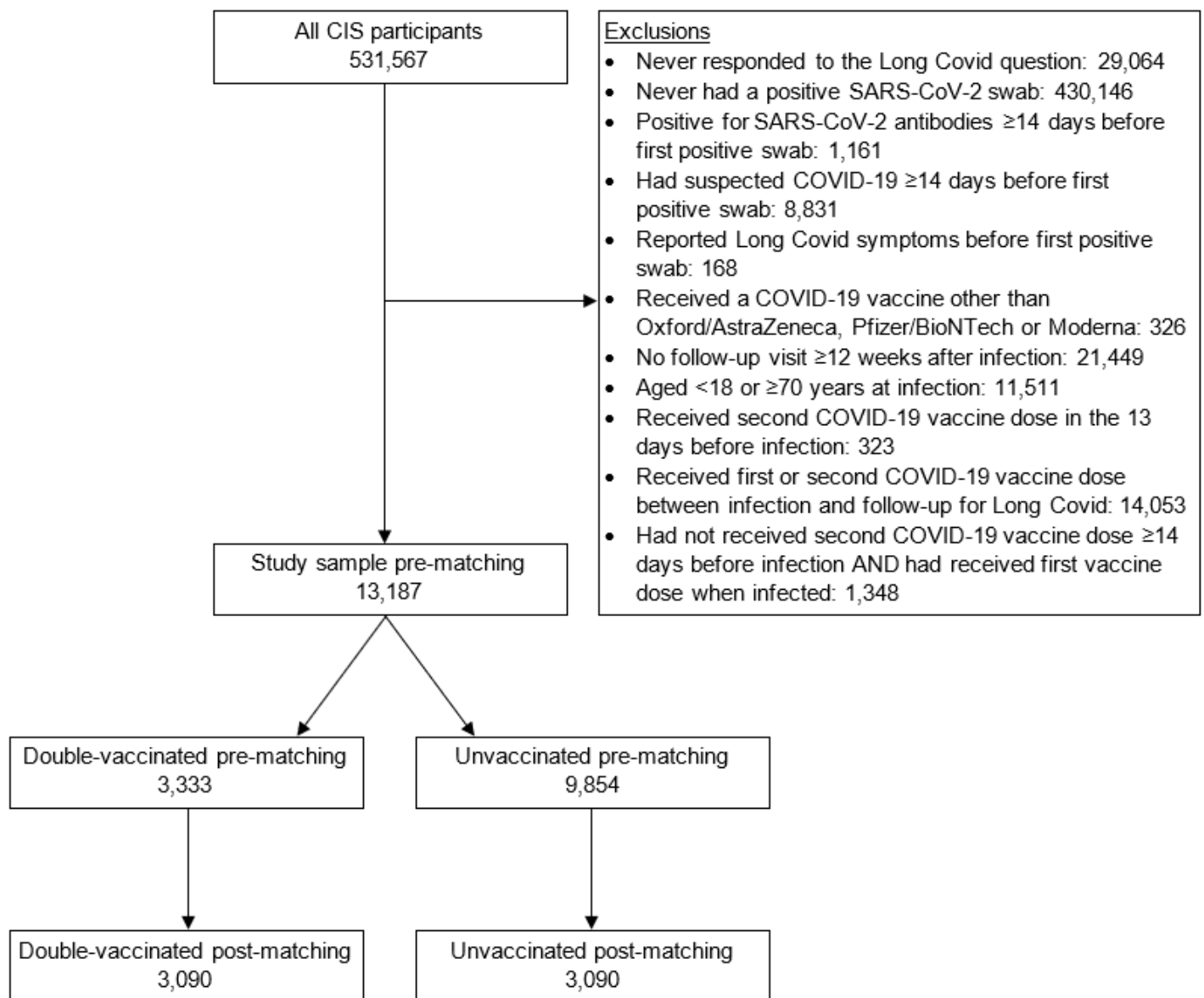
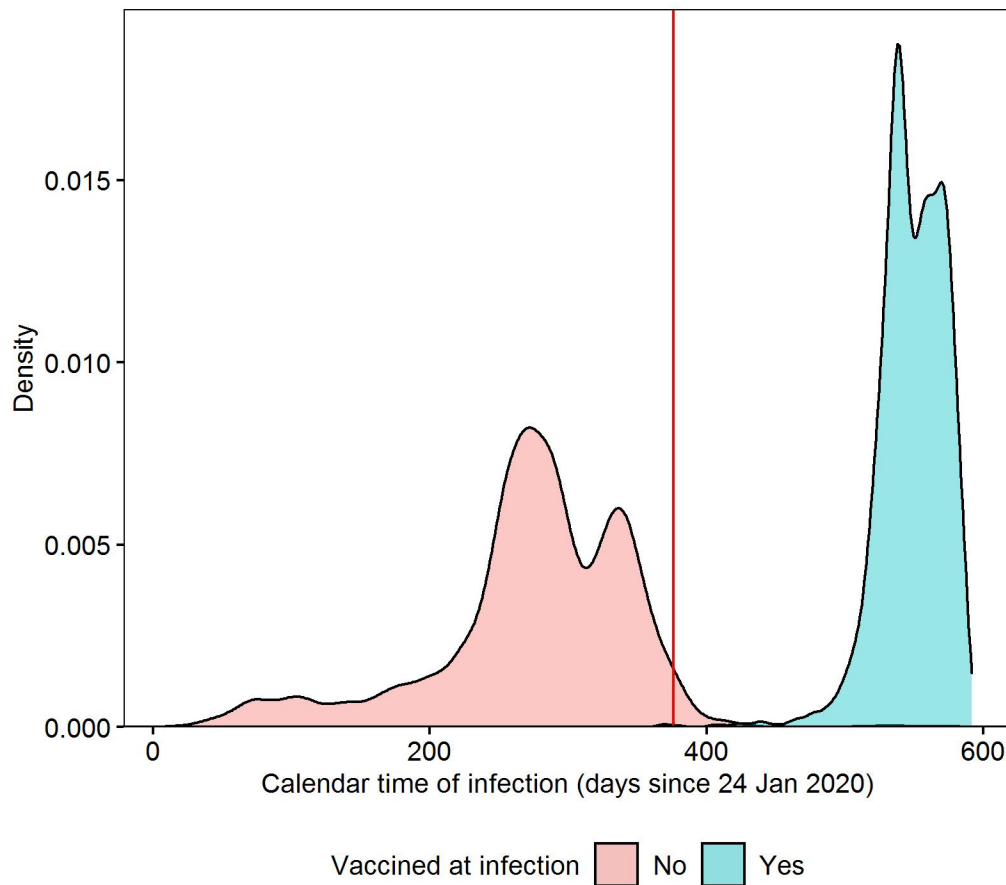


