# Online Appendix

## Quantifying the impact of COVID-19 on travel behavior in different socio-economic segments

### Appendix A. States in low- and high- ED/income segment

| | ED rank | ED | States | | Median income rank | Median income | States |
|---|---|---|---|---|---|---|---|
| | 1 | 16044 | DC | | 1 | 84342 | MD |
| | 2 | 574 | NJ | | 2 | 82604 | DC |
| | 3 | 393 | MA | | 3 | 80536 | NJ |
| | 4 | 336 | RI | | 4 | 78970 | MA |
| | 5 | 316 | CT | | 5 | 78728 | HI |
| | 6 | 230 | MD | | 6 | 78484 | VA |
| | 7 | 192 | DE | | 7 | 77608 | CT |
| | 8 | 172 | NY | | 8 | 76682 | AK |
| | 9 | 160 | FL | | 9 | 75508 | NH |
| | 10 | 131 | PA | | 10 | 73056 | CA |
| High- ED | 11 | 118 | OH | High- income | 11 | 72070 | WA |
| segment | 12 | 112 | IL | segment | 12 | 70336 | CO |
| | 13 | 109 | CA | | 13 | 70160 | MN |
| | 14 | 92 | VA | | 14 | 69170 | NY |
| | 15 | 79 | IN | | 15 | 68981 | UT |
| | 16 | 77 | NH | | 16 | 66401 | DE |
| | 17 | 76 | NC | | 17 | 65468 | IL |
| | 18 | 65 | GA | | 18 | 63822 | ND |
| | 18 | 65 | TN | | 19 | 63344 | RI |
| | 20 | 60 | SC | | 20 | 62752 | WY |
| | 21 | 59 | HI | | 21 | 61252 | PA |
| | 22 | 46 | WA | | 22 | 60794 | OR |
| | 22 | 46 | KY | | 23 | 60766 | VT |
| | 24 | 45 | MN | | 24 | 60697 | TX |
| | 25 | 44 | WI | | 25 | 60234 | WI |
| | 26 | 43 | MI | | 26 | 59764 | NE |
| | 27 | 41 | TX | | 27 | 59470 | KS |
| | 28 | 40 | MO | | 28 | 59060 | IA |
| | 29 | 39 | LA | | 29 | 57757 | NV |
| | 30 | 37 | AL | | 30 | 57606 | GA |
| | 31 | 37 | WV | | 31 | 56869 | AZ |
| Low-ED | 32 | 36 | VT | Low- income | 32 | 56590 | SD |
| segment | 33 | 27 | CO | segment | 33 | 56460 | ME |
| | 33 | 27 | IA | | 34 | 56352 | MI |

| | | | | | | |
|---|---|---|---|---|---|---|
| 35 | 25 | MS | | 35 | 55651 | OH |
| 36 | 24 | AZ | | 36 | 55523 | IN |
| 37 | 23 | AR | | 37 | 54873 | MO |
| 38 | 22 | OK | | 38 | 53877 | NC |
| 39 | 20 | OR | | 39 | 53719 | ID |
| 40 | 19 | ME | | 40 | 53576 | FL |
| 41 | 16 | UT | | 41 | 52853 | MT |
| 41 | 16 | KS | | 42 | 52328 | TN |
| 41 | 16 | NV | | 43 | 51821 | OK |
| 44 | 12 | NE | | 44 | 51588 | SC |
| 45 | 11 | ID | | 45 | 49623 | KY |
| 46 | 9 | NM | | 46 | 49154 | AL |
| 47 | 8 | ND | | 47 | 48627 | NM |
| 48 | 6 | SD | | 48 | 48568 | LA |
| 49 | 4 | WY | | 49 | 46562 | AR |
| 49 | 4 | MT | | 50 | 45649 | WV |
| 51 | 1 | AK | | 51 | 44445 | MS |

## Appendix B. US State Abbreviations List

| USA State | Acronym |
|---|---|
| Alabama | AL |
| Alaska | AK |
| Arizona | AZ |
| Arkansas | AR |
| California | CA |
| Canal Zone | CZ |
| Colorado | CO |
| Connecticut | CT |
| Delaware | DE |
| District of Columbia | DC |
| Florida | FL |
| Georgia | GA |
| Guam | GU |
| Hawaii | HI |
| Idaho | ID |
| Illinois | IL |
| Indiana | IN |
| Iowa | IA |
| Kansas | KS |
| Kentucky | KY |
| Louisiana | LA |
| Maine | ME |
| Maryland | MD |
| Massachusetts | MA |
| Michigan | MI |
| Minnesota | MN |
| Mississippi | MS |
| Missouri | MO |
| Montana | MT |
| Nebraska | NE |
| Nevada | NV |
| New Hampshire | NH |
| New Jersey | NJ |
| New Mexico | NM |
| New York | NY |
| North Carolina | NC |
| North Dakota | ND |
| Ohio | OH |
| Oklahoma | OK |
| Oregon | OR |
| Pennsylvania | PA |
| Puerto Rico | PR |
| Rhode Island | RI |
| South Carolina | SC |
| South Dakota | SD |
| Tennessee | TN |
| Texas | TX |
| Utah | UT |
| Vermont | VT |
| Virgin Islands | VI |
| Virginia | VA |
| Washington | WA |
| West Virginia | WV |
| Wisconsin | WI |
| Wyoming | WY |

## Appendix C: Percentage of behavior changes

As shown in Figure C1 ~ Figure C3, the states marked as green, grey, and cyan denote the states where the reported percentage changes of travel behavior are statistically below, same as, and above the US average, respectively, with 95% confidence intervals, and the low ED states are marked by ç. The values in the round brackets marked in red denote the US average of each travel behavior change during the collection period.

Figure C1 shows that the average percentage of American workers moving to WFH, due to COVID, increased from 36.3% to 37.3% during 19 Aug 2020 ~ 9 Nov 2020, and then decreased to 36.9% after experiencing some fluctuations during 11 Nov 2020 ~ 21 Dec 2020, finally increasing to 39.1% during 6 Jan 2021~29 Mar 2021. Figure C2 shows that the average percentage of people in different US states who took fewer trips by public transit (bus, rail, or ride-sharing services) than normal, due to COVID, first saw a decrease from 73.0% to 69.3% during 19 Aug 2020 ~ 9 Nov 2020, and then an increase from 71.1% to 73.4% during 11 Nov 2020 ~ 15 Feb 2021, and finally decreased to 64.0% during 17 Feb 2021 ~ 29 Mar 2021. Similarly, Figure C3 shows that the average percentage of individuals in different US states who took fewer in-person shopping trips, due to COVID-19, first saw a decrease from 70.5% to 65.5% during 19 Aug 2020 ~ 9 Nov 2020, and then an increase from 69.5% to 71.4% during 11 Nov 2020 ~15 Feb 2021, and finally a decrease to 55.7% during 17 Feb 2021 ~ 29 Mar 2021. It is showed that the increased percentage of WFH in most of the high-ED states are same as US average or statistically above US average, indicating that the high-ED states are more adaptable for WFH while low-ED states are more reliant on the in-person work style, in part due to the different configurations of their labor markets. For example, high-ED states provide more jobs supporting the flexibility of WFH, while low-ED states provide more jobs given the occupation and in-office or elsewhere requirement for face-to-face contact or their role as an essential worker like cleaning, cashier, waiters/waitress, etc, and essential services such as healthcare nurses, etc.

