Supplementary Appendix to:

**Using regional sero-epidemiology SARS-CoV-2 anti-S antibodies in the Dominican Republic to inform targeted public health response**

**Authors**

Beatris M. Martin1, Angela Cadavid1, Helen Mayfield1,2, Cecilia Then Paulino3, Micheal de St. Aubin4,5, William Duke3, Petr Jarolim4,6, Emily Zielinski Gutiérrez7, Ronald Skewes Ramm8, Devan Dumas4,5, Salome Garnier4,5, Marie Caroline Etienne4, Farah Peña8, Gabriela Abdalla4, Beatriz Lopez7, Lucia de la Cruz8, Bernarda Henriquez8, Margaret Baldwin4,5, Benn Sartorius1, Adam Kucharski9, Eric J. Nilles4,5,6, Colleen L. Lau1

**Affiliations**

1. School of Public Health, Faculty of Medicine, The University of Queensland, Queensland, Brisbane, Australia
2. School of Earth and Environmental Sciences, The University of Queensland, Brisbane, Australia
3. Pedro Henriquez Urena National University, Santo Domingo, DR
4. Brigham and Women’s Hospital, Boston, MA, USA
5. Harvard Humanitarian Initiative, Cambridge, MA, USA
6. Harvard Medical School, Boston, MA, USA
7. Centers for Disease Control and Prevention, Central America Regional Office, Guatemala City, Guatemala
8. Ministry of Health and Social Assistance, Santo Domingo, Dominican Republic
9. London School of Hygiene & Tropical Medicine, London, UK

**Supplementary methods:**

**Survey weights**

The weight of the selection probability was calculated in three stages. In the analysis reported in this study, the region (10 regions) and the area of residence (urban or rural setting) were combined to create 20 categories. The categories used here differ from the previous national report (1). In our previous report, the categories used to calculate the weights were defined based on the country’s division into 5 areas, which combined with the area of residence, resulting in 10 categories.

Here, firstly, the probability of a cluster being selected (*p*c) was calculated based on the total number of clusters in each category (Supplementary Table 1) and the weight (*w*c) was the inverse of the probability of selection for each category (*w*c = 1/*p*c). Secondly, the probability of a household being selected (*p*h) was calculated based on the total number of households in each cluster and the weight (*w*h) was the inverse of the probability of household selection (*w*h = 1/*p*h). Thirdly, the weights (*w*f) from the first two steps were multiplied (*w*f *= w*c \**w*p) and corrected for a finite population. The finite population was calculated as the sum of the probability of selection for each category and the probability of selection for each cluster.

**Supplementary Table 1: Weights for Regions and setting categories based on probability of selection for each sampled cluster, Dominican Republic, June-October 2021.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Category** | **REGION** | **Setting** | **No. clusters per region** | **No. clusters selected** | **Selection** **probability** | **Weight** |
| 1 | El Valle | Rural | 1003 | 3 | 0.003 | 334.33 |
| 2 | El Valle | Urban | 124 | 4 | 0.032 | 31.00 |
| 3 | Enriquillo | Rural | 628 | 5 | 0.008 | 125.60 |
| 4 | Enriquillo | Urban | 297 | 10 | 0.034 | 29.70 |
| 5 | Higuamo | Rural | 1053 | 11 | 0.010 | 95.73 |
| 6 | Higuamo | Urban | 299 | 12 | 0.040 | 24.92 |
| 7 | Metropolitana | Rural | 234 | 9 | 0.038 | 26.00 |
| 8 | Metropolitana | Urban | 163 | 12 | 0.074 | 13.58 |
| 9 | Nordeste | Rural | 1203 | 5 | 0.004 | 240.60 |
| 10 | Nordeste | Urban | 329 | 5 | 0.015 | 65.80 |
| 11 | Noroeste | Rural | 836 | 4 | 0.005 | 209.00 |
| 12 | Noroeste | Urban | 208 | 3 | 0.014 | 69.33 |
| 13 | Norte | Rural | 1755 | 15 | 0.009 | 117.00 |
| 14 | Norte | Urban | 397 | 11 | 0.028 | 36.09 |
| 15 | Sur | Rural | 1131 | 4 | 0.004 | 282.75 |
| 16 | Sur | Urban | 286 | 5 | 0.017 | 57.20 |
| 17 | Valdesia | Rural | 1279 | 5 | 0.004 | 255.80 |
| 18 | Valdesia | Urban | 311 | 4 | 0.013 | 77.75 |
| 19 | Yuma | Rural | 823 | 4 | 0.005 | 205.75 |
| 20 | Yuma | Urban | 206 | 3 | 0.015 | 68.67 |

**Supplementary results:**

**Anti-S prevalence, PT80 for ancestral and Delta strain**

**Supplementary Table 2: National SARS-COV-2 anti-S antibody prevalence by demographics, COVID-19 vaccination status and regions, Dominican Republic, June-October 2021.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Covariates** | **Total participants, n** | **Seropositive participants, n** | **Adjusted1 seroprevalence, % (95% CI)** |
| Overall | 6683 | 5958 | 85.4 (81.9-88.0) |
| Regions |  |  |  |
|  Yuma | 330 | 265 | 78.7 (75.0-82.2) |
|  Nordeste/Sur  | 533 | 476 | 86.6 (81.6-90.7) |
|  Valdesia  | 489 | 429 | 83.3 (77.9-87.9) |
|  Noroeste/El Valle  | 602 | 548 | 88.8 (83.6-92.8) |
|  Norte  | 1306 | 1164 | 86.6 (73.5-94.8) |
|  Higuamo  | 1717 | 1537 | 85.4 (79.7-90.1) |
|  Metropolitana  | 999 | 897 | 84.1 (80.0-87.7) |
|  Enriquillo  | 707 | 642 | 90.4 (86.1-93.8) |
| Gender |  |  |  |
|  | Male | 2494 | 2205 | 85.8 (81.6-90.0) |
|  | Female | 4144 | 3712 | 85.0 (82.8-87.2) |
|  | Others | 45 | 41 | 85.2 (71.2-99.2) |
| Age, years |  |  |  |
|  05-17 | 912 | 660 | 69.9 (65.9-73.7) |
|  | 18-54 | 3795 | 3475 | 90.4 (85.9-93.9) |
|  | ≥55 | 1976 | 1823 | 92.3 (88.3-95.4) |
| Area of residence |  |  |  |
|  | Rural | 3086 | 2682 | 82.4 (76.8-87.2) |
|  | Urban | 3597 | 3276 | 87.2 (84.3-89.8) |
| No. household residents |  |  |  |
|  | 1-2 | 1427 | 1275 | 86.7 (77.9-93.1) |
|  | 3-4 | 2776 | 2462 | 85.1 (80.7-88.9) |
|  | ≥5 | 2480 | 2221 | 85.1 (82.6-87.3) |
| Work environment |  |  |  |
|  | Outdoor | 527 | 443 | 79.0 (65.1-89.4) |
|  | Indoor/ Mix  | 1531 | 1432 | 94.6 (92.1-96.5) |
| Smoking status |  |  |  |
|  | Non-smoker | 6214 | 5549 | 85.2 (82.2-88.1) |
|  | Current smoker  | 469 | 409 | 88.2 (81.7-94.7) |
| COVID-19 vaccine doses |  |  |  |
|  | None | 2576 | 1966 | 74.0 (68.4-79.1) |
|  | One dose  | 952 | 873 | 92.7 (90.6-94.5) |
|  | Two or more doses | 3155 | 3119 | 98.9 (97.9-99.5) |

1Adjusted for study design (selection probability, clustering), finite population correction, and post-stratified for age and sex.

