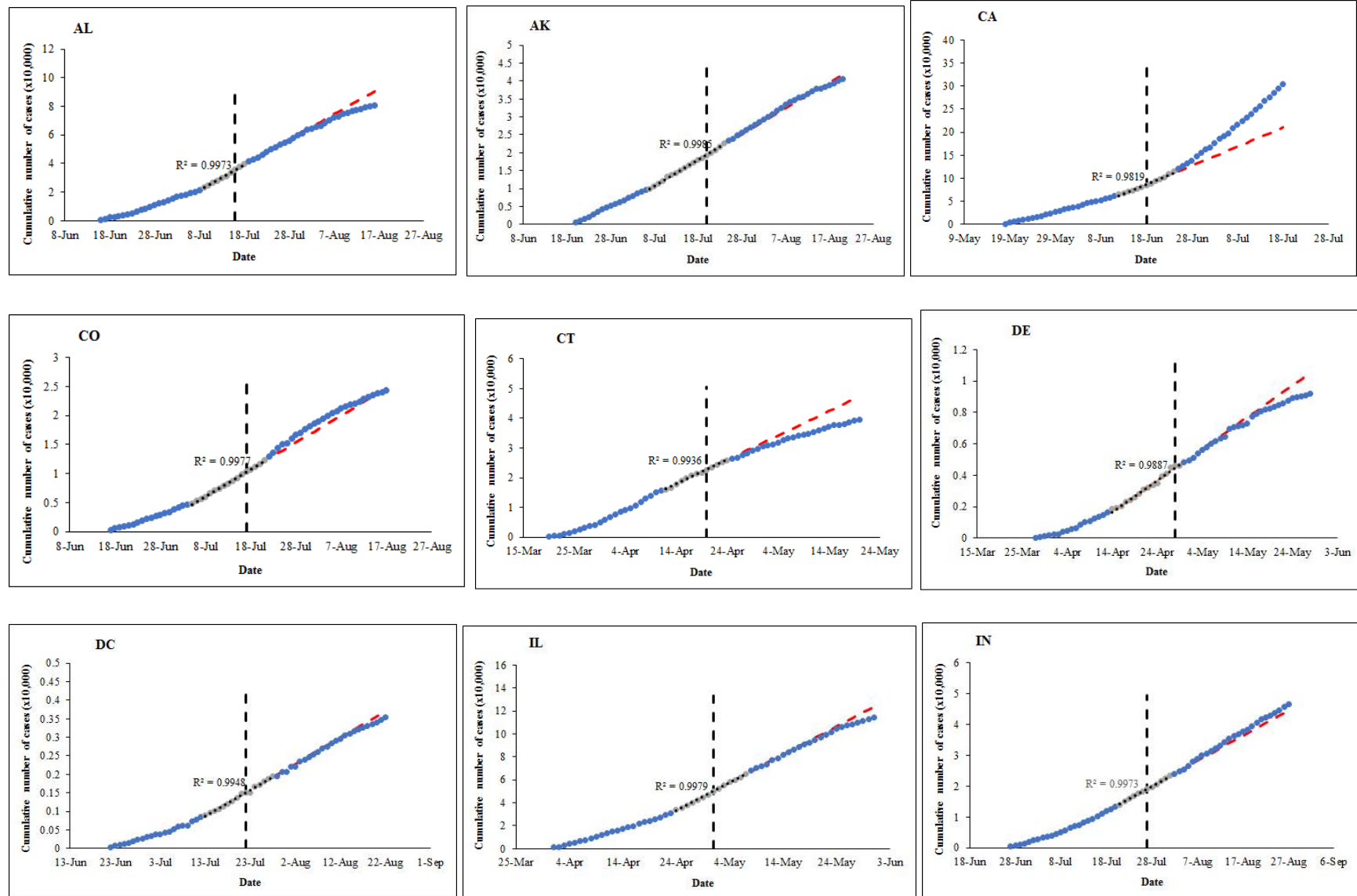
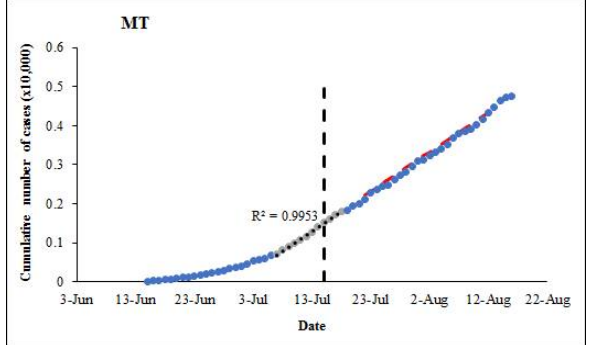
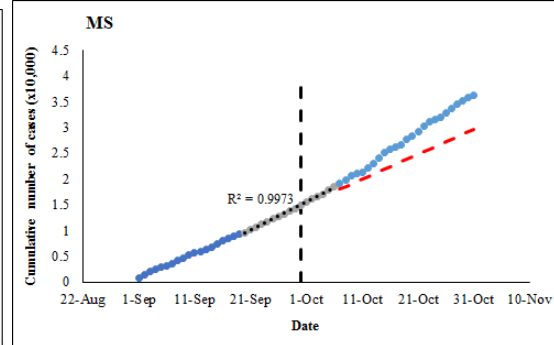
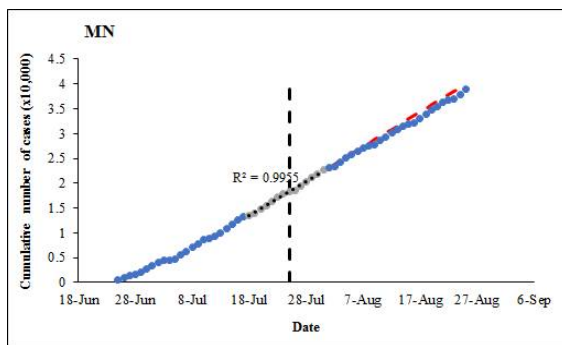
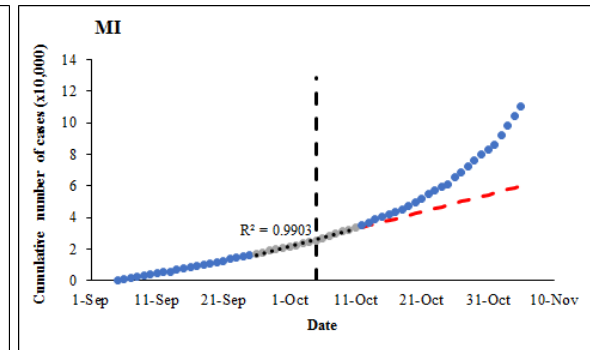
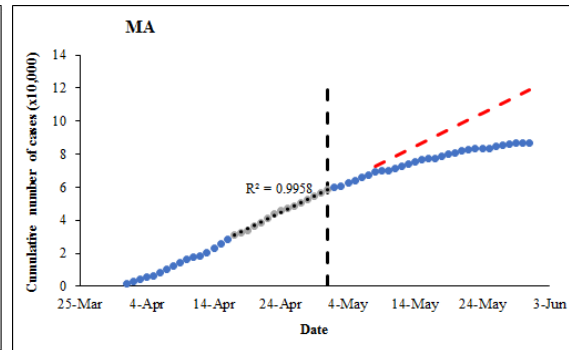
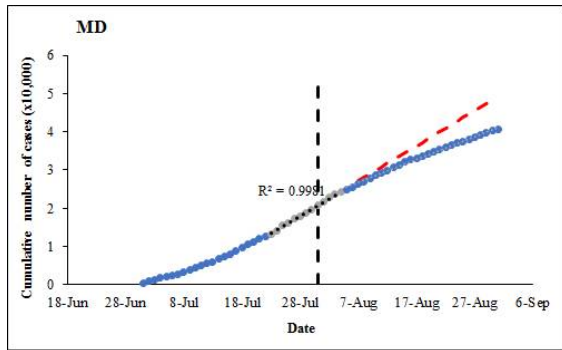
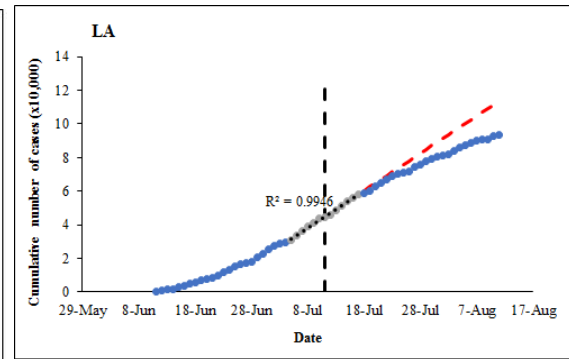
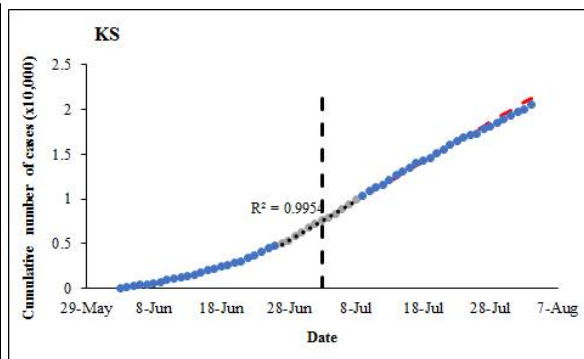
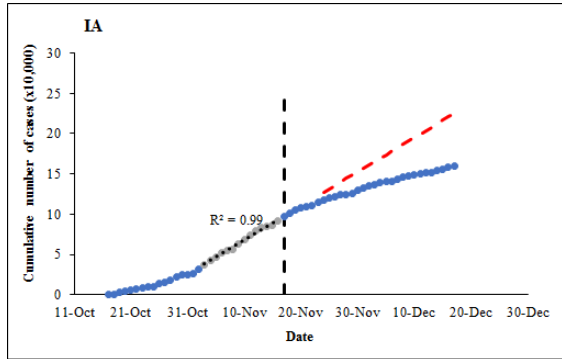
