**Risk factors for SARS-CoV-2 infection in primary and secondary schools students and staff in England in the 2020/2021 school year: a longitudinal study**

**Supplementary Figures and tables**

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# Supplementary table 1: Association between school-level characteristics and SARS-CoV-2 anti-N antibodies\* in students and staff at the start of the study (November 2020)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Students** | | | | | **Staff** | | | | |
| **Variables** | | **d/n (%)** | **Crude\*\* OR (95%CI)** | **p-value** | **Adj\*\*\* OR** | **p-value** | **d/n (%)** | **Crude\*\* OR (95%CI)** | **p-value** | **Adj\*\*\* OR** | **p-value** |
| **School rural/urban** | |  |  | **0.05** |  | **0.04** |  |  | **0.02** |  | **0.02** |
|  | Rural | 21 / 593 (3.54) | REF |  | REF |  | 12 / 254 (4.72) | REF |  | REF |  |
|  | Urban city and town | 120 / 2160 (5.56) | 1.49 (0.60, 3.68) |  | 1.42 (0.59, 3.38) |  | 128 / 1556 (8.23) | 1.73 (0.68, 4.37) |  | 1.64 (0.80, 3.35) |  |
|  | Urban conurbation | 203 / 2279 (8.91) | 2.96 (1.23, 7.09) |  | 2.56 (1.07, 6.11) |  | 261 / 1767 (14.77) | 3.72 (1.52, 9.09) |  | 3.12 (1.44, 6.74) |  |
| **Transmission at time of sampling** | | |  | **0.15** |  | **0.14** |  |  | **0.12** |  | **0.11** |
|  | Low | 72 / 1678 (4.29) | REF |  | REF |  | 81 / 1180 (6.86) | REF |  | REF |  |
|  | High | 272 / 3354 (8.11) | 1.96 (0.76, 5.03) |  | 2.02 (0.78, 5.26) |  | 320 / 2397 (13.35) | 2.20 (0.80, 6.02) |  | 2.22 (0.80, 6.16) |  |
| **School type** | |  |  | **0.17** |  | **0.88** |  |  | **0.62** |  | **0.52** |
|  | Primary | 103 / 2078 (4.96) | REF |  | REF |  | 110 / 963 (11.42) | REF |  | REF |  |
|  | Secondary | 241 / 2954 (8.16) | 1.37 (0.86, 2.19) |  | 1.04 (0.62, 1.73) |  | 291 / 2614 (11.13) | 0.90 (0.59, 1.39) |  | 0.90 (0.62, 1.29) |  |
| **School establishment group+** | | |  | **0.45** |  | **0.81** |  |  | **0.72** |  | **0.61** |
|  | Academy/Free | 180 / 2119 (8.49) | REF |  | REF |  | 215 / 1873 (11.48) | REF |  | REF |  |
|  | LA maintained | 164 / 2913 (5.63) | 0.83 (0.51, 1.37) |  | 0.94 (0.57, 1.56) |  | 186 / 1704 (10.92) | 1.08 (0.70, 1.65) |  | 1.13 (0.68, 1.88) |  |
| **School OFSTED++ rating** | |  |  | **0.25** |  | **0.15** |  |  | **0.08** |  | **0.75** |
|  | Outstanding/Good | 254 / 3799 (6.69) | REF |  | REF |  | 288 / 2465 (11.68) | REF |  | REF |  |
|  | Inadequate/Requires improvement | 59 / 688 (8.58) | 1.33 (0.92, 1.94) |  | 1.42 (0.84, 2.39) |  | 53 / 597 (8.88) | 0.76 (0.55, 1.04) |  | 0.86 (0.55, 1.35) |  |
|  | Not yet available | 31 / 545 (5.69) | 0.89 (0.58, 1.37) |  | 0.81 (0.50, 1.32) |  | 60 / 515 (11.65) | 1.06 (0.65, 1.73) |  | 0.95 (0.65, 1.39) |  |
| **School % students eligible for FSM+++ band** | | |  | **0.07** |  | **0.03** |  |  | **0.21** |  | **0.22** |
|  | <10% | 83 / 1371 (6.05) | REF |  | REF |  | 49 / 475 (10.32) | REF |  | REF |  |
|  | 10% - <30% | 196 / 2919 (6.71) | 1.60 (0.80, 3.19) |  | 1.58 (0.77, 3.23) |  | 237 / 2253 (10.52) | 1.40 (0.80, 2.45) |  | 1.50 (0.89, 2.54) |  |
|  | >=30% | 65 / 742 (8.76) | 2.16 (1.16, 4.02) |  | 1.79 (1.20, 2.68) |  | 115 / 849 (13.55) | 1.84 (0.93, 3.63) |  | 1.61 (0.94, 2.77) |  |
| **School % non-white ethnicity students (tertile)** | | |  | **0.14** |  | **0.12** |  |  | **0.11** |  | **0.06** |
|  | <7.70% | 110 / 2051 (5.36) | REF |  | REF |  | 85 / 1240 (6.85) | REF |  | REF |  |
|  | 7.70-<29.06% | 139 / 2098 (6.63) | 1.13 (0.65, 1.97) |  | 1.07 (0.64, 1.77) |  | 160 / 1211 (13.21) | 2.10 (1.00, 4.43) |  | 2.08 (1.14, 3.77) |  |
|  | >29.06% | 95 / 883 (10.76) | 2.01 (1.03, 3.93) |  | 2.17 (1.03, 4.60) |  | 156 / 1126 (13.85) | 2.38 (1.08, 5.25) |  | 2.48 (1.10, 5.60) |  |
| **School % students with English as Additional Language (tertile)** | | | | **0.05** |  | **0.05** |  |  | **0.12** |  | **0.11** |
|  | <4.23% | 106 / 1929 (5.50) | REF |  | REF |  | 80 / 1021 (7.84) | REF |  | REF |  |
|  | 4.23-<21.06% | 138 / 2234 (6.18) | 1.14 (0.61, 2.13) |  | 1.09 (0.60, 1.99) |  | 183 / 1529 (11.97) | 1.64 (0.87, 3.09) |  | 1.61 (0.95, 2.74) |  |
|  | >21.06% | 100 / 869 (11.51) | 2.26 (1.21, 4.24) |  | 2.56 (1.14, 5.73) |  | 138 / 1027 (13.44) | 1.89 (1.04, 3.44) |  | 2.07 (0.98, 4.35) |  |
| **School size** | |  |  | **0.78** |  | **0.58** |  |  | **0.21** |  | **0.34** |
|  | Small | 72 / 1080 (6.67) | REF |  | REF |  | 72 / 821 (8.77) | REF |  | REF |  |
|  | Medium | 121 / 1741 (6.95) | 1.10 (0.68, 1.76) |  | 1.10 (0.68, 1.78) |  | 153 / 1299 (11.78) | 1.40 (0.85, 2.31) |  | 1.29 (0.75, 2.22) |  |
|  | Large | 151 / 2211 (6.83) | 1.21 (0.69, 2.10) |  | 1.41 (0.71, 2.79) |  | 176 / 1457 (12.08) | 1.50 (0.96, 2.35) |  | 1.58 (0.84, 2.97) |  |
| **School student to teacher ratio** | | |  | **0.03** |  | **0.34** |  |  | **0.22** |  | **0.41** |
|  | <20 | 252 / 3053 (8.25) | REF |  | REF |  | 296 / 2676 (11.06) | REF |  | REF |  |
|  | 20 - <51 | 76 / 1687 (4.51) | 0.62 (0.43, 0.88) |  | 0.79 (0.53, 1.18) |  | 70 / 692 (10.12) | 1.04 (0.62, 1.75) |  | 1.15 (0.66, 1.99) |  |
|  | Data not available | 16 / 292 (5.48) | 0.70 (0.36, 1.37) |  | 0.73 (0.43, 1.27) |  | 35 / 209 (16.75) | 1.80 (0.90, 3.58) |  | 1.63 (0.78, 3.39) |  |

*\*antibodies against SARS-CoV-2 nucleocapsid (N) protein, detected in oral fluids in students and fingerprick capillary blood in staff*

*\*\*crude OR (95%CI) = crude odds ratio and 95% confidence interval (mixed effect model with random intercept at school-level and robust standard errors clustered at the local authority level)*

*\*\*\*adj OR = adjusted odds ratio (controlled for age, gender and LA-level covid-19 community rates at the start of the school year 2020/2021)*

