**SUPPLEMENTAL MATERIALS**

**Table S1.** Changes in mAb referrals according to time and county characteristics, July 1, 2021 – December 31, 2021

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Overall: Marginal Effect (SE)** | **Urban Counties:** **Marginal Effect (SE)** | **Rural/Frontier Counties:****Marginal Effect (SE)** | **Counties with High Hispanic/Latinx Populations:****Marginal Effect (SE)** | **Counties with Low Hispanic/Latinx Populations:****Marginal Effect (SE)** |
| **N** | 1374 | 553 | 821 | 563 | 811 |
| **Weeks Since July 1, 2021** |  |  |  |  |  |
| Nov 2020 – June 2021 | [Ref.] | [Ref.] | [Ref.] | [Ref.] | [Ref.] |
| 1 | 1.34\*\* (0.82) | 0.60 (1.49) | 0.56\*\* (0.38) | -2.23\*\* (0.669) | 1.46\* (1.02) |
| 2 | 1.48\*\* (0.96) | 2.04 (2.19) | 0.47\*\* (0.33) | -0.10 (1.57) | 2.50\*\*\* (1.56) |
| 3 | 2.33\*\* (1.09) | 4.62\*\* (2.51) | 0.38 (0.29) | -0.01 (1.51) | 3.77\*\*\* (1.58) |
| 4 | 2.57\*\*\* (1.09) | 5.80\*\* (2.42) | 0.40\* (0.24) | 0.79 (1.50) | 3.80\*\*\* (1.34) |
| 5 | 3.39\*\*\* (1.66) | 10.03\*\*\* (3.75) | 0.10 (0.14) | 1.60 (1.59) | 5.05\*\*\* (2.52) |
| 6 | 5.23\*\*\* (2.15) | 14.41\*\*\* (4.67) | 0.58\*\* (0.30) | 1.34 (1.49) | 7.44\*\*\* (3.00) |
| 7 | 6.02\*\*\* (2.09) | 18.27\*\*\* (4.02) | 0.91\*\* (0.34) | 3.95\*\* (2.42) | 9.53\*\*\* (3.16) |
| 8 | 8.34\*\*\* (2.55) | 34.00\*\*\* (15.87) | 1.54\*\*\* (0.69) | 6.25\*\* (4.15) | 17.40\*\*\* (8.95) |
| 9 | 7.99\*\*\* (2.05) | 22.44\*\*\* (10.15) | 1.88\*\*\* (0.78) | 10.31\*\*\* (4.15) | 8.75\*\* (5.33) |
| 10 | 5.40\*\*\* (1.73) | 23.50\*\*\* (10.57) | 1.42\*\*\* (0.61) | 10.86\*\*\* (4.40) | 3.14\* (2.15) |
| 11 | 10.69\*\*\* (2.43) | 34.90\*\*\* (14.43) | 2.94\*\*\* (0.81) | 16.91\*\*\* (4.53) | 10.11\*\* (5.27) |
| 12 | 10.43\*\*\* (2.78) | 25.43\*\*\* (11.07) | 3.33\*\*\* (0.98) | 20.94\*\*\* (6.61) | 7.62\*\* (5.17) |
| 13 | 10.43\*\*\* (2.76) | 36.57\*\*\* (16.94) | 2.89\*\*\* (0.96) | 26.07\*\*\* (11.07) | 7.53\*\* (4.39) |
| 14 | 14.02\*\*\* (3.78) | 25.71\*\*\* (12.64) | 4.83\*\*\* (1.34) | 20.19\*\*\* (8.00) | 8.28\*\* (5.05) |
| 15 | 13.23\*\*\* (3.47) | 27.05\*\*\* (13.25) | 4.07\*\*\* (1.05) | 27.06\*\*\* (11.35) | 6.38\* (4.47) |
| 16 | 18.73\*\*\* (5.24) | 28.53\*\*\* (14.57) | 6.72\*\*\* (2.04) | 26.58\*\*\* (10.77) | 12.35\*\* (7.63) |
| 17 | 21.35\*\*\* (6.12) | 48.73\*\*\* (23.74) | 6.99\*\*\* (2.57) | 29.06\*\*\* (10.38) | 11.86\*\* (6.89) |
| 18 | 24.41\*\*\* (8.59) | 57.86\*\*\* (26.95) | 8.56\*\*\* (3.11) | 59.97\*\*\* (33.99) | 12.52\*\* (6.10) |
| 19 | 34.26\*\*\* (8.90) | 67.32\*\*\* (30.66) | 10.80\*\*\* (3.17) | 77.92\*\*\* (50.36) | 20.29\*\* (11.66) |
| 20 | 42.06\*\*\* (11.24) | 115.34\*\*\* (59.08) | 11.73\*\*\* (3.78) | 108.26\*\*\* (91.25) | 23.46\*\*\* (11.42) |
| 21 | 31.27\*\*\* (9.47) | 63.71\*\*\* (32.55) | 10.02\*\*\* (3.42) | 50.83\*\*\* (25.26) | 15.51\*\* (9.78) |
| 22 | 25.69\*\*\* (6.72) | 43.24\*\*\* (20.27) | 9.01\*\*\* (2.98) | 30.75\*\*\* (13.39) | 17.00\*\*\* (9.25) |
| 23 | 18.44\*\*\* (5.07) | 23.72\*\*\* (9.86) | 6.21\*\*\* (2.01) | 20.88\*\*\* (9.73) | 11.95\*\* (6.90) |
| 24 | 19.37\*\*\* (5.32) | 22.16\*\*\* (8.86) | 8.30\*\*\* (2.79) | 13.99\*\*\* (4.81) | 14.59\*\* (8.12) |
| 25 | 13.49\*\*\* (3.03) | 16.60\*\*\* (5.50) | 4.93\*\*\* (1.26) | 16.66\*\*\* (5.90) | 9.27\*\* (6.10) |
| 26 | 29.90\*\*\* (8.05) | 43.06\*\*\* (15.57) | 9.18\*\*\* (3.00) | 41.79\*\*\* (17.82) | 24.11\*\*\* (14.88) |
| **County Demographics** |  |  |  |  |  |
| County type |  |  |  |  |  |
| Urban | [Ref.] | -- | -- | [Ref.] | [Ref.] |
| Frontier | -10.78\* (5.19) | -- | -- | 119.57\*\* (139.18) | -15.20\*\*\* (7.20) |
| Rural | -10.01\*\* (5.09) | -- | -- | -1.91 (4.94) | -11.80\*\* (6.90) |
| Over age 65, population % | -0.42 (0.57) | -15.19\*\*\* (5.93) | 0.09 (0.15) | -6.14\*\*\* (3.28) | -0.80 (0.88) |
| Race/Ethnicity, population % |  |  |  |  |  |
| Hispanic/Latinx | -0.03 (0.16) | -8.53\*\*\* (3.32) | 0.03 (0.06) | -- | -- |
| Black, non-Hispanic | -0.29 (1.0) | -5.86\*\*\* (2.25) | -0.43 (0.81) | 3.25\*\* (1.56) | -1.80\* (1.37) |
| AIAN | -0.33\*\* (0.46) | 124.59\*\*\* (48.49) | -0.18 (0.14) | 12.88\*\*\* (6.83) | -0.34 (0.32) |
| Voter Share for Republican presidential candidate (2020), population % | 0.012\* (0.01) | -1.17\*\*\* (0.38) | -0.07 (0.05) | 0.20 (0.21) | 0.04 (0.20) |