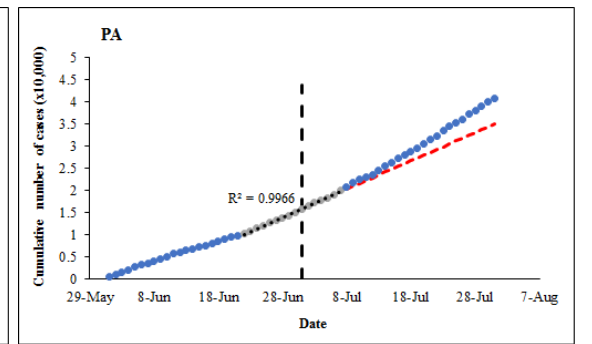
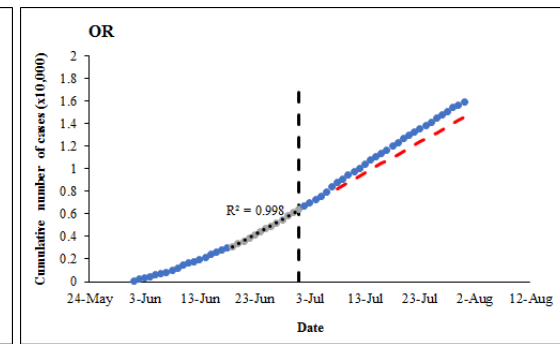
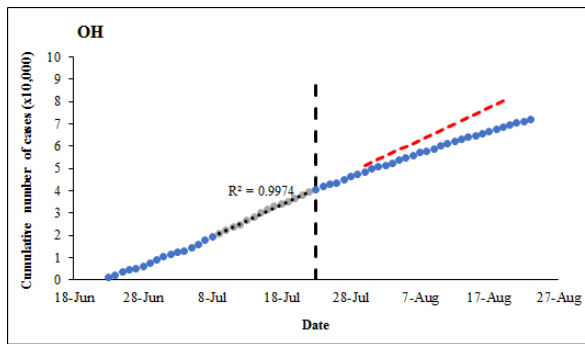
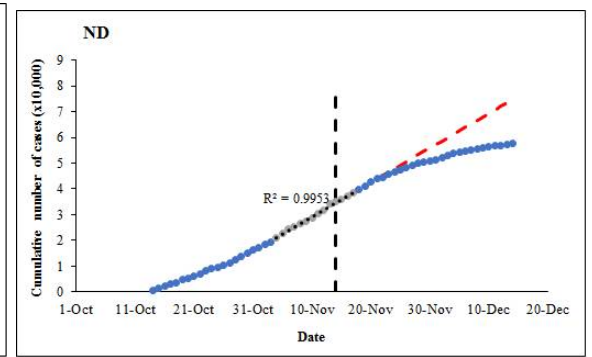
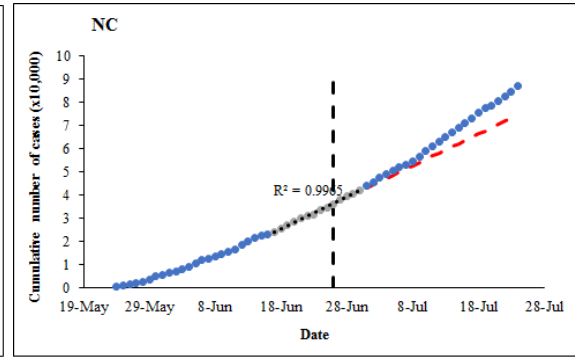
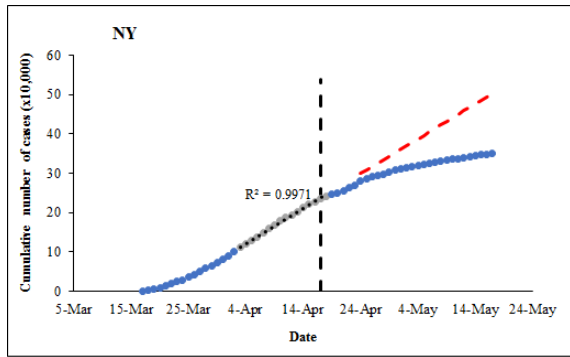
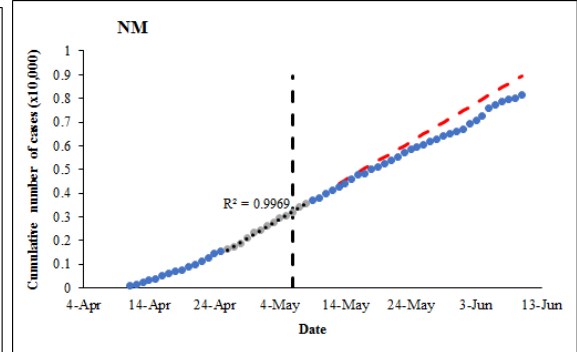
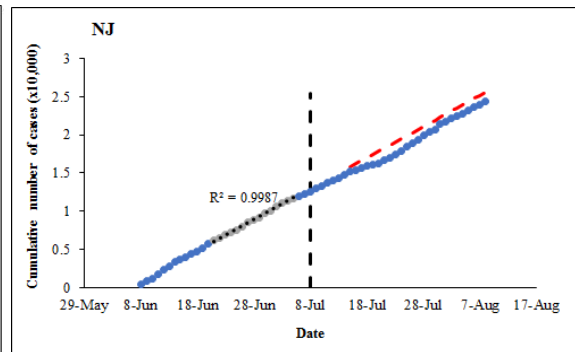
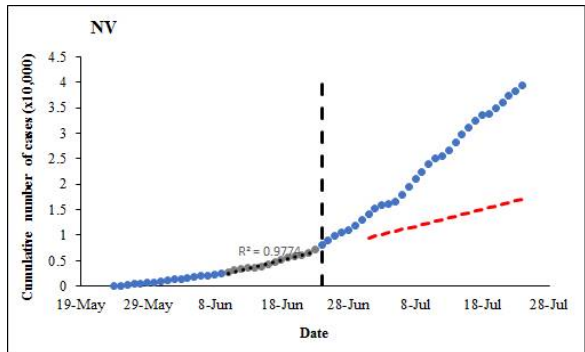
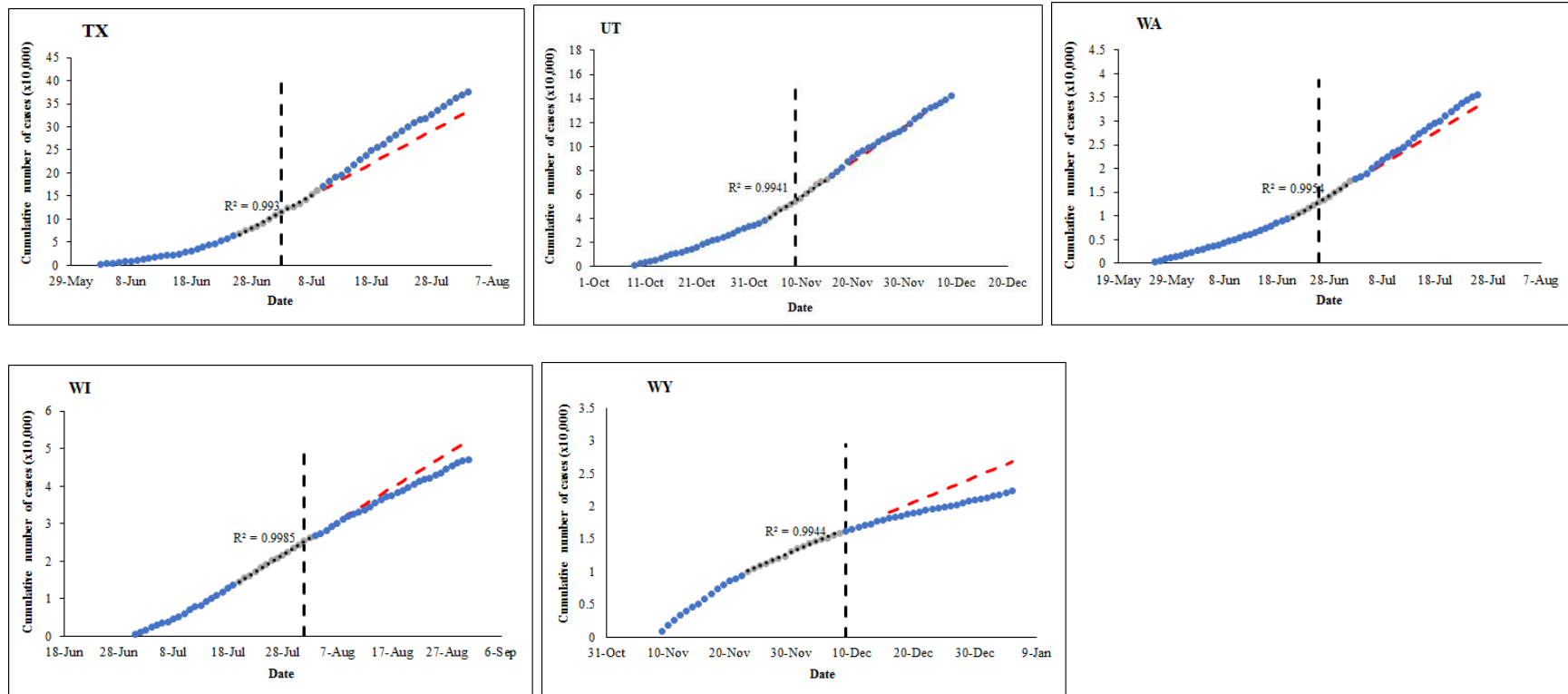


SUPPLEMENTARY FIGURE 1









Supplementary Figure S1: Cumulative number of COVID-19 cases (y-axis) in U.S. states over time (x-axis). The chart is showing trend of cases (blue dotted line) for one month pre- and post- FC mandate (total = 2 months) for each state with face coverings mandate. The black vertical line is the date when face coverings order was passed. The gray segment through the case data was used to derive regression equation (black dotted line) that was used to project the number of cases (red line) that would have been recorded if FC order were not passed. The prediction was limited to 28 days post FC order to limit variation. Seven days post FC mandate was omitted from the prediction because the incubation period of COVID-19 is estimated to be 5 days.

