HHS Public Access

Author manuscript

J Public Health Manag Pract. Author manuscript; available in PMC 2022 January 01.

Published in final edited form as:

J Public Health Manag Pract. 2022 ; 28(1): 43–49. doi:10.1097/PHH.0000000000001376.

The Impact of Covid-19 State Closure Orders on Consumer Spending, Employment, and Business Revenue

Christopher Dunphy, PhD, **Gabrielle F. Miller, PhD**, **Ketra Rice, PhD**, **Linda Vo, MPH**, **Gregory Sunshine, JD**, **Russell McCord, JD**, **Mara Howard-Williams, JD, MPH**, **Fátima Coronado, MD, MPH**

COVID-19 Response, Centers for Disease Control and Prevention, Atlanta, Georgia

Abstract

Context: In response to the COVID-19 pandemic, states across the United States implemented various strategies to mitigate transmission of SARS-CoV-2 (the virus that causes COVID-19).

Objective: To examine the effect of COVID-19–related state closures on consumer spending, business revenue, and employment, while controlling for changes in COVID-19 incidence and death.

Design: The analysis estimated a difference-in-difference model, utilizing temporal and geographic variation in state closure orders to analyze their impact on the economy, while controlling for COVID-19 incidence and death.

Participants: State-level data on economic outcomes from the Opportunity Insights data tracker and COVID-19 cases and death data from usafacts.org.

Interventions: The mitigation strategy analyzed within this study was COVID-19–related state closure orders. Data on these orders were obtained from state government Web sites containing executive or administrative orders.

Main Outcome Measures: Outcomes include state-level estimates of consumer spending, business revenue, and employment levels.

Results: Analyses showed that although state closures led to a decrease in consumer spending, business revenue, and employment, they accounted for only a small portion of the observed decreases in these outcomes over the first wave of COVID-19.

Conclusions: The impact of COVID-19 on economic activity likely reflects a combination of factors, in addition to state closures, such as individuals' perceptions of risk related to COVID-19 incidence, which may play significant roles in impacting economic activity.

Correspondence: *Christopher Dunphy, PhD, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 4770 Buford Hwy NE, Atlanta, GA 30341 (*ppz1@cdc.gov*).*

The authors declare no conflicts of interest.

Supplemental digital content is available for this article. Direct URL citation appears in the printed text and is provided in the HTML and PDF versions of this article on the journal's Web site (http://www.JPHMP.com).

Keywords

community mitigation; COVID-19; state closures

The coronavirus (COVID-19) pandemic has prompted a range of responses at all levels of government. States and localities across the United States began implementing various emergency restrictions to respond to the COVID-19 pandemic starting in March 2020. State governments declared states of emergency and some states issued stay-at-home orders, business closures, and mask mandates. Although early studies demonstrated the effectiveness of these policies in slowing the spread of COVID-19,[1] states began to loosen these restrictions at the end of April 2020.

Since the first COVID-19 case was identified in the United States in January 2020, more than 30 million cases and more than 515 000 COVID-19–related deaths have been reported.[2] Resurgence in most states was documented since September; by February 27, 2021, reported cases reached a daily high of more than 70 000.[3] Although data indicate that the United States has entered a phase of high-level transmission where a layered approach to implementing strategies at the individual and community levels is essential,[4] decision makers need to balance the wide-ranging effects on the health, economy, and social well-being of populations when considering reimplementation of state-level mitigation policies.

Understanding the economic and public health impact of state-mandated mitigation policies can inform exploration of options as states move forward. The objective of this study was to examine the effect and outcomes of state closures (ie, stay at home orders, business closure orders) on the economy across the United States, controlling for changes in COVID-19 incidence and death.

Methods

We accessed and measured publicly available data for 3 key economic variables: consumer spending, business revenue, and employment. These variables were chosen to explore indicators of economic performance, including consumer behavior, labor-market fluctuations, and business operations. We accessed daily economic data from February-September 2020 from the Opportunity Insights Economic Tracker, which combines anonymized data from private companies, including credit card processors and payroll firms.[5] Data on consumer spending were measured as the seasonally adjusted credit/debit card spending in all merchant category codes. Business revenue was measured as the net revenue for small businesses. Employment was measured as employment levels for all workers collected from the online payroll programs Paychex, Intuit, Earnin, and Kronos. All 3 variables were measured as percent changes in values compared with January 2020 (the baseline period). Daily COVID-19 case counts, deaths, and state population were collected from usafacts.org,[6] which collects data from the Centers for Disease Control and Prevention and state and local health departments and is continually validated and checked.[7] For this study, new daily COVID-19 cases and deaths per 100 000 population were analyzed.

