 (ref)		-	
	Yes	25867 (99.961)	10 (0.039)	1.78 (0.83-3.79)	0.1366	-	-
<b>Diabetes without chronic complication</b>	No	4962235 (99.987)	664 (0.013)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	4495 (99.911)	4 (0.089)	<b>13.44 (1.49-121.57)</b>	<b>0.0207</b>	<b>31.8 (29.34-34.47)</b>	<b>0.0000</b>
<b>Diabetes with chronic complication</b>	No	4914946 (99.987)	640 (0.013)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	51784 (99.946)	28 (0.054)	<b>2.08 (1.29-3.36)</b>	<b>0.0026</b>	<b>0.97 (0.95-0.98)</b>	<b>0.0004</b>

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**Table 18 (contd).** Unadjusted and adjusted conditional Poisson regression models for deep vein thrombosis within 1 to 30 days following COVID-19 onset in the matched cohort study with individual comorbidity groupings displayed from the Charlson Comorbidity Index.

Variable (contd)	Categories	Not DVT (%)	DVT (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>Renal disease</b>	No	4927757 (99.987)	640 (0.013)	1 (ref)		1 (ref)	
	Yes	38973 (99.928)	28 (0.072)	<b>3.42 (2.01-5.8)</b>	<b>0.0000</b>	<b>2.76 (2.7-2.81)</b>	<b>0.0000</b>
<b>Mild liver disease</b>	No	4929597 (99.987)	648 (0.013)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	37133 (99.946)	20 (0.054)	<b>3.22 (1.75-5.93)</b>	<b>0.0002</b>	<b>4.48 (4.39-4.57)</b>	<b>0.0000</b>
<b>Liver special</b>	No	4964444 (99.987)	665 (0.013)	1 (ref)		-	
	Yes	2286 (99.869)	3 (0.131)	2.88 (0.64-12.88)	0.1669	-	-
<b>Severe liver disease</b>	No	4963302 (99.987)	662 (0.013)	1 (ref)		-	
	Yes	3428 (99.825)	6 (0.175)	2.85 (0.99-8.26)	0.0532	-	-
<b>Peptic ulcer disease</b>	No	4927557 (99.987)	659 (0.013)	1 (ref)		-	
	Yes	39173 (99.977)	9 (0.023)	0.63 (0.31-1.27)	0.1953	-	-
<b>Malignancy</b>	No	4661670 (99.988)	554 (0.012)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	305060 (99.963)	114 (0.037)	<b>1.32 (1.03-1.68)</b>	<b>0.0265</b>	<b>2.09 (2.08-2.11)</b>	<b>0.0000</b>
<b>Metastatic solid tumor</b>	No	4941597 (99.987)	632 (0.013)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	25133 (99.857)	36 (0.143)	<b>4.7 (2.86-7.71)</b>	<b>0.0000</b>	<b>7.28 (7.16-7.4)</b>	<b>0.0000</b>
<b>Aids</b>	No	4682170 (99.987)	626 (0.013)	1 (ref)		-	
	Yes	284560 (99.985)	42 (0.015)	1.09 (0.76-1.56)	0.6289	-	-

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous event were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval.



**Table 19.** Unadjusted and adjusted conditional Poisson regression models for pulmonary embolism within 1 to 30 days following COVID-19 onset in the matched cohort study with individual comorbidity groupings displayed from the Charlson Comorbidity Index.