**+** *Academies and Free schools are directly funded by the government, thus have more control over how they are run, whereas local authority (LA) maintained schools are funded via their local authority.*

**++** *OFSTED: Office for Standards in Education, Children's Services and Skills*

**+++** *FSM: Free School Meals (funded by the government for socio-economically disadvantaged students)*

# Supplementary table 2: Association between socio-demographic characteristics and SARS-CoV-2 anti-N antibodies\* in students and staff at the start of the study (November 2020)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Students** | | | | | **Staff** | | | | |
| **Variables** | | **d/n (%)** | **Crude\*\* OR (95%CI)** | **p-value** | **Adj\*\*\* OR** | **p-value** | **d/n (%)** | **Crude\*\* OR (95%CI)** | **p-value** | **Adj\*\*\* OR** | **p-value** |
| **Age group (years)** | |  |  | **0.02** |  | **<0.01** |  |  | **0.01** |  | **0.02** |
|  | 5-9 years | 75 / 1700 (4.41) | REF |  | REF |  |  |  |  |  |  |
|  | 10-14 years | 239 / 2875 (8.31) | 1.62 (1.20, 2.19) |  | 1.66 (1.26, 2.19) |  |  |  |  |  |  |
|  | 15+ years | 30 / 457 (6.56) | 1.40 (0.89, 2.21) |  | 1.55 (1.06, 2.26) |  |  |  |  |  |  |
|  | <35 years |  |  |  |  |  | 142 / 1091 (13.02) | REF |  | REF |  |
|  | 35-44 years |  |  |  |  |  | 110 / 1028 (10.70) | 0.84 (0.63, 1.12) |  | 0.84 (0.63, 1.12) |  |
|  | 45-54 years |  |  |  |  |  | 105 / 926 (11.34) | 0.88 (0.71, 1.11) |  | 0.90 (0.71, 1.14) |  |
|  | 55+ years |  |  |  |  |  | 44 / 532 (8.27) | 0.61 (0.47, 0.78) |  | 0.62 (0.47, 0.81) |  |
| **Gender** | |  |  | **0.32** |  | **0.32** |  |  | **0.08** |  | **0.11** |
|  | Male | 189 / 2562 (7.38) | REF |  | REF |  | 103 / 775 (13.29) | REF |  | REF |  |
|  | Female | 155 / 2470 (6.28) | 0.86 (0.63, 1.18) |  | 0.86 (0.62, 1.18) |  | 298 / 2802 (10.64) | 0.76 (0.55, 1.04) |  | 0.77 (0.56, 1.07) |  |
| **Ethnicity** |  |  |  | **0.03** |  | **<0.01** |  |  | **<0.01** |  | **<0.01** |
|  | White | 258 / 4266 (6.05) | REF |  | REF |  | 356 / 3331 (10.69) | REF |  | REF |  |
|  | Non-white (minority) | 86 / 766 (11.23) | 1.64 (1.05, 2.56) |  | 1.77 (1.18, 2.64) |  | 45 / 246 (18.29) | 1.79 (1.27, 2.52) |  | 1.77 (1.26, 2.47) |  |
| **Index of multiple deprivation 2019 quintile** | | |  | **0.10** |  | **0.09** |  |  | **0.39** |  | **0.40** |
|  | Least deprived | 46 / 1001 (4.60) | REF |  | REF |  | 71 / 770 (9.22) | REF |  | REF |  |
|  | 4 | 53 / 1008 (5.26) | 1.46 (0.81, 2.62) |  | 1.48 (0.83, 2.64) |  | 80 / 787 (10.17) | 1.10 (0.84, 1.44) |  | 1.09 (0.82, 1.46) |  |
|  | 3 | 44 / 755 (5.83) | 1.79 (0.98, 3.28) |  | 1.83 (0.99, 3.38) |  | 81 / 655 (12.37) | 1.38 (1.01, 1.87) |  | 1.37 (0.98, 1.91) |  |
|  | 2 | 89 / 1060 (8.40) | 2.42 (1.43, 4.11) |  | 2.50 (1.45, 4.32) |  | 92 / 727 (12.65) | 1.35 (0.94, 1.94) |  | 1.37 (0.92, 2.04) |  |
|  | Most deprived | 112 / 1208 (9.27) | 2.13 (1.27, 3.55) |  | 2.16 (1.28, 3.62) |  | 77 / 638 (12.07) | 1.13 (0.72, 1.78) |  | 1.12 (0.71, 1.78) |  |
| **Household composition** | | |  | **0.64** |  | **0.57** |  |  | **0.59** |  | **0.36** |
|  | Only adults | 15 / 287 (5.23) | REF |  | REF |  | 222 / 1904 (11.66) | REF |  | REF |  |
|  | One child | 96 / 1385 (6.93) | 1.28 (0.65, 2.52) |  | 1.29 (0.65, 2.55) |  | 71 / 682 (10.41) | 0.84 (0.59, 1.19) |  | 0.80 (0.57, 1.11) |  |
|  | Multiple children | 233 / 3360 (6.93) | 1.38 (0.66, 2.88) |  | 1.42 (0.68, 2.98) |  | 108 / 991 (10.90) | 0.94 (0.61, 1.45) |  | 0.87 (0.57, 1.33) |  |
| **Person per bedroom** | | |  | **0.67** |  | **0.58** |  |  | **0.66** |  | **0.58** |
|  | <=1 | 73 / 1110 (6.58) | REF |  | REF |  | 157 / 1338 (11.73) | REF |  | REF |  |
|  | >1-2 | 235 / 3550 (6.62) | 1.05 (0.82, 1.33) |  | 1.08 (0.84, 1.38) |  | 235 / 2141 (10.98) | 0.98 (0.77, 1.24) |  | 0.97 (0.78, 1.20) |  |
|  | >2 | 36 / 372 (9.68) | 1.26 (0.73, 2.15) |  | 1.32 (0.76, 2.28) |  | 9 / 98 (9.18) | 0.71 (0.26, 1.96) |  | 0.71 (0.26, 1.90) |  |
| **Job group (staff only)** | | |  |  |  |  |  |  | **0.36** |  | **0.35** |
|  | Senior leader |  |  |  |  |  | 43 / 311 (13.83) | REF |  | REF |  |
|  | Middle leader | |  |  |  |  | 76 / 639 (11.89) | 0.83 (0.51, 1.37) |  | 0.80 (0.49, 1.32) |  |
|  | Teacher |  |  |  |  |  | 123 / 1174 (10.48) | 0.72 (0.40, 1.30) |  | 0.67 (0.36, 1.27) |  |
|  | TA / Special Ed | |  |  |  |  | 75 / 543 (13.81) | 1.01 (0.49, 2.09) |  | 1.10 (0.52, 2.30) |  |
|  | Admin / Pastoral | |  |  |  |  | 48 / 501 (9.58) | 0.70 (0.37, 1.32) |  | 0.78 (0.41, 1.48) |  |
|  | Cater/Clean/Maintenance | |  |  |  |  | 17 / 155 (10.97) | 0.66 (0.29, 1.54) |  | 0.72 (0.33, 1.58) |  |
|  | Other |  |  |  |  |  | 19 / 254 (7.48) | 0.51 (0.27, 0.97) |  | 0.55 (0.28, 1.06) |  |
| **Year group with most contact (staff only)** | | |  |  |  |  |  |  | **0.08** |  | **0.09** |
|  | None |  |  |  |  |  | 209 / 1929 (10.83) | REF |  | REF |  |
|  | Year 2 and below | |  |  |  |  | 18 / 209 (8.61) | 0.73 (0.47, 1.14) |  | 0.76 (0.46, 1.24) |  |
|  | Year 3 to 6 |  |  |  |  |  | 21 / 217 (9.68) | 0.76 (0.46, 1.24) |  | 0.75 (0.46, 1.21) |  |
|  | Year 7 to 9 |  |  |  |  |  | 55 / 464 (11.85) | 1.12 (0.70, 1.81) |  | 1.08 (0.66, 1.76) |  |
|  | Year 10 & 11 |  |  |  |  |  | 77 / 604 (12.75) | 1.32 (0.99, 1.75) |  | 1.27 (0.97, 1.67) |  |
|  | Year 12 & 13 |  |  |  |  |  | 21 / 154 (13.64) | 1.28 (0.76, 2.13) |  | 1.24 (0.77, 2.01) |  |