To determine the duration of each state's closure, data on state COVID-19 mitigation orders from March through September 2020 were obtained from each state's government Web sites containing executive or administrative orders for its respective jurisdiction. Each order was analyzed and coded on the basis of the effective and end date of the statewide stay-at-home order and business closure. The date of state closure was defined as the earlier of either (*a*) the date individuals were ordered to stay home or (*b*) the date when both restaurants were ordered to cease on-premises dining and nonessential retail businesses were ordered to close. The date of state reopening was defined as the earlier of either (*a*) the date the stay-at-home order was lifted or (*b*) the date both restaurants were allowed to resume on-premises dining and retail businesses were permitted to reopen. All data underwent secondary review and quality assurance checks.

A difference-in-difference (DID) model was used to estimate the effect of state closures on the 3 variables of interest. The DID model utilizes temporal and geographic variations in implementation of state closure across the United States to identify the effect of these policies on the outcomes of interest; it includes 2-way fixed effects (daily and by state) while controlling for new daily COVID-19 cases and deaths. The DID framework is a widely used methodology for analyzing the effect of public health policies with varying timing of implementation across jurisdictions.[8,9] A supplemental analysis modeled the interaction of state closure orders with US census region to explore spatial heterogeneity.

The main assumption of the DID model is the "parallel trend" assumption, which posits that the trend in outcome for those who receive the policy intervention (treated group) would have been the same as for those who did not receive the intervention (control group) in the absence of the state closure orders. Typically, this assumption is tested by graphing the difference in outcome between the treated and control groups (states in this analysis). The timing of policy interventions (statewide closure) varied by state and the majority of states enacted closure orders; therefore, we used the published method of estimating an event studies model to examine differences in outcomes during periods leading up to the policy implementation with the inclusion of lead policy variables.[10] Lead policy variables are dummy variables that indicate the number of days before closure. Insignificant coefficient estimates on the lead policy variables suggest that the parallel trend assumption is met. Given that our analysis utilizes daily data, 30 lead policy variables were included in this model. A P value of less than .05 was considered statistically significant. This activity was reviewed by the Centers for Disease Control and Prevention and was conducted consistent with applicable federal law and the Centers for Disease Control and Prevention policy.*

Results

The Figure depicts the trends in consumer spending, employment, and business revenue over the study period. During March and April 2020, all 3 economic variables decreased substantially compared with the baseline period. By the beginning of April, consumer spending and business revenue decreased by more than 30% and approximately 50%, respectively. Employment decreased by more than 20% by mid-April. Forty-five states

*See, for example, 45 CFR part 46, 21 CFR part 56; 42 USC §241(d); 5 USC §552a; 44 USC §3501, et seq.

implemented a closure order during the first wave (March-September 2020) of the COVID-19 pandemic with a median closure duration of 52 days (Table 1).

State closures were significantly associated with a percentage point decrease of 2.5 in consumer spending, 7.9 in business revenue, and 2.0 in employment. In addition, new daily COVID-19 cases and deaths negatively impacted the economy over the study period. One additional COVID-19 case per 100 000 population was associated with a percentage point decrease of 0.06 in consumer spending and 0.07 in employment; an additional COVID-19–related death per 100 000 population was associated with a percentage point decrease of 0.04 in business revenue and 0.03 in employment (Table 2). These coefficients were estimated while controlling for time-invariant state-level characteristics, such as demographic and socioeconomic factors over the study period, and daily national economic shocks with the inclusion of state and day fixed effects. These findings, in conjunction with the raw trends outlined in the Figure, suggest that—on average—state closures accounted for approximately 8% of the observed decrease in consumer spending, 16% of the observed decrease in business revenue, and 9.5% of the observed decrease in employment over the study period. In addition, supplemental analysis suggests that there was some heterogeneity of state closure effects across census regions (see Supplemental Digital Content Table 1, available at http://links.lww.com/JPHMP/A809).