Variable	Categories	Not PE (%)	PE (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>COVID19</b>	No	3931307 (99.996)	171 (0.004)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	1034159 (99.830)	1761 (0.170)	<b>38.03 (32.5-44.5)</b>	<b>0.0000</b>	<b>32.99 (32.73-33.26)</b>	<b>0.0000</b>
<b>Surgery</b>	No	4945110 (99.970)	1476 (0.030)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	20356 (97.809)	456 (2.191)	<b>57.06 (39.19-83.09)</b>	<b>0.0000</b>	<b>20.09 (19.52-20.68)</b>	<b>0.0000</b>
<b>Anticoagulant</b>	No	4935869 (99.962)	1900 (0.038)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	29597 (99.892)	32 (0.108)	<b>0.57 (0.39-0.83)</b>	<b>0.0038</b>	<b>0.31 (0.3-0.33)</b>	<b>0.0000</b>
<b>Myocardial infarction</b>	No	4900717 (99.963)	1821 (0.037)	1 (ref)		-	
	Yes	64749 (99.829)	111 (0.171)	1.04 (0.84-1.3)	0.7061	-	-
<b>Congestive heart failure</b>	No	4908695 (99.963)	1839 (0.037)	1 (ref)		-	
	Yes	56771 (99.836)	93 (0.164)	1.09 (0.85-1.4)	0.4776	-	-
<b>Peripheral vascular disease</b>	No	4933598 (99.962)	1868 (0.038)	1 (ref)		-	
	Yes	31868 (99.800)	64 (0.200)	1.32 (0.98-1.78)	0.0637	-	-
<b>Cerebrovascular disease</b>	No	4867067 (99.964)	1750 (0.036)	1 (ref)		1 (ref)	
	Yes	98399 (99.815)	182 (0.185)	<b>1.38 (1.15-1.67)</b>	<b>0.0006</b>	<b>0.9 (0.88-0.92)</b>	<b>0.0000</b>
<b>Chronic obstructive pulmonary disease</b>	No	4930535 (99.963)	1841 (0.037)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	34931 (99.740)	91 (0.260)	<b>1.79 (1.38-2.33)</b>	<b>0.0000</b>	<b>1.28 (1.25-1.32)</b>	<b>0.0000</b>
<b>Chronic other pulmonary disease</b>	No	4641103 (99.962)	1773 (0.038)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	324363 (99.951)	159 (0.049)	<b>1.82 (1.49-2.21)</b>	<b>0.0000</b>	<b>1.27 (1.24-1.3)</b>	<b>0.0000</b>
<b>Rheumatic disease</b>	No	4836626 (99.963)	1814 (0.037)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	128840 (99.908)	118 (0.092)	<b>1.39 (1.11-1.73)</b>	<b>0.0034</b>	<b>1.57 (1.53-1.61)</b>	<b>0.0000</b>
<b>Dementia</b>	No	4943815 (99.962)	1875 (0.038)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	21651 (99.737)	57 (0.263)	<b>1.54 (1.11-2.14)</b>	<b>0.0099</b>	<b>0.77 (0.74-0.79)</b>	<b>0.0000</b>
<b>Hemiplegia</b>	No	4939617 (99.961)	1904 (0.039)	1 (ref)		-	
	Yes	25849 (99.892)	28 (0.108)	1.37 (0.88-2.13)	0.1627	-	-
<b>Diabetes without chronic complication</b>	No	4960973 (99.961)	1926 (0.039)	1 (ref)		-	
	Yes	4493 (99.867)	6 (0.133)	2.88 (1-8.3)	0.0506	-	-
<b>Diabetes with chronic complication</b>	No	4913735 (99.962)	1851 (0.038)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	51731 (99.844)	81 (0.156)	<b>1.72 (1.31-2.26)</b>	<b>0.0001</b>	<b>1.68 (1.62-1.73)</b>	<b>0.0000</b>

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**Table 19 (continued).** Unadjusted and adjusted conditional Poisson regression models for pulmonary embolism within 1 to 30 days following COVID-19 onset in the matched cohort study with individual comorbidity groupings displayed from the Charlson Comorbidity Index.

