

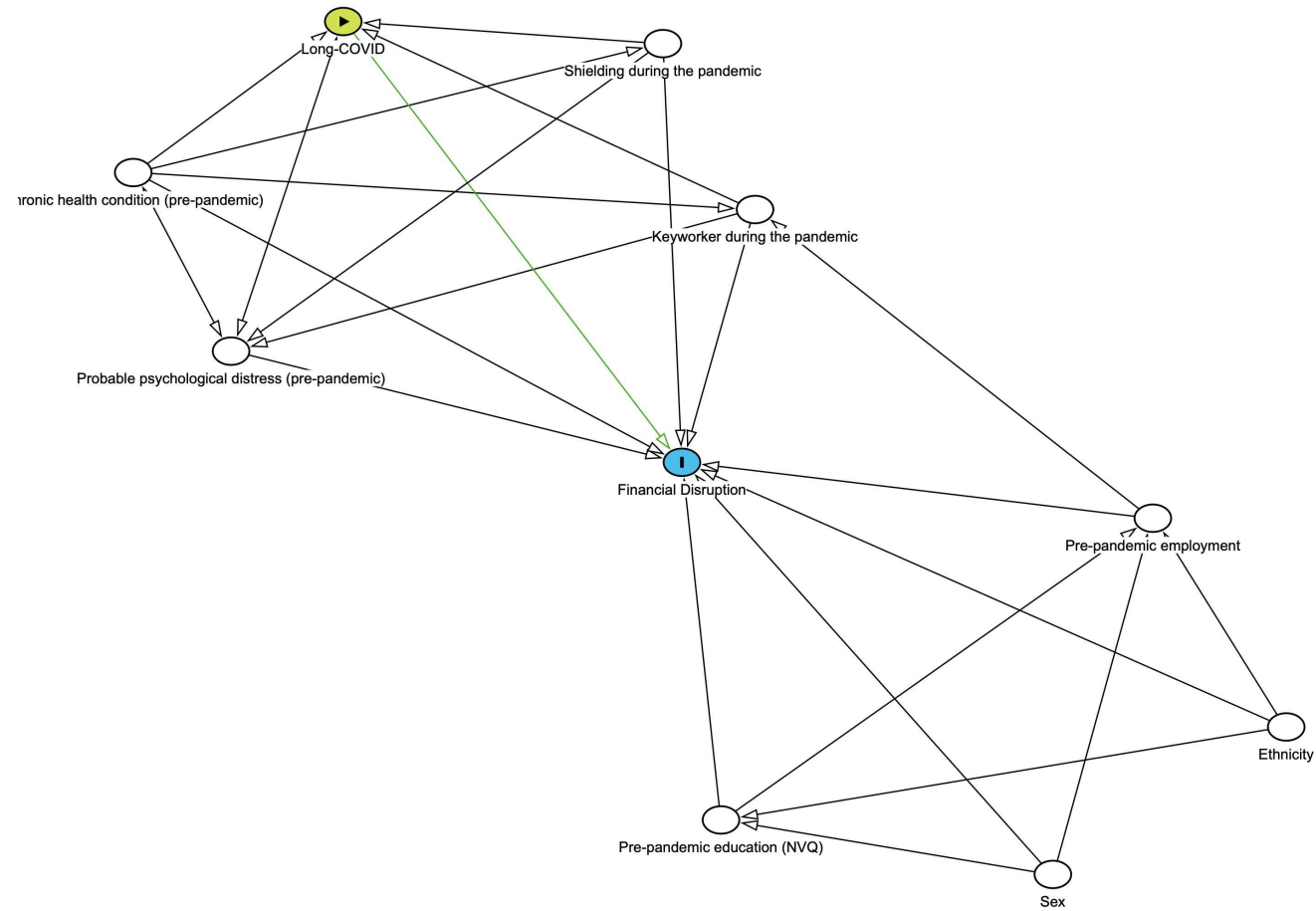
Supplementary Material

Supplementary 1) Potential confounders and Directed Acyclic Graph.....	2
Supplementary 2) Exposure and outcomes by cohort.....	5
Supplementary 3) New benefit claims but COVID status.....	6
Supplementary 4) Sensitivity analyses using imputed data.....	7
Supplementary 5) Sensitivity analysis using a four-category measure of long-COVID & stratified analysis	8
Supplementary 6) OECD equivalised measure of household income	9
Supplementary 7) Re-weighted analysis using scaled populations weights.....	10

