Supplementary material

Title: Socioeconomic inequalities in the risk of infection with SARS-CoV-2 Delta and Omicron variants in United Kingdom, 2020-22

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Supplementary Table 1. Count and crude percentage of participants testing compatible with the Delta and Omicron variant, by IMD deciles and occupation sector.

IMD	Delta cohort (02.07.2020–19.12.2021)							
	Manufacturing and construction		Healthcare		Retail		Teaching and education	
	Total N	Positive n (%)	Total N	Positive n (%)	Total N	Positive n (%)	Total N	Positive n (%)
1 (most deprived)	966	90 (9.3)	1225	95 (7.8)	1097	83 (7.6)	1098	93 (8.5)
2	1579	111 (7.0)	1846	104 (5.6)	1422	103 (7.2)	1861	140 (7.5)
3	1769	144 (8.1)	2223	110 (4.9)	1519	75 (4.9)	2433	197 (8.1)
4	2127	142 (6.7)	2452	131 (5.3)	1675	92 (5.5)	2793	214 (7.7)
5	2424	168 (6.9)	2750	145 (5.3)	1708	95 (5.6)	3112	245 (7.9)
6	2656	163 (6.1)	2844	132 (4.6)	1828	109 (6.0)	3535	279 (7.9)
7	2660	156 (5.9)	3167	154 (4.9)	1842	112 (6.1)	3586	258 (7.2)
8	3052	191 (6.3)	3292	166 (5.0)	1878	120 (6.4)	4060	307 (7.6)
9	3149	228 (7.2)	3497	145 (4.1)	1955	115 (5.9)	4334	348 (8.0)
10 (least deprived)	2981	185 (6.2)	3552	178 (5.0)	1794	110 (6.1)	4550	324 (7.1)
IMD	**Omicron cohort (on or after 20.12.2021)**							
	Manufacturing and construction		Healthcare		Retail		Teaching and education	
	Total N	Positive n (%)	Total N	Positive n (%)	Total N	Positive n (%)	Total N	Positive n (%)
1 (most deprived)	759	60 (7.9)	920	80 (8.7)	841	61 (7.3)	867	68 (7.8)
2	1189	93 (7.8)	1360	95 (7.0)	987	76 (7.7)	1465	111 (7.6)
3	1322	77 (5.8)	1621	94 (5.8)	1135	70 (6.2)	1914	139 (7.3)
4	1590	101 (6.4)	1873	139 (7.4)	1264	62 (4.9)	2192	128 (5.8)
5	1844	108 (5.9)	2097	123 (5.9)	1293	82 (6.3)	2553	161 (6.3)
6	2010	126 (6.3)	2221	137 (6.2)	1368	75 (5.5)	2910	191 (6.6)
7	2114	101 (4.8)	2449	130 (5.3)	1424	65 (4.6)	2956	168 (5.7)
8	2400	135 (5.6)	2585	128 (5.0)	1458	80 (5.5)	3377	204 (6.0)
9	2447	150 (6.1)	2778	167 (6.0)	1464	77 (5.3)	3639	209 (5.7)
10 (least deprived)	2379	153 (6.4)	2836	150 (5.3)	1394	76 (5.5)	3829	191 (5.0)

Supplementary Table 2. Crude incidence rate of testing compatible with the Delta variant by IMD, and by IMD decile and sex.

	Incidence Rate per 1000 person months (95% CI)		
IMD, deciles	**Overall**	**Male**	**Female**
1 (most deprived)	4.33 (4.09, 4.58)	4.46 (4.10, 4.84)	4.22 (3.91, 4.56)
2	3.57 (3.39, 3.76)	3.49 (3.23, 3.78)	3.63 (3.39, 3.89)
3	3.52 (3.36, 3.69)	3.81 (3.55, 4.07)	3.28 (3.07, 3.51)
4	3.41 (3.26, 3.57)	3.47 (3.24, 3.71)	3.35 (3.15, 3.57)
5	3.31 (3.17, 3.46)	3.50 (3.28, 3.73)	3.16 (2.97, 3.36)
6	3.32 (3.18, 3.47)	3.58 (3.36, 3.80)	3.11 (2.93, 3.30)
7	3.22 (3.08, 3.36)	3.24 (3.05, 3.46)	3.20 (3.02, 3.39)
8	3.24 (3.11, 3.38)	3.37 (3.17, 3.57)	3.14 (2.97, 3.32)
9	3.34 (3.21, 3.47)	3.60 (3.40, 3.81)	3.12 (2.95, 3.30)
10 (least deprived)	3.18 (3.05, 3.31)	3.27 (3.09, 3.47)	3.09 (2.93, 3.27)

Supplementary Table 3. Crude incidence rate of testing compatible with the Omicron variant by IMD decile, and by IMD decile and sex.

