COVID, Work-from-Home, and Changes in the Organization of Cities

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COVID and WFH

The COVID pandemic led to a change in work practices that is likely to be with us going forward.

In the US, around 15% of employees worked from home before the pandemic, but COVID raised this share to 45%.

People learned that WFH is not only feasible but preferable to office work in many cases.

COVID made WFH into a new, attractive style of work.

Effect on location choices

Under WFH, workers can reconsider their choice of residential locations.

With office-trip frequency reduced under WFH, annualized commuting costs would fall.

Makes suburban locations, where housing is cheaper, more attractive, spurring further decentralization of cities.

Raises demand for suburban housing, pushing up prices in suburbs.

Intercity relocation in response to WFH

A more dramatic type of relocation under WFH is moving *between*, not within, cities.

A worker can relocate to a cheaper city, while working remotely at original job.

Many US-media anecdotes of tech workers leaving expensive places like San Francisco for other cities, but keeping well-paid jobs via WFH.

Recruiting ads for national companies now often say that recruits can live anywhere.

Effects of intercity relocation

Implication is that populations should fall in expensive cities whose jobs have high WFH potential.

Puts downward pressure on housing prices and rents in these places.

Prediction is tested in my work with Matthew Kahn and Gary Lin (*American Economic Journal–Applied Economics*, forthcoming).

We also test for the predicted effects of intracity relocation, showing how WFH has affected city price gradients.

WFH's effect on price gradients

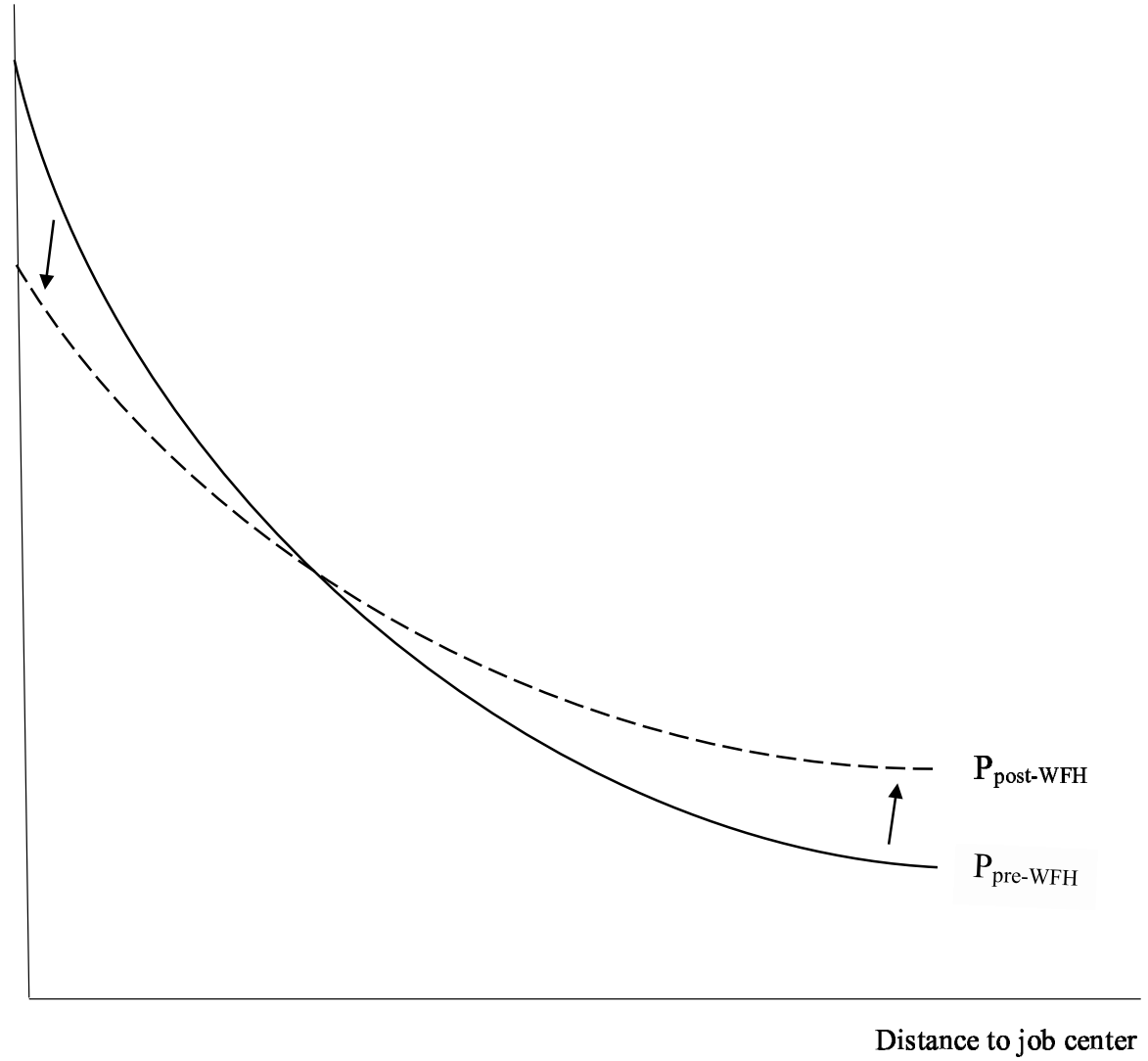
Urban economic models predict that price p per square foot of housing falls moving away from job center.