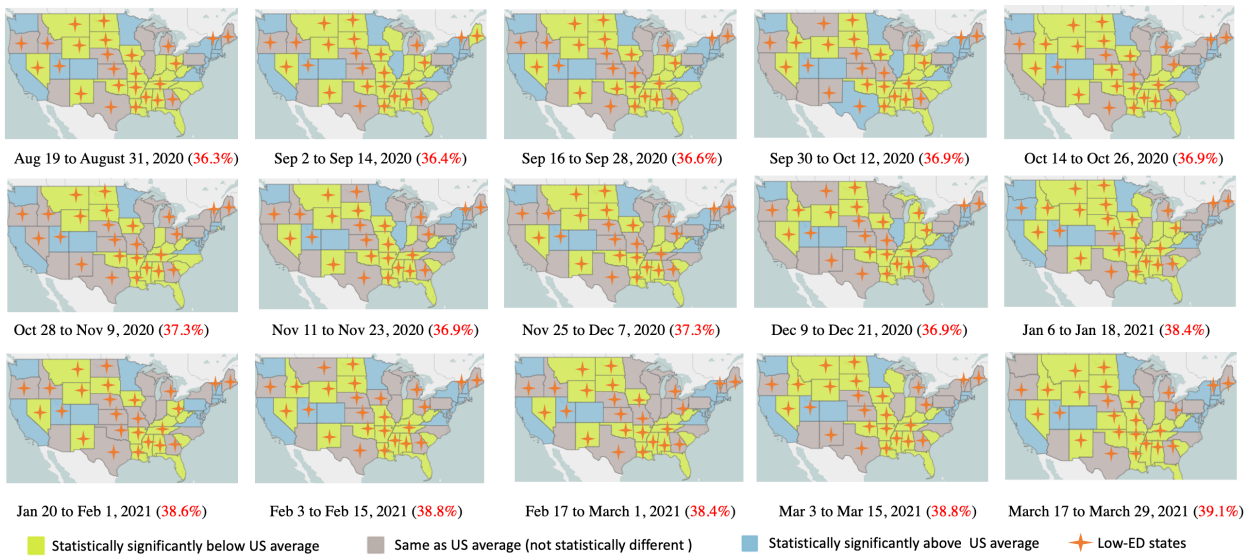


**Figure C1. Percentage of increased WFH in different US states due to COVID**

Figure C1 ~ Figure C3 show that the percentages of decreased public transit use and decreased in-person shopping trips varied significantly in different states during different periods and tended to recover; however, the percentage of increased WFH was relatively stable in different states during the observed periods. For example, the percentage of behavior changes of all 50 US states during two time periods is summarized in Table C1. During 19 Aug 2020 ~ 31 Aug 2020 (resp. 3 Feb 2021 ~ 15 Feb 2021), Figure C1 shows that the percentage of increased *WFH* was statistically below, the same, and above the

corresponding US average in 22 (resp. 18) states, 14 (resp. 20) states, and 15 (resp. 13) states, respectively; Figure C2 shows that the percentage of *decreased public transit trips* taken by bus, rail, and ridesharing was statistically below, the same, and above the corresponding US average in 19 (resp. 13) states, 25 (resp. 32) states, and 7 (resp. 6) states, respectively. Figure C3 shows that the percentage of decreased *in-person shopping trips* was statistically below, the same and above the corresponding US average in 21 (resp. 13) states, 21 (resp. 32) states, and 9 (resp. 6) states, respectively.

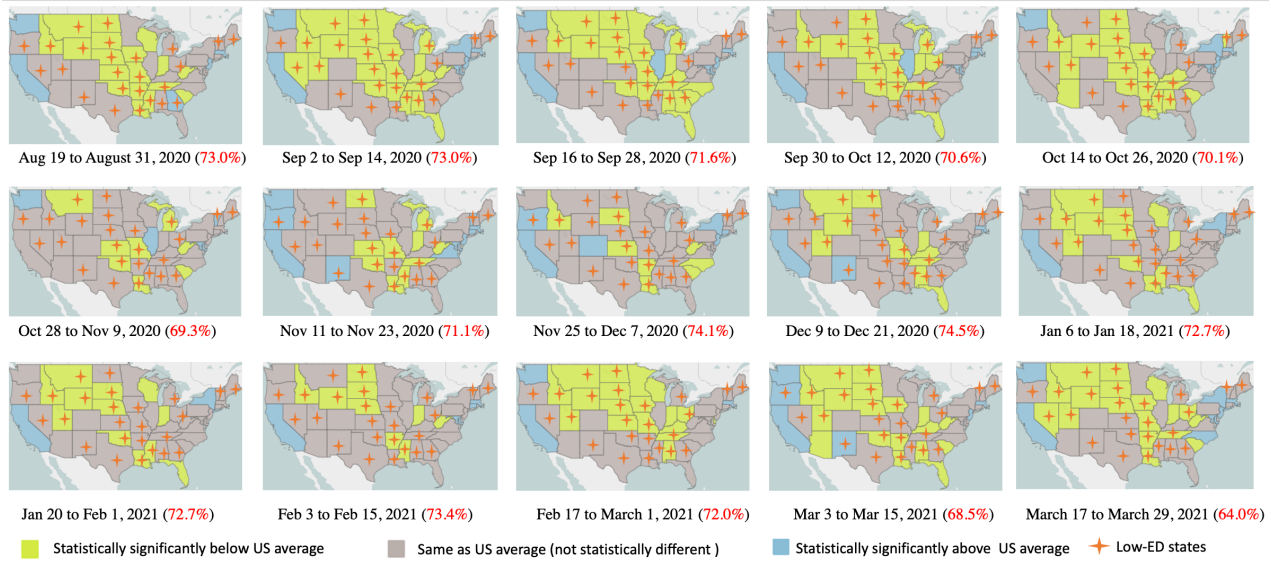


**Figure C2. Percentage of decreased trips taken by bus, rail, and ridesharing, in different US states due to COVID**

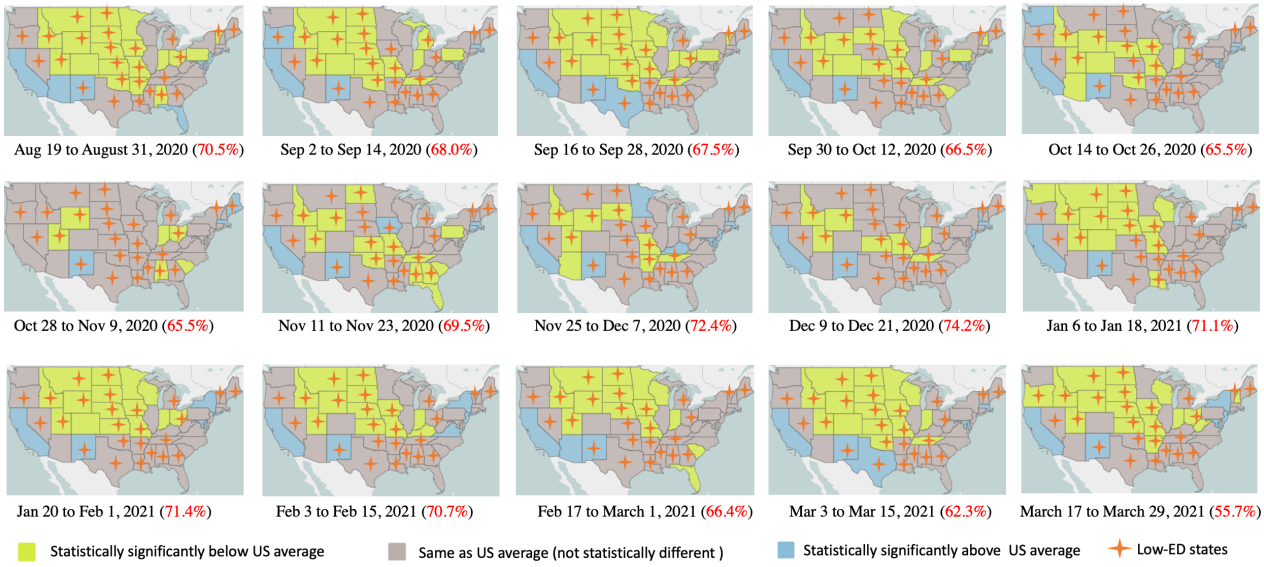


**Figure C3. Percentage of decreased in-person shopping trips in different US states due to COVID**

**Table C1. Comparing percentage of travel behavior changes of all US states of selected two periods (19 Aug 2020 ~ 31 Aug 2020 and 3 Feb 2021 ~ 15 Feb 2021)**