Supplementary Table S1: U.S. states with and without state-wide order mandating the wearing of face coverings in public places. Data on confirmed COVID-19 cases were collected from or through the websites of the Department of Public Health of each state.

| State/Code | State-wide order | Effective date | Sources – daily cases and cumulative infection cases data | Face covering mandates |
|------------------|------------------|----------------|---|--|
| Alabama [AL] | Yes | July 16 | https://www.alabamapublichealth.gov/covid19/index.html | https://governor.alabama.gov/assets/2020/12/Safer-at-Home-Order-Final-12.9.2020.pdf |
| Alaska [AK] | No | | | |
| Arizona [AZ] | No | | | |
| Arkansas [AR] | Yes | July 20 | https://www.healthy.arkansas.gov/programs-services/topics/novel-coronavirus | https://governor.arkansas.gov/images/uploads/executiveOrders/EO_20-43.pdf |
| California [CA] | Yes | June 18 | https://covid19.ca.gov/state-dashboard/ | https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/COVID-19/Guidance-for-Face-Coverings_06-18-2020.pdf |
| Colorado [CO] | Yes | July 17 | https://covid19.colorado.gov/data | https://www.colorado.gov/governor/sites/default/files/inline-files/D%202020%20138%20Mask%20Order.pdf |
| Connecticut [CT] | Yes | April 20 | https://data.ct.gov/Health-and-Human-Services/COVID-19-daily-and-cumulative-cases-hospitalization/5dch-cm68 | https://portal.ct.gov/-/media/Office-of-the-Governor/Executive-Orders/Lamont-Executive-Orders/Executive-Order-No-7BB.pdf?la=en |
| Delaware [DE] | Yes | April 28 | https://myhealthcommunity.dhss.delaware.gov/locations/state | https://governor.delaware.gov/health-soe/twenty-seventh-modification-state-of-emergency-declaration/ https://governor.delaware.gov/health-soe/thirteenth-state-of-emergency/ https://coronavirus.delaware.gov/guidance-for-face-coverings/ |
| DC | Yes | July 22 | https://coronavirus.dc.gov/data | https://coronavirus.dc.gov/maskorder |
| Florida [FL] | No | | | |
| Georgia [GA] | No | | | |
| Hawaii [HI] | Yes | | - | https://governor.hawaii.gov/wp-content/uploads/2020/10/2010095-ATG_Fourteenth-Proclamation-for-COVID-19-distribution-signed.pdf https://governor.hawaii.gov/wp-content/uploads/2020/11/2011051-ATG_Fifteenth-Proclamation-Related-to-the-COVID-19-Emergency-distribution-signed.pdf |
| Idaho [ID] | No | | | |
| Illinois [IL] | Yes | May 1 | https://www.dph.illinois.gov/covid19/covid19-statistics | https://www.dph.illinois.gov/covid19/community-guidance/mask-use https://www2.illinois.gov/Pages/Executive-Orders/ExecutiveOrder2020-32.aspx |
| Indiana [IN] | Yes | July 27 | https://www.coronavirus.in.gov/2393.htm | https://www.in.gov/gov/files/Executive_Order_20-48_Color-Coded_County_Assessments.pdf |
| Iowa [IA] | Yes | Nov 17 | https://coronavirus.iowa.gov/pages/case-counts | https://governor.iowa.gov/sites/default/files/documents/Public%20Health%20Proclamation%20-%202020.12.09.pdf |
| Kansas [KS] | Yes | Jul 3 | https://www.coronavirus.kdheks.gov/160/COVID-19-in-Kansas | https://governor.kansas.gov/wp-content/uploads/2020/11/EO-20-68-Face-Coverings-protocol-Executed-1.pdf https://governor.kansas.gov/wp-content/uploads/2020/07/20200702093130003.pdf |
| Kentucky [KY] | Yes | July 9 | - | https://governor.ky.gov/attachments/20201203_Executive-Order_2020-996_Face-coverings.pdf |

| | | | | |
|---------------------|-----|----------|---|---|