Supplementary Figure 1: Study participant flow diagram



Supplementary Figure 2: Density plot of calendar time of first infection, stratified by whether study participants were double-vaccinated ≥ 14 days before infection; the red line indicates the introduction of the survey question on Long Covid on 3 February 2021

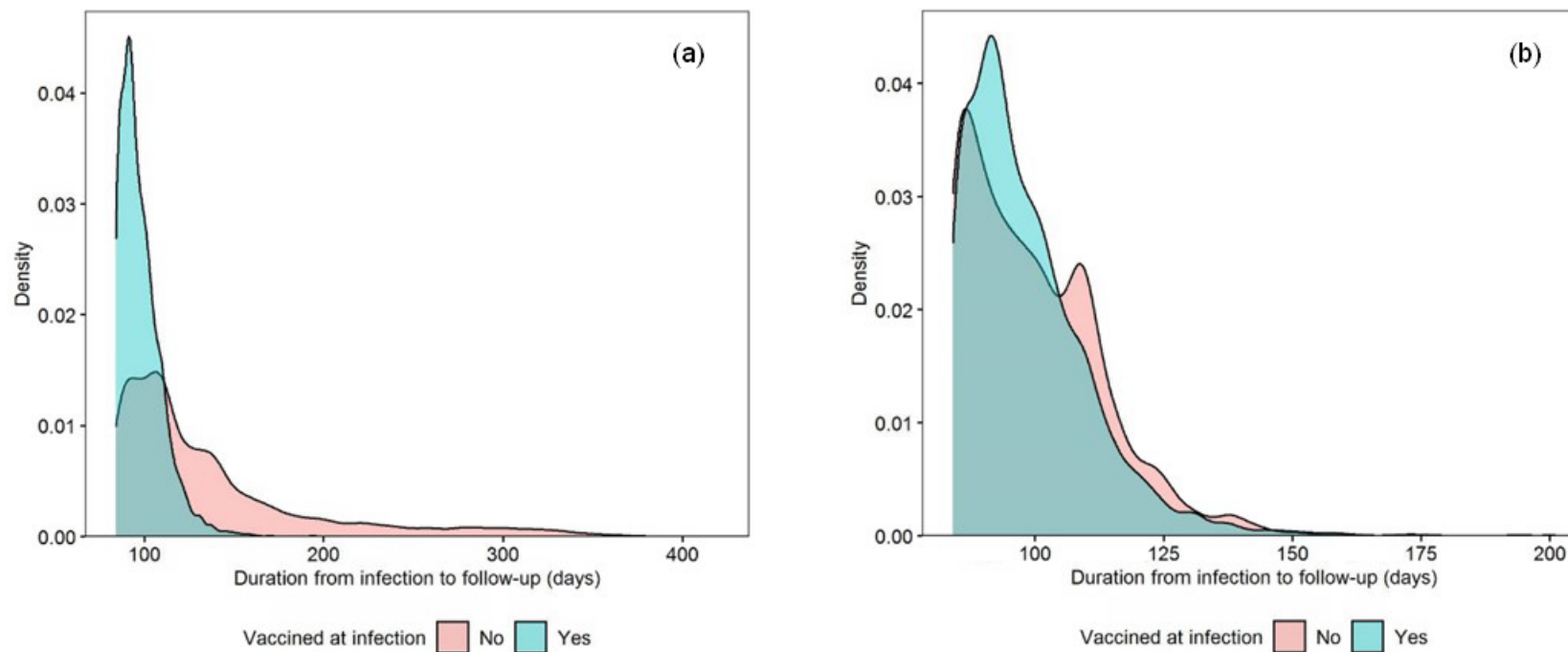


Calendar time of infection calculated as the number of days from 24 January 2020, when the first COVID-19 case was reported in the UK. Density estimated from 3,333 double-vaccinated participants and 9,854 unvaccinated participants before matching.

Supplementary Figure 1 demonstrates that there was almost no common support in the distribution of calendar time of infection stratified by vaccination status when infected. This means that it was not possible to match double-vaccinated and unvaccinated participants on calendar time of infection.

Furthermore, the position of the red vertical line in Supplementary Figure 1, denoting the introduction of the survey question on Long Covid on 3 February 2021, illustrates why time from infection to follow-up for Long Covid ≥ 12 weeks later tended to be longer for unvaccinated than double-vaccinated participants. It was therefore necessary to match on this duration, to avoid evaluating Long Covid symptoms in unvaccinated and double-vaccinated participants at different stages of the illness as it progresses.

Supplementary Figure 3: Density plots of time from infection to follow-up for Long Covid ≥ 12 weeks later, stratified by whether study participants were double-vaccinated ≥ 14 days before infection, (a) before matching and (b) after matching



Supplementary Table 1: Characteristics of study participants at enrolment, before and after matching

Characteristic	Before matching			After matching		
	Double-vaccinated (n = 3,333)	Unvaccinated (n = 9,854)	Absolute standardized difference (%)	Double-vaccinated (n = 3,090)	Unvaccinated (n = 3,090)	Absolute standardized difference (%)
