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| **Table 1: Patient demographics by Vaccination Status (n = 14246)** | | | | | | |
|  | | **Unvaccinated**  **(n=7234)** | **1 dose**  **(n=972)** | **2+ doses**  **≥ 5 months**  **(n=4688)** | **2+ doses**  **< 5 months**  **(n=1352)** | **Overall**  **(n=14246)** |
| **Age group** | |  |  |  |  |  |
| 5-17 | 2051 (28.4%) | 49 (5.0%) | 222 (4.7%) | 124 (9.2%) | 2446 (17.2%) |
| 18-39 | 2635 (36.4%) | 327 (33.6%) | 1197 (25.5%) | 403 (29.8%) | 4562 (32.0%) |
| 40-64 | 1999 (27.6%) | 453 (46.6%) | 2045 (43.6%) | 558 (41.3%) | 5055 (35.5%) |
| 65+ | 549 (7.6%) | 143 (14.7%) | 1224 (26.1%) | 267 (19.7%) | 2183 (15.3%) |
| **Sex** | |  |  |  |  |  |
| Female | 3273 (45.2%) | 464 (47.7%) | 2346 (50.0%) | 743 (55.0%) | 6826 (47.9%) |
| Male | 3157 (43.6%) | 413 (42.5%) | 1744 (37.2%) | 538 (39.8%) | 5852 (41.1%) |
| Other | 21 (0.3%) | 1 (0.1%) | 12 (0.3%) | 0 (0%) | 34 (0.2%) |
| Unknown | 783 (10.8%) | 94 (9.7%) | 586 (12.5%) | 71 (5.3%) | 1534 (10.8%) |
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| **Supplemental Table 2: Delta Emergence Model** | | | |
| **Covariates** | | **Odds ratio (eβ, 95% CI)** | **p-value** |
| **Vaccination status** | |  |  |
| Unvaccinated | Ref. | Ref. |
| One dose | NA | NA |
| 2+ doses ≥ 5 months | 0.302 (0.017, 5.481) | 0.418 |
| 2+ doses< 5 months | 2.533 (0.381, 16.818) | 0.336 |
| **Age category** | |  |  |
| 18-39 | Ref. | Ref. |
| 5-17 | 0.573 (0.135, 2.444) | 0.452 |
| 40-64 | 1.106 (0.296, 4.131) | 0.881 |
| 65+ | 0.083 (0.008, 0.814) | 0.033 |
| **Sex** | |  |  |
| Male | Ref. | Ref. |
| Female | 1.689 (0.562, 5.074) | 0.350 |
| **Time** | | 3.898 (2.023, 7.511) | <0.001 |

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| **Supplemental Table 3: BA.1 Emergence Model** | | | |
| **Covariates** | | **Odds ratio (eβ, 95% CI)** | **p-value** |
| **Vaccination status** | |  |  |
| Unvaccinated | Ref. | Ref. |
| One dose | 0.651 (0.262, 1.621) | 0.357 |
| 2+ doses ≥ 5 months | 1.917 (1.033, 3.558) | 0.0393 |
| 2+ doses< 5 months | 1.320 (0.507, 3.440) | 0.570 |
| **Age category** | |  |  |
| 18-39 | Ref. | Ref. |
| 5-17 | 0.280 (0.131, 0.598) | 0.001 |
| 40-64 | 0.471 (0.258, 0.861) | 0.014 |
| 65+ | 0.365 (0.146, 0.912) | 0.031 |
| **Sex** | |  |  |
| Male | Ref. | Ref. |
| Female | 0.956 (0.574, 1.592) | 0.863 |
| **Time** | | 50.430 (27.761, 91.611) | <0.001 |

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| **Supplemental Table 4: BA.2 Emergence Model** | | | |
| **Covariates** | | **Odds ratio (eβ, 95% CI)** | **p-value** |
| **Vaccination status** | |  |  |
| Unvaccinated | Ref. | Ref. |
| One dose | 1.558 (0.739, 3.285) | 0.244 |
| 2+ doses ≥ 5 months | 1.308 (0.830, 2.061) | 0.247 |
| 2+ doses< 5 months | 1.089 (0.677, 1.752) | 0.724 |
| **Age category** | |  |  |
| 18-39 | Ref. | Ref. |
| 5-17 | 1.087 (0.614, 1.926) | 0.775 |
| 40-64 | 1.003 (0.652, 1.542) | 0.989 |
| 65+ | 1.251 (0.673, 2.327) | 0.479 |
| **Sex** | |  |  |
| Male | Ref. | Ref. |
| Female | 1.066 (0.745, 1.526) | 0.727 |
| **Time** | |  | <0.001 |

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| **Supplemental Table 5: BA.4/5 Emergence Model** | | | |
| **Covariates** | | **Odds ratio (eβ, 95% CI)** | **p-value** |
| **Vaccination status** | |  |  |
| Unvaccinated | Ref. | Ref. |
| One dose | 0.834 (0.380, 1.835) | 0.653 |
| 2+ doses ≥ 5 months | 1.214 (0.791, 1.863) | 0.374 |
| 2+ doses< 5 months | 2.441 (0.995, 5.988) | 0.051 |
| **Age category** | |  |  |
| 18-39 | Ref. | Ref. |
| 5-17 | 0.782 (0.396, 1.546) | 0.480 |
| 40-64 | 0.858 (0.551, 1.335) | 0.497 |
| 65+ | 0.630 (0.373, 1.062) | 0.083 |
| **Time** | | 2.924 (2.363, 3.617) | <0.001 |

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| **Supplemental Table 6: XBB.1 Emergence Model** | | | |
| **Covariates** | | **Odds ratio (eβ, 95% CI)** | **p-value** |
| **Vaccination status** | |  |  |
| Unvaccinated | Ref. | Ref. |
| One dose | 0.677 (0.251, 1.830) | 0.442 |
| 2+ doses ≥ 5 months | 0.586 (0.339, 1.013) | 0.056 |
| 2+ doses< 5 months | 2.690 (0.405, 17.859) | 0.306 |
| **Age category** | |  |  |
| 18-39 | Ref. | Ref. |
| 5-17 | 0.538 (0.218, 1.326) | 0.178 |
| 40-64 | 0.575 (0.313, 1.056) | 0.075 |
| 65+ | 0.539 (0.290, 0.999) | 0.0497 |
| **Sex** | |  |  |
| Male | Ref. | Ref. |
| Female | 1.372 (0.865, 2.177) | 0.179 |
| **Time** | | 2.251 (1.765, 2.872) | <0.001 |