**Supplementary Table 3.** **Adjusted anti-S prevalence, correlates of protection and vaccine coverage by region in the Dominican Republic, June-October 2021.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Anti-S adjusted prevalence** | **PT80 ancestral strain** | **PT80 Delta strain** | **Vaccine coverage1**  |
| Yuma | 78.7 (75.0-82.2) | 57.7 (54.6-60.9) | 30.0 (27.8-32.2) | 22.1 (16.7-28.1) |
| Nordeste/Sur  | 86.6 (81.6-90.7) | 63.7 (58.4-68.7) | 32.7 (27.3-38.4) | 37.7 (30.4-45.3) |
| Valdesia  | 83.3 (77.9-87.9) | 62.3 (61.2-63.3) | 35.4 (30.6-40.4) | 23.2 (19.1-27.6) |
| Noroeste/El Valle  | 88.8 (83.6-92.8) | 65.6 (60.1-70.9) | 31.6 (24.5-39.3) | 35.9 (25.3-47.5) |
| Norte  | 86.6 (73.5-94.8) | 65.2 (52.8-76.3) | 40.6 (33.1-48.4) | 37.3 (35.3-39.4) |
| Higuamo  | 85.4 (79.7-90.1) | 70.1 (61.9-77.5) | 38.3 (33.0-43.8) | 41.5 (31.0-52.6) |
| Metropolitana  | 84.1 (80.0-87.7) | 69.6 (63.2-75.5) | 35.5 (31.3-39.9) | 30.2 (23.8-37.1) |
| Enriquillo  | 90.4 (86.1-93.8) | 72.0 (70.7-73.3) | 43.0 (37.1-49.0) | 40.1 (25.4-56.0) |

1Two or more doses of vaccine coverage.

