

RESEARCH BRIEF • JULY 2023

# Remote Work and City Structure

*Based on BFI Working Paper No. 2023-98, "[Remote Work and City Structure](#)," by Ferdinando Monte, Georgetown University; Charly Porcher, Georgetown University; and Esteban Rossi-Hansberg, University of Chicago*

*US cell-phone-based mobility data reveal that central business trips in large cities have stabilized at about 60% of pre-pandemic levels, with smaller cities returning to pre-pandemic levels. For 274 US cities that stabilized at a large fraction of remote work, welfare losses average 2.7%.*

Work-from-home (WFH) was only a marginal phenomenon a few years ago, but since the COVID-19 pandemic—and aided by advances in information and communication technologies—WFH is now widespread in cities around the world. In the United States, commuting has declined by half in many large cities and seems to have stabilized at those low levels. In contrast, commuting in small US cities has gone fully back to pre-pandemic levels. What accounts for this large shift to work from home in large cities? Why is the change not uniform across all US cities? Importantly, what are the welfare consequences of these seemingly permanent shifts in commuting and agglomeration patterns?

At the core of the author’s view is the idea that the value of working in central business districts (CBDs), or engaging in “office work,” depends on the presence of other workers. If many workers commute to the CBD to work, the value of commuting is enhanced through interactions with coworkers, but also across businesses, and more generally with other workers at city centers. If few people commute, the value of commuting decreases, and workers might prefer to stay at home, thereby saving on commuting costs.

Since workers do not internalize many of the benefits they convey to others, this alternative possibility leads to a new coordination problem: Workers prefer to work in the CBD only if others do, but otherwise prefer to WFH. In a dynamic economy, where workers face idiosyncratic preferences for remote work (e.g., having a baby or remodeling), and fixed costs from switching between labor delivery modes (e.g., setting up a home office or buying a car), this mechanism can lead to multiple stationary equilibria (or outcomes) with different permanent shares of commuters.

When big and abrupt changes happen like the COVID-19 pandemic, with its lockdowns and self-isolation, cities where this coordination problem is severe and exhibit multiple stationary equilibria (and only these cities) will get stuck in a stationary equilibrium with little commuting.

Hence, for many US cities, the authors postulate that this one-time temporary change has permanently altered one of the most enduring characteristics of human organization: work at city centers.

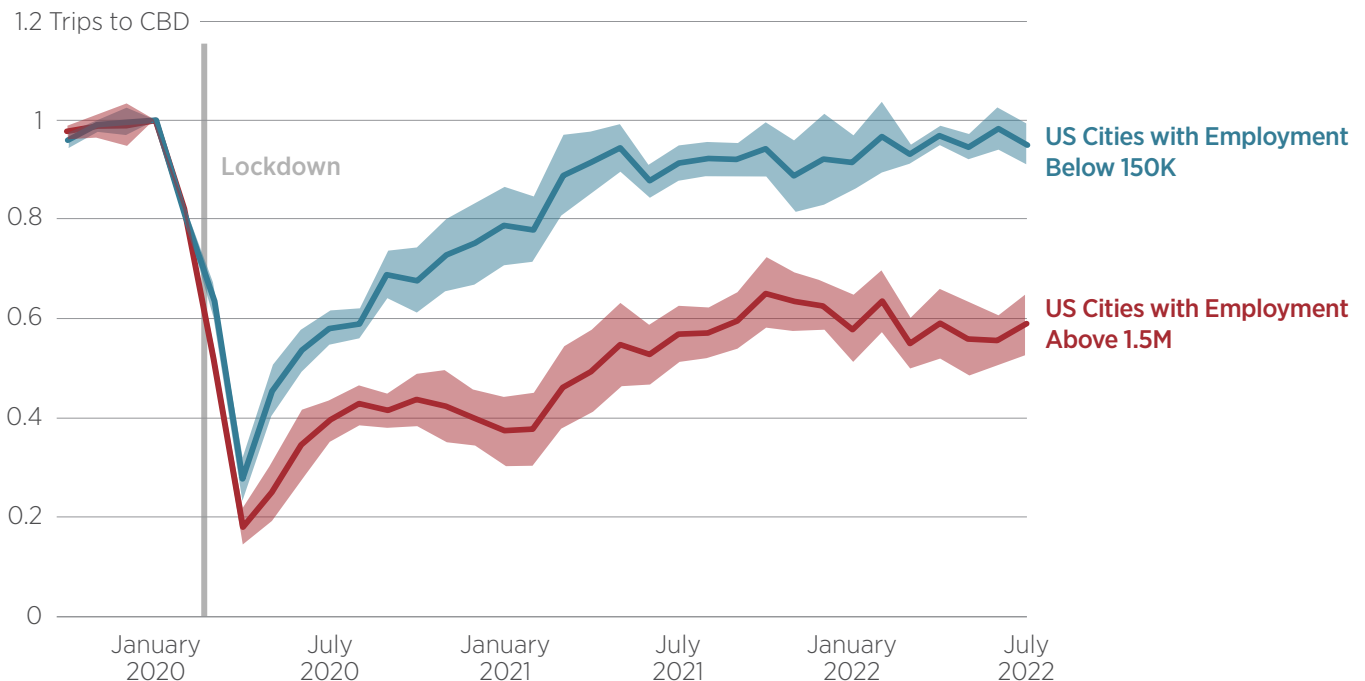
Of course, not all cities are equal. Some cities specialize in industries where interactions between workers lead to large spillovers and correspondingly large populations, while others specialize in industries with low spillovers and are relatively small. Commuting costs can also vary, WFH ability varies by occupation, and those occupations often concentrate in certain spaces/cities.