Supplementary 1) Potential confounders and Directed Acyclic Graph

Characteristic	Overall = 20112 ¹	NCDS N = 6467 ¹	BCS70 N = 5421 ¹	NS N = 4005 ¹	MCS N = 4219 ¹
Sex					
Male	8,460 (42.2%)	2,995 (46.3%)	2,293 (42.3%)	1,501 (38.0%)	1,671 (40.1%)
Female	11,652 (57.8%)	3,472 (53.7%)	3,128 (57.7%)	2,504 (62.0%)	2,548 (59.9%)
Ethnicity					
White	18,162 (94.7%)	6,467 (100.0%)	5,421 (100.0%)	2,941 (90.3%)	3,333 (85.2%)
Non-White	1,950 (5.3%)	0 (0.0%)	0 (0.0%)	1,064 (9.7%)	886 (14.8%)
Pre-pandemic employment					
Employed	10,781 (61.8%)	3,238 (54.9%)	3,967 (86.7%)	2,718 (84.9%)	858 (25.0%)
Unemployed	541 (2.9%)	125 (2.1%)	93 (2.0%)	133 (3.2%)	190 (4.6%)
Economically Inactive	6,157 (35.3%)	2,535 (43.0%)	518 (11.3%)	388 (11.8%)	2,716 (70.4%)
Unknown	2,680	569	843	792	476
Shielding during the pandemic					
No	19,023 (94.7%)	5,958 (92.2%)	5,108 (94.2%)	3,855 (96.4%)	4,102 (97.2%)
Yes	1,081 (5.3%)	506 (7.8%)	312 (5.8%)	150 (3.6%)	113 (2.8%)
Unknown	8	3	1	0	4
Keyworker during the pandemic					
No	12,521 (65.6%)	4,422 (72.1%)	2,709 (52.9%)	2,019 (52.5%)	3,371 (83.2%)
Yes	6,515 (34.4%)	1,708 (27.9%)	2,409 (47.1%)	1,748 (47.5%)	650 (16.8%)
Unknown	1,127	337	303	254	233
Pre-pandemic education (NVQ)					
None	990 (5.5%)	383 (6.0%)	363 (7.1%)	113 (3.2%)	131 (4.6%)
NVQ1 level	1,247 (7.3%)	602 (9.4%)	349 (6.8%)	199 (5.6%)	97 (4.9%)
NVQ2 level	4,067 (24.2%)	1,567 (24.5%)	1,322 (25.9%)	714 (20.6%)	464 (25.3%)
NVQ3 level	3,026 (17.8%)	1,154 (18.1%)	753 (14.8%)	824 (22.7%)	295 (15.5%)
NVQ4 level	6,084 (36.3%)	2,349 (36.7%)	1,878 (36.9%)	1,100 (30.9%)	757 (43.5%)
NVQ5 level	1,540 (9.0%)	337 (5.3%)	431 (8.5%)	664 (17.1%)	108 (6.2%)
Unknown	3,351	75	325	405	2,545
Chronic health condition (pre-pandemic)					
No	13,586 (72.9%)	4,122 (68.1%)	3,161 (64.6%)	2,932 (80.0%)	3,371 (82.2%)
Yes	5,072 (27.1%)	1,934 (31.9%)	1,730 (35.4%)	686 (20.0%)	722 (17.8%)
Unknown	1,477	411	530	402	134
Probable psychological distress (pre-pandemic)					
No	15,268 (82.7%)	5,218 (87.2%)	4,086 (83.5%)	2,627 (74.6%)	3,337 (82.8%)
Yes	3,212 (17.3%)	769 (12.8%)	805 (16.5%)	919 (25.4%)	719 (17.2%)
Unknown	1,654	480	530	464	180

¹n_unweighted (%)



Directed acyclic graph (DAG) to illustrate confounders relationship with exposure and outcomes