**Supplementary Table 4. Adjusted** **anti-S prevalence, correlates of protection and vaccine coverage by cluster in the Dominican Republic, June-October 2021.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Cluster-ID** | **Provincia** | **Barrio/Paraje** | **Region** | **Anti-S****(95%CI)** | **PT80 Ancestral****(95% CI)** | **PT80 Delta****(95%CI)** | **Vaccine Coverage1 (95%CI)** |
| A\_01R | Santiago Rodriguez | La Leonor | Cibao Noroeste | 82.5 (81.1-83.8) | 66.8 (65.6-68.0) | 40.8 (39.1-42.6) | 20.1 (18.8-21.4) |
| A\_02 | Santiago Rodriguez | Las Caobas Adentro | Cibao Noroeste | 85.8 (82.9-88.6) | 59.4 (57.1-61.7) | 29.6 (28.3-31.0) | 29.6 (25.4-33.7) |
| A\_03 | Monte Cristi | La Judea | Cibao Noroeste | 94.0 (93.2-94.9) | 85.0 (83.0-86.9) | 28.8 (26.2-31.3) | 75.5 (73.5-77.6) |
| A\_04 | Monte Cristi | Guatapanal | Cibao Noroeste | 89.1 (88.0-90.2) | 38.6 (35.0-42.2) | 6.8 (5.8-7.9) | 14.1 (11.7-16.5) |
| A\_05 | Dajabon | La Ceiba | Cibao Noroeste | 84.5 (81.3-87.6) | 67.7 (66.1-69.3) | 31.1 (30.1-32.1) | 46.7 (40.3-53.1) |
| B\_01 | Duarte | El Vaticano | Cibao Nordeste | 87.4 (86.6-88.1) | 63.0 (62.0-64.0) | 27.7 (27.0-28.3) | 50.6 (48.7-52.5) |
| B\_02 | Duarte | La Madeja | Cibao Nordeste | 92.0 (90.5-93.6) | 72.2 (69.2-75.2) | 25.8 (24.2-27.3) | 28.4 (26.9-29.9) |
| B\_03 | Duarte | Urbanizacion Campo Fernandez I y II | Cibao Nordeste | 82.3 (78.2-86.5) | 35.2 (32.0-38.4) | 17.5 (15.4-19.6) | 47.7 (43.5-51.8) |
| B\_04 | Espaillat | Boca Ferrea Abajo (Aguacate) | Cibao Norte | 88.2 (85.4-90.9) | 65.9 (63.3-68.6) | 33.5 (31.5-35.6) | 59.0 (55.2-62.8) |
| B\_05 | Espaillat | La Encantada | Cibao Norte | 83.0 (79.3-86.6) | 56.1 (54.7-57.6) | 26.2 (24.7-27.8) | 54.0 (49.3-58.7) |
| B\_06 | Espaillat | Los Gonzalez | Cibao Norte | 95.1 (94.4-95.9) | 77.6 (76.5-78.7) | 46.9 (44.5-49.3) | 52.2 (46.8-57.7) |
| B\_07R | Espaillat | Guayabillo | Cibao Norte | 87.4 (86.0-88.9) | 62.5 (60.6-64.4) | 36.1 (35.1-37.2) | 70.4 (67.9-72.9) |
| B\_08 | Espaillat | El Picacho | Cibao Norte | 98.0 (97.2-98.7) | 91.6 (90.9-92.3) | 64.2 (62.5-65.8) | 63.2 (60.3-66) |
| B\_09 | Espaillat | Los Pichardo | Cibao Norte | 91.4 (90.5-92.2) | 73.8 (72.7-74.9) | 52.9 (52.0-53.8) | 67.9 (66.1-69.6) |
| B\_10 | Espaillat | Canca La Reyna | Cibao Norte | 86.8 (85.0-88.6) | 66.0 (63.6-68.4) | 38.2 (36.4-39.9) | 52.2 (49.6-54.9) |
| B\_11 | Espaillat | El Higuerito Arriba | Cibao Norte | 92.9 (91.8-93.9) | 79.0 (78.2-79.9) | 48.1 (46.7-49.6) | 58.7 (57.5-59.9) |
| B\_12R | Espaillat | Los Lopez | Cibao Norte | 92.9 (90.9-95.0) | 81.0 (79.6-82.5) | 58.1 (55.9-60.2) | 51.1 (46.3-55.8) |
| B\_13 | Espaillat | Manuel Rodríguez | Cibao Norte | 93.6 (92.6-94.5) | 72.1 (70.8-73.3) | 46.6 (45.1-48.1) | 53.2 (47.9-58.4) |
| B\_14 | La Vega | Santa Ana | Cibao Sur | 96.2 (95.5-96.9) | 75.1 (72.2-78.0) | 44.1 (41.7-46.6) | 63.5 (62.2-64.8) |
| B\_15 | La Vega | Rio Seco | Cibao Sur | 86.9 (85.8-87.9) | 64.3 (61.3-67.3) | 33.4 (31.6-35.1) | 41.9 (38.9-45.0) |
| B\_16 | La Vega | San Martin II | Cibao Sur | 98.4 (97.9-98.9) | 63.6 (61.5-65.6) | 25.2 (22.4-28.0) | 20.3 (19.0-21.7) |
| B\_17 | La Vega | Urbanización Doña Miledys | Cibao Sur | 88.8 (87.3-90.4) | 75.3 (70.7-79.9) | 40.7 (37.3-44.0) | 53.7 (50.8-56.7) |
| B\_18 | La Vega | El Centro Del Pueblo | Cibao Sur | 78.0 (75.6-80.5) | 50.9 (48.4-53.4) | 29.7 (28.0-31.4) | 46.2 (44.1-48.3) |
| B\_19 | Maria Trinidad Sanchez | Playa Navío | Cibao Nordeste | 91.4 (90.3-92.4) | 56.0 (53.4-58.6) | 24.6 (23-26.2) | 43.4 (41.8-45.0) |
| B\_20 | Puerto Plata | Gualetico | Cibao Norte | 69.6 (67.4-71.8) | 37.4 (34.5-40.3) | 22.7 (20.7-24.7) | 16.5 (14.5-18.5) |
| B\_21 | Hermanas Mirabal | El Abanico | Cibao Nordeste | \*2 | 50.0 (46.0-54.1) | 25.2 (23.1-27.3) | 45.7 (42.4-48.9) |
| B\_22 | Sanchez Ramirez | La Bomba | Cibao Sur | \*2 | 82.3 (79.8-84.9) | 47.9 (45.6-50.3) | 37.0 (34.5-39.6) |
| B\_23 | Sanchez Ramirez | Los Pinos | Cibao Sur | 95.2 (94.3-96.2) | 78.5 (77.0-80.0) | 47.9 (46.5-49.4) | 63.8 (62.6-64.9) |
| B\_24 | Santiago | Cienfuegos | Cibao Norte | 92.0 (90.6-93.3) | 71.6 (70.1-73.1) | 36.1 (34.6-37.6) | 20.9 (20.0-21.8) |
| B\_25 | Santiago | La Otra Banda | Cibao Norte | 92.7 (91.6-93.9) | 67.1 (62.7-71.5) | 38.2 (34.6-41.8) | 48.7 (43.0-54.3) |
| B\_26 | Santiago | Ensanche Bolivar | Cibao Norte | 93.5 (92.8-94.2) | 86.2 (84.9-87.5) | 57.4 (55.2-59.7) | 56.8 (54.7-58.9) |
| B\_27R | Santiago | Los Jazmines | Cibao Norte | 97.9 (97.7-98.2) | 65.8 (61.6-70.1) | 53.6 (51.2-56.0) | 32.0 (30.4-33.5) |
| B\_28 | Santiago | Palmarito | Cibao Norte | 81.6 (76.3-87.0) | 66.0 (62.9-69.0) | 34.5 (32.1-36.9) | 43.2 (36.7-49.7) |
| B\_29 | Santiago | El Centro | Cibao Norte | 72.6 (69.3-75.8) | 56.2 (51.4-61.1) | 23.5 (21.1-25.9) | 28.2 (25.4-31.0) |
| B\_30 | Santiago | Villa Duarte Abajo | Cibao Norte | 79.7 (78.8-80.5) | 56.4 (54.0-58.7) | 26.8 (24.9-28.7) | 40.1 (38.2-42.0) |
| B\_31 | Santiago | Palma Picada de los Amaceyes | Cibao Norte | 56.2 (52.9-59.4) | 49.8 (46.1-53.5) | 20.7 (17.3-24.0) | 11.4 (10.0-12.8) |
| B\_32R | Santiago | El Aguacate | Cibao Norte | 54.8 (51.7-58.0) | 37.8 (33.7-41.9) | 16.0 (12.4-19.6) | 5.2 (4.4-6.0) |
| B\_33R | Santiago | Bernabe y Vereda De Amina | Cibao Norte | 77.1 (74.9-79.3) | 47.1 (43.0-51.2) | 22.9 (16.8-28.9) | 48.7 (43.9-53.5) |
| B\_34 | Santiago | El Piñón | Cibao Norte | 71.7 (70.0-73.4) | 50.8 (49.0-52.6) | 18.9 (16.9-21.0) | 9.3 (7.2-11.3) |
| B\_35R | Santiago | Las Charcas y La Cruz | Cibao Norte | 74.1 (71.5-76.7) | 57.5 (55.3-59.7) | 46.6 (43.7-49.5) | 36.8 (33.3-40.2) |
| B\_36 | Santiago | San Jose Adentro | Cibao Norte | 83.9 (81.1-86.7) | 36.6 (34.9-38.3) | 21.9 (20.2-23.7) | 8.9 (8-9.9.0) |
| B\_37 | Santiago | Cuesta Arena y Sabana Grande De Batey I | Cibao Norte | 62.6 (58.0-67.1) | 32.9 (30.0-35.9) | 17.5 (15.9-19.1) | 30.3 (27.3-33.3) |
