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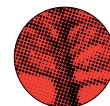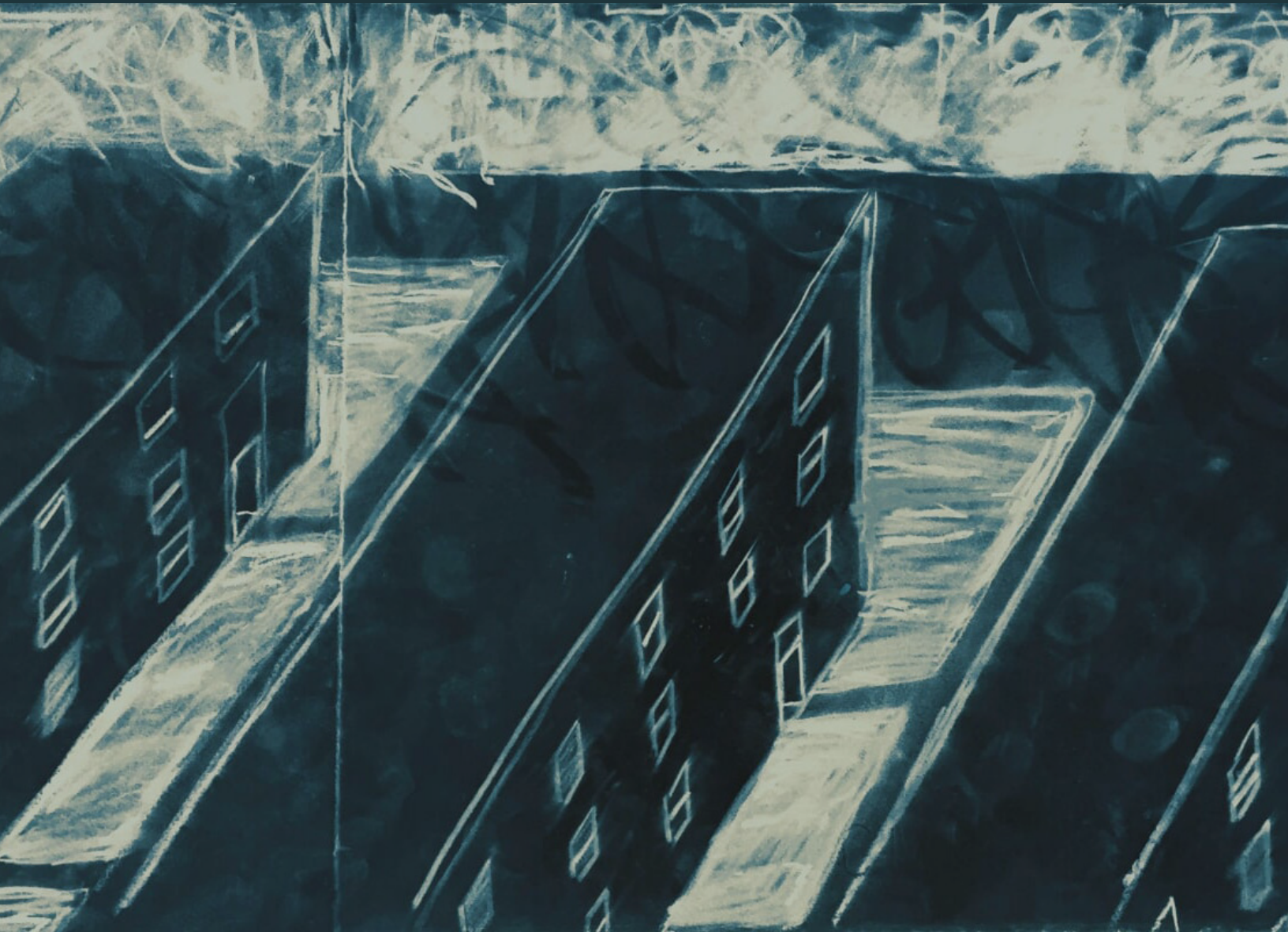Ong, Elena
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Neighborhood Inequality in Shelter-in-Place Burden: Impacts of COVID-19 in Los Angeles