*\*antibodies against SARS-CoV-2 nucleocapside (N) protein, detected in oral fluids in students and fingerprick capillary blood in staff*

*\*\*crude OR (95%CI) = crude odds ratio and 95% confidence interval (mixed effect model with random intercept at school-level and robust standard errors clustered at the local authority level)*

*\*\*\*adj OR = adjusted odds ratio (controlled for age, gender and LA-level covid-19 community rates at the start of the school year 2020/2021)*

# Supplementary table 3: Comparison of characteristics of students and staff enrolled in the study to those who completed the additional second questionnaire in the Autumn 2020 school term

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | | | **Enrolled Students** | | **Additional Questionnaire Students** | **Enrolled Staff** | | **Additional Questionnaire Staff** |
| **School rural/urban** | | |  | |  |  | |  |
|  | Rural | | 737 / 6799 (10.84) | | 438 / 4254 (10.30) | 368 / 5090 (7.23) | | 252 / 3303 (7.63) |
|  | Urban city and town | | 3248 / 6799 (47.77) | | 2185 / 4254 (51.36) | 2313 / 5090 (45.44) | | 1589 / 3303 (48.11) |
|  | Urban conurbation | | 2814 / 6799 (41.39) | | 1631 / 4254 (38.34) | 2409 / 5090 (47.33) | | 1462 / 3303 (44.26) |
| **Transmission at time of sampling** | | |  | |  |  | |  |
|  | Low | | 2517 / 6799 (37.02) | | 1616 / 4254 (37.99) | 1861 / 5090 (36.56) | | 1239 / 3303 (37.51) |
|  | High | | 4282 / 6799 (62.98) | | 2638 / 4254 (62.01) | 3229 / 5090 (63.44) | | 2064 / 3303 (62.49) |
| **School type** | | |  | |  |  | |  |
|  | Primary | | 2503 / 6799 (36.81) | | 1479 / 4254 (34.77) | 1156 / 5090 (22.71) | | 774 / 3303 (23.43) |
|  | Secondary | | 4296 / 6799 (63.19) | | 2775 / 4254 (65.23) | 3934 / 5090 (77.29) | | 2529 / 3303 (76.57) |
| **School establishment group+** | | |  | |  |  | |  |
|  | Academy/Free | | 3288 / 6799 (48.36) | | 2118 / 4254 (49.79) | 2731 / 5090 (53.65) | | 1836 / 3303 (55.59) |
|  | LA maintained | | 3511 / 6799 (51.64) | | 2136 / 4254 (50.21) | 2359 / 5090 (46.35) | | 1467 / 3303 (44.41) |
| **School OFSTED++ rating** | | |  | |  |  | |  |
|  | Outstanding/Good | | 4968 / 6799 (73.07) | | 3189 / 4254 (74.96) | 3382 / 5090 (66.44) | | 2212 / 3303 (66.97) |
|  | Inadequate/Requires improvement | | 947 / 6799 (13.93) | | 525 / 4254 (12.34) | 918 / 5090 (18.04) | | 572 / 3303 (17.32) |
|  | Not yet available | | 884 / 6799 (13.00) | | 540 / 4254 (12.69) | 790 / 5090 (15.52) | | 519 / 3303 (15.71) |
| **School % students eligible for FSM+++ band** | | |  | |  |  | |  |
|  | <10% | | 1776 / 6799 (26.12) | | 1235 / 4254 (29.03) | 668 / 5090 (13.12) | | 474 / 3303 (14.35) |
|  | 10% - <30% | | 4110 / 6799 (60.45) | | 2553 / 4254 (60.01) | 3290 / 5090 (64.64) | | 2132 / 3303 (64.55) |
|  | >=30% | | 913 / 6799 (13.43) | | 466 / 4254 (10.95) | 1132 / 5090 (22.24) | | 697 / 3303 (21.10) |
| **School % non-white ethnicity students (tertile)** | | | | |  |  | |  |
|  | <7.70% | | 2818 / 6799 (41.45) | | 1798 / 4254 (42.27) | 1784 / 5090 (35.05) | | 1195 / 3303 (36.18) |
|  | 7.70-<29.06% | | 2518 / 6799 (37.03) | | 1648 / 4254 (38.74) | 1614 / 5090 (31.71) | | 1050 / 3303 (31.79) |
|  | >29.06% | | 1463 / 6799 (21.52) | | 808 / 4254 (18.99) | 1692 / 5090 (33.24) | | 1058 / 3303 (32.03) |
| **School % students with English as Additional Language (tertile)** | | | | |  |  | |  |
|  | <4.23% | | 2513 / 6799 (36.96) | | 1608 / 4254 (37.80) | 1444 / 5090 (28.37) | | 950 / 3303 (28.76) |
|  | 4.23-<21.06% | | 3002 / 6799 (44.15) | | 1955 / 4254 (45.96) | 2201 / 5090 (43.24) | | 1462 / 3303 (44.26) |
|  | >21.06% | | 1284 / 6799 (18.89) | | 691 / 4254 (16.24) | 1445 / 5090 (28.39) | | 891 / 3303 (26.98) |
| **School size** | | |  | |  |  | |  |
|  | Small | | 1375 / 6799 (20.22) | | 887 / 4254 (20.85) | 1133 / 5090 (22.26) | | 751 / 3303 (22.74) |
|  | Medium | | 2366 / 6799 (34.80) | | 1477 / 4254 (34.72) | 1878 / 5090 (36.90) | | 1209 / 3303 (36.60) |
|  | Large | | 3058 / 6799 (44.98) | | 1890 / 4254 (44.43) | 2079 / 5090 (40.84) | | 1343 / 3303 (40.66) |
| **School pupil teacher ratio** | | |  | |  |  | |  |
|  | <20 | | 4321 / 6799 (63.55) | | 2681 / 4254 (63.02) | 3879 / 5090 (76.21) | | 2467 / 3303 (74.69) |
|  | 20 - <51 | | 2063 / 6799 (30.34) | | 1327 / 4254 (31.19) | 936 / 5090 (18.39) | | 661 / 3303 (20.01) |
|  | Data not available | | 415 / 6799 (6.10) | | 246 / 4254 (5.78) | 275 / 5090 (5.40) | | 175 / 3303 (5.30) |
| **Age group (years)** | | |  | |  |  | |  |
|  | 5-9 years | | 2053 / 6799 (30.20) | | 1239 / 4251 (29.15) |  | |  |
|  | 10-14 years | | 3899 / 6799 (57.35) | | 2556 / 4251 (60.13) |  | |  |
|  | 15+ years | | 847 / 6799 (12.46) | | 456 / 4251 (10.73) |  | |  |
|  | <35 years | |  | |  | 1571 / 5090 (30.86) | | 950 / 3302 (28.77) |
|  | 35-44 years | |  | |  | 1493 / 5090 (29.33) | | 951 / 3302 (28.80) |
|  | 45-54 years | |  | |  | 1264 / 5090 (24.83) | | 895 / 3302 (27.10) |
|  | 55+ years | |  | |  | 762 / 5090 (14.97) | | 506 / 3302 (15.32) |
| **Key Stage (year group)** | | |  | |  |  | |  |
|  | KS-1 | | 1094 / 6799 (16.09) | | 679 / 4250 (15.98) |  | |  |
|  | KS-2 | | 1410 / 6799 (20.74) | | 799 / 4250 (18.80) |  | |  |
|  | KS-3 | | 3026 / 6799 (44.51) | | 2046 / 4250 (48.14) |  | |  |
|  | KS-4 | | 586 / 6799 (8.62) | | 375 / 4250 (8.82) |  | |  |
|  | KS-5 | | 683 / 6799 (10.05) | | 351 / 4250 (8.26) |  | |  |
| **Gender** | | |  | |  |  | |  |
|  | Male | | 3370 / 6799 (49.57) | | 2090 / 4249 (49.19) | 1160 / 5090 (22.79) | | 676 / 3298 (20.50) |
|  | Female | | 3429 / 6799 (50.43) | | 2159 / 4249 (50.81) | 3930 / 5090 (77.21) | | 2622 / 3298 (79.50) |
| **Ethnicity** | | |  | |  |  | |  |
|  | White | | 5698 / 6799 (83.81) | | 3685 / 4239 (86.93) | 4724 / 5090 (92.81) | | 3098 / 3287 (94.25) |
|  | Non-white (minority) | | 1101 / 6799 (16.19) | | 554 / 4239 (13.07) | 366 / 5090 (7.19) | | 189 / 3287 (5.75) |
| **Index of multiple deprivation 2019 quintile** | |  | |  | | |  | |
|  | Least deprived | | 1333 / 6799 (19.61) | | 935 / 4212 (22.20) | 1080 / 5090 (21.22) | | 684 / 3267 (20.94) |
|  | 4 | | 1315 / 6799 (19.34) | | 854 / 4212 (20.28) | 1098 / 5090 (21.57) | | 720 / 3267 (22.04) |
|  | 3 | | 1104 / 6799 (16.24) | | 688 / 4212 (16.33) | 947 / 5090 (18.61) | | 617 / 3267 (18.89) |
|  | 2 | | 1423 / 6799 (20.93) | | 884 / 4212 (20.99) | 1056 / 5090 (20.75) | | 701 / 3267 (21.46) |
|  | Most deprived | | 1624 / 6799 (23.89) | | 851 / 4212 (20.20) | 909 / 5090 (17.86) | | 545 / 3267 (16.68) |
| **Household size** | | |  | |  |  | |  |
|  | 1-2 | | 440 / 6799 (6.47) | | 267 / 4251 (6.28) | 1975 / 5090 (38.80) | | 1317 / 3250 (40.52) |
|  | 3-5 | | 5566 / 6799 (81.86) | | 3562 / 4251 (83.79) | 2910 / 5090 (57.17) | | 1834 / 3250 (56.43) |
|  | 6+ | | 793 / 6799 (11.66) | | 422 / 4251 (9.93) | 205 / 5090 (4.03) | | 99 / 3250 (3.05) |
| **Household composition** | | |  | |  |  | |  |
|  | Only adults | | 513 / 6799 (7.55) | | 293 / 4251 (6.89) | 2717 / 5090 (53.38) | | 1808 / 3251 (55.61) |
|  | One child | | 1919 / 6799 (28.22) | | 1262 / 4251 (29.69) | 992 / 5090 (19.49) | | 640 / 3251 (19.69) |
|  | Multiple children | | 4367 / 6799 (64.23) | | 2696 / 4251 (63.42) | 1381 / 5090 (27.13) | | 803 / 3251 (24.70) |
| **People per bedroom** | | |  | |  |  | |  |
|  | <=1 | | 1533 / 6799 (22.55) | | 929 / 4254 (21.84) | 1908 / 5090 (37.49) | | 1239 / 3303 (37.51) |
|  | >1-2 | | 4743 / 6799 (69.76) | | 3066 / 4254 (72.07) | 3038 / 5090 (59.69) | | 1936 / 3303 (58.61) |
|  | >2 | | 523 / 6799 (7.69) | | 259 / 4254 (6.09) | 144 / 5090 (2.83) | | 128 / 3303 (3.88) |
| **Job group (staff only)** | | |  | |  |  | |  |
|  | Senior leader | |  | |  | 421 / 5090 (8.27) | | 251 / 3280 (7.65) |
|  | Middle leader | |  | |  | 907 / 5090 (17.82) | | 589 / 3280 (17.96) |
|  | Teacher | |  | |  | 1731 / 5090 (34.01) | | 1137 / 3280 (34.66) |
|  | TA / Special Ed | |  | |  | 707 / 5090 (13.89) | | 453 / 3280 (13.81) |
|  | Admin / Pastoral | |  | |  | 728 / 5090 (14.30) | | 475 / 3280 (14.48) |
|  | Cater/Clean/Maintenance | |  | |  | 228 / 5090 (4.48) | | 130 / 3280 (3.96) |
|  | Other | |  | |  | 368 / 5090 (7.23) | | 245 / 3280 (7.47) |
| **Year group with most contact (staff only)** | | | |  | | |  | |
|  | None | |  | |  | 2781 / 5090 (54.64) | | 1764 / 3277 (53.83) |
|  | Year 2 and below | |  | |  | 265 / 5090 (5.21) | | 195 / 3277 (5.95) |
|  | Year 3 to 6 | |  | |  | 274 / 5090 (5.38) | | 190 / 3277 (5.80) |
|  | Year 7 to 9 | |  | |  | 655 / 5090 (12.87) | | 412 / 3277 (12.57) |
|  | Year 10 & 11 | |  | |  | 861 / 5090 (16.92) | | 551 / 3277 (16.81) |
|  | Year 12 & 13 | |  | |  | 254 / 5090 (4.99) | | 165 / 3277 (5.04) |