Supplementary 2) Exposure and outcomes by cohort

Characteristic	Overall N = 20,112 ¹	NCDS N = 6,467 ¹	BCS70 N = 5,421 ¹	NS N = 4,005 ¹	MCS N = 4,219 ¹
Long COVID					
No COVID	16,731 (83.1%)	5,783 (89.4%)	4,565 (84.2%)	3,190 (80.6%)	3,193 (75.3%)
C19 - normal functioning	879 (4.5%)	133 (2.1%)	192 (3.5%)	194 (4.7%)	360 (8.7%)
C19 - sym <4weeks	2,139 (10.7%)	426 (6.6%)	537 (9.9%)	550 (12.9%)	626 (15.1%)
C19 - sym 4-<12 weeks	251 (1.2%)	92 (1.4%)	82 (1.5%)	49 (1.1%)	28 (0.7%)
C19 - sym 12+ weeks	112 (0.6%)	33 (0.5%)	45 (0.8%)	22 (0.6%)	12 (0.3%)
Coping financially compared to pre-pandemic					
Same/better	14,585 (72.8%)	4,740 (73.3%)	3,940 (72.7%)	2,932 (73.7%)	2,973 (71.2%)
Worse	5,527 (27.2%)	1,727 (26.7%)	1,481 (27.3%)	1,073 (26.3%)	1,246 (28.8%)
New benefit claims since pandemic					
No	17,303 (86.3%)	5,637 (87.2%)	4,631 (85.4%)	3,356 (84.1%)	3,679 (88.0%)
Yes	2,809 (13.7%)	830 (12.8%)	790 (14.6%)	649 (15.9%)	540 (12.0%)
Change in weekly household income since pandemic					
same/increased & decrease < 5%	12,662 (81.9%)	3,918 (82.1%)	3,453 (81.4%)	2,843 (82.8%)	2,448 (81.2%)
decreased by ≥ 5%	2,733 (18.1%)	856 (17.9%)	787 (18.6%)	561 (17.2%)	529 (18.8%)
Unknown	4,760	1,693	1,181	583	1,303

¹unweighted n (%). NCDS refers to the 1958 National Child Development Study; BCS70 refers to the 1970 British Cohort study; NS refers to the 1989-90 Next Step study; MCS refers to the 2000-01 Millennium Cohort Study.

Supplementary 3) New benefit claims but COVID status

	Overall = 20112 ¹	no covid N = 16731 ¹	C19 - normal functioning N = 879 ¹	C19 - sym <4weeks N = 2139 ¹	C19 - 4+ weeks N = 363 ¹
New benefit claims?					
No	17,256	14,410 (83.33%)	770 (4.59%)	1,780 (10.37%)	296 (1.70%)
Yes	2,856	2,321 (81.52%)	109 (3.71%)	359 (12.43%)	67 (2.34%)
¹ n unweighted (%)					

	Free school dinners	Universal credit	Employment support	Sick pay	Council tax support	COVID-19 self-employment income support	Career allowance	Test and trace
No COVID	79 (3.4%)	873 (37.6%)	249 (10.7%)	199 (8.6%)	281 (12.1%)	771 (33.2%)	302 (13.0%)	32 (1.4%)
C19 - normal functioning	4 (3.7%)	41 (37.6%)	7 (6.4%)	17 (15.6%)	11 (10.1%)	31 (28.4%)	4 (3.7%)	9 (8.3%)
C19 - symptoms	14 (3.3%)	157 (36.9%)	39 (9.2%)	72 (16.9%)	56 (13.1%)	108 (25.4%)	40 (9.4%)	32 (7.5%)

	Free school dinners	Universal credit	Employment support	Sick pay	Council tax support	COVID-19 self-employment income support	Career allowance	Test and trace
No COVID	79 (3.4%)	873 (37.6%)	249 (10.7%)	199 (8.6%)	281 (12.1%)	771 (33.2%)	302 (13.0%)	32 (1.4%)
C19 - normal functioning	4 (3.7%)	41 (37.6%)	7 (6.4%)	17 (15.6%)	11 (10.1%)	31 (28.4%)	4 (3.7%)	9 (8.3%)
C19 - sym <4weeks	13 (3.6%)	135 (37.6%)	32 (8.9%)	54 (15.0%)	46 (12.8%)	99 (27.6%)	27 (7.5%)	26 (7.2%)
C19 - sym 4-<12 weeks	1 (2.6%)	12 (30.8%)	4 (10.3%)	10 (25.6%)	5 (12.8%)	4 (10.3%)	8 (20.5%)	5 (12.8%)
C19 - sym 12+ weeks		10 (35.7%)	3 (10.7%)	8 (28.6%)	5 (17.9%)	5 (17.9%)	5 (17.9%)	1 (3.6%)