Table 3 reports the coefficient estimates for the event studies analysis that indirectly tests the parallel trend assumption of the DID model. The coefficients for the 30 lead closure variables are almost all insignificant for consumer spending and business revenue, providing evidence that the assumption of the DID model is likely met when modeling consumer spending and business revenue. However, a majority of the lead coefficient estimates are statistically significant for the employment model indicating that the parallel trend assumption is likely not satisfied when examining employment as the outcome in our model. Thus, the DID estimates should be interpreted with caution for employment.

Discussion

The pandemic response is dynamic and changing and it is expected that governments' responses will continue to develop. State governments have exercised their authority in enacting specific requirements and making emergency declarations to serve their constituents.[11] This study examined the impact of timing and duration of state closures on the US economy during the first wave of state mandates enacted to mitigate the COVID-19 pandemic. Our findings suggest that state closures accounted for a statistically significant small portion of the observed decreases in consumer spending, business revenue, and employment over the study period. Health-related factors such as newly identified COVID-19 cases and deaths also negatively influenced the economy. This falls in line with other studies examining the association between community mitigation policies and the economy.[12]

As the United States recovers from the pandemic, state policy makers may continue to adopt new rules and legislation to promote the health and financial security of the US population. State decision makers may also face challenging questions about how and when to relax

interventions and how to weigh the economic cost of long-term mitigation measures against the risk of another wave of the virus.[13] These questions are especially challenging in light of evidence that suggests that relaxing business closures may contribute to increases in COVID-19 incidence and mortality,[14] particularly when other mitigation measures—such as mask mandates—are not present.[15]

While policy strategies such as state closures may be helpful in decreasing population mobility, individuals and communities can consider implementing a layered approach using all available evidence-based strategies that can break transmission chains and address high levels of community transmission, reduce illnesses and deaths, and mitigate the pandemic's economic impact.[4] State policy makers can continue monitoring community transmission and use public health and other data for decision making. Similarly, full implementation of public health prevention strategies may help contribute to the health protection of communities and individual persons and may fuel economic recovery.

Understanding states' capabilities for implementing community-level COVID-19 mitigation strategies can provide practical information that decision makers, including public health officials, can use to implement and adjust strategies to reduce COVID-19 transmission. For example, physical barriers and visual reminders might promote community adherence to maintaining physical distance and limiting contacts, and universal use of masks can be facilitated by policies or directives mandating universal use of masks in nonhousehold settings including all modes of public transportation. Statewide mask mandates contributed to decreasing COVID-19–associated hospitalization growth rates during March-October 2020.[16] In addition, policies restricting access to some nonessential indoor spaces that pose the highest risk for transmission or applying limits to occupancy of indoor spaces and to the size of social gatherings might result in reduced viral transmission in the community. States and local communities can continue supporting the layered implementation of preventive measures and adjust these strategies based on community transmission data.

This study has at least 5 limitations. First, we do not find evidence to support the parallel trend assumption of the DID model for employment. This limits the interpretations that can be made regarding the impact of state closures on employment. Second, the study reflects only the effects limited to 3 economic indicators and is restricted to the observation period of March-September 2020. Third, Opportunity Insights estimate the economic variables with a baseline period of January 2020 and do not provide data for 2019, limiting our ability to extend the baseline to the average of 2019. Fourth, we analyzed only closures and reopenings at the state level, so we do not account for orders resulting in closures or reopenings in counties or cities within states. Thus, our study does not account for potential heterogeneity of policy effects within states. Fifth, we did not examine alternatives that could have caused the observed decrease in economic outcomes aside from COVID-19 cases, deaths, and state closures, such as global supply shocks, trade disruptions, and travel restrictions.[17]

Although state closures led to a decrease in consumer spending and business revenue, they accounted for only a small portion of the observed decreases in these outcomes over the first wave of COVID-19 during the spring and summer of 2020. The impact of COVID-19

on economic activity likely reflects a combination of factors, in addition to state closures, such as individuals' perceptions of risk related to COVID-19 incidence, which may play significant roles in impacting economic activity.[18]

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention (CDC). The mention of any company or product does not constitute endorsement by the CDC.