**+** *Academies and Free schools are directly funded by the government, thus have more control over how they are run, whereas local authority (LA) maintained schools are funded via their local authority.*

**++** *OFSTED: Office for Standards in Education, Children's Services and Skills*

**+++** *FSM: Free School Meals (funded by the government for socio-economically disadvantaged students)*

# Supplementary table 4: Comparison of characteristics of students and staff enrolled in the study to those who completed the additional second questionnaire in the Spring and Summer 2021 school terms

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | | | **Enrolled Student** | **Additional Questionnaire Student** | | **Enrolled Staff** | | **Additional Questionnaire Staff** |
| **School rural/urban** | | |  |  | |  | |  |
|  | Rural | | 841 / 11952 (7.04) | 500 / 7247 (6.90) | | 289 / 4569 (6.33) | | 228 / 3388 (6.73) |
|  | Urban city and town | | 6807 / 11952 (56.95) | 4231 / 7247 (58.38) | | 2187 / 4569 (47.87) | | 1692 / 3388 (49.94) |
|  | Urban conurbation | | 4304 / 11952 (36.01) | 2516 / 7247 (34.72) | | 2093 / 4569 (45.81) | | 1468 / 3388 (43.33) |
| **Transmission at time of sampling** | | |  |  | |  | |  |
|  | Low | | 4715 / 11952 (39.45) | 2829 / 7247 (39.04) | | 1642 / 4569 (35.94) | | 1247 / 3388 (36.81) |
|  | High | | 7237 / 11952 (60.55) | 4418 / 7247 (60.96) | | 2927 / 4569 (64.06) | | 2141 / 3388 (63.19) |
| **School type** | | |  |  | |  | |  |
|  | Primary | | 3795 / 11952 (31.75) | 2136 / 7247 (29.47) | | 1301 / 4569 (28.47) | | 934 / 3388 (27.57) |
|  | Secondary | | 8157 / 11952 (68.25) | 5111 / 7247 (70.53) | | 3268 / 4569 (71.53) | | 2454 / 3388 (72.43) |
| **School establishment group+** | | |  |  | |  | |  |
|  | Academy/Free | | 6545 / 11952 (54.76) | 4069 / 7247 (56.15) | | 2527 / 4569 (55.31) | | 1897 / 3388 (55.99) |
|  | LA maintained | | 5407 / 11952 (45.24) | 3178 / 7247 (43.85) | | 2042 / 4569 (44.69) | | 1491 / 3388 (44.01) |
| **School OFSTED++ rating** | | |  |  | |  | |  |
|  | Outstanding/Good | | 8943 / 11952 (74.82) | 5510 / 7247 (76.03) | | 3218 / 4569 (70.43) | | 2374 / 3388 (70.07) |
|  | Inadequate/Requires improvement | | 1624 / 11952 (13.59) | 863 / 7247 (11.91) | | 723 / 4569 (15.82) | | 546 / 3388 (16.12) |
|  | Not yet available | | 1385 / 11952 (11.59) | 874 / 7247 (12.06) | | 628 / 4569 (13.74) | | 468 / 3388 (13.81) |
| **School % students eligible for FSM+++ band** | | |  |  | |  | |  |
|  | <10% | | 3429 / 11952 (28.69) | 2307 / 7247 (31.83) | | 680 / 4569 (14.88) | | 551 / 3388 (16.26) |
|  | 10% - <30% | | 6932 / 11952 (58.00) | 4133 / 7247 (57.03) | | 2848 / 4569 (62.33) | | 2128 / 3388 (62.81) |
|  | >=30% | | 1591 / 11952 (13.31) | 807 / 7247 (11.14) | | 1041 / 4569 (22.78) | | 709 / 3388 (20.93) |
| **School % non-white ethnicity students (tertile)** | | | |  | |  | |  |
|  | <7.70% | | 4103 / 11952 (34.33) | 2517 / 7247 (34.73) | | 1496 / 4569 (32.74) | | 1155 / 3388 (34.09) |
|  | 7.70-<29.06% | | 5252 / 11952 (43.94) | 3272 / 7247 (45.15) | | 1656 / 4569 (36.24) | | 1237 / 3388 (36.51) |
|  | >29.06% | | 2597 / 11952 (21.73) | 1458 / 7247 (20.12) | | 1417 / 4569 (31.01) | | 996 / 3388 (29.40) |
| **School % students with English as Additional Language (tertile)** | | | |  | |  | |  |
|  | <4.23% | | 4005 / 11952 (33.51) | 2489 / 7247 (34.35) | | 1325 / 4569 (29.00) | | 1000 / 3388 (29.52) |
|  | 4.23-<21.06% | | 5960 / 11952 (49.87) | 3682 / 7247 (50.81) | | 2006 / 4569 (43.90) | | 1529 / 3388 (45.13) |
|  | >21.06% | | 1987 / 11952 (16.62) | 1076 / 7247 (14.85) | | 1238 / 4569 (27.10) | | 859 / 3388 (25.35) |
| **School size** | | |  |  | |  | |  |
|  | Small | | 2980 / 11952 (24.93) | 1862 / 7247 (25.69) | | 1064 / 4569 (23.29) | | 785 / 3388 (23.17) |
|  | Medium | | 4174 / 11952 (34.92) | 2478 / 7247 (34.19) | | 1690 / 4569 (36.99) | | 1245 / 3388 (36.75) |
|  | Large | | 4798 / 11952 (40.14) | 2907 / 7247 (40.11) | | 1815 / 4569 (39.72) | | 1358 / 3388 (40.08) |
| **School pupil teacher ratio** | | |  |  | |  | |  |
|  | <20 | | 8233 / 11952 (68.88) | 5004 / 7247 (69.05) | | 3276 / 4569 (71.70) | | 2431 / 3388 (71.75) |
|  | 20 - <51 | | 2897 / 11952 (24.24) | 1738 / 7247 (23.98) | | 993 / 4569 (21.73) | | 746 / 3388 (22.02) |
|  | Data not available | | 822 / 11952 (6.88) | 505 / 7247 (6.97) | | 300 / 4569 (6.57) | | 211 / 3388 (6.23) |