Age, years (mean, standard deviation)	49.9 (12.0)	40.2 (13.2)	76.7	49.0 (12.0)	46.7 (11.2)	19.6
Sex (n, %)						
Female	1,807 (54.2)	5,158 (52.3)	3.8	1,676 (54.2)	1,659 (53.7)	1.1
Male	1,526 (45.8)	4,696 (47.7)		1,414 (45.8)	1,431 (46.3)	
Ethnic group (n, %)						
White	3,073 (92.2)	8,806 (89.4)	9.8	2,837 (91.8)	2,817 (91.2)	2.3
Non-white	260 (7.8)	1,048 (10.6)		253 (8.2)	273 (8.8)	
Region or country (n, %)						
North East England	179 (5.4)	435 (4.4)	4.4	156 (5.0)	147 (4.8)	1.3
North West England	473 (14.2)	1,468 (14.9)	2.0	445 (14.4)	433 (14.0)	1.1
Yorkshire and the Humber	388 (11.6)	969 (9.8)	5.8	348 (11.3)	341 (11.0)	0.7
East Midlands	213 (6.4)	650 (6.6)	0.8	206 (6.7)	208 (6.7)	0.3
West Midlands	260 (7.8)	749 (7.6)	0.7	236 (7.6)	258 (8.3)	2.6
East of England	222 (6.7)	819 (8.3)	6.3	207 (6.7)	242 (7.8)	4.4
London	527 (15.8)	2,263 (23.0)	18.2	509 (16.5)	559 (18.1)	4.3
South East England	339 (10.2)	1,072 (10.9)	2.3	315 (10.2)	337 (10.9)	2.3
South West England	237 (7.1)	474 (4.8)	9.7	214 (6.9)	179 (5.8)	4.6
Northern Ireland	122 (3.7)	234 (2.4)	7.5	113 (3.7)	96 (3.1)	3.0
Scotland	244 (7.3)	406 (4.1)	13.8	219 (7.1)	175 (5.7)	5.8
Wales	129 (3.9)	315 (3.2)	3.6	122 (3.9)	115 (3.7)	1.2
Area deprivation quintile group (n, %)						
1 (most deprived)	404 (12.1)	1,299 (13.2)	3.2	381 (12.3)	384 (12.4)	0.3
2	542 (16.3)	1,846 (18.7)	6.5	512 (16.6)	498 (16.1)	1.2
3	647 (19.4)	2,080 (21.1)	4.2	609 (19.7)	623 (20.2)	1.1
4	739 (22.2)	2,299 (23.3)	2.8	688 (22.3)	694 (22.5)	0.5
5 (least deprived)	1,001 (30.0)	2,330 (23.6)	14.5	900 (29.1)	891 (28.8)	0.6
Self-reported, pre-existing health/disability status (n, %)						
No health conditions	2,657 (79.7)	8,532 (86.6)	18.4	2,489 (80.6)	2,559 (82.8)	5.9
Activity not limited by health conditions	370 (11.1)	748 (7.6)	12.1	331 (10.7)	297 (9.6)	3.6
Activity limited a little by health conditions	181 (5.4)	367 (3.7)	8.2	164 (5.3)	147 (4.8)	2.5
Activity limited a lot by health conditions	125 (3.8)	207 (2.1)	9.8	106 (3.4)	87 (2.8)	3.5