| B\_38 | Santiago | Jacagua | Cibao Norte | 78.1 (74.8-81.3) | 69.5 (66.5-72.6) | 34.2 (30.1-38.4) | 32.6 (28.9-36.2) |
| B\_39 | Valverde | La Altagracia | Cibao Noroeste | \*2 | 72.1 (70.0-74.1) | 29.0 (27.3-30.8) | 26.7 (24-29.3) |
| B\_40 | Valverde | Sito Toro | Cibao Noroeste | 93.7 (92.9-94.6) | 54.0 (51.8-56.2) | 28.9 (27.6-30.1) | 37.7 (35.1-40.3) |
| B\_41R | Monseñor Nouel | Los Quemados | Cibao Sur | 84.1 (81.7-86.5) | 69.5 (66.0-73.1) | 56.7 (53.4-59.9) | 42.7 (38.8-46.5) |
| B\_42 | Monseñor Nouel | San Pablo | Cibao Sur | 85.8 (84.5-87.0) | 56.6 (53.1-60.2) | 26.1 (24.2-27.9) | 32.9 (30.1-35.7) |
| C\_01 | Elias Piña | El Batey | El Valle | 89.4 (86.3-92.6) | 81.1 (78.7-83.5) | 66.7 (65.5-67.8) | 38.5 (34.5-42.5) |
| C\_02 | Barahona | Palo Bonito | Enriquillo | 75.7 (74.4-77.0) | 69.9 (69.2-70.5) | 40.6 (38.2-43.1) | 8.2 (7.7-8.8) |
| C\_03 | Barahona | El Higuito | Enriquillo | 98.9 (98.5-99.3) | 68.2 (66.2-70.2) | 49.0 (46.2-51.8) | 50.2 (41.0-59.4) |
| C\_04 | Barahona | El Majagual | Enriquillo | 92.9 (91.9-93.9) | 79.0 (77.6-80.4) | 43.9 (43.0-44.8) | 53.7 (47.2-60.2) |
| C\_05R | Baoruco | Las Cañitas | Enriquillo | 83.4 (80.6-86.2) | 51.7 (49.9-53.5) | 35.0 (33.8-36.2) | 13.7 (12.7-14.7) |
| C\_06R | Azua | Los Frios Almedio | Valdesia | 94.7 (94.0-95.5) | 66.8 (64.1-69.6) | 15.8 (14.3-17.2) | 35.8 (33.2-38.4) |
| C\_07 | San Juan | Guatapanal | El Valle | 87.7 (85.1-90.4) | 72.1 (70.0-74.1) | 27.5 (26.2-28.9) | 43.9 (38.3-49.4) |
| C\_08 | San Juan | Montes del Estado | El Valle | 71.1 (65.9-76.3) | 57.6 (54.1-61.1) | 23.9 (22.9-25.0) | 27.3 (23.7-30.8) |
| C\_09 | Independencia | Batey 9 | Enriquillo | 94.8 (94.0-95.6) | 80.2 (78.9-81.4) | 46.0 (45.0-46.9) | 22.2 (18.8-25.5) |
| C\_10R | Independencia | Tierra Nueva | Enriquillo | 92.3 (90.0-94.5) | 60.2 (57.4-63.0) | 23.8 (22.2-25.3) | 35.3 (33.9-36.7) |
| C\_11 | Azua | Santa Ana | Valdesia | 94.9 (92.7-97.2) | 79.2 (77.1-81.3) | 40.2 (36.9-43.4) | 62.1 (59.9-64.2) |
| C\_12 | Barahona | Blanquizales | Enriquillo | 97.7 (97.2-98.2) | 80.3 (77.5-83.0) | 54.5 (51.3-57.7) | 62.1 (57.9-66.3) |
| C\_13 | Barahona | Los Blocks | Enriquillo | 82.4 (78.2-86.7) | 71.8 (69.0-74.7) | 45.4 (43.5-47.3) | 62.2 (58.8-65.6) |
| C\_14 | Baoruco | Hato Nuevo | Enriquillo | 98.1 (97.5-98.8) | 90.3 (89.0-91.6) | 63.3 (60.4-66.1) | 84.3 (83.0-85.7) |
| C\_15 | Barahona | La Yagua o La Caya | Enriquillo | 91.1 (90.0-92.1) | 73.8 (71.6-75.9) | 49.8 (47.0-52.5) | 23.5 (21.2-25.8) |
| C\_16 | Pedernales | Los Cayucos | Enriquillo | 84.2 (79.4-88.9) | 73.4 (70.7-76.1) | 39.2 (35.7-42.6) | 54.3 (46.8-61.7) |
| C\_17 | Independencia | La Q | Enriquillo | 84.9 (83.4-86.3) | 69.9 (67.9-72.0) | 35.4 (31.7-39.2) | 31.7 (28.2-35.3) |
| C\_18 | Independencia | Brisas del Lago | Enriquillo | 89.4 (87.0-91.8) | 82.9 (80.5-85.4) | 56.5 (52.4-60.6) | 37.2 (33.1-41.3) |
| C\_19 | Baoruco | Las Malvinas | Enriquillo | 84.8 (82.8-86.9) | 56.1 (54.2-58.1) | 41.1 (39.1-43.0) | 28.7 (26.4-31.0) |
| C\_20 | Baoruco | Cabeza de Toro | Enriquillo | 81.0 (75.1-86.9) | 62.9 (59.2-66.5) | 37.9 (36.9-38.8) | 51.2 (44.8-57.5) |
| C\_21 | San Juan | La Mina | El Valle | 85.8 (83.3-88.3) | 73.3 (70.6-75.9) | 47.3 (45.9-48.6) | 26.1 (21.6-30.5) |
| C\_22 | San Juan | Centro del Pueblo | El Valle | 87.4 (84.3-90.4) | 64.5 (61.3-67.6) | 33.9 (28.8-39.1) | 33.6 (26.6-40.6) |
| C\_23 | Elias Piña | Centro de la Ciudad | El Valle | 83.4 (78.0-88.8) | 66.7 (62.7-70.6) | 40.3 (36.3-44.3) | 52.8 (46.9-58.7) |
| C\_24 | Elias Piña | Cristo Salvador | El Valle | 82.9 (77.5-88.3) | 64.9 (61.6-68.3) | 47.9 (46.5-49.3) | 43.5 (38.9-48.1) |
| D\_01 | Azua | Los Tramojos | Valdesia | 88.9 (87.7-90.2) | 67.4 (65.5-69.3) | 41.8 (39.3-44.4) | 19.6 (15.2-24.1) |
| D\_02 | San Cristobal | Sainagua | Valdesia | 81.9 (79.1-84.7) | 58.3 (55.4-61.2) | 37.4 (32.2-42.6) | 19.4 (15.9-22.9) |
| D\_03R | San Jose de Ocoa | La Cruz y Los Palmaritos | Valdesia | \*2 | 69.3 (65.7-72.8) | 59.1 (55.8-62.5) | 71.1 (64.6-77.6) |
| D\_04R | Distrito Nacional | 30 De Mayo | Metropolitana | 97.7 (97.0-98.4) | 93.6 (92.4-94.7) | 62.9 (58.8-66.9) | 36.5 (33.8-39.2) |
| D\_05R | Distrito Nacional | Mata Hambre | Metropolitana | 89.9 (87.3-92.6) | 50.6 (48.8-52.3) | 21.7 (19.8-23.7) | 26.1 (21.4-30.7) |
| D\_06R | Distrito Nacional | Julieta Morales (Los Praditos) | Metropolitana | 98.3 (98.0-98.6) | 85.7 (84.8-86.6) | 52.6 (51.2-54.0) | 28.1 (26.4-29.7) |
| D\_07 | Distrito Nacional | Simon Bolivar | Metropolitana | 93.8 (92.6-95.0) | 79.1 (77.4-80.9) | 40.4 (36.4-44.4) | 40.0 (32.5-47.4) |
| D\_08R | Distrito Nacional | La Isabela | Metropolitana | 90.2 (88.5-92.0) | 68.9 (67.2-70.6) | 24.2 (21.8-26.6) | 26.8 (21.8-31.9) |
| D\_09 | Distrito Nacional | Ensanche la Fe | Metropolitana | \*2 | 95.1 (94.0-96.3) | 58.9 (56.1-61.8) | 37.8 (31.9-43.7) |
| D\_10 | Santo Domingo | Los Paredones | Metropolitana | 80.2 (75.2-85.3) | 54.5 (49.2-59.8) | 37.5 (34.8-40.2) | 21.7 (19.5-23.9) |
| D\_11R | Monte Plata (Borde Santo Domingo) | El Talado (El Talao) | Higuamo | 79.1 (73.5-84.8) | 54.6 (50.4-58.8) | 29.8 (26.5-33.0) | 46.3 (41.8-50.7) |
| D\_12R | Santo Domingo | La Culata y San Joaquin | Metropolitana | 84.7 (80.5-88.9) | 58.9 (52.8-64.9) | 22.1 (18.6-25.6) | 42.0 (34.6-49.3) |
| D\_13 | Santo Domingo | Los Mameyes | Metropolitana | 67.5 (60.6-74.3) | 41.1 (39.7-42.5) | 10.5 (9.3-11.8) | 14.4 (10.1-18.8) |
| D\_14 | Santo Domingo | Batey Guanuma | Metropolitana | 79.0 (74.9-83.0) | 60.0 (57.8-62.3) | 25.3 (20.7-29.8) | 15.2 (12.0-18.3) |
| D\_15 | Santo Domingo | La Ceiba | Metropolitana | 85.5 (84.3-86.8) | 61.3 (57.9-64.6) | 36.1 (34.8-37.4) | 37.8 (32.9-42.8) |
| D\_16R | Santo Domingo | El Dajao y Palmilla | Metropolitana | 78.0 (73.2-82.9) | 59.2 (57.4-61.0) | 24.3 (20.3-28.4) | 30.9 (25.3-36.4) |
| D\_17 | Santo Domingo | La Jacagua | Metropolitana | 85.0 (80.8-89.1) | 74.7 (71.5-77.9) | 22.7 (21.2-24.3) | 31.5 (25.9-37.1) |