All these characteristics, which are captured in the authors' theory, determine the extent to which the coordination problem leads to multiplicity in stationary equilibria. The authors characterize these conditions to prove that the intensity of the coordination problems and, therefore, the likelihood of multiple stationary equilibria increases with the strength of agglomeration forces minus that of congestion forces, and in the relative productivity of remote work to office work. In other words, the value of working together minus the cost of working together, along with how productive workers are at home or office, leads to multiple outcomes. Only the cities that have these features, in general large cities in the US, will remain in a situation where many people work from home. Other cities will naturally get back to their pre-pandemic shares of commuters.

The authors find the following:

- Many large US cities, based on an analysis of 274 cities, have switched from a stationary equilibrium where most workers commuted to one with a large share of WFH. In New York, for example, the pandemic reduced the number of trips to the CBD by more than 80%; post-pandemic, commuting trips have stabilized at about 40% of the pre-pandemic level. San Francisco, CA, shows a similar pattern.
- Small cities, in contrast, have converged back to the pre-pandemic stationary equilibrium. San Diego, CA, or Madison, WI, experienced a drop in the pandemic as large as New York, but they have recovered fully to pre-pandemic levels.
- Broadly, the largest US cities, with above 1.5 million workers, experienced a drop of 80% in trips to the CBD during the pandemic but now have stabilized at 60% of pre-pandemic levels. In contrast, cities with fewer than 150 thousand workers, which experienced a comparable drop in CBD trips during the pandemic, have now returned, on average, to pre-pandemic commuting levels.

**Figure 1 • Visits to Central Business Districts (CBDs) Relative to January 2020**



Note: This figure reports the estimates of the average volume of visits to the CBD from block groups located in i) CBSAs with total employment above 1.5 million (25 largest CBSAs), ii) CBSAs with total employment below 150,000 (663 smallest CBSAs) expressed as a share of their values in January 2020. The shaded areas represent the contour delimited by the consecutive 95% confidence intervals of each monthly indicator. Standard errors are clustered by month and census region.

- Regarding housing, other studies have found that prices at the CBD declined relative to prices further away from the city, a natural consequence of WFH as proximity to work provides less value. This work reveals something new: Using Zillow zip code-level data, the authors show that rents have continued to flatten in the largest cities, but this trend has reversed and disappeared in smaller ones.
- Welfare losses follow this pattern too, with smaller cities experiencing no long-run welfare effects, and with larger cities, or those with a permanent shift to the WFH intensive stationary equilibrium, experiencing welfare losses between 1.7% to 3.2%. For example, such costs are slightly larger than 2.5% for New York and San Francisco, less than 2% for Phoenix, and around 3% for Los Angeles and San Jose.
- In particular, the welfare loss of the average resident in cities with trips to the CBD of 60% or less of the pre-pandemic level is 2.7%. While modest, this cost results from a large drop in wages compensated by substantial utility gains that workers receive from trading off work and home time (option values), and lower commuting costs.

**Bottom line:** Office work, the primary mode of labor in CBDs, has radically transformed since the COVID-19 pandemic, with likely long-term repercussions that will transform the organization of work in cities, firms, and labor markets. This work contributes to our understanding of WFH, and offers an agenda for further research to help us understand and accommodate the booming phenomenon of remote work, both in the workplace and in central business districts.

#### READ THE WORKING PAPER

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