Variable (continued)	Categories	Not PE (%)	PE (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>Renal disease</b>	No	4926530 (99.962)	1867 (0.038)	<b>1 (ref)</b>		1 (ref)	
	Yes	38936 (99.833)	65 (0.167)	<b>1.8 (1.33-2.44)</b>	<b>0.0001</b>	1.02 (0.99-1.06)	0.1688
<b>Mild liver disease</b>	No	4928333 (99.961)	1912 (0.039)	1 (ref)		-	
	Yes	37133 (99.946)	20 (0.054)	0.99 (0.6-1.62)	0.953	-	-
<b>Liver special</b>	No	4963182 (99.961)	1927 (0.039)	1 (ref)		-	
	Yes	2284 (99.782)	5 (0.218)	2.56 (0.81-8.13)	0.1096	-	-
<b>Severe liver disease</b>	No	4962037 (99.961)	1927 (0.039)	1 (ref)		-	
	Yes	3429 (99.854)	5 (0.146)	1.1 (0.4-2.98)	0.8548	-	-
<b>Peptic ulcer disease</b>	No	4926336 (99.962)	1880 (0.038)	1 (ref)		-	
	Yes	39130 (99.867)	52 (0.133)	1.31 (0.95-1.81)	0.1025	-	-
<b>Malignancy</b>	No	4660610 (99.965)	1614 (0.035)	1 (ref)		-	
	Yes	304856 (99.896)	318 (0.104)	1.02 (0.89-1.18)	0.7456	-	-
<b>Metastatic solid tumor</b>	No	4940351 (99.962)	1878 (0.038)	1 (ref)		1 (ref)	
	Yes	25115 (99.785)	54 (0.215)	<b>2.05 (1.46-2.87)</b>	<b>0.0000</b>	<b>5.6 (5.43-5.78)</b>	<b>0.0000</b>
<b>Aids</b>	No	4680985 (99.961)	1811 (0.039)	1 (ref)		-	
	Yes	284481 (99.957)	121 (0.043)	1.22 (0.98-1.51)	0.0759	-	-

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous event were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval.

**Table 20.** Unadjusted and adjusted conditional Poisson regression models for bleeding within 1 to 30 days following COVID-19 onset in the matched cohort study with individual comorbidity groupings displayed from the Charlson Comorbidity Index.

Variable	Categories	Not bleeding (%)	Bleeding (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>COVID19</b>	No	3648254 (99.965)	1292 (0.035)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	992875 (99.899)	1002 (0.101)	<b>2.67 (2.46-2.9)</b>	<b>0.0000</b>	<b>1.85 (1.84-1.86)</b>	<b>0.0000</b>
<b>Surgery</b>	No	4623806 (99.961)	1827 (0.039)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	17323 (97.375)	467 (2.625)	<b>34.3 (25.24-46.61)</b>	<b>0.0000</b>	<b>23.8 (23.41-24.19)</b>	<b>0.0000</b>
<b>Anticoagulant</b>	No	4615151 (99.953)	2160 (0.047)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	25978 (99.487)	134 (0.513)	<b>2.61 (2.06-3.3)</b>	<b>0.0000</b>	<b>2.23 (2.19-2.26)</b>	<b>0.0000</b>
<b>Myocardial infarction</b>	No	4592004 (99.954)	2116 (0.046)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	49125 (99.639)	178 (0.361)	<b>1.96 (1.61-2.4)</b>	<b>0.0000</b>	<b>1.41 (1.39-1.43)</b>	<b>0.0000</b>
<b>Congestive heart failure</b>	No	4599218 (99.954)	2117 (0.046)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	41911 (99.579)	177 (0.421)	<b>2.37 (1.92-2.93)</b>	<b>0.0000</b>	<b>1.41 (1.39-1.43)</b>	<b>0.0000</b>
<b>Peripheral vascular disease</b>	No	4616835 (99.952)	2208 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	24294 (99.647)	86 (0.353)	<b>1.87 (1.42-2.47)</b>	<b>0.0000</b>	<b>1.39 (1.36-1.41)</b>	<b>0.0000</b>
<b>Cerebrovascular disease</b>	No	4575816 (99.954)	2085 (0.046)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	65313 (99.681)	209 (0.319)	<b>1.65 (1.37-1.99)</b>	<b>0.0000</b>	<b>1.1 (1.09-1.12)</b>	<b>0.0000</b>
<b>Chronic obstructive pulmonary disease</b>	No	4614251 (99.953)	2185 (0.047)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	26878 (99.596)	109 (0.404)	<b>2.27 (1.76-2.93)</b>	<b>0.0000</b>	<b>1.5 (1.48-1.53)</b>	<b>0.0000</b>
<b>Chronic other pulmonary disease</b>	No	4341244 (99.952)	2075 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	299885 (99.927)	219 (0.073)	<b>2.14 (1.8-2.56)</b>	<b>0.0000</b>	<b>1.72 (1.7-1.73)</b>	<b>0.0000</b>
<b>Rheumatic disease</b>	No	4528154 (99.952)	2153 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	112975 (99.875)	141 (0.125)	<b>1.39 (1.13-1.7)</b>	<b>0.0015</b>	<b>1.16 (1.14-1.17)</b>	<b>0.0000</b>
<b>Dementia</b>	No	4625008 (99.951)	2248 (0.049)	<b>1 (ref)</b>		-	
	Yes	16121 (99.715)	46 (0.285)	1.1 (0.77-1.55)	0.6055	-	-
<b>Hemiplegia</b>	No	4621167 (99.951)	2250 (0.049)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	19962 (99.780)	44 (0.220)	<b>2.25 (1.53-3.33)</b>	<b>0.0000</b>	<b>1.41 (1.37-1.44)</b>	<b>0.0000</b>
<b>Diabetes without chronic complication</b>	No	4637072 (99.951)	2288 (0.049)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	4057 (99.852)	6 (0.148)	<b>3.11 (1.04-9.3)</b>	<b>0.0425</b>	<b>1.96 (1.82-2.11)</b>	<b>0.0000</b>
<b>Diabetes with chronic complication</b>	No	4597917 (99.952)	2196 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	43212 (99.774)	98 (0.226)	<b>1.93 (1.49-2.5)</b>	<b>0.0000</b>	<b>1.03 (1.02-1.05)</b>	<b>0.0001</b>