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April 22, 2020

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INSTITUTE ON
INEQUALITY AND DEMOCRACY
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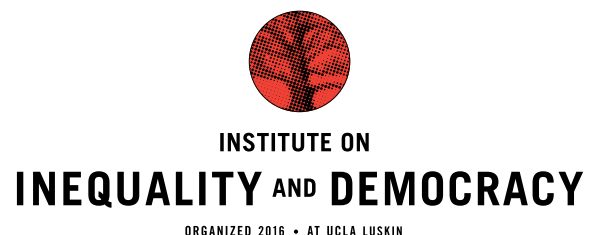# Neighborhood Inequality in Shelter-in-Place Burden: Impacts of COVID-19 in Los Angeles

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Cover art by Eden McNutt

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Preface

The COVID-19 crisis, extraordinary in its scope and scale, has exposed and deepened the lived inequalities of our cities and regions. It is evident that the prolonged disaster which will follow the immediacy of the public health emergency will be devastating for communities that have long experienced the everyday crisis that is racial capitalism. Now more than ever before, it is necessary to mobilize analysis and expertise to pinpoint the specific and differentiated socio-spatial burdens of labor and social reproduction that are implicated in this crisis. The Institute on Inequality and Democracy at UCLA Luskin is proud to partner with Ong & Associates to share this report on neighborhood inequality in Los Angeles. The report focuses on mandated shelter-in-place policies, a key public response to the COVID-19 crisis, and shows how the capacity to shelter in place safely and easily varies across neighborhoods, thus revealing structural inequalities. The Shelter-in-Place-Burden Index, devised by Professor Paul Ong and his colleagues, reveals the strain and stress carried by low-income and minority neighborhoods, a pattern that is becoming starkly evident across the United States and that perpetuates existing systems of spatialized disadvantage. We invite you to read and disseminate the report and to consider its implications for advocacy and action.

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Introduction

Los Angeles County, California, like the rest of the nation, is experiencing an unprecedented disruption to its people and economy caused by the spread of COVID-19. The direct and indirect disruptions are creating enormous financial and personal hardships to workers, families, businesses and communities. The magnitude of the economic impacts is evident in the dramatic increase in unemployment. In the weeks between March 15 and April 11, there were 20.1 million new unemployment insurance claims nationally, with 2.8 million in California (not seasonally adjusted). This level is several orders of magnitude higher than experienced in previous years, even those during the Great Recession of 2007-09. The human and health impacts are equally traumatic. As of April 18, 2020, Los Angeles County reported 12,021 confirmed cases and killed 576.[1]

To "flatten the curve" and prevent the number of new cases from overwhelming the healthcare system, health experts have strongly advocated for limiting person-to-person interactions by restricting group gatherings, encouraging "social distancing," and ordering people to "shelter in place."[2] These steps are designed to minimize the speed and extent of the spread of the virus. Social distancing is the practice of maintaining a distance of at least six feet between individuals when in public space and more when engaging in activities such as biking. Sheltering in place is the practice of remaining in one's home, although it also means remaining in the immediate area when going outdoors.

Elected and public officials have taken dramatic action to implement the advice, some faster than others. On March 4, 2020, California Governor Gavin Newsom declared a state of emergency because of the COVID-19 threat. On March 19, 2020, he issued "Executive Order N-33-20," ordering "all individuals living in the State of California to stay home or at their place of residence except as needed to maintain continuity of operations of the federal critical infrastructure sectors..." Parallel developments were occurring in Los Angeles. On March 4, 2020, the County declared a "Local Health Emergency in Response to New Novel Coronavirus Activity." On March 19, City of Los Angeles Mayor Eric Garcetti issued "Public Order Under City of Los Angeles Emergency Authority," (also known as "Safer at Home") declaring "Wherever feasible, City residents must isolate themselves in their residences, subject to certain exceptions..."

