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Land-use regulations are a primary ways in which state and local governments influence the urban landscape, affecting where people live, how much they commute and the impact they have on the environment. This research project examined two questions related to a specific way by which land use regulation in the U.S. affect individuals. First, do individuals spend more time commuting in locations with strict land use regulation, and second, does the correlation between land use regulation and commuting times vary with demographics? The research grant resulted in a working paper that was presented by one of the co-PIs at the peer-reviewed Humanitarian Technology: Science, System and Global Impact 2015 conference and published in a journal as part of the conference proceedings.¹

This research agenda is highly relevant to policy. In previous work, Ganong and Shoag (2013) found that restrictive land use policies raised housing prices and depressed migration in some areas, particularly after 1980. One potential channel for these effects is that restrictive land use policies force workers to reside farther from work, increasing the cost of commuting and lowering the attraction of the high-wage locations. Our work as part of this grant provides direct evidence on this question by studying the relationship between commuting patterns from the Census and land use policies extending back several decades. Moreover, our work speaks to distributional concerns over land-use regulations by examining the impact of regulation on the commuting patterns of different demographic groups. To our knowledge, our work is the first to analyze the intensity of land-use regulation and commuting times for a large, nationally-representative dataset.

We focus our empirical analysis on a summary statistic that reflects the combined home and work choices made by individuals: the average amount of time a person reports spending commuting. Our data is drawn from decennial U.S. Census surveys from 1980 to 2010 and reports commuting time, in addition to detailed demographic information for over 19 million workers. We match this data with a unique measure of the stringency of land-use regulation developed by one of the co-PIs in Ganong and Shoag (2013) based on the number of state appellate court cases related to “land use.”

¹ Daniel Shoag, Erich Muehlegger, Commuting Times and Land Use Regulations, *Procedia Engineering*, Volume 107, 2015, Pages 488-493, ISSN 1877-7058, <http://dx.doi.org/10.1016/j.proeng.2015.06.108>.

We analyze the data using a linear regression model predicting reported commuting time with our measure of land-use regulatory stringency and demographic controls. On average, commute time is greater for the wealthy, the highly educated (individuals with a Bachelor's degree), as well as for minorities. Furthermore, we find commuting times increase more quickly in states adopting more stringent land-use regulations. To quantify the distributional impacts of land-use regulation, we further interact our land-use regulation variable with our demographic variables. We interpret the coefficients on the interaction terms as the incremental impact of land-use regulation on each demographic group. We find that the workers most affected by stringent land-use regulations are high income, highly educated workers, suggesting that the burden of land-use regulations falls more on these groups rather than low income, less well-educated or minority workers.

As a final consideration, we look at one way in which cities may be able to temper negative consequences of land use regulation. To do this, we collect information about the existence and extent of public transit systems in each metropolitan area in the United States. Then, we compare locations with and without public transit systems under the hypothesis that public transit may provide one way to mitigate the traffic consequences of stringent land-use policies. We find that locations with subways tend to have higher commuting times on average, reflecting the endogeneity of which cities choose to build mass-transit systems. Furthermore, even after controlling for the presence of a subway, we continue to find that land use regulation is also associated with longer commuting times. The presence of a subway attenuates the relationship between commutes and land-use regulation – the magnitude of the relationship between more stringent land-use regulation and commuting times decreases by two-thirds after the introduction of the subway.

To summarize the contribution of the paper to the broader research agenda, the project represents the first analysis of its kind for land use regulations. Focusing on the amount of time spent commuting, we find that land-use regulations are associated with increases in commuting times and that the burden of increased commuting times is most heavily borne by more educated and wealthier individuals. Although commuting times are only one dimension on which the costs and benefits of land-use regulation may be distributed, this work takes a first step in understanding the regressivity of policies designed to influence the urban environment.