| Louisiana [LA] | Yes | July 11 | https://ldh.la.gov/Coronavirus/ | https://gov.louisiana.gov/assets/Proclamations/2020/168-JBE-2020-State-of-Emergency-Renewing-COVID-19.pdf |
| Maine [ME] | Yes | May 1 | - | https://www.maine.gov/governor/mills/sites/maine.gov/governor.mills/files/inline-files/An%20Order%20to%20Revise%20Indoor%20Gathering%20Limits%2C%20Strengthen%20Face%20Covering%20Requirements%20and%20Delegate%20Certain%20Authority.pdf |
| Maryland [MD] | Yes | July 31 | https://coronavirus.maryland.gov/ | https://governor.maryland.gov/wp-content/uploads/2020/07/Gatherings-10th-AMENDED-7.29.20.pdf |
| Massachusetts [MA] | Yes | May | https://www.mass.gov/info-details/covid-19-response-reporting# covid-19-interactive-data-dashboard- | https://www.mass.gov/doc/covid-19-order-55/download |
| Michigan [MI] | Yes | Oct 5 | https://www.michigan.gov/coronavirus/0,9753,7-406-98163_98173---,00.html | https://www.michigan.gov/coronavirus/0,9753,7-406-98178_98455-543708--,00.html |
| Minnesota [MN] | Yes | July 25 | https://www.health.state.mn.us/diseases/coronavirus/situation.html#cases1 | https://www.leg.mn.gov/archive/execorders/20-81.pdf |
| Mississippi [MS] | Yes | Sep 30 | https://msdh.ms.gov/msdhsite/_static/14,21882,420,873.html | https://www.sos.ms.gov/content/executiveorders/ExecutiveOrders/1536.pdf |
| Missouri [MO] | No | | | |
| Montana [MT] | Yes | July 15 | https://covid19.mt.gov/ | https://covid19.mt.gov/_docs/2020-11-17_Directive-on-Group-Size-and-Capacity-FINAL.pdf |
| Nebraska [NE] | No | | | |
| Nevada [NV] | Yes | June 24 | https://nvhealthresponse.nv.gov/#covid-data-tracker | https://nvhealthresponse.nv.gov/wp-content/uploads/2020/06/Directive-024-Face-Coverings.pdf |
| New Hampshire [NH] | Yes | Nov 20 | - | https://www.governor.nh.gov/sites/g/files/ehbemt336/files/documents/emergency-order-74.pdf |
| New Jersey [NJ] | Yes | July 8 | https://covid19.nj.gov/ | https://nj.gov/infobank/eo/056murphy/pdf/EO-163.pdf |
| New Mexico [NM] | Yes | May 6 | https://cvprovider.nmhealth.org/public-dashboard.html | https://www.governor.state.nm.us/wp-content/uploads/2020/05/05_15_2020_PHO.pdf |
| New York [NY] | Yes | April 17 | https://coronavirus.health.ny.gov/home | https://www.governor.ny.gov/news/no-20217-continuing-temporary-suspension-and-modification-laws-relating-disaster-emergency |
| North Carolina [NC] | Yes | June | https://covid19.ncdhhs.gov/dashboard/cases | https://files.nc.gov/governor/documents/files/EO181-Modified-Stay-at-Home-Early-Closure-Order.pdf |
| North Dakota [ND] | Yes | Nov 14 | https://www.health.nd.gov/diseases-conditions/coronavirus/north-dakota-coronavirus-cases | https://www.governor.nd.gov/sites/www/files/documents/executive-orders/SHO%20Order%202020-08%20Signed.pdf |
| Ohio [OH] | Yes | July 23 | https://coronavirus.ohio.gov/wps/portal/gov/covid-19/dashboards/overview/ | https://governor.ohio.gov/wps/portal/gov/governor/media/news-and-media/covid19-update-07222020 |
| Oklahoma [OK] | No | | | |
| Oregon [OR] | Yes | July 1 | https://coronavirus.oregon.gov/Pages/default.aspx | https://govstatus.egov.com/or-oha-face-coverings |
| Pennsylvania [PA] | Yes | July 1 | https://www.health.pa.gov/topics/disease/coronavirus/Pages/Cases.aspx | https://www.health.pa.gov/topics/Documents/Diseases%20and%20Conditions/Updated%20Order%20of%20the%20Secretary%20Requiring%20Universal%20Face%20Coverings.pdf |

| | | | | |
|---------------------|------|---------|---|---|