*Note:* Results displayed as marginal effects (incidence rates). The standard errors are clustered at the county-level. Robust standard errors are in parentheses. \**p*<0.1; \*\**p*<0.05; \*\*\**p*<0.001

*Abbreviations:* mAb: neutralizing monoclonal antibodies; SE: standard error; AIAN: American Indian/Alaskan Native;

**Table S2.** Change in unique referring clinicians according to time and county characteristics, July 1, 2021 – December 31, 2021

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Overall: Marginal Effect (SE)** | **Urban Counties:** **Marginal Effect (SE)** | **Rural/Frontier Counties:****Marginal Effect (SE)** | **Counties with High Hispanic/Latinx Populations:****Marginal Effect (SE)** | **Counties with Low Hispanic/Latinx Populations:****Marginal Effect (SE)** |
| **N** | 1374 | 553 | 821 | 563 | 811 |
| **Weeks Since July 1, 2021** |  |  |  |  |  |
| Nov 2020 – June 2021 | [Ref.] | [Ref.] | [Ref.] | [Ref.] | [Ref.] |
| 1 | -0.38 (0.69) | -0.69 (2.02) | 0.34\* (0.26) | -2.06\*\*\* (0.33) | -0.15 (0.81) |
| 2 | 0.06 (0.45) | -0.35 (1.26) | 0.17 (0.17) | -1.07 (0.95) | 0.43 (0.44) |
| 3 | 0.27 (0.34) | 0.94 (2.25) | 0.12 (0.12) | -0.83 (0.53) | 0.75\*\* (0.27) |
| 4 | 0.60 (0.38) | 1.76 (2.22) | 0.26\*\* (0.14) | 0.17 (0.85) | 1.03\*\* (0.37) |
| 5 | 1.47\*\*\* (0.55) | 3.68\* (2.57) | 0.26\*\* (0.12) | 0.90 (0.73) | 2.18\*\*\* (0.72) |
| 6 | 2.71\*\*\* (0.92) | 6.67\*\* (3.68) | 0.61\*\*\* (0.28) | 0.92 (0.86) | 3.85\*\*\* (1.33) |
| 7 | 3.55\*\*\* (1.15) | 9.49\*\* (4.44) | 0.66\*\* (0.29) | 2.25\* (1.58) | 5.04\*\*\* (1.56) |
| 8 | 4.74\*\*\*(1.51) | 15.91\*\* (9.87) | 0.89\*\* (0.39) | 3.50 (3.28) | 7.44\*\*\* (2.78) |
| 9 | 5.57\*\*\* (1.40) | 18.86\*\*\* (8.24) | 1.19\*\*\* (0.45) | 7.60\*\* (5.03) | 4.90\*\*\* (2.03) |
| 10 | 4.01\*\*\* (1.41) | 19.62\*\*\* (10.53) | 0.91\*\*\* (0.39) | 8.40\*\*\* (3.77) | 2.20\* (1.18) |
| 11 | 7.40\*\*\* (1.82) | 26.39\*\*\* (13.31) | 2.07\*\*\* (0.56)  | 11.90\*\*\* (4.42) | 5.80\*\* (2.17) |
| 12 | 5.68\*\*\* (1.69) | 17.05\*\*\* (8.46) | 1.78\*\*\* (0.63) | 9.89\*\*\* (3.33) | 3.62\*\* (1.98) |
| 13 | 5.46\*\*\* (1.61) | 26.48\*\*\* (14.21) | 1.27\*\*\* (0.43) | 11.50\*\*\* (4.11) | 4.37\*\* (1.86) |