	Incidence Rate per 1000 person months (95% CI)		
IMD, deciles	**Overall**	**Male**	**Female**
1 (most deprived)	76.67 (71.60, 82.11)	79.45 (71.78, 87.93)	74.50 (67.89, 81.74)
2	74.11 (69.82, 78.66)	76.56 (70.07, 83.65)	72.19 (66.60, 78.25)
3	65.41 (61.72, 69.33)	65.95 (60.44, 71.97)	64.99 (60.12, 70.25)
4	67.53 (64.02, 71.24)	68.15 (62.90, 73.84)	67.05 (62.40, 72.04)
5	64.53 (61.24, 67.99)	68.50 (63.43, 73.98)	61.47 (57.24, 66.01)
6	61.90 (58.84, 65.12)	59.99 (55.52, 64.82)	63.42 (59.30, 67.82)
7	55.23 (52.42, 58.20)	55.27 (51.07, 59.81)	55.21 (51.48, 59.20)
8	59.99 (57.14, 62.99)	59.67 (55.45, 64.20)	60.26 (56.45, 64.33)
9	58.03 (55.31, 60.89)	58.73 (54.68, 63.08)	57.47 (53.86, 61.33)
10 (least deprived)	54.52 (51.93, 57.24)	54.55 (50.74, 58.65)	54.49 (51.02, 58.20)

Supplementary Table 4. Association between deprivation and Delta and Omicron variant using multilevel Poisson regression model and random-effects at country level.

IMD, deciles	Delta cohort; N=329,356		Omicron cohort; N=246,061	
	IRR (95% CI)	P value	IRR (95% CI)	P value
1 (most deprived)	1.37 (1.33, 1.42)	<0.0001	1.34 (1.31, 1.37)	<0.0001
2	1.18 (1.13, 1.23)	<0.0001	1.28 (1.24, 1.32)	<0.0001
3	1.19 (1.12, 1.26)	<0.0001	1.14 (1.11, 1.18)	<0.0001
4	1.12 (1.07, 1.17)	<0.0001	1.21 (1.17, 1.25)	<0.0001
5	1.10 (1.03, 1.17)	0.003	1.19 (1.15, 1.22)	<0.0001
6	1.09 (1.05, 1.13)	<0.0001	1.15 (1.09, 1.22)	<0.0001
7	1.07 (1.06, 1.08)	<0.0001	1.04 (1.02, 1.06)	0.001
8	1.07 (1.05, 1.09)	<0.0001	1.12 (1.07, 1.18)	<0.0001
9	1.09 (1.07, 1.10)	<0.0001	1.08 (1.06, 1.1)	<0.0001
10 (least deprived)	Reference			

IRR = incident rate ratio

*Adjusted for age, sex, ethnicity, urban/rural, comorbid conditions, household size, patient/client-facing nature of the job, and time (as the quarter of the year) in the multilevel Poisson regression model using random-effects at country level.

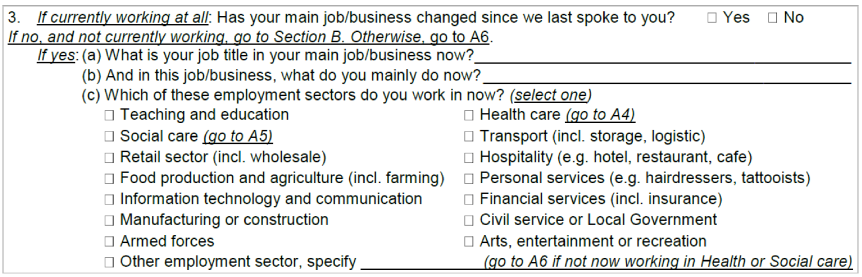
Supplementary Table 5. Association between deprivation and Delta and Omicron variant using multilevel Poisson regression model and second-order polynomial for age and time variables.