| **Age group (years)** | | |  |  | |  | |  |
|  | 5-9 years | | 2967 / 11952 (24.82) | 1718 / 7245 (23.71) | |  | |  |
|  | 10-14 years | | 7743 / 11952 (64.78) | 4833 / 7245 (66.71) | |  | |  |
|  | 15+ years | | 1242 / 11952 (10.39) | 694 / 7245 (9.58) | |  | |  |
|  | <35 years | |  | 1544 / 5312 (29.07) | | 1381 / 4569 (30.23) | | 932 / 3388 (27.51) |
|  | 35-44 years | |  | 1548 / 5312 (29.14) | | 1331 / 4569 (29.13) | | 982 / 3388 (28.98) |
|  | 45-54 years | |  | 1436 / 5312 (27.03) | | 1178 / 4569 (25.78) | | 955 / 3388 (28.19) |
|  | 55+ years | |  | 784 / 5312 (14.76) | | 679 / 4569 (14.86) | | 519 / 3388 (15.32) |
| **Key Stage (year group)** | | |  |  | |  | |  |
|  | KS-1 | | 1507 / 11952 (12.61) | 899 / 7244 (12.41) | |  | |  |
|  | KS-2 | | 2287 / 11952 (19.13) | 1235 / 7244 (17.05) | |  | |  |
|  | KS-3 | | 6032 / 11952 (50.47) | 3886 / 7244 (53.64) | |  | |  |
|  | KS-4 | | 1421 / 11952 (11.89) | 848 / 7244 (11.71) | |  | |  |
|  | KS-5 | | 705 / 11952 (5.90) | 373 / 7244 (5.15) | |  | |  |
| **Gender** | | |  |  | |  | |  |
|  | Male | | 5965 / 11952 (49.91) | 3576 / 7230 (49.46) | | 968 / 4569 (21.19) | | 665 / 3384 (19.65) |
|  | Female | | 5987 / 11952 (50.09) | 3654 / 7230 (50.54) | | 3601 / 4569 (78.81) | | 2719 / 3384 (80.35) |
| **Ethnicity** | | |  |  | |  | |  |
|  | White | | 10178 / 11952 (85.16) | 6352 / 7212 (88.08) | | 4269 / 4569 (93.43) | | 3205 / 3377 (94.91) |
|  | Non-white (minority) | | 1774 / 11952 (14.84) | 860 / 7212 (11.92) | | 300 / 4569 (6.57) | | 172 / 3377 (5.09) |
| **Index of multiple deprivation 2019 quintile** | | | |  | |  | |  |
|  | Least deprived | | 2448 / 11952 (20.48) | 1598 / 7191 (22.22) | | 981 / 4569 (21.47) | | 733 / 3354 (21.85) |
|  | 4 | | 2296 / 11952 (19.21) | 1507 / 7191 (20.96) | | 996 / 4569 (21.80) | | 754 / 3354 (22.48) |
|  | 3 | | 1915 / 11952 (16.02) | 1189 / 7191 (16.53) | | 799 / 4569 (17.49) | | 604 / 3354 (18.01) |
|  | 2 | | 2472 / 11952 (20.68) | 1454 / 7191 (20.22) | | 955 / 4569 (20.90) | | 713 / 3354 (21.26) |
|  | Most deprived | | 2821 / 11952 (23.60) | 1443 / 7191 (20.07) | | 838 / 4569 (18.34) | | 550 / 3354 (16.40) |
| **Household size** | | |  |  | |  | |  |
|  | 1-2 | | 795 / 11952 (6.65) | 487 / 7243 (6.72) | | 1771 / 4569 (38.76) | | 1333 / 3338 (39.93) |
|  | 3-5 | | 9764 / 11952 (81.69) | 6080 / 7243 (83.94) | | 2626 / 4569 (57.47) | | 1902 / 3338 (56.98) |
|  | 6+ | | 1393 / 11952 (11.65) | 676 / 7243 (9.33) | | 172 / 4569 (3.76) | | 103 / 3338 (3.09) |
| **Household composition** | | |  |  | |  | |  |
|  | Only adults | | 699 / 11952 (5.85) | 409 / 7243 (5.65) | | 2454 / 4569 (53.71) | | 1828 / 3338 (54.76) |
|  | One child | | 3576 / 11952 (29.92) | 2314 / 7243 (31.95) | | 932 / 4569 (20.40) | | 698 / 3338 (20.91) |
|  | Multiple childen | | 7677 / 11952 (64.23) | 4520 / 7243 (62.41) | | 1183 / 4569 (25.89) | | 812 / 3338 (24.33) |
| **People per bedroom** | | |  |  | |  | |  |
|  | <=1 | | 2832 / 11952 (23.69) | 1698 / 7247 (23.43) | | 1716 / 4569 (37.56) | | 1260 / 3388 (37.19) |
|  | >1-2 | | 8195 / 11952 (68.57) | 5097 / 7247 (70.33) | | 2728 / 4569 (59.71) | | 2002 / 3388 (59.09) |
|  | >2 | | 925 / 11952 (7.74) | 452 / 7247 (6.24) | | 125 / 4569 (2.74) | | 126 / 3388 (3.72) |
| **Job group (staff only)** | | |  |  | |  | |  |
|  | Senior leader | |  |  | | 384 / 4569 (8.40) | | 267 / 3369 (7.93) |
|  | Middle leader | |  |  | | 738 / 4569 (16.15) | | 552 / 3369 (16.38) |
|  | Teacher | |  |  | | 1453 / 4569 (31.80) | | 1075 / 3369 (31.91) |
|  | TA / Special Ed | |  |  | | 727 / 4569 (15.91) | | 521 / 3369 (15.46) |
|  | Admin / Pastoral | |  |  | | 728 / 4569 (15.93) | | 562 / 3369 (16.68) |
|  | Cater/Clean/Maintenance |  | | | 212 / 4569 (4.64) | | 133 / 3369 (3.95) | |
|  | Other | |  |  | | 327 / 4569 (7.16) | | 259 / 3369 (7.69) |
| **Year group with most contact (staff only)** | | | |  | |  | |  |
|  | None | |  |  | | 2584 / 4569 (56.56) | | 1875 / 3356 (55.87) |
|  | Year 2 and below | |  |  | | 290 / 4569 (6.35) | | 221 / 3356 (6.59) |
|  | Year 3 to 6 | |  |  | | 318 / 4569 (6.96) | | 228 / 3356 (6.79) |
|  | Year 7 to 9 | |  |  | | 502 / 4569 (10.99) | | 375 / 3356 (11.17) |
|  | Year 10 & 11 | |  |  | | 677 / 4569 (14.82) | | 503 / 3356 (14.99) |
|  | Year 12 & 13 | |  |  | | 198 / 4569 (4.33) | | 154 / 3356 (4.59) |