Supplementary 4) Sensitivity analyses using imputed data**Long-COVID associated with subject of financial well-being and new benefit claims (complete case and MI)**

Long-COVID	Crude		Adjusted		Adjusted (MICE imputed data)
	n	RRR (95% CI)	n	RRR (95% CI)	RRR (95% CI)
Financial wellbeing					
no covid	16,731	--	11,323	--	--
C19 - normal functioning	879	0.93 (0.82, 1.06)	505	1.02 (0.86, 1.21)	0.96 (0.85, 1.09)
C19 - symptoms <4weeks	2,139	1.11 (1.03, 1.20)	1,326	1.15 (1.04, 1.26)	1.13 (1.05, 1.22)
C19 - symptoms 4-<12 weeks	251	1.29 (1.08, 1.55)	176	1.28 (1.01, 1.62)	1.28 (1.07, 1.54)
C19 - symptoms 12+ weeks	112	1.57 (1.25, 1.96)	78	1.85 (1.43, 2.41)	1.62 (1.30, 2.03)
New benefit claims					
no covid	16,731	--	14,314	--	--
C19 - normal functioning	879	0.85 (0.69, 1.04)	638	0.94 (0.72, 1.22)	0.92 (0.75, 1.13)
C19 - symptoms <4weeks	2,139	1.19 (1.06, 1.33)	1,670	1.34 (1.17, 1.53)	1.21 (1.08, 1.35)
C19 - symptoms 4-<12 weeks	251	1.12 (0.83, 1.51)	233	1.16 (0.83, 1.63)	1.04 (0.78, 1.40)
C19 - symptoms 12+ weeks	112	1.79 (1.27, 2.53)	99	1.79 (1.20, 2.66)	1.71 (1.22, 2.39)

Long-COVID associated with a decrease in weekly household income $\geq 5\%$ (complete case and MI)

Long-COVID	Crude	Adjusted
	RRR (95% CI)	RRR (95% CI)
Decrease in weekly household income $\geq 5\%$ (complete case)		
C19 - normal functioning	0.91 (0.79, 1.05)	1.03 (0.85, 1.23)
C19 - symptoms <4weeks	1.00 (0.91, 1.09)	1.05 (0.93, 1.18)
C19 - symptoms 4+ weeks	1.07 (0.88, 1.30)	1.25 (1.02, 1.53)
Decrease in weekly household income $\geq 5\%$ (missing data imputed)		
C19 - normal functioning	1.01 (0.95, 1.08)	1.02 (0.95, 1.09)
C19 - symptoms <4weeks	1.01 (0.96, 1.07)	1.02 (0.97, 1.07)
C19 - symptoms 4+ weeks	1.05 (0.97, 1.14)	1.07 (0.99, 1.15)

Supplementary 5) Sensitivity analysis using a four-category measure of long-COVID & stratified analysis**Long-COVID (four-category) associated with financial wellbeing**

Long-COVID	Financial wellbeing	
	Crude	Adjusted
	RRR (95% CI)	RRR (95% CI)
C19 - normal functioning	0.93 (0.82, 1.06)	0.95 (0.81, 1.11)
C19 - symptoms <4weeks	1.11 (1.03, 1.20)	1.11 (1.02, 1.21)
C19 - symptoms 4+weeks	1.38 (1.19, 1.59)	1.32 (1.12, 1.56)

Long-COVID (four-category) associated with new benefit claims

Long-COVID	New benefit claims	
	Crude	Adjusted
	RRR (95% CI)	RRR (95% CI)
C19 - normal functioning	0.85 (0.69, 1.04)	0.94 (0.72, 1.22)
C19 - symptoms <4weeks	1.19 (1.06, 1.33)	1.34 (1.17, 1.53)
C19 - symptoms 4+weeks	1.33 (1.06, 1.68)	1.36 (1.05, 1.77)