IMD, deciles	Delta cohort; N=329,356		Omicron cohort; N=246,061	
	IRR (95% CI)	P value	IRR (95% CI)	P value
1 (most deprived)	1.39 (1.30, 1.48)	<0.0001	1.34 (1.23, 1.45)	<0.0001
2	1.19 (1.12, 1.27)	<0.0001	1.27 (1.18, 1.37)	<0.0001
3	1.21 (1.14, 1.28)	<0.0001	1.14 (1.05, 1.22)	0.001
4	1.13 (1.07, 1.20)	<0.0001	1.20 (1.12, 1.29)	<0.0001
5	1.11 (1.05, 1.17)	<0.0001	1.18 (1.10, 1.27)	<0.0001
6	1.10 (1.04, 1.16)	<0.0001	1.15 (1.07, 1.23)	<0.0001
7	1.07 (1.02, 1.13)	0.007	1.03 (0.96, 1.11)	0.336
8	1.07 (1.02, 1.13)	0.008	1.12 (1.05, 1.20)	0.001
9	1.09 (1.04, 1.14)	0.001	1.07 (1.00, 1.15)	0.037
10 (least deprived)	Reference			

IRR = incident rate ratio

*Adjusted for age, sex, ethnicity, urban/rural, comorbid conditions, household size, patient/client-facing nature of the job, and time (as the quarter of the year) in the multilevel Poisson regression model using second-order polynomial for age and time variables.

Supplementary Figure 1. Occupational groups or employment sectors in the survey questionnaire.



3. *If currently working at all*: Has your main job/business changed since we last spoke to you? ☐ Yes ☐ No
If no, and not currently working, go to Section B. Otherwise, go to A6.

If yes: (a) What is your job title in your main job/business now?_____

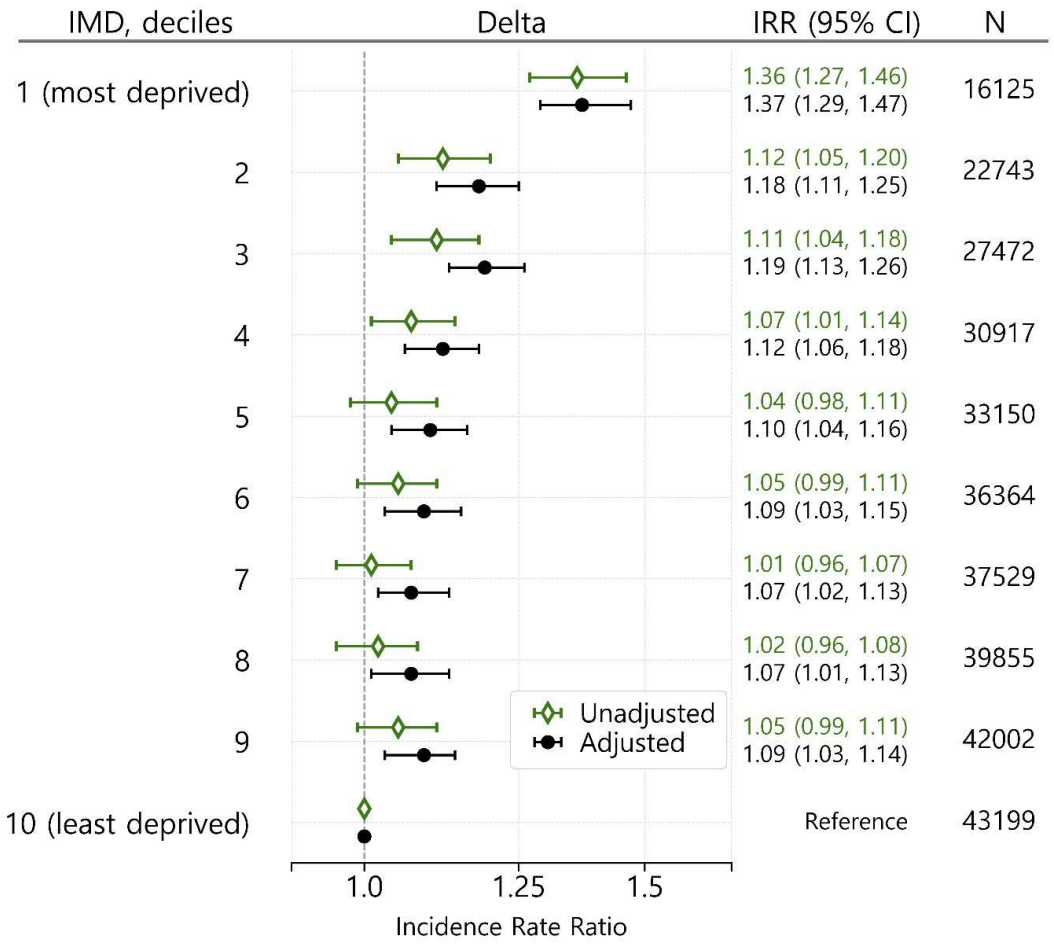
(b) And in this job/business, what do you mainly do now?_____