| D\_18 | Santo Domingo | Mata Gorda | Metropolitana | 80.9 (78.8-82.9) | 67.0 (65.4-68.6) | 34.1 (33.5-34.7) | 25.3 (21.4-29.2) |
| D\_19 | Santo Domingo | Buenas Noches | Metropolitana | 89.1 (88.3-89.8) | 60.1 (57.1-63.1) | 37.0 (33.3-40.6) | 29.6 (24.7-34.5) |
| D\_20 | Sanchez Ramirez | El Cacao | Cibao Sur | 96.9 (96.2-97.7) | 73.7 (72.5-74.9) | 31.6 (30.0-33.2) | 47.0 (44.4-49.6) |
| D\_21 | San Pedro de Macoris | Batey Aleman | Higuamo | 91.3 (88.6-94.1) | 76.1 (73.4-78.7) | 46.0 (44.0-47.9) | 37.3 (34.1-40.5) |
| D\_22 | San Pedro de Macoris | Batey Campiña | Higuamo | 85.6 (81.5-89.7) | 70.9 (66.0-75.7) | 40.4 (37.2-43.6) | 26.7 (24.6-28.8) |
| D\_23R | San Pedro de Macoris | Batey Monte Cristi | Higuamo | 91.8 (88.9-94.7) | 72.9 (71.3-74.4) | 49.5 (48.0-51.0) | 39.6 (37.3-41.8) |
| D\_24 | San Pedro de Macoris | Honduras | Higuamo | 83.3 (79.8-86.8) | 58.9 (57.1-60.8) | 19.1 (16.8-21.5) | 38.3 (32.6-44.0) |
| D\_25 | Samana | Agua Sabrosa | Cibao Nordeste | 52.8 (49.9-55.8) | 37.5 (35.2-39.9) | 19.0 (16.9-21.1) | 19.0 (17.6-20.3) |
| D\_26R | Samana | La Colmena | Cibao Nordeste | 67.8 (64.9-70.7) | 28.3 (25.5-31.1) | 1.0 (0.7-1.3) | \*3 |
| D\_27 | Azua | El Golfo | Valdesia | 90.0 (89.1-91.0) | 42.1 (40.0-44.2) | 21.9 (20.5-23.3) | 32.1 (30.3-33.8) |
| D\_28 | Monte Plata | Cuarce (Cuance) | Higuamo | 34.3 (32.6-36.0) | 10.5 (9.2-11.7) | 5.4 (4.4-6.4) | \*3 |
| D\_29 | Monte Plata | La Piña | Higuamo | 63.0 (59.7-66.3) | 48.7 (47.2-50.3) | 13.6 (12.3-14.8) | 12.3 (10.3-14.2) |
| D\_30R | Monte Plata | Coca Barrera | Higuamo | 66.5 (59.5-73.6) | 37.4 (31.8-42.9) | 23.3 (19.8-26.8) | 25.3 (19.9-30.7) |
| D\_31 | Hato Mayor | Rincon Bellaco | Higuamo | 61.3 (56.5-66.1) | 49.4 (46.5-52.3) | 24.3 (22.1-26.5) | 30.5 (26.7-34.3) |
| D\_32 | Maria Trinidad Sanchez | La Colmenas | Cibao Nordeste | 84.8 (83.2-86.3) | 68.8 (67.6-70.1) | 26.6 (23.5-29.7) | 14.5 (13.5-15.4) |
| D\_33 | Azua | Enriquillo | Valdesia | 71.4 (65.9-76.9) | 55.7 (51.6-59.8) | 39.0 (38.1-40.0) | 26.7 (20.9-32.5) |
| D\_34 | La Romana | Cucama | Yuma | 81.3 (76.2-86.3) | 52.4 (47.8-57.0) | 24.8 (22.3-27.3) | 23.0 (19.1-26.9) |
| D\_35 | San Pedro de Macoris | Guachupita | Higuamo | 91.7 (91.0-92.4) | 80.6 (79.6-81.6) | 51.6 (49.5-53.6) | 58.4 (56.6-60.2) |
| D\_36 | San Pedro de Macoris | Mexico | Higuamo | 84.2 (82.0-86.5) | 75.2 (73.4-77.1) | 39.7 (36.9-42.5) | 49.9 (43.8-56.0) |
| D\_37 | San Pedro de Macoris | Las Piedras | Higuamo | 91.0 (89.3-92.7) | 73.8 (72.2-75.5) | 38.0 (36.6-39.3) | 45.3 (38.3-52.3) |
| D\_38 | San Pedro de Macoris | Villa Magdalena | Higuamo | 91.3 (89.5-93.0) | 74.2 (73.0-75.5) | 41.0 (39.9-42.1) | 45.4 (40.3-50.5) |
| D\_39 | San Pedro de Macoris | El Brisal | Higuamo | 88.2 (86.0-90.4) | 73.9 (72.9-74.9) | 43.9 (42.7-45.2) | 31.5 (28.7-34.3) |
| D\_40 | San Pedro de Macoris | San Anton | Higuamo | 84.5 (82.2-86.7) | 65.9 (64.6-67.2) | 40.9 (39.0-42.7) | 38.3 (35.7-40.9) |
| D\_41 | San Pedro de Macoris | La Punta Pescadora | Higuamo | 86.8 (84.4-89.3) | 65.5 (64.2-66.9) | 42.2 (40.4-44.0) | 34.8 (31.8-37.8) |
| D\_42 | San Pedro de Macoris | Colina II | Higuamo | 93.7 (92.3-95.2) | 77.6 (75.0-80.2) | 44.9 (42.7-47.0) | 49.1 (46.0-52.2) |
| D\_43 | San Pedro de Macoris | El Patio | Higuamo | 95.4 (94.9-95.9) | 79.5 (77.4-81.6) | 35.6 (34.0-37.3) | 51.6 (49.0-54.3) |
| D\_44 | Monte Plata | La Madama | Higuamo | 92.8 (91.9-93.7) | 82.2 (80.9-83.6) | 27.6 (24.8-30.4) | 34.0 (32.8-35.2) |
| D\_45 | Monte Plata | 30 De Mayo | Higuamo | 86.2 (84.5-87.8) | 68.9 (67.4-70.3) | 39.9 (36.2-43.5) | 55.3 (50.5-60.2) |
| D\_46 | Monte Plata | El Suizo | Higuamo | 92.2 (90.7-93.6) | 78.3 (77.1-79.5) | 55.5 (54.0-56.9) | 60.8 (57.2-64.3) |
| D\_47 | Maria Trinidad Sanchez | Ensanche José Ramírez | Cibao Nordeste | 97.4 (96.9-98.0) | 83.6 (82.0-85.3) | 46.2 (42.8-49.7) | 19.0 (16.9-21.1) |
| D\_48 | Santo Domingo | Santa Rosa | Metropolitana | 69.8 (65.7-73.8) | 59.5 (58.3-60.8) | 30.9 (30.1-31.7) | 17.7 (11.8-23.6) |
| D\_49 | San Cristobal | Guachupita/ Los Cocos (Kilómetro 28) | Valdesia | 95.0 (93.9-96.2) | 78.7 (75.9-81.4) | 39.2 (33.2-45.1) | 48.2 (41.9-54.5) |
| D\_50 | San Cristobal | Nigua Sur I | Valdesia | 80.7 (79.8-81.6) | 65.6 (63.5-67.7) | 33.1 (31.3-34.9) | 14.6 (13.4-15.7) |
| D\_51 | Santo Domingo | La Rosa | Metropolitana | 94.3 (93.0-95.7) | 78.5 (74.3-82.7) | 28.8 (24.6-33.0) | 43.0 (39.3-46.7) |
| D\_52R | Distrito Nacional | Los Restauradores | Metropolitana | 98.5 (98.2-98.8) | 95.5 (94.7-96.2) | 64.5 (61.5-67.6) | 49.7 (43.9-55.5) |
| D\_53R | Santo Domingo | Los Trinitarios y Mendoza | Metropolitana | 73.2 (66.8-79.7) | 51.6 (45.2-57.9) | 27.8 (26.4-29.3) | 27.3 (20.9-33.6) |
| D\_54 | Santo Domingo | San Jose de Mendoza | Metropolitana | 71.5 (65.0-77.9) | 60.2 (56.3-64.2) | 18.4 (14.6-22.1) | 26.2 (21.2-31.3) |
| D\_55 | Peravia | El Mani | Valdesia | 64.8 (58.0-71.5) | 39.8 (34.3-45.3) | 14.4 (11.9-17.0) | 13.5 (10.2-16.7) |
| D\_56 | Samana | El Almendro | Cibao Nordeste | 87.0 (85.9-88.2) | 64.4 (63.2-65.6) | 19.1 (16.8-21.5) | 14.8 (12.8-16.9) |
| E\_01 | Hato Mayor | Yanigua | Higuamo | 53.2 (51.2-55.2) | 37.7 (35.9-39.6) | 13.3 (12.0-14.5) | 9.3 (7.4-11.2) |
| E\_02 | El Seibo | Cabirmal | Yuma | 54.4 (50.3-58.5) | 30.8 (28.5-33.1) | 17.5 (16.1-18.9) | 5.4 (4.4-6.3) |
| E\_03 | El Seibo | Arroyo Lucas Campo | Yuma | 58.5 (56.3-60.7) | 36.6 (35.1-38.1) | 17.0 (16.0-18.0) | 6.5 (5.3-7.6) |
| E\_04 | La Altagracia | San Pedro | Yuma | 77.4 (76.2-78.7) | 60.9 (59.1-62.7) | 34.3 (32.2-36.4) | 24.6 (21.4-27.9) |
| E\_05 | El Seibo | El Matadero | Yuma | 88.4 (87.5-89.3) | 57.8 (54.3-61.4) | 14.2 (12.3-16.2) | 36.7 (32.0-41.4) |
| E\_06 | La Altagracia | Batey Palo Bonito | Yuma | 95.6 (95.1-96.0) | 91.1 (90.2-92.0) | 50.2 (47.7-52.7) | 25.4 (23.6-27.2) |
| E\_07 | La Altagracia | Batey Maragua | Yuma | 68.3 (63.2-73.3) | 44.4 (40.9-47.9) | 23.4 (22.0-24.7) | 12.9 (10.6-15.2) |