| South Carolina [SC] | No | | | |
| South Dakota [SD] | No | | | |
| Tennessee [TN] | No | | | |
| Texas [TX] | Yes | July 3 | https://www.dshs.state.tx.us/coronavirus/ | https://open.texas.gov/uploads/files/organization/opentexas/EO-GA-29-use-of-face-coverings-during-COVID-19-IMAGE-07-02-2020.pdf |
| Utah [UT] | Yes | Nov 9 | https://coronavirus.utah.gov/case-counts/ | https://coronavirus-download.utah.gov/Health/UPHO-2020-26-Updated-Statewide-COVID-19-Restrictions.pdf |
| Vermont [VT] | Yes | Aug 1 | - | https://governor.vermont.gov/sites/scott/files/documents/ADDENDUM%202%20TO%20AMENDED%20AND%20RESTATED%20EXECUTIVE%20ORDER%20NO.%2001-20.pdf |
| Virginia [VA] | Yes | Dec 14 | - | https://www.governor.virginia.gov/media/governorviriniagov/executive-actions/EO-72-and-Order-of-Public-Health-Emergency-Nine-Common-Sense-Surge-Restrictions-Certain-Temporary-Restrictions-Due-to-Novel-Coronavirus-[COVID-19].pdf |
| Washington [WA] | Yes | June 26 | https://www.doh.wa.gov/Emergencies/COVID19/DataDashboard | https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/ClothFacemasks.pdf |
| West Virginia [WV] | Yes! | Dec 14 | - | https://governor.wv.gov/Pages/Statewide-Indoor-Face-Covering-Requirement.aspx |
| Wisconsin [WI] | Yes | Aug 1 | https://www.dhs.wisconsin.gov/covid-19/cases.htm | https://content.govdelivery.com/attachments/WIGOV/2020/11/20/file_attachments/1607585/Em001-NovFaceCovering.pdf |
| Wyoming [WY] | Yes | Dec 9 | https://health.wyo.gov/publichealth/infectious-disease-epidemiology-unit/disease/novel-coronavirus/covid-19-map-and-statistics/ | https://health.wyo.gov/wp-content/uploads/2020/12/Order4_StatewideFaceCoveringOrder_Dec72020.pdf |

Supplementary Table S2: Change in trends of cases rate per 100,000 people during summer and fall exponential increase in daily cases and confirmed cumulative cases. Higher slopes indicate higher case rate and lower slopes indicate lower case rates.

| SN | States | All data | | Summer surge data | | | Fall surge data | | |
|----|-----------------------|----------------|--------------------------|-------------------|--------------------------|--------|-----------------|--------------------------|--------|
| | | R ² | Slope (d ⁻¹) | R ² | Slope (d ⁻¹) | R-LDS | R ² | Slope (d ⁻¹) | R-LDF |
| 1 | Alabama | 0.9425 | 24.555 | 0.9899 | 27.364 | 2989.6 | 0.9495 | 38.124 | 6624.9 |
| 2 | Alaska ^a | 0.7162 | 18.897 | 0.9912 | 9.769 | 950 | 0.9546 | 58.777 | 5818.2 |
| 3 | Arizona ^a | 0.9272 | 22.187 | 0.8841 | 23.349 | 2951.7 | 0.8550 | 34.016 | 6338.3 |
| 4 | Arkansas | 0.9090 | 24.652 | 0.9982 | 21.886 | 2550.9 | 0.9679 | 45.416 | 6730.3 |
| 5 | California | 0.8926 | 15.839 | 0.9840 | 18.027 | 1985 | 0.8129 | 24.569 | 4789.3 |
| 6 | Colorado | 0.7188 | 16.308 | 0.9911 | 6.774 | 1147 | 0.9286 | 51.867 | 5401.1 |
| 7 | Connecticut | 0.7403 | 11.886 | 0.9901 | 3.0394 | 1575.2 | 0.8973 | 34.373 | 4694.6 |
| 8 | Delaware | 0.8622 | 15.653 | 0.9970 | 9.8417 | 2029.3 | 0.881 | 33.07 | 5243.2 |
| 9 | D of Columbia | 0.9470 | 11.307 | 0.9945 | 8.2233 | 2128.4 | 0.9148 | 17.668 | 3788.9 |
| 10 | Florida ^a | 0.9632 | 21.976 | 0.9471 | 31.396 | 3165 | 0.9417 | 25.567 | 5552.1 |
| 11 | Georgia ^a | 0.9650 | 21.386 | 0.9901 | 28.567 | 3050.3 | 0.9402 | 25.815 | 5570.4 |
| 12 | Idaho ^a | 0.8493 | 26.123 | 0.9867 | 22.087 | 2145.8 | 0.9752 | 60.193 | 7323.6 |
| 13 | Illinois | 0.8210 | 23.058 | 0.9801 | 12.537 | 2205.4 | 0.9557 | 60.820 | 7142.4 |