| Period | Percentage of behavior changes | Statistically below US average | Statistically same as US average | Statistically above US average |
|---|---|---|---|---|
| 19 Aug 2020 ~ 31 Aug 2020 | % Increased WFH | MV, MS, AL, WY, LA, AR, MT, OK, SC, IA, TN, SD, NV, FL, IN, KY, OH, ND, MO, NC, AK, NM | ID, WI, AZ, NE, DE, TX, KS, MF, OR, IL, PA, GA, MI, HI | CA, VA, NH, RI, CO, NY, VT, WA, NJ, MN, CT, UT, MD, MA, DC |
| | % Decreased public transit trips | MT, SD, ND, AR, LA, WV, TN, OK, IN, WI, MS, NE, AK, WY, SC, ID, KS, IA, MO | AL, UT, KY, TX, MN, FL, NV, OH, NC, MI, VT, DE, CO, CT, AZ, ME, NM, NH, PA, NY, VA, RI, OR, MD, IL | CA, GA, WA, NJ, HI, MA, DC |
| | %Decreased in-person shopping trips | WY, ND, MT, SD, IN, UT, ID, IA, NE, AR, AK, MO, KS, AL, VT, PA, OH, OK, MN, CO | SC, TN, GA, NH, MV, MI, ME, WI, WA, IL, MS, OR, NE, DE, NC, KY, LA, NY, CT, VA, MA, TX | AZ, MD, NM, NJ, RI, FL, CA, DC, HI |
| 3 Feb 2021 ~ 15 Feb 2021 | % Increased WFH | KY, WY, MS, AL, WV, NE, AR, IN, LA, ND, SD, SC, OK, FL, TN, MO, ID, NM | MT, IA, AK, GA, AZ, MI, DE, NC, TX, NE, OH, WI, RI, PA, ME, HI, KS, OR, IL, VT | CT, CA, MN, WA, VA, NY, CO, NH, NJ, MA, UT, MD, DC |
| | % Decreased public transit trips | MT, SD, ID, AR, LA, NE, AK, WV, MO, KS, KY, UT, NV | LA, IN, SC, AZ, IA, DE, OH, OK, NH, FL, MS, NM, TN, NC, TX, WI, CT, MI, GA, MT, PA, MN, RI, IL, HI, VA, CO, MA, CA, MD, DC | WA, OR, NJ, NY, VT, ME |
| | % Decreased in-person shopping trips | ND, ID, SD, KS, UT, IA, AK, MT, IN, WY, MO, KY, NF | NH, MN, WI, CO, GA, OH, PA, LA, IL, AR, NC, AL, RI, FL, AZ, MI, OK, NV, TN, WV, DF, SC, WA, HI, CT, MA, DC, TX, OR, MD, MS, MF | VA, NY, NJ, VT, CA, NM |

Compared with the travel behavior changes during 19 Aug 2020 ~ 31 Aug 2020, the number of states with percentages of behavior changes statistically below/above the US average decreased, while the number of states with percentages statistically the same as the US average increased during 3 Feb 2021 ~ 15 Feb 2021. We find that most of the states where percentages of behavior changes were statistically below the US average belong to the low-ED segment (marked by ✦ in Figure C1 ~ Figure C3), while most of the states where the percentage of travel behavior changes was statistically above the US average belong to the high-ED segment. For example, the percentage of travel behavior changes in *Alaska* (AK), which has the lowest ED in the US, was statistically below the US average; the percentage of behavior changes in Washington DC, which has the highest ED in the US, was statistically above the US average. This difference could be explained by the composition of the labor markets and the economy sectors in different states, e.g., the high-ED segments are more flexible on the physical presence at office while low-ED segments are more reliant on the workers who must physically present at work.

## Appendix D: Variable explanation

| Variables | Explanation |
|---|---|
| New COVID cases | Number of COVID-19 daily new cases. Source: JHU COVID-19 data repository. |
| Imported COVID cases | Number of daily external trips by infectious persons from out of state/county. Calculated by MTI. |
| COVID exposure/1000 people | Number of residents already exposed to coronavirus per 1000 people. Calculated by MTI. |
| # Days: decreasing COVID cases | Number of days with decreasing COVID-19 cases. Calculated by MTI based on weekly pattern of new daily cases. |
| COVID tests done/1000 people | Number of COVID-19 tests already completed per 1000 people. Source: The COVID tracking project. |
| % Hospital bed utilization | % Hospital beds occupied with patients. Calculated by MTI using ESRI: US Hospital Beds Dashboard and IMHE COVID-19 projections |
| % ICU utilization | % ICU unites occupied with COVID-19 patients. Calculated by MTI using ESRI: US Hospital Beds Dashboard , The COVID Tracking Project , and IMHE COVID-19 projections. |
| Ventilator needs | Number of ventilators needed for COVID-19 patients. Source: IHME COVID-19 projections. |
| COVID death rate | % Deaths among all COVID-19 cases. Calculated by MTI based on number of deaths and estimated total COVID cases including confirmed and untested cases. |
| % Working from home | Percentage of workforce working from home based on UMD models. Calculated by MTI based on changes in work trips and unemployment claims. |
| % Out-of-state trips* | Percentage of all trips that cross state borders. Calculated by MTI. |
| Miles/person | Average person-miles travelled on all modes (car, train, bus, plane, bike, walk, etc.) per person per day. Calculated by MTI. |
| Work trips/person | Number of work trips per person per day (where a “work trip” is defined as going to or coming home from work location). Calculated by MTI. |
| Non-work trips/person | Number of non-work trips per person per day. Additional information on trip purpose (grocery, park, restaurant, etc.) is available, but not currently shown on the platform. Calculated by MTI. |

## Appendix E: Results of the FE panel regression model

**Appendix Table 1-1 Coefficients of the panel regression model for low employment density.**

| | Non-work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 0.03 | 0.07 | 0.38 | 0.71 | -0.11 | 0.16 |
| hospital bed utilization | -0.03 | 0.01 | -4.66 | 0.00 | -0.04 | -0.02 |
| Tests done 1000 people | 2.5E-04 | 9.9E-05 | 2.52 | 0.01 | 5.5E-05 | 4.4E-04 |
| ICU utilization | -0.01 | 2.6E-03 | -2.33 | 0.02 | -0.01 | -9.6E-04 |
| Ventilator needs | 1.7E-04 | 3.7E-05 | 4.46 | 0.00 | 9.3E-05 | 2.4E-04 |
| Imported COVID cases | 2.1E-05 | 7.0E-06 | 2.95 | 3.0E-03 | 6.9E-06 | 3.5E-05 |
| COVID exposure/1000 people | 0.01 | 4.6E-03 | 3.13 | 2.0E-03 | 0.01 | 0.02 |
| days decreasing Cases | 1.1E-03 | 2.3E-04 | 4.80 | 0.00 | 6.6E-04 | 1.6E-03 |
| COVID death rate | -1.6E-03 | 1.6E-03 | -1.02 | 0.31 | -4.8E-03 | 1.5E-03 |
| Constant | 4.05 | 0.26 | 15.51 | 0.00 | 3.54 | 4.56 |
| R-square: within | | | 0.27 | | | |
| R-square: between | | | 0.05 | | | |
| R-square: overall | | | 0.14 | | | |
| Wald chi2(9) | | | 364.65 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12,376 | | | |

**Appendix Table 1-2 Coefficients of the panel regression model for low employment density.**

| | Work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.03 | 0.01 | -2.91 | 4.0E-03 | -0.05 | -0.01 |
| hospital bed utilization | 1.4E-03 | 7.2E-04 | 1.99 | 0.05 | 2.1E-05 | 2.8E-03 |
| Tests done 1000 people | -1.7E-05 | 1.0E-05 | -1.63 | 0.10 | -3.8E-05 | 3.4E-06 |
| ICU utilization | -1.8E-03 | 4.4E-04 | -4.13 | 0.00 | -2.7E-03 | -9.5E-04 |
| Ventilator needs | 2.2E-05 | 1.1E-05 | 2.06 | 0.04 | 1.0E-06 | 4.2E-05 |
| Imported COVID cases | -5.0E-06 | 1.7E-06 | -2.94 | 3.0E-03 | -8.3E-06 | -1.7E-06 |
| COVID exposure/1000 people | 2.4E-03 | 4.9E-04 | 4.81 | 0.00 | 1.4E-03 | 3.3E-03 |
| days decreasing Cases | -1.4E-04 | 3.1E-05 | -4.62 | 0.00 | -2.0E-04 | -8.3E-05 |
| COVID death rate | -3.2E-03 | 2.7E-04 | -11.77 | 0.00 | -3.7E-03 | -2.6E-03 |
| Constant | 0.44 | 0.03 | 13.15 | 0.00 | 0.38 | 0.51 |
| R-square: within | | | 0.10 | | | |
| R-square: between | | | 0.04 | | | |
| R-square: overall | | | 0.09 | | | |
| Wald chi2(9) | | | 498.68 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 1-3 Coefficients of the panel regression model for low employment density.**