References

1. Moreland A, Herlihy C, Popoola A, et al. Timing of state and territorial COVID-19 stay-at home orders and changes in population movement—United States, March 1-May 31, 2020. MMWR Morb Mortal Wkly Rep. 2020;69(35):1198–1203. [PubMed: 32881851]
2. Centers for Disease Control and Prevention. Coronavirus disease (COVID-19). COVID data tracker. https://covid.cdc.gov/covid-data-tracker/#cases_casesinlast7days. Updated February 27, 2021. Accessed February 27, 2021.
3. Centers for Disease Control and Prevention. CDC trends in number of COVID-19 cases and deaths in the US reported to CDC, by state/territory. https://covid.cdc.gov/covid-data-tracker/#cases_casesper100klast7days. Updated February 27, 2021. Accessed February 27, 2021.
4. Honein MA, Christie A, Rose DA, et al. Summary of guidance for public health strategies to address high levels of community transmission of SARS-CoV-2 and related deaths, December 2020. vMMWR Morb Mortal Wkly Rep. 2020;69(49):1860–1867.
5. Chetty R, Friedman J, Hendren N, Stepner M; Opportunity Insights Team. The Economic impacts of COVID-19: evidence from a new public database built using private sector data. https://opportunityinsights.org/wp-content/uploads/2020/05/tracker_paper.pdf. Published 2020. Accessed November 17, 2020.
6. USAFacts. Coronavirus stats and data. https://usafacts.org/issues/coronavirus/. Published 2020. Accessed November 2020.
7. USAFacts. Detailed methodology and sources: COVID-19 data. https://usafacts.org/articles/detailedmethodology-covid-19-data/. Published 2020. Accessed February 27, 2021.
8. Bitler MP, Carpenter CS. Health insurance mandates, mammography, and breast cancer diagnosis. Am Econ J Econ Policy. 2016; 8(3):39–68. [PubMed: 29527253]
9. Rees DI, Sabia JJ, Argys L, Latshaw J, Dave D. With a little help from my friends: the effects of Good Samaritan and naloxone access laws on opioid-related deaths. J Law Econ. 2019;62:1–27
10. Wing C, Simon K, Bello-Gomez R. Designing difference-in difference studies: best practices for public health policy research. Annu Rev Public Health. 2018;39:453–469. [PubMed: 29328877]
11. Library of Congress. Federal, state, and local government responses to COVID-19. https://www.loc.gov/law/help/covid-19-responses/us.php. Published 2021. Accessed January 7, 2021.
12. Rojas FL, Jiang X, Montenovo L, Simon KI, Weinberg BA, Wing C. Is the cure worse than the problem itself? Immediate labor market effects of COVID-19 case rates and school closures in the U.S. NBER Working Paper Series. Working Paper 27127. https://www.nber.org/papers/w27127. Published 2020.Accessed February 12, 2021.
13. RAND Corporation. The health and economic impacts of COVID-19 interventions. https://www.rand.org/pubs/tools/TLA173-1/tool.html. Updated October 1, 2020. Accessed January 7, 2021.
14. Guy GP Jr, Lee FC, Sunshine G, et al. Association of state-issued mask mandates and allowing on-premises restaurant dining with county-level COVID-19 case and death growth rates—United

States, March 1-December 31, 2020. MMWR Morb Mortal Wkly Rep. 2021;70(10):350–354. [PubMed: 33705364]

15. Kaufman BG, Whitaker R, Mahendraratnam N, Smith VA, McClellan MB. Comparing associations of state reopening strategies with COVID-19 burden. J Gen Intern Med. 2020;35:3627–3634. [PubMed: 33021717]
16. Joo H, Miller G, Sunshine G, et al. Association of statewide mask mandates with COVID-19 associated hospitalization growth rates—10 states, March-October 2020. MMWR Morb Mortal Wkly Rep. 2021;70:1–6. [PubMed: 33411702]
17. Baldwin R, Weder di Mauro B. Economics in the Time of COVID-19: A New eBook. London, England: VOX CEPR Policy Portal; 2020.
18. Foroudi P, Tabaghdehi SAH, Marvi R. The gloom of the COVID-19 shock in the hospitality industry: a study of consumer risk perception and adaptive belief in the dark cloud of a pandemic. Int J Hospitality Manage. 2021;92:102107.