1Two or more doses of vaccine coverage. \*2Estimated prevalence and 95%CI were not calculated once all participants from these clusters were anti-S positive. \*3Estimated vaccine coverage and 95%CI were not calculated once no participants from these clusters had received two or more doses of vaccine against COVID-19.

**Variable selection and Logistic Regression**

Correlation between variables was detected for age group and work environment, age group and smoking status, gender and age group, gender and area of residence, gender and number of household members, gender and work environment, gender and smoking status, gender and number of vaccine doses, area of residence and work environment, area of residence and number of vaccine doses, number of household members and work environment, smoking status and work environment and work environment and number of vaccines doses. Comparing the multivariable model and the model with interaction terms for each pair of variables listed above, the results of the likelihood test were significant for age and work environment, age and smoking status, gender and area of residence, gender and work environment, number of household members and work environment and smoking status and work environment. Testing the models using the VIF test found no significant multicollinearity in the multivariable model, thus the results reported here are from the multivariable model.

**Multivariable National model**

Higher OR for anti-S positivity was associated with five or more people per household (OR 1.98; 95%CI 1.06-3.39) compared to 1-2 people per household, indoor and mix indoor/outdoor compared to outdoor work environment (OR 5.04; 95%CI 2.25-11.29), tertiary/technical compared to none/primary/secondary educational level (OR 1.52; 95%CU 1.15-2.01) and receiving one (OR 3.14; 95%CI 1.94-5.10) and two or more (OR 18.87; 95%CI 11.33-31.42) doses of vaccine against COVID-19 compared to unvaccinated participants. Lower OR for anti-S positivity was associated with participants younger than 18 years old, compared to those 18-54 years old.

Higher OR for PT80 for ancestral strain was associated with five or more people per household (OR 1.92; 95%CI 1.28-2.90) compared to 1-2 people per household, indoor and mix indoor/outdoor compared to outdoor work environment (OR 2.45; 95%CI 1.85-3.24), and receiving one (OR 1.71; 95%CI 1.12-2.61) and two or more (OR 2.62; 95%CI 1.93-3.55) doses of vaccine against COVID-19 compared to unvaccinated participants.

Higher OR for PT80 for Delta strain was associated with indoor and mix indoor/outdoor compared to outdoor work environment (OR 1.78; 95%CI 1.25-2.83) and receiving one (OR 2.23; 95%CI 1.68-2.95) and two or more (OR 2.11; 95%CI 1.52-2.92) doses of vaccine against COVID-19 compared to unvaccinated participants.

**Multilevel National model**

**Supplementary Table 5. National level OR for PT80 for ancestral and Delta strains from multilevel logistic regression, the Dominican Republic, June-October 2021.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Anti-S** | **Ancestral PT80** | **Delta PT80** |
|  |  | **OR** | **(95%CI)** | **OR** | **(95%CI)** | **OR** | **(95%CI)** |
| **Gender** |  |  |  |  |  |  |
|  | Female (ref.) |  |  |  |  |  |  |
|  | Male | 0.63 | (0.38-1.06) | 1.51 | (0.84-2.70) | 1.07 | (0.76-1.50) |
|  | Other | 1.34 | (0.83-2.17) | 0.7 | (0.16-3.09) | 1.42 | (0.62-3.27) |
| **Age, years** |  |  |  |  |  |  |
|  | 05-17 | **0.17** | **(0.07-0.40)** | 0.65 | (0.36-1.18) | 1.22 | (0.69-2.18) |
|  | 18-54 (ref.) |  |  |  |  |  |  |
|  | ≥55 | 1.52 | (0.85-2.72) | 1.27 | (0.77-2.09) | **1.45** | **(1.11-1.89)** |
| **Educational Level** |  |  |  |  |  |  |
|  | None/Primary/ Secondary (ref.) |  |  |  |  |  |  |
|  | Tertiary/Technical | **1.78** | **(1.39-2.29)** | 0.77 | (0.50-1.19) | 0.97 | (0.71-1.32) |
| **Socioeconomic score, 0-5** |  |  |  |  |  |
|  | 0 |  |  |  |  |  |  |
|  | 1-5 (ref.) | 1.36 | (0.32-1.7) | 0.97 | (0.34-2.77) | 1.39 | (0.56-3.42) |
| **Setting** |  |  |  |  |  |  |
|  | Urban (ref.) |  |  |  |  |  |  |
|  | Rural | 1.33 | (0.89-1.98) | 1.23 | (0.91-1.67) | 1.31 | (0.97-1.77) |
| **Household members, number of people/household** |  |  |  |
|  | 1-2 (ref.) |  |  |  |  |  |  |
|  | 3-4 | 1.28 | (0.66-2.49) | 1.18 | (0.75-1.85) | 1.04 | (0.61-1.78) |
|  | ≥5 | 2.74 | (0.66-11.39) | 3.41 | (0.78-14.83) | 1.11 | (0.71-1.74) |
| **Work environment** |  |  |  |  |  |  |
|  | Outdoor (ref.) |  |  |  |  |  |  |
|  | Indoor/Mix | **9.49** | **(1.33-67.85)** | **4.34** | **(2.43-7.76)** | **2.41** | **(1.16-4.97)** |
| **Smoking status** |  |  |  |  |  |  |
|  | Non-smoker (ref.) |  |  |  |  |  |  |
|  | Current smoker | 0.82 | (0.42-1.58) | 0.52 | (0.26-1.02) | 0.77 | (0.42-1.40) |
| **Risk Factors** |  |  |  |  |  |  |
|  | None | 1.58 | (0.85-2.92) | 1.19 | (0.69-2.06) | 0.81 | (0.05-1.33) |
|  | One or more (ref.) |  |  |  |  |  |  |
| **Vaccine doses** |  |  |  |  |  |  |
|  | Unvaccinated (ref.) |  |  |  |  |  |  |
|  | One dose | **4.80** | **(2.35-9.83)** | **2.61** | **(1.72-3.94)** | 3.89 | (0.93-4.4) |
|  | Two or more doses | **85.94** | **(10.95-674.33)** | **4.78** | **(2.15-10.62)** | **3.08** | **(1.57-9.65)** |

