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E-commerce is Reshaping the Warehousing Landscape – and it May Impact Disadvantaged Communities

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Issue

Prior to the last decade, the logistics industry trended towards the development of mega-warehouse facilities in suburban settings far from core markets, creating a phenomenon known as logistics sprawl. This trend is particularly prominent in Southern California (Figure 1). Since the 2008-2009 economic crisis, however, the trend has shifted. The rise of e-commerce may have influenced supply chain decisions to locate warehouses and distribution centers closer to denser urban areas to enable faster deliveries to consumers. The changes in size and spatial distribution of warehouses and distribution centers as well as the environmental and equity implications of these changes are not fully understood. As warehouses and distribution centers locate in denser urban areas, they may introduce additional diesel truck traffic into disadvantaged and low-income communities.

To gain a better understanding of how the spatial distribution and size of freight facilities are changing and the implications of these changes for disadvantaged and low-income communities, researchers at the University of California, Davis analyzed aggregate data about the number of warehouses and distribution centers and disaggregate real estate data

of purchases and leases during the last three decades in California. They also analyzed the relationship between freight facilities and communities of concern using the California Environmental Protection Agency's CalEnviroScreen 3.0 tool. The research focused on the San Diego, Los Angeles, San Francisco, San Joaquin Valley, and Sacramento regions. Key findings from the research are presented in this brief.

Key Research Findings

Trends show smaller, more numerous warehouses and distribution centers located closer to densely populated downtown areas. This trend can be seen in real estate data of sold and leased properties (Figure 2). While a causal link cannot be drawn from this data alone, this trend is consistent with the higher frequencies of smaller shipments characteristic of e-commerce logistics.

The trend of more and smaller warehouses and distribution centers will result in more freight traffic, even if the amount of cargo remains constant. This deconsolidation effect has serious implications for the communities in which these facilities locate. The communities will experience a disproportionate

number of truck trips along with the resulting emissions and congestion.

There is a positive correlation between the number of warehouses and distribution centers in a zip code and environmental hazards in that same zip code. Areas impacted by hazardous waste facilities, groundwater threats, high levels of particulate matter, and other environmental hazards are likely to be dis-

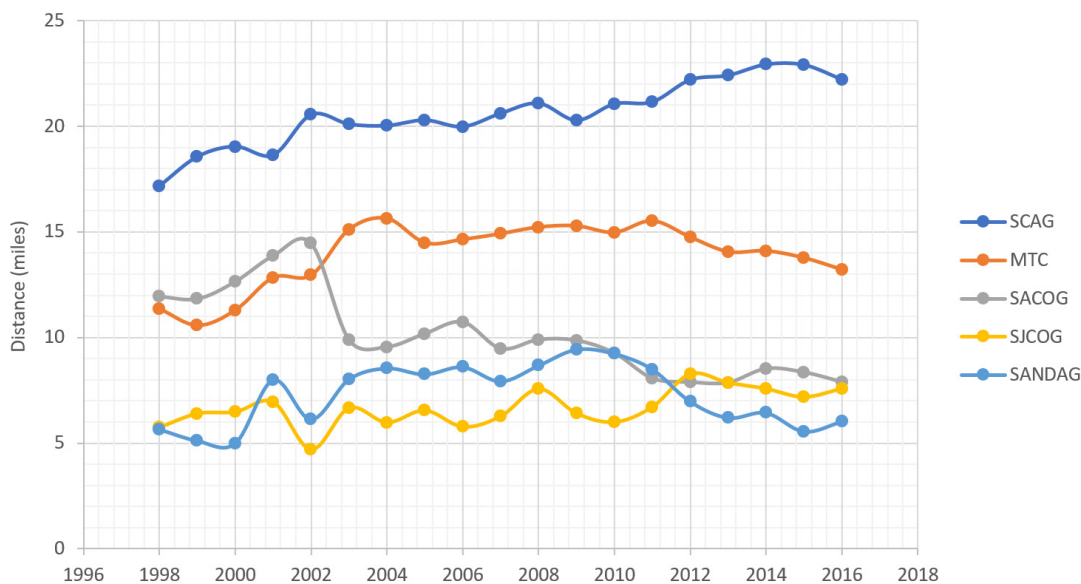


Figure 1. The changes in distance between the average location of warehouses and distribution centers and downtown areas from 1998-2016 in California's five-largest regions, or metropolitan planning organizations: Sacramento (SACOG), Los Angeles (SCAG), San Francisco (MTC), San Joaquin Valley (SJCOG), and San Diego (SANDAG).

advantaged communities as defined by the California Environmental Protection Agency. These communities are also more likely to attract warehouses and distribution centers, possibly because of lower land values, among other factors. It is unclear whether warehouse facilities are the cause of these environmental impacts.

