

Economic resilience during COVID-19: An insight from permanent business closures

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Abstract

The rapid spread of COVID-19 has damaged the economy in the United States. To understand the resilience capacities of local businesses, we visualized the spatiotemporal patterns of permanently closed Points of Interest (POIs) after the outbreak of the pandemic. The results show that the counties with more business closures are also the counties with a larger population. The permanent closures of most local businesses occurred immediately after the lift of stay-at-home order. We also found that those business owners, who permanently shut down their businesses, may not open new ones elsewhere. In addition, the permanent closures of entertainment and recreation businesses are significantly less than that of retail and trade businesses and food services.

Keywords

permanent business closures, points of interest, economic resilience, COVID-19

During the early outbreak of COVID-19 across the United States, millions of small-business owners faced a similar challenge as the coronavirus shut down much of the economy and consumers stayed home to slow the spread of the virus. The existing studies have also shown that the impacts of COVID-19 on the local economy and societies are unevenly distributed (Fu and Zhai, 2021; Zhai et al., 2021a; Zhai et al., 2021b; Zhai and Peng, 2021). The Yelp data shows that 60% of temporary business closures during the local lockdown were eventually permanent (Yelp, 2020). And more pain is ahead, as the Delta variant has become the predominant strain of the virus in the United

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States since July 2021. Thus, it is still essential to understand the resilience capacities of local businesses so as to prepare for the new wave of COVID-19 in the future.

In this research, we used the permanently closed Points of Interest (POIs) data from SafeGraph (<https://docs.safegraph.com/docs/core-places>), during the period between March 2020 and May 2021, to show the closure patterns of three business types: entertainment and recreation, retail and trade, and food services. From the geographical perspective, we generated three cartogram maps by mapping the number of closed businesses per 100 thousand people in each county during the study period (Figure 1(a), (b), (c)). Concerning the temporal patterns, we visualized the monthly change of closed businesses in each county, highlighting the counties with the most changes (Figure 1(d), (e), (f)). We also plot the monthly changes in newly opened businesses to see whether new openings could, in part, explain the business closures.

We concluded four novel findings. First, from the spatial point of view, it is quite consistent that some densely populated areas, such as Los Angeles (CA), Denver (CO), New York City (NY), Miami (FL), are more likely to have more business closures than those areas with a lower population density. Second, from the temporal perspective, July 2020 and August 2020 witnessed the peak of local business closures for all three types. Thus, we could infer that due to the sheer scale of the stay-at-home order, some small business owners cannot afford the income loss in those inactive months. In addition, the *Coronavirus Aid, Relief, and Economic Security Act (CARES)* expired at the end of July, failing to further recover the local economy. Third, during July 2020 and August 2020, the temporal changes of new openings were far less than that of closed businesses. That is, those business owners, who permanently shut down their businesses, may not open new ones elsewhere. Fourth, regarding the business types, the permanent closures of entertainment

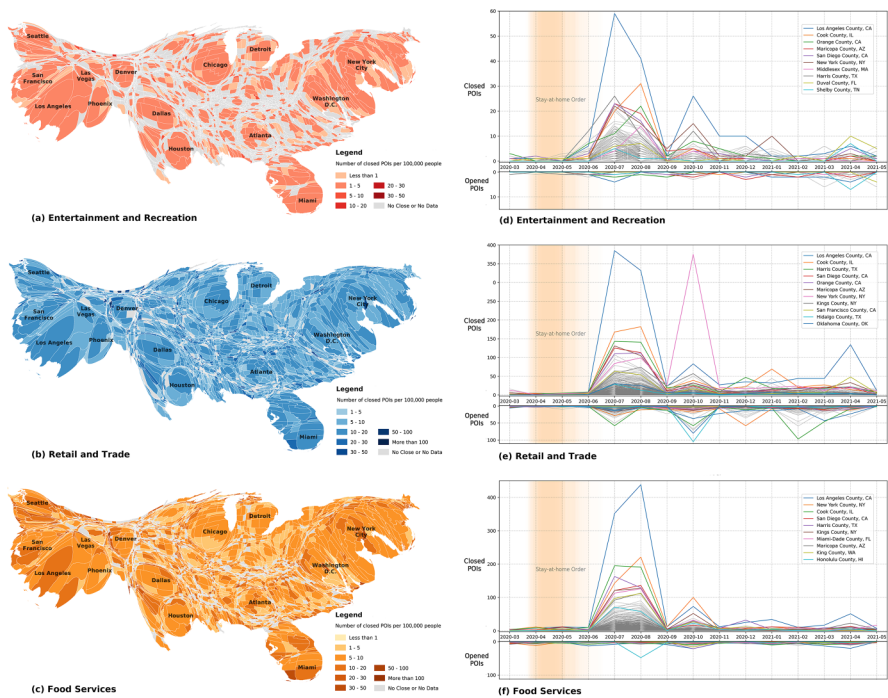


Figure 1. The spatiotemporal patterns of closed POIs across the United States during COVID-19.

and recreation businesses are significantly less than that of retail and trade businesses and food services.

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