Implications for Policy & Practice

- State closures accounted for a statistically significant, small portion of the observed decreases in consumer spending, business revenue, and employment over the first wave of COVID-19. Individuals and communities can consider implementing a layered approach using all available evidence-based strategies that can break transmission chains and address high levels of community transmission, reduce illnesses and deaths, and mitigate the pandemic's economic impact.
- Health-related factors such as newly identified COVID-19 cases and deaths also negatively influenced the economy. Policy makers can consider implementation of public health prevention strategies that help contribute to the health protection of communities and individual persons and may fuel economic recovery.
- States and local communities can continue supporting the layered implementation of preventive measures and adjust these strategies based on community transmission data.

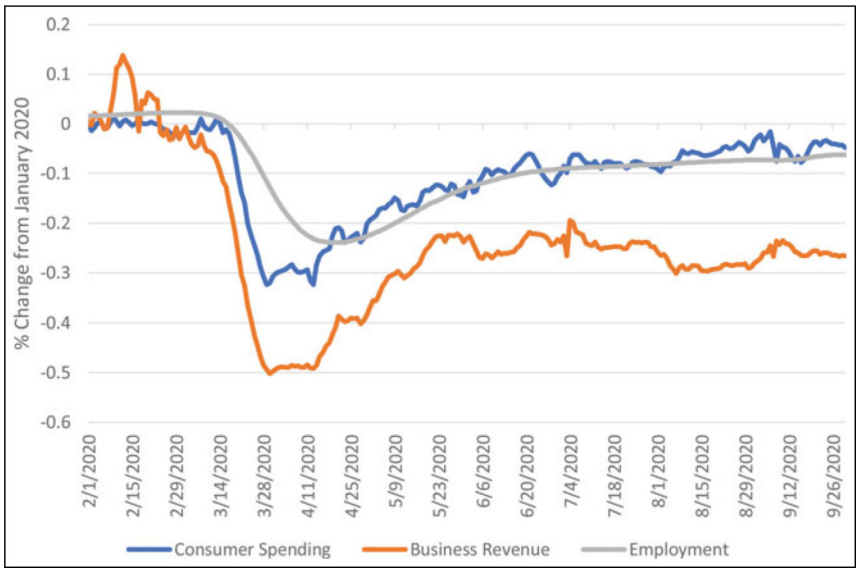

FIGURE.

Trends in Consumer Spending, Small Business Revenue, and Employment—United States, February-September 2020—Measured as the Percentage Change From January 2020[a]

[a] Data are from the Opportunity Insights Economic Tracker. Consumer spending is the seasonally adjusted credit/debit card spending relative to January 4–31, 2020, in all merchant category codes (MCC), 7-day moving average. Business revenue is the percent change in net revenue for small businesses, calculated as a 7-day moving average, seasonally adjusted, and indexed to January 4–31, 2020. Employment is employment levels for all workers relative to January 4–31, 2020, from Paychex, Intuit, Earnin, and Kronos.

TABLE 1

Statewide Closure Orders—March to September 2020[a]

States	Statewide Closing Date	Statewide Reopening Date	Length of Statewide Closure (in Days)
Alaska	March 28, 2020	April 24, 2020	27
Alabama	March 28, 2020	April 30, 2020	33
Arkansas	…	…	0
Arizona	March 31, 2020	May 16, 2020	46
California	March 19, 2020	July 13, 2020	116
Colorado	March 26, 2020	April 27, 2020	32
Connecticut	March 22, 2020	May 20, 2020	59
District of Columbia	March 25, 2020	May 29, 2020	65
Delaware	March 24, 2020	May 22, 2020	59
Florida	April 3, 2020	May 4, 2020	31
Georgia	April 3, 2020	April 30, 2020	27
Hawaii	March 25, 2020	June 10, 2020	77
Iowa	March 26, 2020	May 15, 2020	50
Idaho	March 25, 2020	May 1, 2020	37
Illinois	March 21, 2020	May 29, 2020	69
Indiana	March 24, 2020	May 18, 2020	55
Kansas	March 30, 2020	May 4, 2020	35
Kentucky	March 23, 2020	May 22, 2020	60
Louisiana	March 23, 2020	May 15, 2020	53
Massachusetts	March 24, 2020	June 8, 2020	76
Maryland	March 23, 2020	May 13, 2020	51
Maine	March 25, 2020	May 31, 2020	67
Michigan	March 24, 2020	June 1, 2020	69
Minnesota	March 27, 2020	May 17, 2020	51
Missouri	April 6, 2020	May 4, 2020	28
Mississippi	March 31, 2020	April 27, 2020	27
Montana	March 28, 2020	April 26, 2020	29
North Carolina	March 30, 2020	May 22, 2020	53