(c) Which of these employment sectors do you work in now? *(select one)*

- ☐ Teaching and education
- ☐ Social care *(go to A5)*
- ☐ Retail sector (incl. wholesale)
- ☐ Food production and agriculture (incl. farming)
- ☐ Information technology and communication
- ☐ Manufacturing or construction
- ☐ Armed forces
- ☐ Other employment sector, specify _____
- ☐ Health care *(go to A4)*
- ☐ Transport (incl. storage, logistic)
- ☐ Hospitality (e.g. hotel, restaurant, cafe)
- ☐ Personal services (e.g. hairdressers, tattooists)
- ☐ Financial services (incl. insurance)
- ☐ Civil service or Local Government
- ☐ Arts, entertainment or recreation

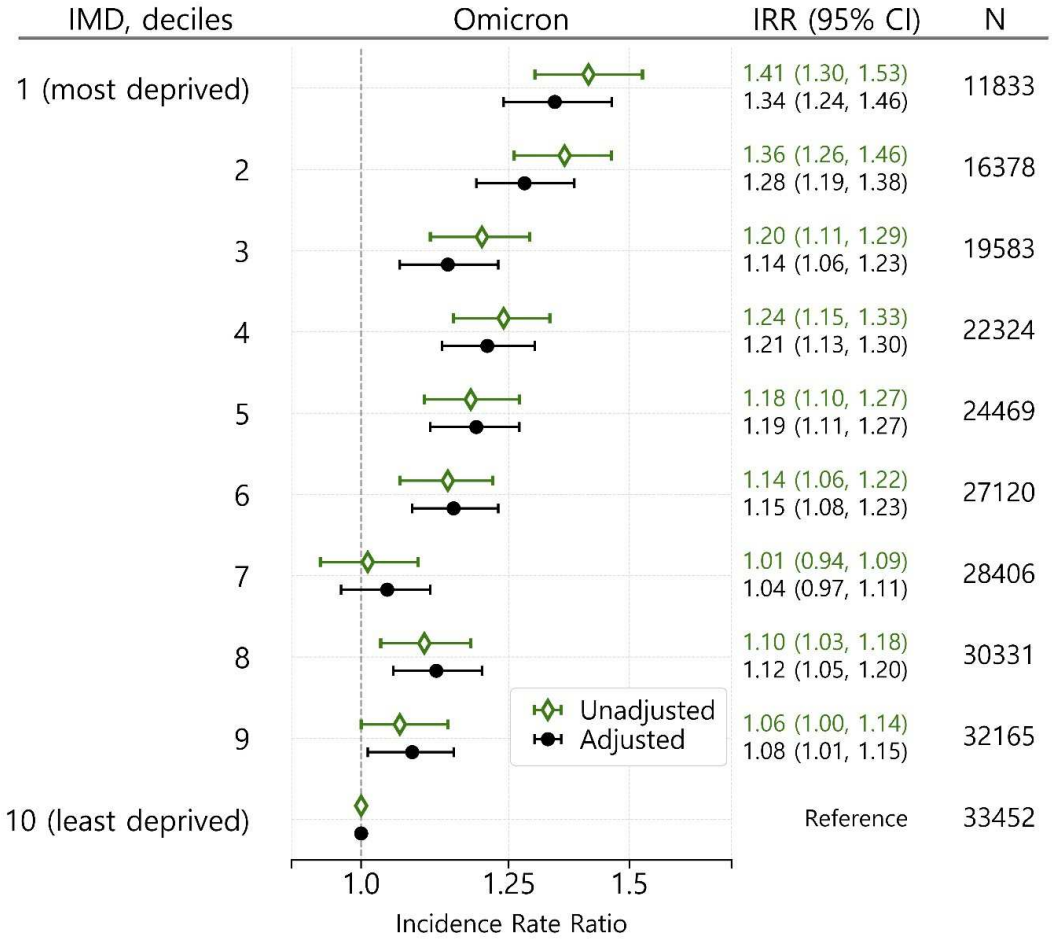
(go to A6 if not now working in Health or Social care)

Supplementary Figure 2. Association between deprivation and Delta variant.



*Adjusted for age, sex, ethnicity, urban/rural, comorbid conditions, household size, patient/client-facing nature of the job, country, and time (as quarters of the year).

Supplementary Figure 3. Association between deprivation and Omicron variant.



*Adjusted for age, sex, ethnicity, urban/rural, comorbid conditions, household size, patient/client-facing nature of the job, country, and time (as quarters of the year).