**+** *Academies and Free schools are directly funded by the government, thus have more control over how they are run, whereas local authority (LA) maintained schools are funded via their local authority.*

**++** *OFSTED: Office for Standards in Education, Children's Services and Skills*

**+++** *FSM: Free School Meals (funded by the government for socio-economically disadvantaged students)*

# Supplementary table 5: Association between household, community and school risk factors and COVID-19 infection in primary and secondary students in the Autumn 2020 and Spring/Summer 2021 terms

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Autumn term** | | |  | **Spring/Summer terms** | | | | |
| **Variables** | | **Crude\* OR (95%CI)** | **p-value** | **Adj\*\* OR** | **p-value** | **Crude\* OR (95%CI)** | **p-value** | | **Adj\*\* OR** | **p-value** |
| **Covid-19 cases in household** | | | **<0.01** |  | **<0.01** |  | **<0.01** | |  | **<0.01** |
|  | 0 | REF |  | REF |  | REF |  | | REF |  |
|  | 1 | 3.54 (1.93, 6.51) |  | 3.02 (1.51, 6.04) |  | 8.86 (6.24, 12.59) |  | | 8.81 (6.07, 12.79) |  |
|  | 2+ | 24.1 (14.8, 39.0) |  | 23.7 (15.1, 37.2) |  | 95.5 (64.8, 141.0) |  | | 94.0 (64.9, 136.1) |  |
| **FAS III+ tertile** | | | **0.84** |  | **0.62** |  | **0.38** | |  | **0.28** |
|  | lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.94 (0.65, 1.36) |  | 0.90 (0.58, 1.38) |  | 1.40 (0.80, 2.47) |  | | 1.52 (0.87, 2.67) |  |
|  | highest | 0.89 (0.56, 1.42) |  | 0.79 (0.47, 1.32) |  | 1.38 (0.86, 2.20) |  | | 1.49 (0.89, 2.51) |  |
| **Eligible for free school meals** | | | **0.51** |  | **0.63** |  | **0.37** | |  | **0.53** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 0.78 (0.35, 1.72) |  | 0.83 (0.36, 1.88) |  | 0.82 (0.51, 1.31) |  | | 0.84 (0.46, 1.52) |  |
| **Household member working in healthcare** | | | **0.45** |  | **0.35** |  | **0.43** | |  | **0.44** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 1.14 (0.79, 1.66) |  | 1.18 (0.82, 1.71) |  | 1.16 (0.78, 1.73) |  | | 1.16 (0.78, 1.71) |  |
| **Household member working in retail / hospitality / transport** | | | **0.64** |  | **0.51** |  | **0.66** | |  | **0.67** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 0.89 (0.53, 1.49) |  | 0.86 (0.53, 1.40) |  | 1.08 (0.75, 1.54) |  | | 1.08 (0.74, 1.56) |  |
| **Household member working in education** | | | **0.31** |  | **0.31** |  | **0.14** | |  | **0.13** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 1.24 (0.80, 1.93) |  | 1.24 (0.81, 1.90) |  | 0.73 (0.48, 1.13) |  | | 0.72 (0.47, 1.11) |  |
| **Household visit to hospital or care home** | | | **0.01** |  | **0.02** |  | **0.43** | |  | **0.39** |
|  | No, nobody has | REF |  | REF |  | REF |  | | REF |  |
|  | Yes, someone from household has | 0.58 (0.38, 0.87) |  | 0.62 (0.39, 0.97) |  | 0.96 (0.56, 1.64) |  | | 0.97 (0.57, 1.64) |  |
|  | Yes, I/they have | 0.59 (0.32, 1.09) |  | 0.62 (0.34, 1.14) |  | 1.26 (0.88, 1.79) |  | | 1.27 (0.90, 1.79) |  |
| **Travel abroad since March 2019** | | | **0.60** |  | **0.65** |  | **0.67** | |  | **0.71** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 1.17 (0.62, 2.22) |  | 1.15 (0.61, 2.16) |  | 0.90 (0.53, 1.52) |  | | 0.91 (0.52, 1.57) |  |
| **Household contact with person from outside** | | | **0.88** |  | **0.96** |  | **0.15** | |  | **0.13** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 0.98 (0.68, 1.39) |  | 1.01 (0.71, 1.42) |  | 1.15 (0.94, 1.41) |  | | 1.17 (0.95, 1.45) |  |
| **PLACES VISITED IN PAST 4 WEEKS** | | |  |  |  |  |  | |  |  |
| **Different household** | | | **0.03** |  | **0.08** |  | **0.43** | |  | **0.50** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 0.69 (0.49, 0.97) |  | 0.73 (0.51, 1.04) |  | 1.11 (0.84, 1.48) |  | | 1.10 (0.82, 1.49) |  |
| **Restaurant** | | | **0.48** |  | **0.61** |  | **0.50** | |  | **0.53** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 0.76 (0.34, 1.70) |  | 0.81 (0.35, 1.91) |  | 1.14 (0.76, 1.69) |  | | 1.14 (0.73, 1.78) |  |
| **Public Transports** | | | **0.94** |  | **0.74** |  | **0.45** | |  | **0.51** |
|  | No | REF |  | REF |  | REF |  | | REF |  |
|  | Yes | 0.98 (0.56, 1.72) |  | 0.91 (0.51, 1.62) |  | 1.20 (0.73, 1.97) |  | | 1.17 (0.71, 1.91) |  |
| **Means of travel to school** | | | **0.06** |  | **0.06** |  | **0.95** | |  | **0.95** |
|  | walk | REF |  | REF |  | REF |  | | REF |  |
|  | bike/moped | 1.36 (0.55, 3.40) |  | 1.41 (0.56, 3.54) |  | 1.15 (0.45, 2.93) |  | | 1.19 (0.42, 3.40) |  |
|  | household car | 1.23 (0.84, 1.80) |  | 1.23 (0.81, 1.87) |  | 0.93 (0.58, 1.50) |  | | 0.93 (0.59, 1.46) |  |
|  | shared car/taxi | 0.90 (0.35, 2.34) |  | 0.84 (0.32, 2.19) |  | 1.01 (0.61, 1.68) |  | | 1.00 (0.62, 1.60) |  |
|  | school bus | 1.26 (0.46, 3.47) |  | 1.13 (0.40, 3.18) |  | 1.31 (0.68, 2.51) |  | | 1.19 (0.65, 2.19) |  |