States	Statewide Closing Date	Statewide Reopening Date	Length of Statewide Closure (in Days)
North Dakota	…	…	0
Nebraska	…	…	0
New Hampshire	March 27, 2020	June 16, 2020	81
New Jersey	March 21, 2020	June 9, 2020	80
New Mexico	March 24, 2020	June 1, 2020	69
Nevada	March 20, 2020	May 9, 2020	50
New York	March 19, 2020	June 6, 2020	79
Ohio	March 23, 2020	May 15, 2020	53
Oklahoma	March 25, 2020	May 1, 2020	37
Oregon	March 23, 2020	June 19, 2020	88
Pennsylvania	March 19, 2020	June 5, 2020	78
Rhode Island	March 28, 2020	May 9, 2020	42
South Carolina	April 7, 2020	May 4, 2020	27
South Dakota	…	…	0
Tennessee	March 31, 2020	April 29, 2020	29
Texas	April 2, 2020	May 1, 2020	29
Utah	…	…	0
Virginia	March 30, 2020	May 29, 2020	60
Vermont	March 24, 2020	May 15, 2020	52
Washington	March 23, 2020	July 3, 2020	102
Wisconsin	March 25, 2020	May 13, 2020	49
West Virginia	March 24, 2020	May 4, 2020	41
Wyoming	…	…	0

[a] *State policy data were collected from state government Web sites containing executive or administrative orders. The date of state closure was defined as the earlier of either (*a*) the date individuals were ordered to stay home or (*b*) the date both restaurants were ordered to cease on-premises dining and nonessential retail businesses were ordered to close. The date of state reopening was defined as the earlier of either (*a*) the date the stay-at-home order was lifted or (*b*) the date both restaurants were allowed to resume on-premises dining and retail businesses were permitted to reopen.*

TABLE 2

Difference-in-Difference Results—Impact of State Closures on Economic Outcomes During the COVID-19 Pandemic—United States, February-September 2020[a,b]

Variable	Consumer Spending	Business Revenue	Employment
Closure	−0.027[c] (0.007)	−0.079[c] (0.005)	−0.020[c] (0.001)
Covid-19 cases	−0.0006[c] (0.0001)	−0.0002 (0.0002)	−0.0007[c] (0.000)
Covid-19 deaths	−0.0001 (0.0001)	−0.0004[c] (0.0001)	−0.0003[c] (0.0001)
State fixed effects	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes
R^2	0.24	0.51	0.59
N	12 393	11 824	10 505

[a]Data on consumer spending, business revenue, and employment from Opportunity Insights Data Tracker; Data on state closure orders collected from state government Web sites containing executive or administrative orders. Data on COVID-19 cases and deaths collected from usafacts.org.

[b]Consumer spending is the seasonally adjusted credit/debit card spending relative to January 4–31, 2020, in all merchant category codes (MCC), 7-day moving average. Business revenue is the percent change in net revenue for small businesses, calculated as a 7-day moving average, seasonally adjusted, and indexed to January 4–31, 2020. Employment is employment levels for all workers relative to January 4–31, 2020, from Paychex, Intuit, Earnin, and Kronos. Standard errors are reported within parentheses.

[c]P < .05.

J Public Health Manag Pract. Author manuscript; available in PMC 2022 January 01.