Compensates workers for suburban commuting costs.

As commuting costs drop under WFH, less compensation needed.

Implies smaller price "gradient."

Flattening of price gradient



Empirical results on price gradients

Use monthly Zillow house price data at the zip-code level.

Estimate log house-price gradients for each of 120 metro areas, doing so monthly over 2019-2020 period.

For example, NYC gradient changed from -0.269 to -0.242 between 12/2019 and 12/2020, flattening.

Empirical results on price gradients

Then compute WFH potential of jobs in metro area's central county, using data from Dingel and Neiman (2020).

Regress gradient values on WFHPOT and controls.

Find that monthly WFHPOT coefficient turns from zero before pandemic to positive in 2020, showing flattening of gradient in high-WFHPOT metro areas.

Intercity predictions

Prediction of house price declines in high WFHPOT cities, tested below, comes out of simple two-city model.

Jobs are more productive in city 1 than in city 2, and all jobs can be done remotely under WFH.

Key feature: city employment = city population before WFH, but employment and population can differ under WFH.

Pre-WFH, city 1 has higher population and higher housing prices than city 2, reflecting higher productivity.

Intercity predictions

Under WFH, some workers move from (expensive) city 1 to (cheap) city 2 while keeping original jobs.

Reduces (raises) city 1's (city 2's) housing prices.

City 1's employment then exceeds its population, reverse in city 2.

Workers must be indifferent to place of work under WFH, implying wage equalization across cities.

Wages then fall in city 1, rising in city 2.

Testing intercity predictions

Tests focus on predicted housing price and population changes in productive cities with high-WFHPOT jobs.

Analysis carried out at county level, again using Zillow house-price and rent data.

Use previous WFHPOT measure, along with US Postal Service address-change data to capture population changes.

County-level job productivity measured with index developed by Albouy (2016), denoted PROD.

Testing intercity predictions

Predicted effects should emerge in counties with both high productivity and high WFHPOT.

So key explanatory variable is the interaction PROD * WFHPOT, supplemented by controls (including levels).

First dependent variables are changes in yearly-average house prices and changes in rents between 2019 and 2020.

Coefficients of PROD * WFHPOT are significantly negative in the house-price and rent regressions, as predicted.

Testing intercity predictions

Regression using 2019-2020 USPS population change also has negative PROD * WFHPOT coefficient, as predicted.

Additional results confirm housing-price predictions using monthly event-study approach, as in gradient analysis.

Other models

A number of the other more-realistic WFH models exist.

But mostly focus on intracity effects of WFH.

Greater realism in current model comes from adding a second group of non-remote workers.

Paper with student shows that main predicted effects are same, so empirical tests still apply.

Future of WFH?

Hybrid WFH (in office 1-2 days a week) seems here to stay.

But unclear whether intercity WFH will persist in significant way (time will tell).

Pressure on firms from workers may give it staying power.

Loss of agglomeration effects?

Another big question is whether WFH significantly undermines agglomeration economies.

Employees say they're just as individually productive under WFH.

But they may not perceive loss of higher-level benefits from employment concentration.

Jury is still out on this issue.

Conclusion

Long after COVID has ceased to be a problem, its effects on the structure of work will be felt.

Pandemic forced WFH and made people realize its feasibility and benefits.

Effects are still unfolding as the economy evolves.