|  | public transport | 2.01 (1.46, 2.76) |  | 1.72 (1.31, 2.25) |  | 1.01 (0.66, 1.55) |  | | 0.95 (0.65, 1.37) |  |
|  | other | 1.79 (0.18, 17.55) |  | 1.99 (0.21, 19.23) |  | 1.00 (0.17, 5.92) |  | | 0.99 (0.16, 6.21) |  |
| **Score contacts in school++** | | | **0.55** |  | **0.59** |  | **0.01** | |  | **0.02** |
|  | Lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 1.41 (0.73, 2.71) |  | 1.40 (0.70, 2.79) |  | 1.47 (1.18, 1.84) |  | | 1.47 (1.15, 1.90) |  |
|  | Highest | 0.98 (0.52, 1.85) |  | 0.99 (0.52, 1.89) |  | 1.30 (0.95, 1.77) |  | | 1.35 (0.99, 1.85) |  |
| **Score contacts after school++** | | | **0.98** |  | **0.88** |  | **0.48** | |  | **0.30** |
|  | lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.97 (0.44, 2.11) |  | 1.02 (0.47, 2.17) |  | 0.85 (0.63, 1.15) |  | | 0.79 (0.56, 1.10) |  |
|  | highest | 1.03 (0.68, 1.56) |  | 1.10 (0.74, 1.65) |  | 0.83 (0.50, 1.38) |  | | 0.78 (0.47, 1.30) |  |
| **Score contacts out of school++** | | | **0.87** |  | **0.91** |  | **0.41** | |  | **0.39** |
|  | lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.87 (0.40, 1.89) |  | 0.88 (0.41, 1.91) |  | 0.88 (0.61, 1.26) |  | | 0.85 (0.60, 1.19) |  |
|  | highest | 0.89 (0.55, 1.42) |  | 0.91 (0.57, 1.44) |  | 1.14 (0.75, 1.74) |  | | 1.09 (0.72, 1.65) |  |
| **Score contacts in same class++** | | | **0.84** |  | **0.94** |  | **0.57** | |  | **0.58** |
|  | lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.88 (0.52, 1.49) |  | 0.92 (0.52, 1.63) |  | 1.24 (0.82, 1.87) |  | | 1.26 (0.81, 1.96) |  |
|  | highest | 0.89 (0.54, 1.48) |  | 0.92 (0.52, 1.63) |  | 1.01 (0.72, 1.43) |  | | 1.02 (0.72, 1.44) |  |
| **Score contacts in same year group but different class++** | | | **0.84** |  | **0.92** |  | **0.28** | |  | **0.42** |
|  | Lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.99 (0.62, 1.58) |  | 0.96 (0.58, 1.58) |  | 1.30 (0.90, 1.90) |  | | 1.18 (0.85, 1.64) |  |
|  | highest | 1.18 (0.64, 2.17) |  | 1.10 (0.58, 2.05) |  | 1.00 (0.59, 1.70) |  | | 0.93 (0.56, 1.55) |  |
| **Score contacts different year group++** | | | **0.58** |  | **0.59** |  | **0.64** | |  | **0.67** |
|  | lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.69 (0.34, 1.41) |  | 0.72 (0.36, 1.42) |  | 1.08 (0.73, 1.58) |  | | 1.06 (0.71, 1.59) |  |
|  | highest | 0.92 (0.50, 1.69) |  | 0.97 (0.53, 1.79) |  | 1.17 (0.84, 1.64) |  | | 1.16 (0.83, 1.61) |  |
| **Score contacts in adjacent year group++** | | | **0.30** |  | **0.37** |  | **0.46** | |  | **0.45** |
|  | lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.95 (0.48, 1.87) |  | 0.97 (0.48, 1.96) |  | 0.95 (0.57, 1.58) |  | | 0.93 (0.53, 1.65) |  |
|  | highest | 0.68 (0.40, 1.16) |  | 0.72 (0.42, 1.21) |  | 1.28 (0.86, 1.91) |  | | 1.27 (0.86, 1.87) |  |
| **Score contacts with adults / staff++** | | | **0.79** |  | **0.89** |  | **0.06** | |  | **0.03** |
|  | lowest | REF |  | REF |  | REF |  | | REF |  |
|  | 2 | 0.93 (0.51, 1.71) |  | 1.03 (0.55, 1.93) |  | 1.18 (0.81, 1.73) | |  | 1.13 (0.76, 1.70) |  |
|  | highest | 0.86 (0.55, 1.36) |  | 0.91 (0.59, 1.40) |  | 0.77 (0.58, 1.01) |  | | 0.72 (0.55, 0.95) |  |
| **Closest contact year group above+++** | | | **0.90** |  | **0.88** |  | **0.14** | |  | **0.11** |
|  | 0 | REF |  | REF |  | REF |  | | REF |  |
|  | 1to3 | 0.84 (0.33, 2.18) |  | 0.77 (0.27, 2.20) |  | 1.28 (0.89, 1.85) |  | | 1.33 (0.92, 1.91) |  |
|  | 4to6 | 0.87 (0.38, 2.01) |  | 0.93 (0.40, 2.14) |  | 0.44 (0.16, 1.24) |  | | 0.44 (0.16, 1.23) |  |
| **Closest contact year group below+++** | | | **0.69** |  | **0.59** |  | **1.00** | |  | **0.99** |
|  | 0 | REF |  | REF |  | REF |  | | REF |  |
|  | 1to3 | 0.75 (0.35, 1.63) |  | 0.66 (0.28, 1.58) |  | 0.99 (0.57, 1.71) |  | | 0.96 (0.54, 1.70) |  |
|  | 4to6 | 0.78 (0.28, 2.18) |  | 0.82 (0.30, 2.27) |  | 0.98 (0.47, 2.04) |  | | 0.98 (0.49, 1.99) |  |
| **Closest contact same class+++** | | | **0.49** |  | **0.35** |  | **0.91** | |  | **0.95** |
|  | 0 | REF |  | REF |  | REF |  | | REF |  |
|  | 1to3 | 0.73 (0.31, 1.74) |  | 0.71 (0.30, 1.69) |  | 1.11 (0.54, 2.25) |  | | 1.11 (0.53, 2.32) |  |
|  | 4to6 | 0.65 (0.28, 1.52) |  | 0.62 (0.27, 1.44) |  | 1.05 (0.56, 1.96) |  | | 1.09 (0.56, 2.15) |  |
| **Closest contact different class+++** | | | **0.21** |  | **0.17** |  | **0.09** | |  | **0.17** |
|  | 0 | REF |  | REF |  | REF |  | | REF |  |
|  | 1to3 | 1.59 (0.93, 2.71) |  | 1.59 (0.98, 2.59) |  | 1.58 (1.07, 2.35) |  | | 1.54 (0.99, 2.41) |  |
|  | 4to6 | 1.25 (0.68, 2.27) |  | 1.28 (0.73, 2.25) |  | 1.38 (0.89, 2.15) |  | | 1.36 (0.87, 2.12) |  |
| **Closest contact other year group+++** | | | **0.75** |  | **0.76** |  | **0.57** | |  | **0.54** |
|  | 0 | REF |  | REF |  | REF |  | | REF |  |
|  | 1to3 | 0.95 (0.43, 2.09) |  | 0.86 (0.36, 2.06) |  | 1.22 (0.79, 1.89) |  | | 1.26 (0.82, 1.94) |  |
|  | 4to6 | 0.65 (0.20, 2.08) |  | 0.67 (0.21, 2.19) |  | 0.80 (0.44, 1.45) |  | | 0.80 (0.46, 1.39) |  |