**Multilevel regional models**

**Supplementary Table 6. Regional OR for Anti-S from regional multilevel logistic regression, the Dominican Republic, June-October 2021.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Yuma** | **Higuamo** | **Nordeste/Sur** | **Noroeste/ El Valle** | **Norte** | **Valdesia** | **Enriquillo** | **Metropolitana** |
|  | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI |
| **Gender** |
| Female (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.57 | 0.44-0.87 | 0.54 | 0.14-2.06 | 2.75 | 0.22-34.34 | 0.44 | 0.15-1.32 | 0.57 | 0.3-1.06 | 1.04 | 0.26-4.08 | 0.88 | 0.41-1.86 | 0.64 | 0.31-1.31 |
| Other | \* |  | \* |  | \* |  | \* |  | \* |  | \* |  | \* |  | \* |  |
| **Age, years** |
| 05-17 | 0.27 | 0.08-0.55 | 0.11 | 0.05-0.25 | 0.25 | 0.04-1.57 | 0.04 | 0.002-0.8 | 0.27 | 0.08-0.85 | 0.51 | 0.26-1.04 | 0.31 | 0.09-1.08 | 0.37 | 0.18-0.76 |
| 18-54 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ≥55 | 1.16 | 0.18-1.23 | 1.35 | 0.59-3.1 | 2.24 | 0.17-29.22 | 3.56 | 0.83-15.32 | 1.16 | 0.31-4.37 | 2.65 | 0.83-8.5 | 1.13 | 0.29-4.48 | 0.97 | 0.42-2.24 |
| **Educational Level** |
| None/Primary/ Secondary (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tertiary/Technical | 2.21 | 0.83-2.4 | 1.12 | 0.57-2.23 | 14.83 | 1.95-112.71 | 10.02 | 0.24-410.08 | 2.21 | 0.51-9.55 | 3.28 | 0.96-11.17 | 1.34 | 0.39-4.54 | 1.35 | 0.51-3.57 |
| **Socioeconomic score** |
| 0 | 12.80 | 0.17-1.27 | 0.68 | 0.27-1.74 | 1.75 | 0.18-16.89 | 0.44 | 0.04-4.98 | 12.80 | 0.61-268.93 | 3.00 | 0.52-17.21 | 0.52 | 0.19-1.44 | 0.52 | 0.24-1.13 |
| 1-5 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Setting** |
| Urban (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rural | 1.50 | 0.21-2.06 | 1.37 | 0.46-4.03 | 1.42 | 0.3-6.75 | 5.24 | 0.65-42.06 | 1.50 | 0.61-3.71 | 0.82 | 0.23-2.99 | 0.38 | 0.2-0.73 | 1.80 | 0.72-4.52 |
| **Household members** |
| 1-2 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3-4 | 1.61 | 0.18-2.99 | 2.14 | 0.72-6.4 | 0.19 | 0.02-1.74 | 0.47 | 0.12-1.89 | 1.61 | 0.66-3.93 | 0.33 | 0.16-0.68 | 1.04 | 0.38-2.86 | 1.38 | 0.71-2.67 |
| ≥5 | 6.66 | 0.87-3.48 | 2.85 | 0.77-10.51 | 0.75 | 0.12-4.76 | 0.21 | 0.03-1.32 | 6.66 | 2.29-19.42 | 0.19 | 0.12-0.31 | 0.64 | 0.17-2.41 | 3.28 | 1.43-7.54 |
| **Work environment** |
| Outdoor (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Indoor/Mix | 45.85 | 0.78-17.92 | 6.80 | 1.06-43.65 | 31.33 | 1.35-724.81 | 0.27 | 0.02-4.3 | 45.85 | 4.3-489.14 | 29.66 | 2.94-299.16 | 1.00 | 0.09-11.45 | 0.54 | 0.16-1.81 |
| **Smoking status** |
| Non-smoker (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Current smoker | 1.01 | 0.21-1.73 | 3.88 | 0.63-23.81 | 1.38 | 0.04-45.95 | 0.08 | 0.01-0.44 | 1.01 | 0.19-5.47 | 0.50 | 0.26-0.94 | 2.09 | 0.8-5.49 | 1.63 | 0.28-9.52 |
| **Risk Factors** |
| None | 1.52 | 6.18-259.17 | 2.25 | 1.08-4.69 | 4.35 | 0.59-31.97 | 1.87 | 0.98-3.56 | 1.52 | 0.29-7.99 | 1.06 | 0.4-2.83 | 1.61 | 0.89-2.92 | 0.93 | 0.56-1.54 |
| One or more (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Vaccine doses** |
| Unvaccinated (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| One dose | 3.79 | 1.22-11.59 | 2.99 | 1.13-7.93 | 10.54 | 1.19-93.11 | 3.33 | 0.66-16.78 | 3.79 | 1.02-14 | 1.87 | 0.43-8.16 | 12.60 | 0.72-219.51 | 4.38 | 1.28-15.01 |
| Two or more doses | 46.04 | 1.29-8.7 | 25.05 | 11.76-53.35 | 1494.60 | 57.64-38753.64 | 55.88 | 2.06-1519.24 | 46.04 | 9.85-215.19 | 45.77 | 9.24-226.7 | 18.86 | 7.59-46.9 | 23.08 | 4.57-116.66 |

**\***Due to the small sample size, results were not calculated.

**Supplementary Table 7. Regional OR for PT80 for ancestral strain from multilevel logistic regression, the Dominican Republic, Jun-Oct 2021.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Yuma** | **Higuamo** | **Nordeste/Sur** | **Noroeste/ El Valle** | **Norte** | **Valdesia** | **Enriquillo** | **Metropolitana** |
|  | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI |
| **Gender** |
| Female (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Male | 1.37 | 1.01-1.85 | 0.63 | 0.25-1.58 | 2.64 | 0.85-8.2 | 1.32 | 0.42-4.17 | 1.44 | 0.54-3.86 | 1.9 | 1.5-2.4 | 0.89 | 0.59-1.35 | 0.75 | 0.48-1.16 |
| Other | 1.34 | 0.05-38.63 | 1.51 | 0.22-10.25 | \* | \* | \* | \* | 60.33 | 0.12-29678.55 | 0.42 | 0.08-2.27 | \* | \* | 71.27 | 5.95-853.94 |
| **Age, years** |
| 05-17 | 0.5 | 0.19-1.35 | 0.52 | 0.25-1.06 | 0.13 | 0.01-1.36 | 0.36 | 0.12-1.09 | 1.14 | 0.14-9.44 | 1.41 | 0.67-2.99 | 1.76 | 0.83-3.73 | 0.51 | 0.24-1.08 |
| 18-54 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ≥55 | 0.49 | 0.24-1.01 | 0.76 | 0.51-1.11 | 1.66 | 0.56-4.88 | 1.77 | 0.41-7.71 | 13.14 | 0.46-372.36 | 1.18 | 0.78-1.79 | 1.99 | 0.71-5.55 | 1.18 | 0.7-1.98 |
| **Risk Factors Level** |
| None/Primary/ Secondary (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tertiary/Technical | 0.67 | 0.33-1.38 | 0.87 | 0.53-1.43 | 0.72 | 0.34-1.56 | 5.95 | 0.83-42.87 | 0.05 | 0.01-0.31 | 1.08 | 0.62-1.88 | 1.15 | 0.64-2.1 | 0.7 | 0.32-1.54 |
| **Socioeconomic score** |
| 0 | 1.63 | 0.47-5.66 | 1.05 | 0.49-2.25 | 2.05 | 0.79-5.35 | 1.68 | 0.15-18.69 | 0.32 | 0.01-19.84 | 4.08 | 1.25-13.3 | 1.25 | 0.41-3.8 | 0.25 | 0.09-0.7 |
| 1-5 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Setting** |
| Urban (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rural | 0.59 | 0.18-1.87 | 1.76 | 0.87-3.56 | 1.39 | 1.08-1.8 | 0.32 | 0.11-0.94 | 0.2 | 0.09-0.43 | 1.78 | 0.84-3.75 | 1.26 | 0.7-2.29 | 4.08 | 3.22-5.16 |
| **Household members** |
| 1-2 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3-4 | 0.46 | 0.17-1.25 | 1.34 | 0.7-2.57 | 0.74 | 0.43-1.29 | 3.53 | 1.24-10.02 | 4.68 | 0.61-35.91 | 0.43 | 0.16-1.16 | 1.05 | 0.5-2.24 | 2.08 | 1.16-3.72 |
| ≥5 | 1.3 | 0.56-3.03 | 2.17 | 1.15-4.08 | 1.45 | 0.79-2.64 | 2.6 | 0.56-12.07 | 16654.97 | 50.7-5471372.19 | 0.46 | 0.17-1.22 | 0.78 | 0.28-2.21 | 3.27 | 2.07-5.18 |
| **Work environment** |
| Outdoor (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Indoor/Mix | 3.43 | 0.96-12.3 | 3.38 | 1.04-10.93 | 1.56 | 0.38-6.35 | 4.44 | 0.54-36.12 | 41.23 | 6.45-263.42 | 3.57 | 1.24-10.24 | 2.53 | 0.74-8.67 | 2.66 | 0.81-8.73 |
| **Smoking status** |
| Non-smoker (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Current smoker | 0.55 | 0.36-0.84 | 1.15 | 0.4-3.35 | 1.85 | 0.28-12.3 | 0.67 | 0.18-2.55 | 0.01 | 0-0.13 | 0.55 | 0.15-1.98 | 0.73 | 0.19-2.78 | 0.4 | 0.12-1.29 |
| **Risk Factors** |
| None | 1.96 | 1.24-3.11 | 1.07 | 0.77-1.49 | 3.71 | 1.37-10.03 | 0.6 | 0.06-6.3 | 6.9 | 0.54-88.7 | 0.93 | 0.6-1.45 | 0.9 | 0.44-1.81 | 0.7 | 0.4-1.23 |
| One or more (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Vaccine doses** |
| Unvaccinated (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| One dose | 2.09 | 1.47-2.97 | 1.83 | 0.92-3.65 | 1.08 | 0.49-2.4 | 0.82 | 0.16-4.21 | 15.21 | 1.04-222.06 | 2.45 | 0.98-6.08 | 5.57 | 1.87-16.62 | 2.28 | 1.26-4.13 |
| Two or more doses | 3.37 | 1.01-11.23 | 3.94 | 2.35-6.62 | 3.35 | 1.5-7.47 | 5.75 | 1.79-18.45 | 1754.16 | 47.37-64958.9 | 2.41 | 1.27-4.59 | 3.46 | 1.41-8.48 | 2.3 | 1.29-4.1 |