Long-COVID associated with subjective financial well-being, stratified by sex

Long-COVID	Financial wellbeing					
	Male			Female		
	n	RRR	95% CI	n	RRR	95% CI
no covid	7,362	—	—	9,971	—	—
C19 - normal functioning	462	0.83	0.68, 1.02	469	1.04	0.88, 1.21
C19 - symptoms <4weeks	851	1.10	0.97, 1.24	1,372	1.12	1.02, 1.23
C19 - symptoms 4-<12 weeks	77	1.91	1.50, 2.42	178	1.02	0.80, 1.32
C19 - symptoms 12+ weeks	43	1.58	1.07, 2.32	74	1.56	1.18, 2.05

Supplementary 6) OECD equivalised measure of household income

Both pandemic and pre-pandemic income measures were equivalised using the Organisation for Economic Co-operation and Development (OECD) equivalence scale where household income was divided by the square root of the household size. This implies that, for example, the needs of a household of four are twice as large as one composed of a single person. Equivalised income measures were then log-transformed to account for the skewed distribution of data. Linear regression was used to examine the association between long COVID and change in weekly household income.

Additional analysis of the associations between OECD equivalized weekly household income (adjusting for retrospective pre-pandemic income) and a four-category measure of COVID severity are shown in Figure a. Findings support those reported in Figure 3, suggesting that those with COVID-19 symptoms which last longer than 4 weeks have decreased household income (adjusted β =-0.05, CI=-0.10, -0.01).

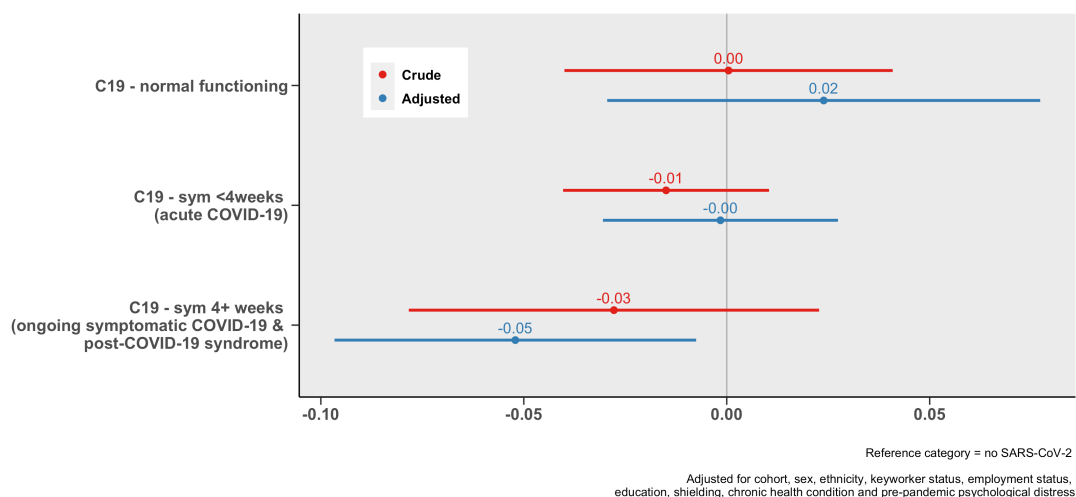


Figure a: Association between duration of COVID-19 symptoms and change in weekly household income across four CLS cohorts

Supplementary 7) Re-weighted analysis using scaled populations weights

Long-COVID associated with subject of financial well-being, new benefit claims and change in weekly household income (population age composite weights)

Crude estimates using population age composition weights	
Financial coping	RRR (95% CI)
C19 - normal functioning	0.93 (0.82, 1.06)
C19 - symptoms <4weeks	1.11 (1.03, 1.20)
C19 - symptoms 4-<12 weeks	1.29 (1.06, 1.56)
C19 - symptoms 12+ weeks	1.52 (1.20, 1.93)
New benefit claims	
C19 - normal functioning	0.83 (0.67, 1.03)
C19 - symptoms <4weeks	1.19 (1.06, 1.34)
C19 - symptoms 4-<12 weeks	1.16 (0.85, 1.59)
C19 - symptoms 12+ weeks	1.84 (1.29, 2.62)
Decrease in weekly household income $\geq 5\%$	
C19 - normal functioning	0.92 (0.79, 1.06)
C19 - symptoms <4weeks	1.00 (0.91, 1.10)
C19 - symptoms 4+ weeks	1.04 (0.84, 1.29)