Policy Implications

Based on the trends observed in this study, it appears that disadvantaged communities are likely to be increasingly impacted by warehouses and distribution centers and their associated emissions and congestion. While newer and cleaner vehicle technologies can mitigate some of the impacts, increased traffic will still cause congestion and accessibility problems. Regional and local governments should consider land use, building, and air quality strategies to mitigate these impacts. There is also a need for trip generation and traffic impact studies for these facilities to better understand the different levels of traffic intensity and impacts on the surrounding communities.

More Information

This policy brief is drawn from the report “E-commerce, Warehousing and Distribution Facilities in California: A Dynamic Landscape and the Impacts on Disadvantaged Communities” authored by Miguel Jaller, Xiaodong Qian, and Xiuli Zhang of the University of California, Davis. The report can be found here: <http://www.ucits.org/research-project/the-influence-of-e-commerce-on-where-warehousing-and-distribution-facilities-locate-and-implications-for-disadvantaged-communities/>.

For more information about the findings in this brief, please contact Miguel Jaller at mjaller@ucdavis.edu.

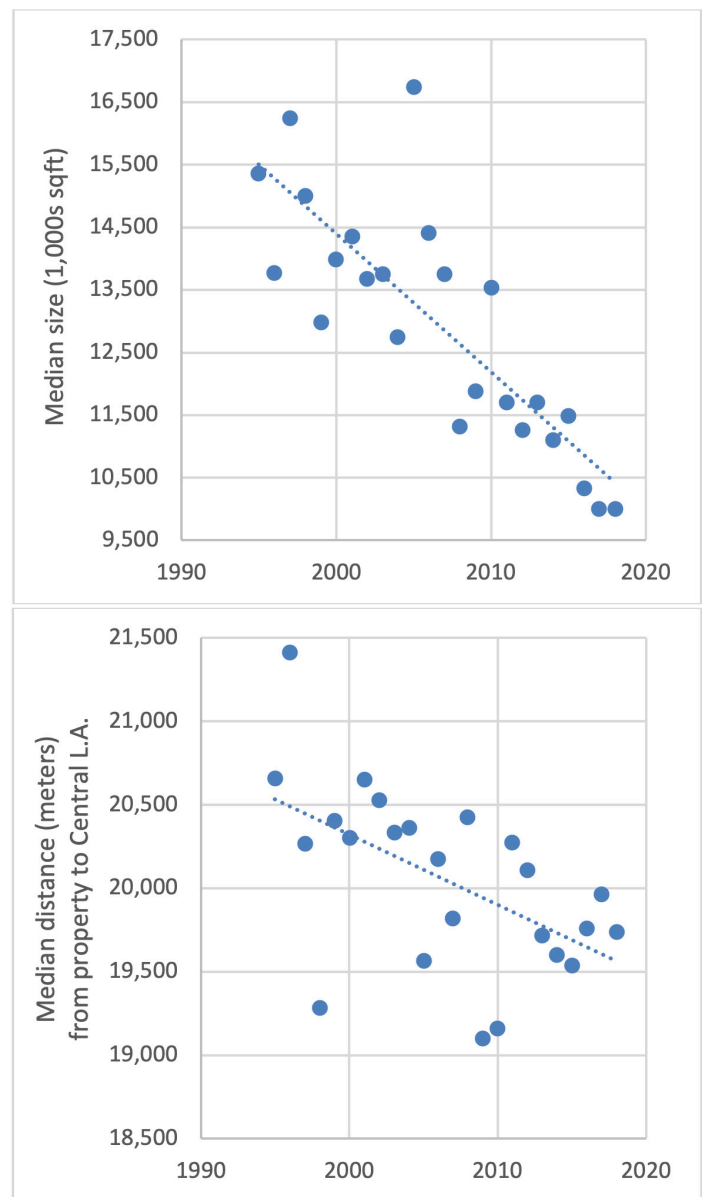


Figure 2. Median size of warehouses and distribution centers sold in the Los Angeles market (top), and median distance of properties to central Los Angeles (bottom), 1990-2020.

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