Over time, the mandates to shelter-in-place (SIP) have become progressively more restrictive as the state and cities close many open spaces (primarily beaches and hiking trails in large parks), lower the number of people who can gather, fine violators, and extend the time to SIP. In practical terms, these mandates have transformed how Angelenos live—eliminating unnecessary travel and trips, working at home, shifting to internet-based distance learning, exercising (walking, jogging, and biking) within one's immediate neighborhood, and shopping nearby whenever possible. Despite the severe restrictions, sheltering in place is supported by the vast majority of residents.[3]
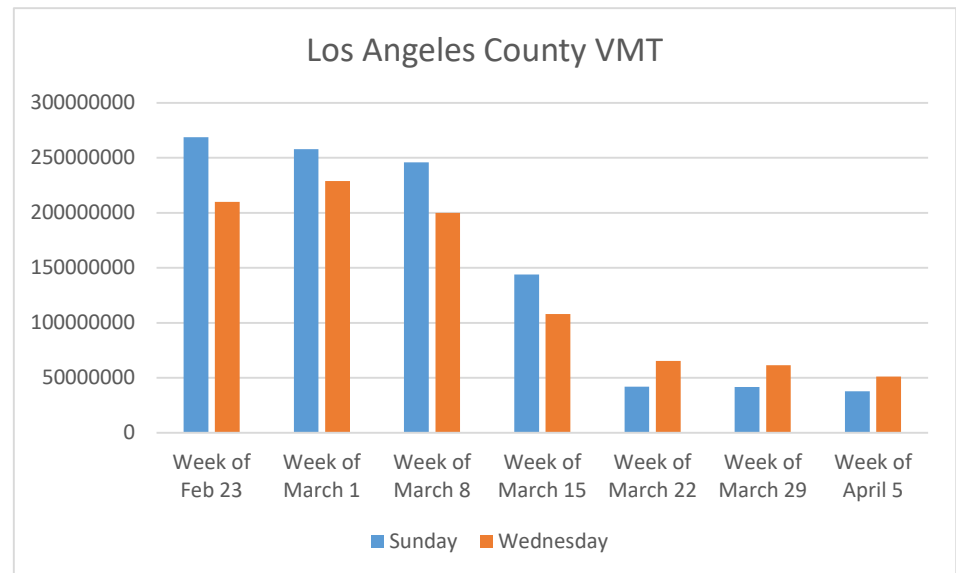
The impacts and effectiveness of the mandates are readily evident in the dramatic shifts in travel and internet usage. The graph below shows the dramatic decline in volume of vehicle miles traveled (VMT) following orders to shelter in place. Vehicle travel during the weekday (Wednesday) dropped as workers ei-

1 *http://publichealth.lacounty.gov/media/Coronavirus/*

2 *Governor Gavin Newsom, State of California, "Executive Order N-33-20," March 4, 2020; Mayor Eric Garcetti, Los Angeles City, "Public Order Under City of Los Angeles Emergency Authority," March 19, 2020.*

3 *Fernando Guerra & Brianne Gilbert, "COVID-19 Public Opinion Survey," Thomas and Dorothy Leavey Center for the Study of Los Angeles, Loyola Marymount University, April 20, 2020; Steven Shepard, Politico/Morning Consult Poll, "Poll: Don't stop social distancing if coronavirus will spread," April 15, 2020, https://www.politico.com/news/2020/04/15/poll-dont-stop-social-distancing-coronavirus-spread-187290.*

ther lost their jobs or started working from home. The decline during the weekend is evident in the VMT for Sunday, which normally included a higher proportion for non-work purposes such as shopping, engaging in physical-fitness activities, going out for entertainment, and socializing with friends and family. Physical interactions outside the home and beyond the immediate neighborhood have evaporated as most people restricted travel and outdoor activities to only essential and necessary tasks.