| 14 | Indiana | 0.7628 | 21.664 | 0.9904 | 11.899 | 1672.9 | 0.9357 | 61.306 | 6954.9 |
| 15 | Iowa | 0.8372 | 30.095 | 0.9815 | 18.768 | 2576.8 | 0.9607 | 75.765 | 8498.3 |
| 16 | Kansas | 0.8041 | 23.468 | 0.9939 | 15.641 | 1852.2 | 0.9471 | 60.535 | 7022.9 |
| 17 | Kentucky | 0.8032 | 18.262 | 0.9887 | 12.353 | 1404.1 | 0.9540 | 46.041 | 5468.1 |
| 18 | Louisiana | 0.967 | 21.970 | 0.9605 | 28.590 | 3511.7 | 0.9119 | 28.563 | 6179.3 |
| 19 | Maryland | 0.9365 | 13.659 | 0.9942 | 10.871 | 2006.3 | 0.9197 | 24.415 | 4224.5 |
| 20 | Massachusetts | 0.8135 | 12.112 | 0.9943 | 4.6683 | 1969.7 | 0.886 | 28.307 | 4711.6 |
| 21 | Michigan | 0.7486 | 15.042 | 0.9947 | 6.9972 | 1305.3 | 0.9328 | 45.611 | 5017.7 |
| 22 | Minnesota | 0.7659 | 23.052 | 0.9958 | 11.465 | 1633.1 | 0.9339 | 68.138 | 7080.4 |
| 23 | Mississippi | 0.9538 | 24.551 | 0.9862 | 28.606 | 3177.7 | 0.9491 | 36.579 | 6642.5 |
| 24 | Missouri ^a | 0.8466 | 21.663 | 0.9838 | 17.752 | 1879.7 | 0.9718 | 49.097 | 6001.1 |
| 25 | Montana | 0.7211 | 24.952 | 0.9878 | 10.226 | 1019.9 | 0.9857 | 76.922 | 7234.8 |
| 26 | Nebraska ^a | 0.8081 | 27.335 | 0.9912 | 13.309 | 2160.1 | 0.9652 | 74.254 | 8121.5 |
| 27 | Nevada | 0.8922 | 23.159 | 0.9715 | 24.331 | 2483.6 | 0.9183 | 45.909 | 6684.2 |
| 28 | New Jersey | 0.7932 | 13.291 | 0.9978 | 4.2512 | 2310.4 | 0.9115 | 34.738 | 5406.5 |
| 29 | New Mexico | 0.7427 | 19.359 | 0.9699 | 9.3487 | 1325.3 | 0.9289 | 58.788 | 6238.4 |
| 30 | New York | 0.8051 | 9.5751 | 0.9994 | 3.4079 | 2391.6 | 0.8734 | 21.314 | 4480.0 |

| | | | | | | | | | |
|----|-----------------------------|--------|--------|--------|--------|--------|--------|--------|---------|
| 31 | North Carolina | 0.9295 | 16.559 | 0.9967 | 15.627 | 1904.1 | 0.9532 | 28.108 | 4611.4 |
| 32 | North Dakota | 0.7695 | 43.635 | 0.9334 | 20.923 | 2490.7 | 0.9821 | 122.19 | 11869.5 |
| 33 | Ohio | 0.7456 | 16.245 | 0.9979 | 9.6734 | 1247.7 | 0.8978 | 45.863 | 5384.1 |
| 34 | Oklahoma ^a | 0.8536 | 23.914 | 0.9926 | 21.371 | 2206.4 | 0.9512 | 49.480 | 6883.5 |
| 35 | Oregon | 0.8363 | 8.1504 | 0.9932 | 6.5497 | 742.4 | 0.9214 | 19.036 | 2460 |
| 36 | Pennsylvania | 0.7363 | 12.191 | 0.9989 | 5.9357 | 1184.6 | 0.8753 | 33.771 | 4402.4 |
| 37 | South Carolina ^a | 0.9627 | 20.628 | 0.9768 | 24.303 | 2734.4 | 0.9516 | 26.540 | 5355.4 |
| 38 | South Dakota ^a | 0.7611 | 37.554 | 0.8996 | 14.395 | 2169.1 | 0.9859 | 108.2 | 10747 |
| 39 | Tennessee ^a | 0.8826 | 26.335 | 0.9931 | 25.286 | 2711.1 | 0.9369 | 50.819 | 7754.6 |
| 40 | Texas | 0.939 | 20.858 | 0.9823 | 23.242 | 2470.0 | 0.9629 | 34.542 | 5490.3 |
| 41 | Utah | 0.8191 | 26.914 | 0.9906 | 14.972 | 2028.8 | 0.9685 | 68.465 | 7884.8 |
| 42 | Virginia | 0.9387 | 12.623 | 0.9966 | 11.185 | 1670.5 | 0.9359 | 20.928 | 3684.4 |
| 43 | Washington | 0.8727 | 9.468 | 0.9856 | 8.2791 | 1092.5 | 0.9046 | 20.046 | 2976.2 |
| 44 | West Virginia | 0.7151 | 12.551 | 0.9892 | 7.0574 | 802.6 | 0.9110 | 35.433 | 4092.1 |
| 45 | Wisconsin | 0.7919 | 30.087 | 0.9909 | 14.47 | 1894.9 | 0.9849 | 81.488 | 8490.5 |
| 46 | Wyoming | 0.6671 | 23.171 | 0.9959 | 6.7687 | 866.7 | 0.9542 | 81.135 | 7277.3 |

Keys: a = states without face coverings mandate in public; d = rate of change in confirmed cases per day; R-LDS = case rate per 100,000 people on last day of summer 2020 (September 22); R-LDF = case rate per 100,000 people on last day of fall 2020 (December 21).