| | Miles/person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 1.85 | 2.36 | 0.79 | 0.43 | -2.77 | 6.47 |
| hospital bed utilization | -0.47 | 0.06 | -7.82 | 0.0E+00 | -0.59 | -0.35 |
| Tests done 1000 people | 1.6E-03 | 1.0E-03 | 1.58 | 0.12 | -3.9E-04 | 3.6E-03 |
| ICU utilization | 0.06 | 0.05 | 1.20 | 0.23 | -0.04 | 0.16 |
| Ventilator needs | 1.4E-03 | 4.3E-04 | 3.14 | 2.0E-03 | 5.1E-04 | 2.2E-03 |
| Imported COVID cases | 3.4E-04 | 1.9E-04 | 1.82 | 0.07 | -2.6E-05 | 7.1E-04 |
| COVID exposure/1000 people | 0.26 | 0.06 | 3.97 | 0.0E+00 | 0.13 | 0.38 |
| days decreasing Cases | 0.02 | 2.7E-03 | 6.23 | 0.0E+00 | 0.01 | 0.02 |
| COVID death rate | -0.22 | 0.04 | -5.01 | 0.0E+00 | -0.31 | -0.14 |
| Constant | 61.51 | 3.03 | 20.31 | 0.0E+00 | 55.58 | 67.45 |
| R-square: within | | | 0.07 | | | |
| R-square: between | | | 0.26 | | | |
| R-square: overall | | | 0.07 | | | |
| Wald chi2(9) | | | 728.73 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 1-4 Coefficients of the panel regression model for low employment density.**

| | Out of state trips | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.12 | 0.10 | -4.60 | 0.00 | -0.32 | 0.09 |
| hospital bed utilization | -0.03 | 0.01 | -3.33 | 1.0E-03 | -0.04 | -0.01 |
| Tests done 1000 people | -2.1E-04 | 2.2E-04 | -0.95 | 0.34 | -6.3E-04 | 2.2E-04 |
| ICU utilization | 0.01 | 4.4E-03 | 3.11 | 2.0E-03 | 0.01 | 0.02 |
| Ventilator needs | 3.9E-06 | 7.0E-05 | 0.06 | 0.96 | -1.3E-04 | 1.4E-04 |
| Imported COVID cases | 5.1E-05 | 2.6E-05 | 2.00 | 0.05 | 9.8E-07 | 1.0E-04 |
| COVID exposure/1000 people | -0.01 | 0.01 | -0.87 | 0.39 | -0.02 | 0.01 |
| days decreasing Cases | 7.0E-04 | 6.0E-04 | 1.16 | 0.25 | -4.8E-04 | 1.9E-03 |
| COVID death rate | -0.01 | 3.2E-03 | -4.60 | 0.00 | -0.02 | -0.01 |
| Constant | 6.89 | 0.74 | 9.25 | 0.00 | 5.43 | 8.35 |
| R-square: within | | | 0.05 | | | |
| R-square: between | | | 0.00 | | | |
| R-square: overall | | | 0.00 | | | |
| Wald chi2(9) | | | 54.47 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 1-5 Coefficients of the panel regression model for low employment density.**

| | Working from home | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 5.51 | 1.72 | 3.20 | 1.0E-03 | 2.14 | 8.88 |
| hospital bed utilization | -0.28 | 0.13 | -2.07 | 0.04 | -0.54 | -0.02 |
| Tests done 1000 people | 3.6E-03 | 2.3E-03 | 1.57 | 0.12 | -9.0E-04 | 0.01 |
| ICU utilization | 0.39 | 0.08 | 4.92 | 0.00 | 0.24 | 0.55 |
| Ventilator needs | -3.5E-03 | 2.1E-03 | -1.68 | 0.09 | -0.01 | 6.0E-04 |
| Imported COVID cases | 9.8E-04 | 2.9E-04 | 3.37 | 1.0E-03 | 4.1E-04 | 1.6E-03 |
| COVID exposure/1000 people | -0.36 | 0.11 | -3.34 | 1.0E-03 | -0.58 | -0.15 |
| days decreasing Cases | 0.04 | 0.01 | 6.18 | 0.00 | 0.02 | 0.05 |
| COVID death rate | 0.51 | 0.05 | 10.67 | 0.00 | 0.42 | 0.61 |
| Constant | 27.04 | 5.70 | 4.74 | 0.00 | 15.86 | 38.22 |
| R-square: within | | | 0.48 | | | |
| R-square: between | | | 0.04 | | | |
| R-square: overall | | | 0.38 | | | |
| Wald chi2(9) | | | 838.78 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 2-1 Coefficients of the panel regression model for high employment density.**

| | Non-work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.26 | 0.08 | -3.09 | 2.0E-03 | -0.42 | -0.09 |
| hospital bed utilization | -0.01 | 3.3E-03 | -3.14 | 2.0E-03 | -0.02 | -3.9E-03 |
| Tests done 1000 people | 5.4E-05 | 6.3E-05 | 0.86 | 0.39 | -7.0E-05 | 1.8E-04 |
| ICU utilization | -0.01 | 1.9E-03 | -3.93 | 0.00 | -0.01 | -3.7E-03 |
| Ventilator needs | 5.5E-06 | 2.7E-05 | 0.21 | 0.84 | -4.6E-05 | 5.7E-05 |
| Imported COVID cases | 1.2E-05 | 3.9E-06 | 3.03 | 2.0E-03 | 4.1E-06 | 1.9E-05 |
| COVID exposure/1000 people | 0.03 | 0.01 | 5.33 | 0.00 | 0.02 | 0.04 |
| days decreasing Cases | 8.3E-04 | 1.7E-04 | 4.95 | 0.00 | 5.0E-04 | 1.2E-03 |
| COVID death rate | 1.4E-03 | 1.2E-03 | 1.09 | 0.28 | -1.1E-03 | 3.8E-03 |
| Constant | 3.35 | 0.18 | 18.27 | 0.00 | 2.99 | 3.71 |
| R-square: within | | | 0.31 | | | |
| R-square: between | | | 0.09 | | | |
| R-square: overall | | | 0.26 | | | |
| Wald chi2(9) | | | 686.98 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 2-2 Coefficients of the panel regression model for high employment density.**

| | Work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.03 | 0.03 | 1.02 | 0.31 | -0.10 | 0.03 |
| hospital bed utilization | 7.4E-04 | 5.9E-04 | 1.26 | 0.21 | -4.1E-04 | 1.9E-03 |
| Tests done 1000 people | -6.4E-06 | 1.4E-05 | 0.47 | 0.64 | -3.3E-05 | 2.1E-05 |
| ICU utilization | -1.0E-03 | 4.2E-04 | 2.45 | 0.01 | -1.9E-03 | -2.0E-04 |
| Ventilator needs | 2.2E-05 | 1.1E-05 | 1.97 | 0.05 | 8.0E-08 | 4.4E-05 |
| Imported COVID cases | -3.4E-06 | 1.0E-06 | 3.30 | 1.0E-03 | -5.4E-06 | -1.4E-06 |
| COVID exposure/1000 people | 8.6E-04 | 9.3E-04 | 0.92 | 0.36 | -9.7E-04 | 2.7E-03 |
| days decreasing Cases | -1.6E-04 | 3.7E-05 | 4.45 | 0. 00 | -2.3E-04 | -9.1E-05 |
| COVID death rate | -3.9E-03 | 4.2E-04 | 9.24 | 0. 0 | -4.7E-03 | -3.1E-03 |
| Constant | 0.49 | 0.05 | 9.85 | 0. 0 | 0.39 | 0.59 |
| R-square: within | | | 0.16 | | | |
| R-square: between | | | 0.09 | | | |
| R-square: overall | | | 0.07 | | | |
| Wald chi2(9) | | | 526.09 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 2-3 Coefficients of the panel regression model for high employment density.**

| | Miles/person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -3.53 | 1.41 | -2.51 | 0.01 | -6.29 | -0.78 |
| hospital bed utilization | -0.19 | 0.08 | -2.49 | 0.01 | -0.33 | -0.04 |
| Tests done 1000 people | -8.1E-04 | 1.2E-03 | -0.65 | 0.52 | -3.2E-03 | 1.6E-03 |
| ICU utilization | -0.09 | 0.04 | -2.26 | 0.02 | -0.16 | -0.01 |
| Ventilator needs | -1.7E-04 | 8.1E-04 | -0.20 | 0.84 | -1.8E-03 | 1.4E-03 |
| Imported COVID cases | 3.1E-04 | 5.0E-05 | 6.21 | 0.00 | 2.1E-04 | 4.1E-04 |
| COVID exposure/1000 people | 0.51 | 0.08 | 6.35 | 0.00 | 0.35 | 0.67 |
| days decreasing Cases | 0.02 | 3.6E-03 | 4.90 | 0.00 | 0.01 | 0.02 |
| COVID death rate | -0.15 | 0.03 | -4.78 | 0.00 | -0.21 | -0.09 |
| Constant | 46.98 | 4.21 | 11.17 | 0.00 | 38.73 | 55.22 |
| R-square: within | | | 0.4123 | | | |
| R-square: between | | | 0.3532 | | | |
| R-square: overall | | | 0.3967 | | | |
| Wald chi2(9) | | | 1280.09 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 2-4 Coefficients of the panel regression model for high employment density.**