*\*crude OR (95%CI) = crude odds ratio and 95% confidence interval (mixed effect model with random intercept at school-level and robust standard errors clustered at the local authority level)*

*\*\*adj OR = adjusted odds ratio (controlled for age, gender, LA-level covid-19 community rates at the start of the school year 2020/2021, school’s urban/rural location, Ofsted rating, and IMD)*

**+** *FAS III Family Affluence Survey version 3 (details in Hartley et al. 2016)*

***++****Score contacts in students: participants asked to estimate the number of contacts in a typical day categorised as none (score 0), 1 to 5 (score 1), 6 to 10 (score 2), and 11 or more (score 3), with school staff, and with other students (separately from same class, same year group but different class, adjacent year group, different year group), and respectively in school, after school, out of school. Scores added across settings (in school, out of school, and after school) or contact type, then grouped in tertiles.*

***++****Closest contact: students asked about number of usual close contacts in each group (class, year group, year group below an dabove and other year groups)*

# Supplementary table 6: Association between household, community and school risk factors and COVID-19 infection in primary and secondary staff in the Autumn 2020 and Spring/Summer 2021 terms

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Autumn term** | | |  | **Spring/Summer terms** | | | |
| **Variables** | | **Crude\* OR (95%CI)** | **p-value** | **Adj\*\* OR** | **p-value** | **Crude\* OR (95%CI)** | **p-value** | **Adj\*\* OR** | **p-value** |
| **Covid-19 cases in household** | | | **<0.01** |  | **<0.01** |  | **<0.01** |  | **<0.01** |
|  | 0 | REF |  | REF |  | REF |  | REF |  |
|  | 1 | 14.78 (8.84, 24.71) |  | 15.3 (9.1, 25.7) |  | 16.8 (9.8, 26.3) |  | 15.10 (9.6, 23.8) |  |
|  | 2+ | 104.3 (42.6, 255.7) |  | 124.2 (42.1, 366.4) |  | 122.1 (45.9, 325.0) |  | 110.11 (39.2, 309.1) |  |
| **Job group (staff only)** | | | **0.48** |  | **0.22** |  | **0.25** |  | **0.39** |
|  | Senior leader | REF |  | REF |  | REF |  | REF |  |
|  | Middle leader | 1.03 (0.53, 2.01) |  | 1.02 (0.51, 2.03) |  | 1.15 (0.60, 2.20) |  | 1.14 (0.62, 2.11) |  |
|  | Teacher | 1.24 (0.74, 2.08) |  | 1.24 (0.74, 2.09) |  | 0.76 (0.31, 1.90) |  | 0.72 (0.31, 1.71) |  |
|  | TA / Special Ed | 0.90 (0.48, 1.68) |  | 0.89 (0.50, 1.60) |  | 1.12 (0.60, 2.07) |  | 1.22 (0.65, 2.28) |  |
|  | Admin / Pastoral | 0.69 (0.30, 1.62) |  | 0.71 (0.31, 1.62) |  | 0.74 (0.32, 1.71) |  | 0.82 (0.35, 1.93) |  |
|  | Cater/Clean/Maintenance | 0.74 (0.25, 2.19) |  | 0.71 (0.22, 2.27) |  | 0.13 (0.02, 1.03) |  | 0.15 (0.02, 1.04) |  |
|  | Other | 0.67 (0.26, 1.71) |  | 0.65 (0.23, 1.84) |  | 0.77 (0.31, 1.91) |  | 0.84 (0.34, 2.05) |  |
| **HHD member working in healthcare** | | | **0.09** |  | **0.11** |  | **0.25** |  | **0.25** |
|  | No | REF |  | REF |  | REF |  | REF |  |
|  | Yes | 1.78 (0.91, 3.48) |  | 1.71 (0.86, 3.37) |  | 0.52 (0.16, 1.68) |  | 0.51 (0.15, 1.72) |  |
| **HHD member working in retail / hospitality / transport** | | | **0.56** |  | **0.69** |  | **0.38** |  | **0.50** |
|  | No | REF |  | REF |  | REF |  | REF |  |
|  | Yes | 0.85 (0.46, 1.54) |  | 0.89 (0.49, 1.64) |  | 1.28 (0.71, 2.31) |  | 1.22 (0.66, 2.27) |  |
| **HHD visit to hospital or care home** | | | **0.26** |  | **0.29** |  | **0.36** |  | **0.42** |
|  | No, nobody has | REF |  | REF |  | REF |  | REF |  |
|  | Yes, someone from household has | 1.60 (0.85, 3.02) |  | 1.57 (0.83, 2.97) |  | 0.91 (0.50, 1.63) |  | 1.04 (0.55, 1.97) |  |
|  | Yes, I/they have | 0.77 (0.37, 1.58) |  | 0.82 (0.41, 1.63) |  | 1.28 (0.75, 2.20) |  | 1.41 (0.76, 2.59) |  |
| **Travel abroad since March 2018** | | | **0.94** |  | **0.83** |  | **0.64** |  | **0.94** |
|  | No | REF |  | REF |  | REF |  | REF |  |
|  | Yes | 0.97 (0.43, 2.19) |  | 0.92 (0.42, 2.03) |  | 1.13 (0.65, 1.97) |  | 1.02 (0.56, 1.85) |  |
| **PLACES VISITED IN PAST 4 WEEKS** | | |  |  |  |  |  |  |  |
| **Different household** | | | **0.05** |  | **0.04** |  | **0.68** |  | **0.69** |
|  | No | REF |  | REF |  | REF |  | REF |  |
|  | Yes | 0.63 (0.40, 1.01) |  | 0.63 (0.41, 0.98) |  | 1.10 (0.68, 1.80) |  | 1.10 (0.67, 1.81) |  |
| **Restaurant** | | | **0.16** |  | **0.14** |  | **0.81** |  | **0.76** |
|  | No | REF |  | REF |  | REF |  | REF |  |
|  | Yes | 0.77 (0.53, 1.13) |  | 0.74 (0.49, 1.12) |  | 1.07 (0.59, 1.94) |  | 1.10 (0.58, 2.09) |  |
| **Public Transports** | | | **0.23** |  | **0.33** |  | **0.50** |  | **0.73** |
|  | No | REF |  | REF |  | REF |  | REF |  |
|  | Yes | 1.49 (0.75, 2.95) |  | 1.38 (0.70, 2.73) |  | 0.80 (0.41, 1.59) |  | 0.90 (0.49, 1.68) |  |
| **Means of travel to school** | | | **0.14** |  | **0.18** |  | **0.85** |  | **0.61** |
|  | walk | REF |  | REF |  | REF |  | REF |  |
|  | bike/moped | 3.17 (0.42, 23.93) |  | 2.96 (0.43, 20.28) |  | 1.18 (0.35, 4.03) |  | 1.74 (0.46, 6.66) |  |
|  | household car | 2.81 (0.86, 9.14) |  | 2.50 (0.79, 7.92) |  | 0.89 (0.31, 2.54) |  | 0.80 (0.29, 2.23) |  |
|  | shared car/taxi | 1.24 (0.17, 9.20) |  | 1.04 (0.15, 7.32) |  | 1.39 (0.37, 5.28) |  | 1.26 (0.32, 5.07) |  |
|  | public transport | 7.39 (1.58, 34.69) |  | 5.94 (1.31, 26.91) |  | 0.58 (0.11, 2.94) |  | 0.64 (0.12, 3.30) |  |
| **Score contacts in school*+*** | | | **0.90** |  | **0.82** |  | **0.30** |  | **0.35** |
|  | lowest | REF |  | REF |  | REF |  | REF |  |
|  | 2 | 0.87 (0.44, 1.73) |  | 0.84 (0.41, 1.73) |  | 1.28 (0.75, 2.18) |  | 1.25 (0.72, 2.17) |  |
|  | highest | 0.92 (0.56, 1.54) |  | 0.87 (0.51, 1.49) |  | 1.38 (0.87, 2.19) |  | 1.39 (0.86, 2.24) |  |
| **Score contacts after school*+*** | | | **0.96** |  | **0.96** |  | **0.96** |  | **0.73** |
|  | lowest | REF |  | REF |  | REF |  | REF |  |
|  | 2 | 0.99 (0.54, 1.83) |  | 0.92 (0.48, 1.75) |  | - |  | - |  |
|  | highest | 1.08 (0.58, 2.01) |  | 0.98 (0.53, 1.79) |  | 1.01 (0.68, 1.50) |  | 1.07 (0.70, 1.64) |  |
| **Score contacts out of school*+*** | | | **0.84** |  | **0.98** |  |  |  |  |
|  | lowest | REF |  | REF |  |  |  |  |  |
|  | highest | 1.04 (0.68, 1.61) |  | 0.99 (0.68, 1.46) |  |  |  |  |  |
| **Score contacts with pupils*+*** | | | **0.73** |  | **0.87** |  | **0.88** |  | **0.81** |
|  | lowest | REF |  | REF |  | REF |  | REF |  |
|  | 2 | 1.15 (0.71, 1.87) |  | 1.11 (0.66, 1.85) |  | 0.94 (0.57, 1.54) |  | 0.92 (0.56, 1.52) |  |
|  | highest | 1.25 (0.67, 2.31) |  | 1.14 (0.63, 2.06) |  | 1.06 (0.56, 2.01) |  | 1.07 (0.56, 2.06) |  |
| **Score contacts with other staff*+*** | | | **0.71** |  | **0.53** |  | **0.32** |  | **0.30** |
|  | lowest | REF |  | REF |  | REF |  | REF |  |
|  | 2 | 1.07 (0.60, 1.92) |  | 1.00 (0.55, 1.80) |  | 1.09 (0.65, 1.81) |  | 1.13 (0.68, 1.88) |  |
|  | highest | 0.83 (0.44, 1.56) |  | 0.75 (0.42, 1.32) |  | 1.47 (0.88, 2.45) |  | 1.52 (0.89, 2.58) |  |

*\*crude OR (95%CI) = crude odds ratio and 95% confidence interval (mixed effect model with random intercept at school-level and robust standard errors clustered at the local authority level)*

*\*\*adj OR = adjusted odds ratio (controlled for age, gender, LA-level covid-19 community rates at the start of the school year 2020/2021, school’s urban/rural location, Ofsted rating, and IMD)*

***+****Score contacts in staff: participants asked to estimate the number of contacts in a typical day categorised as none (score 0), 1 to 5 (score 1), 6 to 10 (score 2), and 11 or more (score 3), with other staff and with pupils, respectively in school, after school, out of school. Scores added across settings (in school, out of school, and after school) or contact type, then grouped in tertiles.*