TABLE 3

Event Studies Results—Pretrend Coefficients[a,b]

Variable	Consumer Spending	Business Revenue	Employment
Lead 1	0.004 (0.030)	−0.066[c] (0.022)	−0.003 (0.004)
Lead 2	0.001 (0.030)	0.008 (0.022)	−0.001 (0.004)
Lead 3	−0.001 (0.030)	−0.043 (0.022)	0.003 (0.004)
Lead 4	−0.001 (0.030)	−0.024 (0.022)	0.003 (0.004)
Lead 5	0.001 (0.030)	−0.018 (0.022)	0.005 (0.004)
Lead 6	0.005 (0.030)	−0.038 (0.022)	0.006 (0.004)
Lead 7	0.001 (0.030)	−0.004 (0.022)	0.008 (0.004)
Lead 8	0.008 (0.030)	−0.015 (0.022)	0.009[c] (0.004)
Lead 9	0.006 (0.030)	−0.032 (0.022)	0.010[c] (0.004)
Lead 10	0.022 (0.031)	−0.010 (0.022)	0.011[c] (0.004)
Lead 11	0.006 (0.031)	−0.020 (0.022)	0.011[c] (0.004)
Lead 12	0.010 (0.031)	0.012 (0.022)	0.012[c] (0.004)
Lead 13	0.009 (0.031)	0.020 (0.022)	0.013[c] (0.004)
Lead 14	0.037 (0.031)	−0.002 (0.022)	0.013[c] (0.004)
Lead 15	0.043 (0.031)	0.007 (0.022)	0.013[c] (0.004)
Lead 16	0.036 (0.031)	−0.003 (0.022)	0.013[c] (0.004)
Lead 17	0.032 (0.031)	0.015 (0.022)	0.013[c] (0.004)
Lead 18	0.023 (0.030)	0.017 (0.022)	0.013[c] (0.004)
Lead 19	0.154[c] (0.030)	0.002 (0.022)	0.012[c] (0.004)
Lead 20	0.029 (0.030)	0.018 (0.022)	0.012[c] (0.004)
Lead 21	0.050 (0.030)	0.016 (0.022)	0.012[c] (0.004)
Lead 22	0.031 (0.030)	0.006 (0.022)	0.011[c] (0.004)

Variable	Consumer Spending	Business Revenue	Employment
Lead 23	0.031 (0.030)	0.015 (0.022)	0.011[c] (0.004)
Lead 24	0.010 (0.030)	0.006 (0.021)	0.010[c] (0.004)
Lead 25	0.041 (0.030)	0.022 (0.021)	0.010[c] (0.004)
Lead 26	0.032 (0.030)	0.011 (0.021)	0.009[c] (0.004)
Lead 27	0.032 (0.030)	0.020 (0.021)	0.009[c] (0.004)
Lead 28	−0.008 (0.030)	0.022 (0.021)	0.008[c] (0.004)
Lead 29	−0.014 (0.030)	0.009 (0.021)	0.007 (0.004)
Lead 30	−0.007 (0.029)	0.016 (0.021)	0.007 (0.004)
Closure	−0.022[c] (0.008)	−0.084[c] (0.006)	−0.019[c] (0.001)
Covid-19 cases	−0.0006[c] (0.0002)	−0.0002 (0.0001)	−0.0007[c] (0.0001)
Covid-19 deaths	−0.0001 (0.0001)	−0.0004[c] (0.0001)	−0.0002[c] (0.0001)
State fixed effects	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes
R^2	0.25	0.51	0.91

[a] Data on consumer spending, business revenue, and employment from Opportunity Insights Data Tracker; Data on state closure orders collected from state government Web sites containing executive or administrative orders. Data on COVID-19 cases and deaths collected from usafacts.org.

[b] Consumer spending is the seasonally adjusted credit/debit card spending relative to January 4–31, 2020, in all merchant category codes (MCC), 7-day moving average. Business revenue is the percent change in net revenue for small businesses, calculated as a 7-day moving average, seasonally adjusted, and indexed to January 4–31, 2020. Employment is employment levels for all workers relative to January 4–31, 2020, from Paychex, Intuit, Earnin, and Kronos. Standard errors are reported within parentheses.

[c] $P < .05$.

J Public Health Manag Pract. Author manuscript; available in PMC 2022 January 01.