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**Table 20 (continued).** Unadjusted and adjusted conditional Poisson regression models for bleeding within 1 to 30 days following COVID-19 onset in the matched cohort study with individual comorbidity groupings displayed from the Charlson Comorbidity Index.

Variable (continued)	Categories	Not bleeding (%)	Bleeding (%)	Univariable RR (95%CI)	p-value	Multivariable RR (95%CI)	p-value
<b>Renal disease</b>	No	4611811 (99.953)	2188 (0.047)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	29318 (99.640)	106 (0.360)	<b>2.46 (1.89-3.21)</b>	<b>0.0000</b>	<b>1.37 (1.34-1.39)</b>	<b>0.0000</b>
<b>Mild liver disease</b>	No	4608267 (99.952)	2234 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	32862 (99.818)	60 (0.182)	<b>3.38 (2.36-4.83)</b>	<b>0.0000</b>	<b>2.89 (2.83-2.95)</b>	<b>0.0000</b>
<b>Liver special</b>	No	4638196 (99.951)	2282 (0.049)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	2933 (99.593)	12 (0.407)	<b>2.97 (1.37-6.45)</b>	<b>0.0059</b>	<b>0.66 (0.62-0.7)</b>	<b>0.0000</b>
<b>Severe liver disease</b>	No	4638800 (99.951)	2283 (0.049)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	2329 (99.530)	11 (0.470)	<b>4.12 (1.7-10)</b>	<b>0.0018</b>	<b>2.64 (2.46-2.82)</b>	<b>0.0000</b>
<b>Peptic ulcer disease</b>	No	4615120 (99.952)	2239 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	26009 (99.789)	55 (0.211)	<b>2.11 (1.49-2.99)</b>	<b>0.0000</b>	<b>1.55 (1.51-1.58)</b>	<b>0.0000</b>
<b>Malignancy</b>	No	4384652 (99.957)	1880 (0.043)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	256477 (99.839)	414 (0.161)	<b>1.39 (1.22-1.59)</b>	<b>0.0000</b>	<b>1.48 (1.47-1.49)</b>	<b>0.0000</b>
<b>Metastatic solid tumor</b>	No	4619687 (99.951)	2244 (0.049)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	21442 (99.767)	50 (0.233)	<b>1.84 (1.29-2.62)</b>	<b>0.0007</b>	<b>1.92 (1.88-1.96)</b>	<b>0.0000</b>
<b>Aids</b>	No	4383580 (99.952)	2123 (0.048)	<b>1 (ref)</b>		<b>1 (ref)</b>	
	Yes	257549 (99.934)	171 (0.066)	<b>1.52 (1.26-1.84)</b>	<b>0.0000</b>	<b>1.33 (1.32-1.35)</b>	<b>0.0000</b>

Data are n (%) or mean (SD) except where otherwise stated. Percentages are calculated as a proportion of the included study population; individuals with a previous event were excluded from the study. Day 0 is excluded from the first study period due to risk of selection bias. RR=relative risk. CI= Confidence interval.