Source: StreetLight, COVID-19 VMT MONITOR https://www.streetlightdata.com/VMT-monitor-by-county/#emergency-map-response

The COVID-19 crises has also radically changed internet usage as workers started telecommuting, schools and colleges shifted to remote teaching, people tuned to online entertainment, and friends and families communicated via web-based meeting platforms. One clear sign of a dramatic alteration of the landscape of social and economic connections, there has been a sizeable drop in internet traffic along the pre-coronavirus job-rich employment corridor stretching from Downtown Los Angeles to Santa Monica, and a corresponding increase in residential areas.[4] Similar realignments have taken place throughout California, resulting in a significant net increase in internet traffic.[5] Shelter-in-place has had the intended effects in transforming where and how people spend their time, and more.

However, the ability to SIP safely and easily can vary across places, a product of structural inequality. Prior research has shown that existing spatial socioeconomic inequalities tend to be reproduced over time. We hypothesize this is occurring in terms of the relative burden of shelter-in-place during the coronavirus crisis. This hypothesis is rooted in the emerging field of stratification economics,[6] specifically on the subfield of how urban spatial structures produces and reproduces socioeconomic inequalities.[7] Systematic and systemic differences in the built environment, local resources, and demographic composition translate into variation in neighborhood variations in vulnerabilities. The communities most burdened are those with the greatest exposure to possible virus carriers, the highest stress levels associated with struggling to remain physically fit, and most challenges to fulfilling essential daily or weekly needs.

The empirical analyses for this technical brief are based on tract-level estimates of an index of the ability of Angelenos to adhere safely to shelter-in-place. The index enables us to classify communities by relative burden. We then examine whether socioeconomically disadvantaged neighborhoods (low-income and

4   Yevgeniy Sverdlik, "See How Internet Traffic Has Shifted in Big Metros During the Lockdown," https://www.datacenterknowledge.com/networks/see-how-internet-traffic-has-shifted-big-metros-during-lockdown.

5   Artur Bergman and Jana Iyengar, "How COVID-19 is affecting internet performance," April 8, 2020, https://www.fastly.com/blog/how-covid-19-is-affecting-internet-performance.

6   For a description see for example, John B. Davis, Stratification economics and identity economics, Cambridge Journal of Economics, Volume 39, Issue 5, September 2015, Pages 1215–1229.

7   For summary, see Ong, Paul M., and Silvia R. Gonzalez. Uneven Urbanscape: Spatial Structures and Ethnoracial Inequality. Cambridge University Press, 2019.

predominantly minority communities) are more adversely impacted. Finally, we assess their ability to remain connected to the outside world and travel when needed. The results confirm that over-burdened neighborhoods tend to be low-income with a disproportionately large number of people of color, and to suffer from a digital and transportation divide.

Data and Shelter-in-Place Burden Index (SIPBU)

Three variables are used to measure the relative difficulty (or ease) in complying with shelter-in-place (SIP). Neighborhoods are operationalized as census tracts. The first variable is the population density in an area. For the same level of neighborhood activity (exercising, local shopping, etc.), densely populated places increase the odds and frequency of encountering people, thus increasing the chances of encountering a COVID-19 carrier and decreasing the chances of maintaining social distancing. Both contribute to spreading the coronavirus. This measure is constructed using data from the 2014-18 American Community Survey (ACS).[8]

The second variable is the availability public-park space per person. Areas with more open space enables individuals to more easily keep physically and mentally fit through outdoor exercise. This measure is constructed with data from the ACS and the California Department of Parks and Recreation (DPR). Although the department has its own measure of park access, we calculate an alternative measure that accounts for open spaces adjacent to a tract rather than just the open spaces within a tract.[9]

The third variable is an estimate of the relative number of households without access to a nearby supermarket. Those who fall into this category face enormous barriers to fulfilling an essential shopping activity—that is, purchasing food. Proximity to a supermarket is based on data from the U.S. Department of Agriculture's (USDA) Food Access Research Atlas.[10] We calculate an alternative index to the one reported by USDA to focus on access to nearby stores.

The three measures are combined to produce an overall SIP burden index (SIPBI). We calculate a composite ranking because the three dimensions are not evenly nor normally distributed, and they are non-linear. All three components are skewed but to varying degrees, and have disparate coefficients of variance. Our method is to rank order each of the three dimensions into 233 categories (each containing roughly 10 tracts), and then sum the three ranks for each tract. The median and mean of the composite index are 348 and 348, with a 5th to 95th percentile range of 200 to 517. Higher value denotes greater total burden.