| 14 | 7.85\*\*\* (2.59) | 21.14\*\* (12.68) | 2.84\*\*\* (0.85) | 12.29\*\*\* (4.73) | 3.85\*\* (2.02) |
| 15 | 7.15\*\*\* (2.25) | 20.88\*\* (12.35) | 2.38\*\*\* (0.76) | 10.92\*\*\* (3.76) | 3.83\* (2.42) |
| 16 | 9.27\*\*\* (3.03) | 22.87\*\* (15.10) | 3.46\*\*\* (1.08) | 12.13\*\*\* (4.16) | 5.44\*\* (3.00) |
| 17 | 11.31\*\*\* (3.80)  | 33.51\*\* (21.90) | 4.00\*\*\* (1.43) | 14.46\*\*\* (5.88) | 6.16\*\* (3.12) |
| 18 | 13.35\*\*\* (4.61) | 55.06\*\*\* (37.43) | 4.51\*\*\* (1.73) | 28.17\*\*\* (14.54) | 6.68\*\* (3.10) |
| 19 | 17.26\*\*\* (4.90) | 61.59\*\*\* (45.73) | 5.73\*\*\* (1.90)  | 41.42\*\*\* (27.08) | 9.09\*\* (4.99) |
| 20 | 22.21\*\*\* (5.88) | 106.25\*\*\* (83.72) | 7.08\*\*\* (2.38) | 60.17\*\* (48.80) | 12.78\*\* (5.88) |
| 21 | 15.36\*\*\* (5.67) | 74.39\*\*\* (52.42) | 5.80\*\*\* (2.08) | 29.72\*\*\* (13.79) | 7.80\*\* (5.03) |
| 22 | 12.80\*\*\* (4.22) | 38.59\*\*\* (24.37) | 5.50\*\*\* (1.73) | 16.18\*\*\* (6.91) | 7.89\*\* (4.38) |
| 23 | 8.78\*\*\* (3.09) | 21.75\*\* (13.15) | 4.15\*\*\* (1.39) | 10.91\*\*\* (4.50) | 5.39\*\* (3.49) |
| 24 | 8.44\*\*\* (2.93) | 16.77\*\* (11.12) | 4.47\*\*\* (1.50) | 6.25\*\*\* (2.72) | 6.55\*\* (3.65) |
| 25 | 5.20\*\*\* (1.87) | 15.22\*\*\* (7.18) | 2.92\*\*\* (0.68) | 9.54\*\* (6.59) | 3.25\* (2.33) |
| 26 | 10.90\*\*\* (2.91) | 32.03\*\*\* (12.43) | 5.10\*\*\* (1.09) | 20.82\*\* (18.13) | 8.62\*\* (4.32) |
| **County Demographics** |  |  |  |  |  |
| County type |  |  |  |  |  |
| Urban | [Ref.] | -- | -- | [Ref.] | [Ref.] |
| Frontier | -6.97\*\*\* (2.15) | -- | -- | 46.76\*\* (57.50) | -8.10\*\*\* (2.54) |
| Rural | -6.37\*\*\* (2.04) | -- | -- | -2.50 (5.26) | -6.25\*\* (2.53) |
| Over age 65, population % | -0.10 (0.29) | -12.48\*\*\* (7.43) | 0.03 (0.09) | -3.34\*\* (1.66) | -0.43 (0.31) |
| Race/Ethnicity, population % |  |  |   |  |  |
| Hispanic | 0.01 (0.06) | -6.81\*\* (4.16) | 0.003 (0.03) | -- | -- |
| Black, non-Hispanic | -0.23 (0.46) | -4.05\*\*\* (1.92) | -0.05 (0.47) | 2.52 (2.56) | -0.99\*\*\* (0.42) |
| AIAN | -0.08 (0.20) | 98.80\*\* (60.21) | -0.04 (0.07) | 8.31 (5.61) | -0.06 (0.13) |
| Voter Share for Republican presidential candidate (2020), population % | -0.17\*\* (0.07) | -0.85\*\*\* (0.38) | -0.04 (0.03) | 0.18 (0.51) | 0.01 (0.07) |