| | Out of state trips | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.34 | 0.20 | 2.82 | 0.01 | -0.74 | 0.06 |
| hospital bed utilization | -3.6E-04 | 0.01 | 0.03 | 0.98 | -0.03 | 0.03 |
| Tests done 1000 people | -6.4E-04 | 2.0E-04 | 3.13 | 2.0E-03 | -1.0E-03 | -2.4E-04 |
| ICU utilization | -0.01 | 0.01 | 1.91 | 0.06 | -0.03 | 3.6E-04 |
| Ventilator needs | 1.0E-04 | 1.1E-04 | 0.96 | 0.34 | -1.1E-04 | 3.1E-04 |
| Imported COVID cases | 3.7E-05 | 9.8E-06 | 3.74 | 0.00 | 1.7E-05 | 5.6E-05 |
| COVID exposure/1000 people | 0.01 | 0.01 | 1.13 | 0.26 | -0.01 | 0.03 |
| days decreasing cases | 1.0E-03 | 4.8E-04 | 2.14 | 0.03 | 8.4E-05 | 2.0E-03 |
| COVID death rate | -0.02 | 0.01 | 2.82 | 0.01 | -0.03 | -4.9E-03 |
| Constant | 8.64 | 1.49 | 5.81 | 0.00 | 5.73 | 11.56 |
| R-square: within | | | 0.07 | | | |
| R-square: between | | | 0.20 | | | |
| R-square: overall | | | 0.05 | | | |
| Wald chi2(9) | | | 87.52 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 2-5 Coefficients of the panel regression model for high employment density.**

| | Working from home | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 9.78 | 3.54 | 2.76 | 0.01 | 2.84 | 16.72 |
| hospital bed utilization | -0.06 | 0.11 | -0.52 | 0.60 | -0.27 | 0.16 |
| Tests done 1000 people | 7.4E-04 | 2.3E-03 | 0.33 | 0.74 | -3.7E-03 | 0.01 |
| ICU utilization | 0.15 | 0.08 | 2.00 | 0.05 | 3.3E-03 | 0.30 |
| Ventilator needs | -3.9E-03 | 1.7E-03 | -2.31 | 0.02 | -0.01 | -5.8E-04 |
| Imported COVID cases | 5.4E-04 | 1.3E-04 | 4.24 | 0.00 | 2.9E-04 | 8.0E-04 |
| COVID exposure/1000 people | -0.12 | 0.15 | -0.78 | 0.44 | -0.42 | 0.18 |
| days decreasing cases | 0.04 | 0.01 | 6.39 | 0.00 | 0.03 | 0.05 |
| COVID death rate | 0.57 | 0.04 | 14.62 | 0.00 | 0.49 | 0.64 |
| Constant | 17.59 | 5.98 | 2.94 | 3.0E-03 | 5.86 | 29.32 |
| R-square: within | | | 0.55 | | | |
| R-square: between | | | 0.06 | | | |
| R-square: overall | | | 0.45 | | | |
| Wald chi2(9) | | | 716.02 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 3-1 Coefficients of the panel regression model for low population density.**

| | Non-work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -2.4E-03 | 0.07 | -0.04 | 0.97 | -0.13 | 0.13 |
| hospital bed utilization | -0.03 | 0.01 | -4.28 | 0.00 | -0.05 | -0.02 |
| Tests done 1000 people | 2.6E-04 | 9.6E-05 | 2.72 | 0.01 | 7.3E-05 | 4.5E-04 |
| ICU utilization | -3.8E-03 | 3.2E-03 | -1.21 | 0.23 | -0.01 | 2.4E-03 |
| Ventilator needs | 3.3E-04 | 2.1E-04 | 1.55 | 0.12 | -8.9E-05 | 7.5E-04 |
| Imported COVID cases | 2.1E-05 | 7.8E-06 | 2.64 | 0.01 | 5.3E-06 | 3.6E-05 |
| COVID exposure/1000 people | 0.01 | 4.5E-03 | 2.78 | 0.01 | 3.7E-03 | 0.02 |
| days decreasing cases | 1.1E-03 | 2.6E-04 | 4.44 | 0.00 | 6.3E-04 | 1.6E-03 |
| COVID death rate | -3.0E-03 | 8.3E-04 | -3.65 | 0.00 | -4.7E-03 | -1.4E-03 |
| Constant | 4.24 | 0.32 | 13.40 | 0.00 | 3.62 | 4.86 |
| R-square: within | | | 0.26 | | | |
| R-square: between | | | 0.04 | | | |
| R-square: overall | | | 0.12 | | | |
| Wald chi2(9) | | | 355.50 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 3-2 Coefficients of the panel regression model for low population density.**

| | Work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.02 | 0.01 | -2.04 | 0.04 | -0.05 | -9.4E-04 |
| hospital bed utilization | 1.0E-03 | 8.4E-04 | 1.21 | 0.23 | -6.3E-04 | 2.7E-03 |
| Tests done 1000 people | -1.6E-05 | 1.0E-05 | -1.56 | 0.12 | -3.6E-05 | 4.1E-06 |
| ICU utilization | -2.2E-03 | 4.5E-04 | -4.83 | 0.00 | -3.0E-03 | -1.3E-03 |
| Ventilator needs | 6.4E-05 | 3.2E-05 | 2.01 | 0.04 | 1.7E-06 | 1.3E-04 |
| Imported COVID cases | -5.4E-06 | 1.8E-06 | -2.98 | 3.0E-03 | -9.0E-06 | -1.9E-06 |
| COVID exposure/1000 people | 2.4E-03 | 5.1E-04 | 4.67 | 0.00 | 1.4E-03 | 3.4E-03 |
| days decreasing Cases | -1.4E-04 | 3.0E-05 | -4.85 | 0.00 | -2.0E-04 | -8.5E-05 |
| COVID death rate | -3.3E-03 | 2.4E-04 | -13.32 | 0.00 | -3.7E-03 | -2.8E-03 |
| Constant | 0.47 | 0.04 | 12.17 | 0.00 | 0.39 | 0.54 |
| R-square: within | | | 0.10 | | | |
| R-square: between | | | 0.03 | | | |
| R-square: overall | | | 0.08 | | | |
| Wald chi2(9) | | | 926.70 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 3-3 Coefficients of the panel regression model for low population density.**

| | Miles/person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 0.72 | 2.14 | 0.34 | 0.74 | -3.47 | 4.91 |
| hospital bed utilization | -0.53 | 0.08 | -7.05 | 0.00 | -0.68 | -0.38 |
| Tests done 1000 people | 1.9E-03 | 1.1E-03 | 1.84 | 0.07 | -1.3E-04 | 4.0E-03 |
| ICU utilization | 0.10 | 0.04 | 2.54 | 0.01 | 0.02 | 0.18 |
| Ventilator needs | 3.3E-03 | 2.1E-03 | 1.56 | 0.12 | -8.5E-04 | 0.01 |
| Imported COVID cases | 3.3E-04 | 2.0E-04 | 1.59 | 0.11 | -7.5E-05 | 7.3E-04 |
| COVID exposure/1000 people | 0.24 | 0.06 | 3.72 | 0.00 | 0.11 | 0.37 |
| days decreasing Cases | 0.02 | 2.8E-03 | 6.68 | 0.00 | 0.01 | 0.02 |
| COVID death rate | -0.27 | 0.03 | -8.31 | 0.00 | -0.33 | -0.20 |
| Constant | 64.46 | 3.46 | 18.65 | 0.00 | 57.68 | 71.23 |
| R-square: within | | | 0.07 | | | |
| R-square: between | | | 0.28 | | | |
| R-square: overall | | | 0.08 | | | |
| Wald chi2(9) | | | 570.11 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 3-4 Coefficients of the panel regression model for low population density.**

| | Out of state trips | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.15 | 0.11 | -4.99 | 0.00 | -0.37 | 0.07 |
| hospital bed utilization | -0.03 | 0.01 | -3.26 | 1.0E-03 | -0.05 | -0.01 |
| Tests done 1000 people | -2.1E-04 | 2.2E-04 | -0.96 | 0.34 | -6.3E-04 | 2.2E-04 |
| ICU utilization | 0.02 | 4.8E-03 | 3.28 | 1.0E-03 | 0.01 | 0.03 |
| Ventilator needs | 1.7E-04 | 3.3E-04 | 0.51 | 0.61 | -4.8E-04 | 8.3E-04 |
| Imported COVID cases | 5.3E-05 | 2.7E-05 | 1.99 | 0.05 | 7.0E-07 | 1.1E-04 |
| COVID exposure/1000 people | -0.01 | 0.01 | -0.92 | 0.36 | -0.03 | 0.01 |
| days decreasing Cases | 8.3E-04 | 6.5E-04 | 1.28 | 0.20 | -4.4E-04 | 2.1E-03 |
| COVID death rate | -0.02 | 2.4E-03 | -6.99 | 0.00 | -0.02 | -0.01 |
| Constant | 7.31 | 0.74 | 9.93 | 0.00 | 5.86 | 8.75 |
| R-square: within | | | 0.05 | | | |
| R-square: between | | | 0.00 | | | |
| R-square: overall | | | 0.00 | | | |
| Wald chi2(9) | | | 73.69 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 3-5 Coefficients of the panel regression model for low population density.**