The project's analytical component examines how variations in the SIPBI correlate with socioeconomic characteristics. Our focus is on whether burden is higher in disadvantaged communities (low-income tracts, predominantly minority tracts, and tracts with a relatively large number of immigrants).[11]

Despite these data limitations, the SIPBI is the best measure available at this time. Moreover, the data are sufficient for first-order approximation and statistical analyses. For this brief, it is more useful to consider the relative ranking of neighborhoods by the burdens and barriers residents face while sheltering in place. The estimate rate may be not be very precise and may have a bias, but the relative ranking in large quantiles is reasonable. Overall, the analysis finds systematic disparities in burden along economic, ethnoracial, and other demographic lines, and that the burden is correlated with the ability to remain connected to the places and people outside ones immediate location.

8 *See previous briefs on details about the nature and limitations of the American Community Survey.*

9 *The data set from the Department of Parks and Recreation also has other limitations, such as not including public golf courses. Hopefully, these limitations can be addressed in the future if there are more resources and time.*

10 *We use the variable "lapophalf," which refers to the "Population count beyond 1/2 mile from supermarket."*

11 *We use bivariate and multi-variate analyses to test for statistical significance.*

Neighborhood Variation

The map below covers the urbanized core and displays the relative burden of sheltering in place.[12] The green areas represent neighborhoods that have a lower burden than average, with the darker shade denoting the least. The red areas represent neighborhoods with above-average burden, with the darker shade denoting the most. The latter are tracts where residents face disproportionate challenges in terms maintaining social distance, exercising in public parks, and shopping for groceries. On the other hand, residents at the other end of the burden spectrum face far fewer barriers.
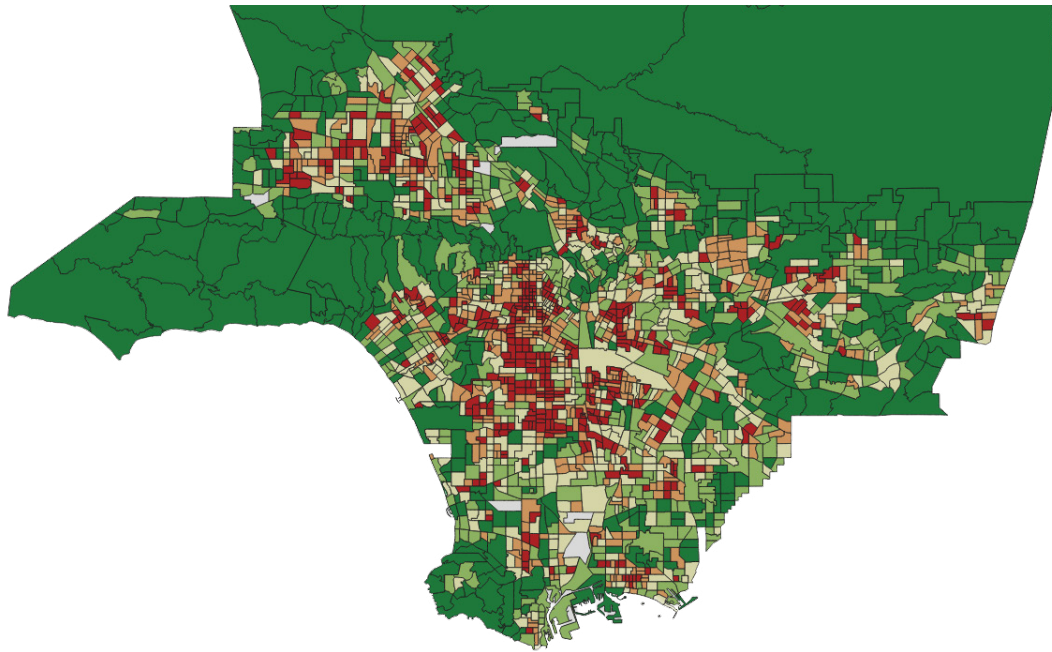
12 *The uncolored areas include both those with average SIPBI values and a few tracts without sufficient data.*