*Note:* Results displayed as marginal effects (incidence rates). The standard errors are clustered at the county-level. Robust standard errors are in parentheses. \**p*<0.1; \*\**p*<0.05; \*\*\**p*<0.001

*Abbreviations:* mAb: neutralizing monoclonal antibodies; SE: standard error; AIAN: American Indian/Alaskan Native;

**Table S3.** COVID-19 hospitalizations, displayed as hospitalizations per 100,000 population using marginal effects, by county presence of at least one mAb treatment site

|  |  |
| --- | --- |
|  | **COVID-19 Hospitalization Rate (per 100k population)** |
| **N** | 2580 |  |  |
| **Clusters** | 47 |  |  |
|  | **Counties with mAb treatment site(s)** | **Counties without mAb treatment site(s)** | **Difference (between group, pre-post)** |
| **Weeks Since July 1, 2021** |  |  |  |
| Nov 2020 – June 2021 | 9.33 (2.41) | 12.27 (3.08) | – |
| 1 | – | – |  |
| 2 | – | – |  |
| 3 | 4.23 (0.95) | 6.98 (2.45) | 0.19 |
| 4 | 3.68 (0.79) | 8.80 (3.01) | -2.18\*\* |
| 5 | 4.50 (1.00) | 9.31 (2.99) | -1.87\*\* |
| 6 | 3.63 (0.59) | 7.73 (2.04) | -1.16\*\* |
| 7 | 4.32 (0.74) | 8.31 (2.17) | -1.05\* |
| 8 | 5.06 (0.87) | 7.95 (2.13) | 0.05 |
| 9 | 5.57 (1.11) | 8.02 (1.95) | 0.49 |
| 10 | 6.27 (1.06) | 7.90 (1.80) | 1.30 |
| 11 | 5.91 (1.07) | 6.74 (1.71) | 2.11 |
| 12 | 5.84 (0.95) | 6.78 (1.52) | 2.00 |
| 13 | 6.40 (1.08) | 6.85 (1.40) | 2.49 |
| 14 | 6.27 (1.06) | 7.85 (1.71) | 1.35 |
| 15 | 7.25 (1.30) | 7.49 (1.48) | 2.70 |
| 16 | 6.94 (1.11) | 7.62 (1.53) | 2.25 |
| 17 | 7.60 (1.32) | 8.87 (1.62) | 1.67 |
| 18 | 8.31 (1.40) | 8.47 (1.90) | 2.77 |
| 19 | 9.30 (1.55) | 8.99 (2.06) | 3.25\* |
| 20 | 9.02 (1.62) | 8.86 (2.19) | 3.11 |
| 21 | 9.26 (1.62) | 8.53 (2.04) | 3.66\* |
| 22 | 9.17 (1.57) | 9.93 (2.27) | 2.17 |
| 23 | 8.22 (1.47) | 8.71 (2.06) | 2.44 |
| 24 | 7.30 (1.28) | 7.96 (2.15) | 2.27 |
| 25 | 5.91 (1.15) | 5.83 (1.97) | 3.02 |
| 26 | 5.06 (1.20) | 5.29 (1.91) | 2.70 |

*Note.* Results displayed as marginal effects (incidence rates). The standard errors are clustered at the county-level. Robust standard errors are in parentheses. \**p*<0.1; \*\**p*<0.05; \*\*\**p*<0.001