| | Working from home | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 3.21 | 1.79 | 1.79 | 0.07 | -0.30 | 6.73 |
| hospital bed utilization | -0.24 | 0.15 | -1.52 | 0.13 | -0.54 | 0.07 |
| Tests done 1000 people | 3.4E-03 | 2.2E-03 | 1.52 | 0.13 | -9.9E-04 | 0.01 |
| ICU utilization | 0.49 | 0.07 | 6.60 | 0.00 | 0.35 | 0.64 |
| Ventilator needs | -0.01 | 4.8E-03 | -1.79 | 0.07 | -0.02 | 8.0E-04 |
| Imported COVID cases | 1.0E-03 | 2.6E-04 | 4.04 | 0.00 | 5.3E-04 | 1.5E-03 |
| COVID exposure/1000 people | -0.37 | 0.11 | -3.27 | 1.0E-03 | -0.59 | -0.15 |
| days decreasing Cases | 0.03 | 0.01 | 6.28 | 0.00 | 0.02 | 0.05 |
| COVID death rate | 0.53 | 0.04 | 11.91 | 0.00 | 0.44 | 0.61 |
| Constant | 24.90 | 6.59 | 3.78 | 0.00 | 11.98 | 37.81 |
| R-square: within | | | 0.49 | | | |
| R-square: between | | | 0.03 | | | |
| R-square: overall | | | 0.40 | | | |
| Wald chi2(9) | | | 1562.97 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 4-1 Coefficients of the panel regression model for high population density.**

| | Non-work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.22 | 0.09 | -2.54 | 0.01 | -0.39 | -0.05 |
| hospital bed utilization | -0.01 | 3.4E-03 | -2.82 | 0.01 | -0.02 | -2.9E-03 |
| Tests done 1000 people | -1.0E-05 | 5.1E-05 | -0.20 | 0.84 | -1.1E-04 | 8.9E-05 |
| ICU utilization | -0.01 | 2.1E-03 | -4.08 | 0.00 | -0.01 | -4.5E-03 |
| Ventilator needs | 1.4E-05 | 2.5E-05 | 0.58 | 0.57 | -3.4E-05 | 6.3E-05 |
| Imported COVID cases | 7.9E-06 | 3.7E-06 | 2.16 | 0.03 | 7.3E-07 | 1.5E-05 |
| COVID exposure/1000 people | 0.04 | 4.0E-03 | 8.85 | 0.00 | 0.03 | 0.04 |
| days decreasing Cases | 8.7E-04 | 1.5E-04 | 5.88 | 0.00 | 5.8E-04 | 1.2E-03 |
| COVID death rate | 2.2E-03 | 1.3E-03 | 1.65 | 0.10 | -4.0E-04 | 4.7E-03 |
| Constant | 3.29 | 0.19 | 17.03 | 0.00 | 2.91 | 3.67 |
| R-square: within | | | 0.33 | | | |
| R-square: between | | | 0.06 | | | |
| R-square: overall | | | 0.28 | | | |
| Wald chi2(9) | | | 670.72 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 4-2 Coefficients of the panel regression model for high population density.**

| | Work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.03 | 0.03 | 0.93 | 0.35 | -0.10 | 0.03 |
| hospital bed utilization | 6.7E-04 | 5.7E-04 | 1.17 | 0.24 | -4.5E-04 | 1.8E-03 |
| Tests done 1000 people | -4.5E-06 | 1.4E-05 | 0.32 | 0.75 | -3.2E-05 | 2.3E-05 |
| ICU utilization | -9.1E-04 | 3.5E-04 | 2.57 | 0.01 | -1.6E-03 | -2.2E-04 |
| Ventilator needs | 1.9E-05 | 9.2E-06 | 2.08 | 0.04 | 1.1E-06 | 3.7E-05 |
| Imported COVID cases | -3.2E-06 | 9.9E-07 | 3.25 | 1.0E-03 | -5.2E-06 | -1.3E-06 |
| COVID exposure/1000 people | 6.1E-04 | 9.6E-04 | 0.64 | 0.52 | -1.3E-03 | 2.5E-03 |
| days decreasing Cases | -1.7E-04 | 4.0E-05 | 4.30 | 0.00 | -2.5E-04 | -9.3E-05 |
| COVID death rate | -3.8E-03 | 4.5E-04 | 8.51 | 0.00 | -4.7E-03 | -3.0E-03 |
| Constant | 0.49 | 0.05 | 9.96 | 0.00 | 0.39 | 0.58 |
| R-square: within | | | 0.16 | | | |
| R-square: between | | | 0.03 | | | |
| R-square: overall | | | 0.08 | | | |
| Wald chi2(9) | | | 419.31 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 4-3 Coefficients of the panel regression model for high population density.**

| | Miles/person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -2.46 | 1.39 | -1.76 | 0.08 | -5.19 | 0.27 |
| hospital bed utilization | -0.17 | 0.07 | -2.47 | 0.01 | -0.30 | -0.03 |
| Tests done 1000 people | -1.2E-03 | 1.2E-03 | -1.07 | 0.29 | -3.5E-03 | 1.0E-03 |
| ICU utilization | -0.13 | 0.04 | -3.14 | 2.0E-03 | -0.20 | -0.05 |
| Ventilator needs | 1.9E-04 | 6.2E-04 | 0.31 | 0.76 | -1.0E-03 | 1.4E-03 |
| Imported COVID cases | 3.0E-04 | 4.7E-05 | 6.44 | 0.00 | 2.1E-04 | 3.9E-04 |
| COVID exposure/1000 people | 0.55 | 0.08 | 7.01 | 0.00 | 0.39 | 0.70 |
| days decreasing Cases | 0.02 | 3.0E-03 | 5.43 | 0.00 | 0.01 | 0.02 |
| COVID death rate | -0.11 | 0.03 | -3.71 | 0.00 | -0.17 | -0.05 |
| Constant | 45.31 | 3.82 | 11.88 | 0.00 | 37.83 | 52.79 |
| R-square: within | | | 0.41 | | | |
| R-square: between | | | 0.19 | | | |
| R-square: overall | | | 0.36 | | | |
| Wald chi2(9) | | | 1337.07 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 4-4 Coefficients of the panel regression model for high population density.**

| | Out of state trips | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.37 | 0.23 | 2.59 | 0.01 | -0.82 | 0.09 |
| hospital bed utilization | -7.4E-04 | 0.01 | 0.05 | 0.96 | -0.03 | 0.03 |
| Tests done 1000 people | -6.2E-04 | 1.9E-04 | 3.22 | 1.0E-03 | -1.0E-03 | -2.4E-04 |
| ICU utilization | -0.01 | 0.01 | 2.05 | 0.04 | -0.02 | -5.6E-04 |
| Ventilator needs | 1.1E-04 | 8.7E-05 | 1.31 | 0.19 | -5.7E-05 | 2.8E-04 |
| Imported COVID cases | 3.7E-05 | 1.0E-05 | 3.65 | 0.00 | 1.7E-05 | 5.6E-05 |
| COVID exposure/1000 people | 0.01 | 0.01 | 1.21 | 0.23 | -0.01 | 0.03 |
| days decreasing Cases | 9.1E-04 | 4.4E-04 | 2.09 | 0.04 | 5.9E-05 | 1.8E-03 |
| COVID death rate | -0.01 | 0.01 | 2.52 | 0.01 | -0.03 | -3.2E-03 |
| Constant | 8.43 | 1.53 | 5.52 | 0.00 | 5.44 | 11.42 |
| R-square: within | | | 0.07 | | | |
| R-square: between | | | 0.20 | | | |
| R-square: overall | | | 0.05 | | | |
| Wald chi2(9) | | | 79.31 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 4-5 Coefficients of the panel regression model for high population density.**