Supplementary Table 2: Adjusted odds ratios for the main analysis (Approach 1) and sensitivity analyses whereby follow-up time from infection to follow-up for Long Covid ≥ 12 weeks later was removed from the matching set (Approach 2) and the adjusted models (Approach 3)

Outcome	Vaccine type	Approach 1	Approach 2	Approach 3
Long Covid of any severity	Combined	0.59 (0.50 to 0.69)	0.68 (0.56 to 0.81)	0.73 (0.62 to 0.85)
	Adenovirus vector	0.62 (0.51 to 0.75)	0.74 (0.61 to 0.91)	0.80 (0.67 to 0.96)
	mRNA	0.50 (0.37 to 0.69)	0.52 (0.38 to 0.72)	0.56 (0.41 to 0.76)
Activity-limiting Long Covid	Combined	0.59 (0.48 to 0.73)	0.65 (0.51 to 0.82)	0.69 (0.56 to 0.84)
	Adenovirus vector	0.63 (0.49 to 0.80)	0.73 (0.56 to 0.95)	0.77 (0.61 to 0.97)
	mRNA	0.50 (0.34 to 0.75)	0.47 (0.31 to 0.72)	0.50 (0.34 to 0.74)

Odds ratios adjusted for socio-demographic characteristics (age, sex, white or non-white ethnicity, country/region of residence, area deprivation quintile group, and self-reported, pre-existing health/disability status) and time from infection to follow-up for Long Covid (Approaches 1 and 2). Confidence intervals are at the 95% level.

Supplementary Table 3: Adjusted odds ratios for the main analysis (study participants in all four countries of the UK) and sensitivity analysis whereby the study sample was restricted to participants living in England

Outcome	Vaccine type	Main analysis	Sensitivity analysis
Long Covid of any severity	Combined	0.59 (0.50 to 0.69)	0.64 (0.53 to 0.78)
	Adenovirus vector	0.62 (0.51 to 0.75)	0.71 (0.57 to 0.88)
	mRNA	0.50 (0.37 to 0.69)	0.47 (0.32 to 0.70)
Activity-limiting Long Covid	Combined	0.59 (0.48 to 0.73)	0.62 (0.48 to 0.79)
	Adenovirus vector	0.63 (0.49 to 0.80)	0.68 (0.51 to 0.91)
	mRNA	0.50 (0.34 to 0.75)	0.45 (0.26 to 0.76)

Odds ratios adjusted for socio-demographic characteristics (age, sex, white or non-white ethnicity, country/region of residence, area deprivation quintile group, and self-reported, pre-existing health/disability status) and time from infection to follow-up for Long Covid. Confidence intervals are at the 95% level. The analysis was based on 2,311 matched pairs for which both the double-vaccinated and unvaccinated participants lived in England