**\***Due to the small sample size, results were not calculated.

**Supplementary Table 8. Regional OR for PT80 for Delta strain multilevel logistic regression, the Dominican Republic, June-October 2021.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Yuma** | **Higuamo** | **Nordeste/Sur** | **Noroeste/ El Valle** | **Norte** | **Valdesia** | **Enriquillo** | **Metropolitana** |
|  | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI |
| **Gender** |
| Female (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Male | 0.94 | 0.47-1.89 | 0.80 | 0.54-1.17 | 2.67 | 1.17-6.09 | 0.81 | 0.2-3.25 | 0.44 | 0.13-1.49 | 0.80 | 0.6-1.06 | 0.92 | 0.57-1.48 | 1.03 | 0.64-1.66 |
| Other | 0.58 | 0.12-2.73 | 0.90 | 0.21-3.89 | \* | \* | \* | \* | 1.52 | 0.17-13.77 | 1.31 | 0.16-10.42 | \* |  | 6.45 | 1.58-26.32 |
| **Age, years** |
| 05-17 | 2.80 | 1.27-6.14 | 1.19 | 0.51-2.77 | 0.39 | 0.06-2.67 | 1.33 | 0.22-8.18 | 1.20 | 0.21-6.81 | 2.12 | 0.54-8.23 | 1.89 | 1-3.6 | 0.79 | 0.41-1.51 |
| 18-54 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ≥55 | 1.09 | 0.62-1.92 | 1.66 | 1.23-2.23 | 0.76 | 0.45-1.28 | 2.29 | 0.45-11.72 | 0.26 | 0.1-0.67 | 1.23 | 0.65-2.35 | 2.62 | 0.97-7.05 | 1.61 | 1.13-2.28 |
| **Risk Factors Level** |
| None/Primary/ Secondary (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tertiary/Technical | 0.74 | 0.16-3.36 | 0.88 | 0.56-1.37 | 0.37 | 0.18-0.75 | 7.87 | 0.42-148.08 | 0.15 | 0.02-0.97 | 1.02 | 0.46-2.24 | 0.89 | 0.52-1.53 | 1.09 | 0.71-1.68 |
| **Socioeconomic score** |
| 0 | 2.22 | 0.25-19.43 | 1.11 | 0.63-1.96 | 0.52 | 0.02-13.58 | 0.61 | 0.09-4.19 | 0.11 | 0.04-0.28 | 6.87 | 1.11-42.37 | 2.50 | 1.21-5.13 | 0.53 | 0.28-1 |
| 1-5 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Setting** |
| Urban (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rural | 0.60 | 0.41-0.88 | 1.35 | 0.89-2.07 | 0.96 | 0.66-1.41 | 0.60 | 0.08-4.7 | 45.34 | 12-171.26 | 0.86 | 0.64-1.14 | 1.94 | 1.51-2.5 | 1.02 | 0.88-1.19 |
| **Household members** |
| 1-2 (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3-4 | 0.48 | 0.15-1.51 | 1.08 | 0.68-1.7 | 0.51 | 0.28-0.96 | 1.62 | 0.31-8.5 | 4.37 | 0.58-33.15 | 0.47 | 0.3-0.76 | 1.32 | 0.64-2.75 | 1.52 | 1.02-2.27 |
| ≥5 | 0.61 | 0.22-1.68 | 0.96 | 0.69-1.34 | 0.62 | 0.37-1.04 | 0.65 | 0.01-30.75 | 1.97 | 0.84-4.64 | 0.71 | 0.43-1.16 | 0.94 | 0.51-1.73 | 1.51 | 1.04-2.18 |
| **Work environment** |
| Outdoor (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Indoor/Mix | 1.18 | 0.49-2.84 | 1.44 | 0.62-3.32 | 2.28 | 0.4-12.88 | 0.70 | 0.11-4.41 | 9.66 | 2.12-44 | 1.09 | 0.33-3.59 | 1.10 | 0.38-3.21 | 4.21 | 1.63-10.87 |
| **Smoking status** |
| Non-smoker (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Current smoker | 0.40 | 0.1-1.54 | 0.42 | 0.1-1.65 | 3.36 | 0.98-11.51 | 0.98 | 0.11-8.57 | 0.21 | 0.02-1.88 | 0.50 | 0.12-2.16 | 0.67 | 0.33-1.33 | 0.45 | 0.2-0.98 |
| **Risk Factors** |
| None | 1.26 | 0.86-1.84 | 1.70 | 0.9-3.19 | 0.91 | 0.59-1.39 | 0.35 | 0.09-1.4 | 0.95 | 0.27-3.39 | 0.73 | 0.43-1.24 | 0.80 | 0.5-1.29 | 0.44 | 0.31-0.62 |
| One or more (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Vaccine doses** |
| Unvaccinated (ref.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| One dose | 4.93 | 1.75-13.88 | 2.72 | 1.21-6.11 | 2.01 | 1.21-3.35 | 0.60 | 0.02-19.3 | 62.87 | 8.66-456.3 | 1.87 | 0.9-3.91 | 2.57 | 1.42-4.66 | 2.54 | 1.43-4.5 |
| Two or more doses | 4.79 | 3.46-6.62 | 4.15 | 1.91-9.04 | 2.31 | 1.14-4.68 | 4.66 | 1.05-20.74 | 45.28 | 6.92-296.48 | 1.97 | 1.06-3.69 | 2.31 | 1.1-4.85 | 1.94 | 1.06-3.56 |

**\***Due to the small sample size, results were not calculated.

**References:**

1. Nilles EJ, Paulino CT, de St. Aubin M, Restrepo AC, Mayfield H, Dumas D, et al. SARS-CoV-2 seroprevalence, cumulative infections, and immunity to symptomatic infection – A multistage national household survey and modelling study, Dominican Republic, June–October 2021. The Lancet Regional Health - Americas. 2022;16:100390.