13 *These are unweighted means of the variables.*

14 *We acknowledge and are grateful to the California Air Resources Board for providing unpublished data used to construct the "reliable vehicles per person" statistic.*

The systematic and systemic variations among neighborhoods can be seen in the following table.[13] Places with the greatest burden are poorer than the least burdened. The average household income for the tracts with the highest SIPBI values is less than half of that for the tracts with the lowest SIPBI values. The most advantaged places have fewer Latinos and more non-Hispanic whites than the least advantaged locations. There are also systematic differences in the ability to connect beyond the immediate area. The most burdened neighborhoods have a disproportionately higher number of households without broadband internet connection and have fewer vehicles and fewer reliable vehicles (those less than two decades old) per person.[14]

	Lowest Burden	Second Lowest	Average Burden	Second Highest	Highest Burden
Density Rank (higher=worse)	44	95	119	153	175
Park-availability Rank (lower=worse)	194	148	112	79	43
Food-access Rank (higher=worse)	135	111	110	98	124
Shelter-in-Place Burden Index (higher=worse)	217	290	349	404	487
Average Income (x1,000)	$100	$75	$65	$56	$51
Percent White	44%	30%	24%	21%	15%
Percent Asian American	17%	16%	14%	13%	11%
Percent Black	5%	7%	9%	9%	11%
Percent Hispanic	29%	44%	51%	55%	61%
Percent Immigrant	27%	32%	34%	38%	41%
Vehicle per person	0.71	0.63	0.58	0.53	0.51
Reliable vehicle per person	0.65	0.57	0.53	0.49	0.46
Percent without broadband	22%	28%	33%	36%	39%

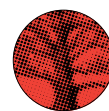## Implications for Policy and Implementation

The findings from the analyses show that low-income and minority neighborhoods have higher SIP burdens than other places. This inequality generates enormous strain on the residents as they struggle to stay safe and healthy. Many of these neighborhoods are also under economic stress from job losses, have fewer resources to weather the COVID-19 crisis, and are less able to qualify for financial relief, as documented in previous briefs. This triple jeopardy harms families already in a precarious financial situation and greatly weakens the economic and social base of neighborhoods. These places have the least resources to weather the COVID-19 crisis.

The solution is formulating and implementing interventions to address the inequality among neighborhoods rather than abandoning shelter-in-place, which is absolutely necessary. The findings should help the state of California, local jurisdictions, foundations, and community organizations more effectively identify places experiencing the greatest burden and target their efforts to assist the communities in most need during the coronavirus crisis. Later, the information can inform the development of more effective, equitable, and targeted plans and programs for social and economic recovery. One of the limitations of the above analyses is that the findings only identify the neighborhoods with the greatest burden under sheltering in place. It is critically important to continually monitor developments, and when possible, analyze direct measurements of how the burden adversely impacts health and other outcomes. Such information is vital to a fair and equitable response to the COVID-19 crisis. ▪

For additional information on the neighborhood economic impacts of COVID-19, see:

Paul Ong, Chhandara Pech, Silvia Gonzalez and Carla Vasquez-Noriega. "Implications of Covid-19 on At-Risk Workers by Neighborhood in Los Angeles." April 1, 2020. Accessible at: https://latino.ucla.edu/wp-content/uploads/2020/04/LPPI-Implications-from-COVID-19-res-3.pdf

Paul Ong, Chhandara Pech, Silvia Gonzalez, Sonja Diaz, Jonathan Ong, and Elena Ong. "Left Behind During a Global Pandemic: An Analysis of Los Angeles County Neighborhoods at Risk of Not Receiving Covid-19 Individual Rebates Under the CARES Act." April 13, 2020. Accessible at: https://latino.ucla.edu/wp-content/uploads/2020/04/LPPI-CNK-Brief-2-with-added-notes-res.pdf