| | Working from home | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 10.78 | 3.89 | 2.77 | 0.01 | 3.16 | 18.41 |
| hospital bed utilization | -0.06 | 0.11 | -0.52 | 0.60 | -0.26 | 0.15 |
| Tests done 1000 people | 2.8E-04 | 2.3E-03 | 0.12 | 0.90 | -4.3E-03 | 4.8E-03 |
| ICU utilization | 0.12 | 0.07 | 1.85 | 0.06 | -0.01 | 0.25 |
| Ventilator needs | -3.1E-03 | 1.4E-03 | -2.25 | 0.02 | -0.01 | -4.0E-04 |
| Imported COVID cases | 4.9E-04 | 1.3E-04 | 3.91 | 0.00 | 2.5E-04 | 7.4E-04 |
| COVID exposure/1000 people | -0.06 | 0.15 | -0.41 | 0.68 | -0.37 | 0.24 |
| days decreasing Cases | 0.04 | 0.01 | 6.29 | 0.00 | 0.03 | 0.05 |
| COVID death rate | 0.56 | 0.04 | 12.79 | 0.00 | 0.48 | 0.65 |
| Constant | 17.54 | 5.96 | 2.94 | 3.0E-03 | 5.85 | 29.23 |
| R-square: within | | | 0.55 | | | |
| R-square: between | | | 0.06 | | | |
| R-square: overall | | | 0.45 | | | |
| Wald chi2(9) | | | 602.63 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 5-1 Coefficients of the panel regression model for low median income.**

| | Non-work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 1.7E-04 | 0.08 | 0.0E+00 | 1.00 | -0.16 | 0.16 |
| hospital bed utilization | -0.03 | 4.5E-03 | -6.31 | 0.00 | -0.04 | -0.02 |
| Tests done 1000 people | 4.3E-04 | 7.5E-05 | 5.76 | 0.00 | 2.9E-04 | 5.8E-04 |
| ICU utilization | -3.7E-03 | 2.3E-03 | -1.66 | 0.10 | -0.01 | 6.8E-04 |
| Ventilator needs | 8.1E-05 | 4.9E-05 | 1.65 | 0.10 | -1.5E-05 | 1.8E-04 |
| Imported COVID cases | 1.0E-05 | 4.4E-06 | 2.36 | 0.02 | 1.8E-06 | 1.9E-05 |
| COVID exposure/1000 people | 0.01 | 3.5E-03 | 4.27 | 0.00 | 0.01 | 0.02 |
| days decreasing Cases | 7.5E-04 | 1.7E-04 | 4.33 | 0.00 | 4.1E-04 | 1.1E-03 |
| COVID death rate | -9.7E-04 | 1.6E-03 | -0.61 | 0.54 | -4.1E-03 | 2.2E-03 |
| Constant | 4.08 | 0.21 | 19.64 | 0.00 | 3.68 | 4.49 |
| R-square: within | | | 0.30 | | | |
| R-square: between | | | 0.16 | | | |
| R-square: overall | | | 0.21 | | | |
| Wald chi2(9) | | | 330.02 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 5-2 Coefficients of the panel regression model for low median income.**

| | Work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.03 | 0.01 | -2.82 | 0.01 | -0.04 | -0.01 |
| hospital bed utilization | 9.8E-04 | 8.9E-04 | 1.10 | 0.27 | -7.6E-04 | 2.7E-03 |
| Tests done 1000 people | -2.1E-05 | 1.9E-05 | -1.07 | 0.28 | -5.8E-05 | 1.7E-05 |
| ICU utilization | -1.8E-03 | 4.2E-04 | -4.33 | 0.00 | -2.6E-03 | -9.9E-04 |
| Ventilator needs | 3.2E-05 | 2.1E-05 | 1.49 | 0.14 | -1.0E-05 | 7.4E-05 |
| Imported COVID cases | -4.1E-06 | 9.3E-07 | -4.45 | 0.00 | -5.9E-06 | -2.3E-06 |
| COVID exposure/1000 people | 2.4E-03 | 6.6E-04 | 3.58 | 0.00 | 1.1E-03 | 3.6E-03 |
| days decreasing Cases | -1.4E-04 | 3.2E-05 | -4.18 | 0.00 | -2.0E-04 | -7.2E-05 |
| COVID death rate | -2.9E-03 | 1.8E-04 | -16.58 | 0.00 | -3.3E-03 | -2.6E-03 |
| Constant | 0.44 | 0.04 | 10.23 | 0.00 | 0.36 | 0.52 |
| R-square: within | | | 0.11 | | | |
| R-square: between | | | 0.00 | | | |
| R-square: overall | | | 0.08 | | | |
| Wald chi2(9) | | | 586.56 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 5-3 Coefficients of the panel regression model for low median income.**

| | Miles/person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.24 | 1.42 | -0.17 | 0.87 | -3.01 | 2.54 |
| hospital bed utilization | -0.47 | 0.06 | -7.42 | 0.00 | -0.60 | -0.35 |
| Tests done 1000 people | 3.0E-03 | 1.7E-03 | 1.79 | 0.07 | -2.9E-04 | 0.01 |
| ICU utilization | 0.07 | 0.05 | 1.46 | 0.15 | -0.02 | 0.17 |
| Ventilator needs | 1.7E-04 | 8.9E-04 | 0.19 | 0.85 | -1.6E-03 | 1.9E-03 |
| Imported COVID cases | 3.9E-04 | 6.1E-05 | 6.29 | 0.00 | 2.7E-04 | 5.1E-04 |
| COVID exposure/1000 people | 0.27 | 0.07 | 3.67 | 0.00 | 0.13 | 0.42 |
| days decreasing Cases | 0.02 | 2.4E-03 | 7.18 | 0.00 | 0.01 | 0.02 |
| COVID death rate | -0.19 | 0.03 | -5.47 | 0.00 | -0.25 | -0.12 |
| Constant | 59.82 | 2.92 | 20.46 | 0.00 | 54.09 | 65.55 |
| R-square: within | | | 0.37 | | | |
| R-square: between | | | 0.38 | | | |
| R-square: overall | | | 0.32 | | | |
| Wald chi2(9) | | | 881.08 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 5-4 Coefficients of the panel regression model for low median income.**

| | Out of state trips | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.15 | 0.10 | -2.68 | 0.01 | -0.35 | 0.06 |
| hospital bed utilization | -0.02 | 0.01 | -2.18 | 0.03 | -0.04 | -2.0E-03 |
| Tests done 1000 people | -5.8E-04 | 2.2E-04 | -2.66 | 0.01 | -1.0E-03 | -1.5E-04 |
| ICU utilization | 0.01 | 4.1E-03 | 3.23 | 1.0E-03 | 0.01 | 0.02 |
| Ventilator needs | -5.1E-06 | 1.2E-04 | -0.04 | 0.97 | -2.4E-04 | 2.3E-04 |
| Imported COVID cases | 3.8E-05 | 1.0E-05 | 3.81 | 0.00 | 1.9E-05 | 5.8E-05 |
| COVID exposure/1000 people | 0.01 | 0.01 | 0.66 | 0.51 | -0.01 | 0.02 |
| days decreasing Cases | 6.9E-04 | 4.2E-04 | 1.66 | 0.10 | -1.3E-04 | 1.5E-03 |
| COVID death rate | -0.02 | 3.0E-03 | -5.15 | 0.00 | -0.02 | -0.01 |
| Constant | 6.68 | 0.65 | 10.26 | 0.00 | 5.40 | 7.95 |
| R-square: within | | | 0.05 | | | |
| R-square: between | | | 0.13 | | | |
| R-square: overall | | | 0.09 | | | |
| Wald chi2(9) | | | 85.91 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 5-5 Coefficients of the panel regression model for low median income.**

| | Working from home | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 4.18 | 1.90 | 2.19 | 0.03 | 0.44 | 7.91 |
| hospital bed utilization | -0.26 | 0.16 | -1.67 | 0.10 | -0.56 | 0.05 |
| Tests done 1000 people | 4.1E-03 | 4.0E-03 | 1.03 | 0.30 | -3.7E-03 | 0.01 |
| ICU utilization | 0.44 | 0.08 | 5.46 | 0.00 | 0.28 | 0.59 |
| Ventilator needs | -4.8E-03 | 4.0E-03 | -1.20 | 0.23 | -0.01 | 3.1E-03 |
| Imported COVID cases | 8.3E-04 | 1.8E-04 | 4.65 | 0.00 | 4.8E-04 | 1.2E-03 |
| COVID exposure/1000 people | -0.35 | 0.14 | -2.41 | 0.02 | -0.63 | -0.07 |
| days decreasing Cases | 0.04 | 0.01 | 5.70 | 0.00 | 0.02 | 0.05 |
| COVID death rate | 0.48 | 0.04 | 13.49 | 0.00 | 0.41 | 0.55 |
| Constant | 26.13 | 7.17 | 3.64 | 0.00 | 12.08 | 40.18 |
| R-square: within | | | 0.50 | | | |
| R-square: between | | | 2.2E-03 | | | |
| R-square: overall | | | 0.40 | | | |
| Wald chi2(9) | | | 732.99 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 12376 | | | |

**Appendix Table 6-1 Coefficients of the panel regression model for high median income.**

| | Non-work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.26 | 0.08 | -3.09 | 2.0E-03 | -0.42 | -0.09 |
| hospital bed utilization | -0.01 | 3.3E-03 | -3.14 | 2.0E-03 | -0.02 | -3.9E-03 |
| Tests done 1000 people | 5.4E-05 | 6.3E-05 | 0.86 | 0.39 | -7.0E-05 | 1.8E-04 |
| ICU utilization | -0.01 | 1.9E-03 | -3.93 | 0.00 | -0.01 | -3.7E-03 |
| Ventilator needs | 5.5E-06 | 2.7E-05 | 0.21 | 0.84 | -4.6E-05 | 5.7E-05 |
| Imported COVID cases | 1.2E-05 | 3.9E-06 | 3.03 | 2.0E-03 | 4.1E-06 | 1.9E-05 |
| COVID exposure/1000 people | 0.03 | 0.01 | 5.33 | 0.00 | 0.02 | 0.04 |
| days decreasing Cases | 8.3E-04 | 1.7E-04 | 4.95 | 0.00 | 5.0E-04 | 1.2E-03 |
| COVID death rate | 1.4E-03 | 1.2E-03 | 1.09 | 0.28 | -1.1E-03 | 3.8E-03 |
| Constant | 3.35 | 0.18 | 18.27 | 0.00 | 2.99 | 3.71 |
| R-square: within | | | 0.31 | | | |
| R-square: between | | | 0.09 | | | |
| R-square: overall | | | 0.26 | | | |
| Wald chi2(9) | | | 686.98 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 6-2 Coefficients of the panel regression model for high median income.**

| | Work trips person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.03 | 0.03 | 1.02 | 0.31 | -0.10 | 0.03 |
| hospital bed utilization | 7.4E-04 | 5.9E-04 | 1.26 | 0.21 | -4.1E-04 | 1.9E-03 |
| Tests done 1000 people | -6.4E-06 | 1.4E-05 | 0.47 | 0.64 | -3.3E-05 | 2.1E-05 |
| ICU utilization | -1.0E-03 | 4.2E-04 | 2.45 | 0.01 | -1.9E-03 | -2.0E-04 |
| Ventilator needs | 2.2E-05 | 1.1E-05 | 1.97 | 0.05 | 8.0E-08 | 4.4E-05 |
| Imported COVID cases | -3.4E-06 | 1.0E-06 | 3.30 | 1.0E-03 | -5.4E-06 | -1.4E-06 |
| COVID exposure/1000 people | 8.6E-04 | 9.3E-04 | 0.92 | 0.36 | -9.7E-04 | 2.7E-03 |
| days decreasing Cases | -1.6E-04 | 3.7E-05 | 4.45 | 0.00 | -2.3E-04 | -9.1E-05 |
| COVID death rate | -3.9E-03 | 4.2E-04 | 9.24 | 0.00 | -4.7E-03 | -3.1E-03 |
| Constant | 0.49 | 0.05 | 9.85 | 0.00 | 0.39 | 0.59 |
| R-square: within | | | 0.16 | | | |
| R-square: between | | | 0.09 | | | |
| R-square: overall | | | 0.07 | | | |
| Wald chi2(9) | | | 526.09 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 6-3 Coefficients of the panel regression model for high median income.**

| | Miles/person | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -3.53 | 1.41 | -2.51 | 0.01 | -6.29 | -0.78 |
| hospital bed utilization | -0.19 | 0.08 | -2.49 | 0.01 | -0.33 | -0.04 |
| Tests done 1000 people | -8.1E-04 | 1.2E-03 | -0.65 | 0.52 | -3.2E-03 | 1.6E-03 |
| ICU utilization | -0.09 | 0.04 | -2.26 | 0.02 | -0.16 | -0.01 |
| Ventilator needs | -1.7E-04 | 8.1E-04 | -0.20 | 0.84 | -1.8E-03 | 1.4E-03 |
| Imported COVID cases | 3.1E-04 | 5.0E-05 | 6.21 | 0.00 | 2.1E-04 | 4.1E-04 |
| COVID exposure/1000 people | 0.51 | 0.08 | 6.35 | 0.00 | 0.35 | 0.67 |
| days decreasing Cases | 0.02 | 3.6E-03 | 4.90 | 0.00 | 0.01 | 0.02 |
| COVID death rate | -0.15 | 0.03 | -4.78 | 0.00 | -0.21 | -0.09 |
| Constant | 46.98 | 4.21 | 11.17 | 0.00 | 38.73 | 55.22 |
| R-square: within | | | 0.41 | | | |
| R-square: between | | | 0.35 | | | |
| R-square: overall | | | 0.40 | | | |
| Wald chi2(9) | | | 1280.09 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 6-4 Coefficients of the panel regression model for high median income.**

| | Out of state trips | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | -0.34 | 0.20 | 2.65 | 0.01 | -0.74 | 0.06 |
| hospital bed utilization | -3.6E-04 | 0.01 | 0.03 | 0.98 | -0.03 | 0.03 |
| Tests done 1000 people | -6.4E-04 | 2.0E-04 | 3.13 | 2.0E-03 | -1.0E-03 | -2.4E-04 |
| ICU utilization | -0.01 | 0.01 | 1.91 | 0.06 | -0.03 | 3.6E-04 |
| Ventilator needs | 1.0E-04 | 1.1E-04 | 0.96 | 0.34 | -1.1E-04 | 3.1E-04 |
| Imported COVID cases | 3.7E-05 | 9.8E-06 | 3.74 | 0.00 | 1.7E-05 | 5.6E-05 |
| COVID exposure/1000 people | 0.01 | 0.01 | 1.13 | 0.26 | -0.01 | 0.03 |
| days decreasing Cases | 1.0E-03 | 4.8E-04 | 2.14 | 0.03 | 8.4E-05 | 2.0E-03 |
| COVID death rate | -0.02 | 0.01 | 2.82 | 0.01 | -0.03 | -4.9E-03 |
| Constant | 8.64 | 1.49 | 5.81 | 0.00 | 5.73 | 11.56 |
| R-square: within | | | 0.07 | | | |
| R-square: between | | | 0.20 | | | |
| R-square: overall | | | 0.05 | | | |
| Wald chi2(9) | | | 87.52 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |

**Appendix Table 6-5 Coefficients of the panel regression model for high median income.**

| | Working from home | | | | | |
|---|---|---|---|---|---|---|
| Variables | Coefficient | Robust Standard Error | t | P | 95% Confidence Interval | |
| New cases/1000 people | 9.78 | 3.54 | 2.76 | 0.01 | 2.84 | 16.72 |
| hospital bed utilization | -0.06 | 0.11 | -0.52 | 0.60 | -0.27 | 0.16 |
| Tests done 1000 people | 7.4E-04 | 2.3E-03 | 0.33 | 0.74 | -3.7E-03 | 0.01 |
| ICU utilization | 0.15 | 0.08 | 2.00 | 0.05 | 3.3E-03 | 0.30 |
| Ventilator needs | -3.9E-03 | 1.7E-03 | -2.31 | 0.02 | -0.01 | -5.8E-04 |
| Imported COVID cases | 5.4E-04 | 1.3E-04 | 4.24 | 0.00 | 2.9E-04 | 8.0E-04 |
| COVID exposure/1000 people | -0.12 | 0.15 | -0.78 | 0.44 | -0.42 | 0.18 |
| days decreasing Cases | 0.04 | 0.01 | 6.39 | 0.00 | 0.03 | 0.05 |
| COVID death rate | 0.57 | 0.04 | 14.62 | 0.00 | 0.49 | 0.64 |
| Constant | 17.59 | 5.98 | 2.94 | 3.0E-03 | 5.86 | 29.32 |
| R-square: within | | | 0.55 | | | |
| R-square: between | | | 0.06 | | | |
| R-square: overall | | | 0.45 | | | |
| Wald chi2(9) | | | 716.02 | | | |
| Prob > chi2 | | | 0.00 | | | |
| Observations | | | 11900 | | | |