Zooming Ahead:
The Future of Work and Urban Real Estate

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Motivation: Covid Changed Urban Real Estate Markets

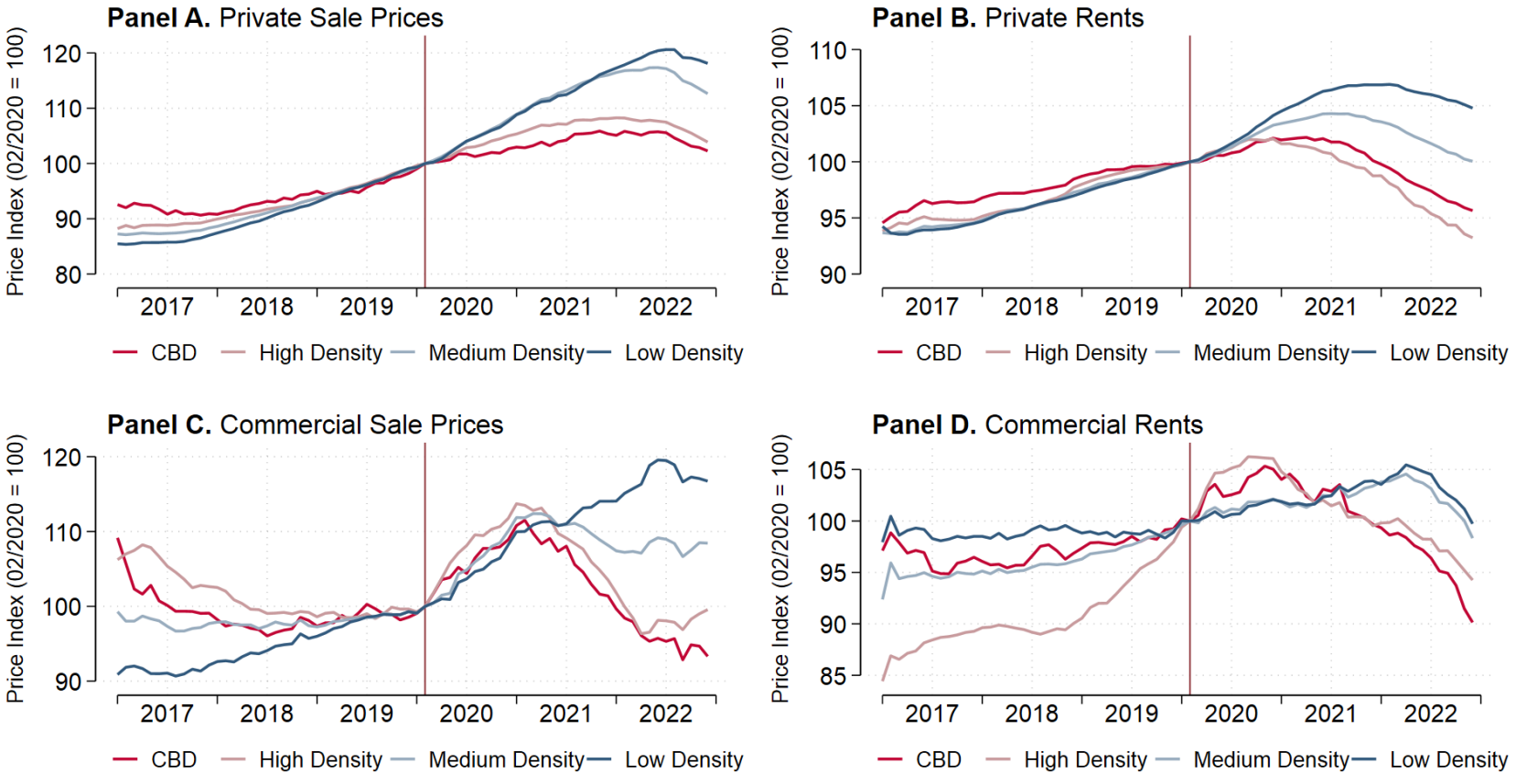


Figure 1: Donut Effect of Urban Real Estate Prices

Motivation: Pandemic Induced Permanent Increase in Working From Home

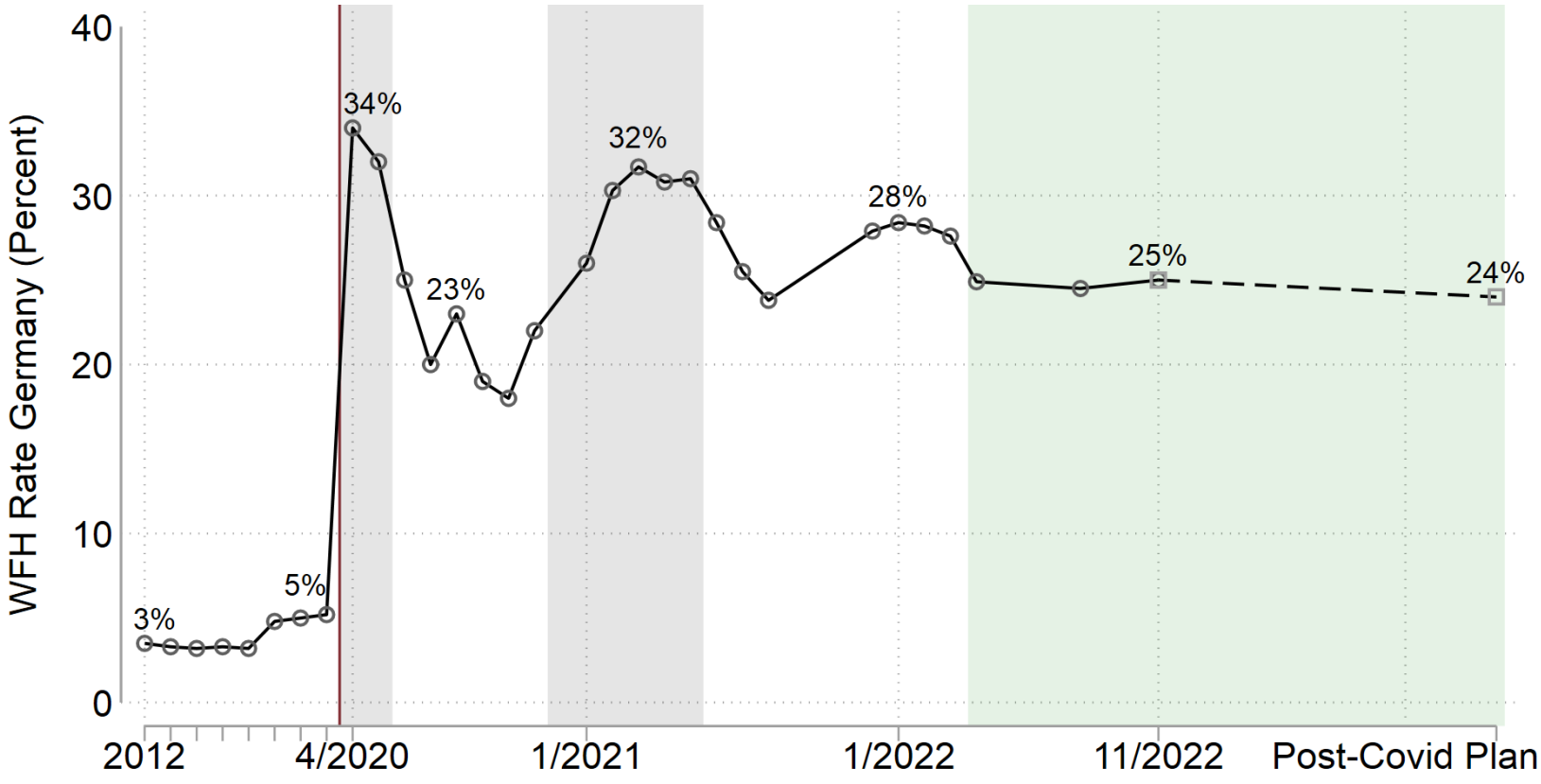
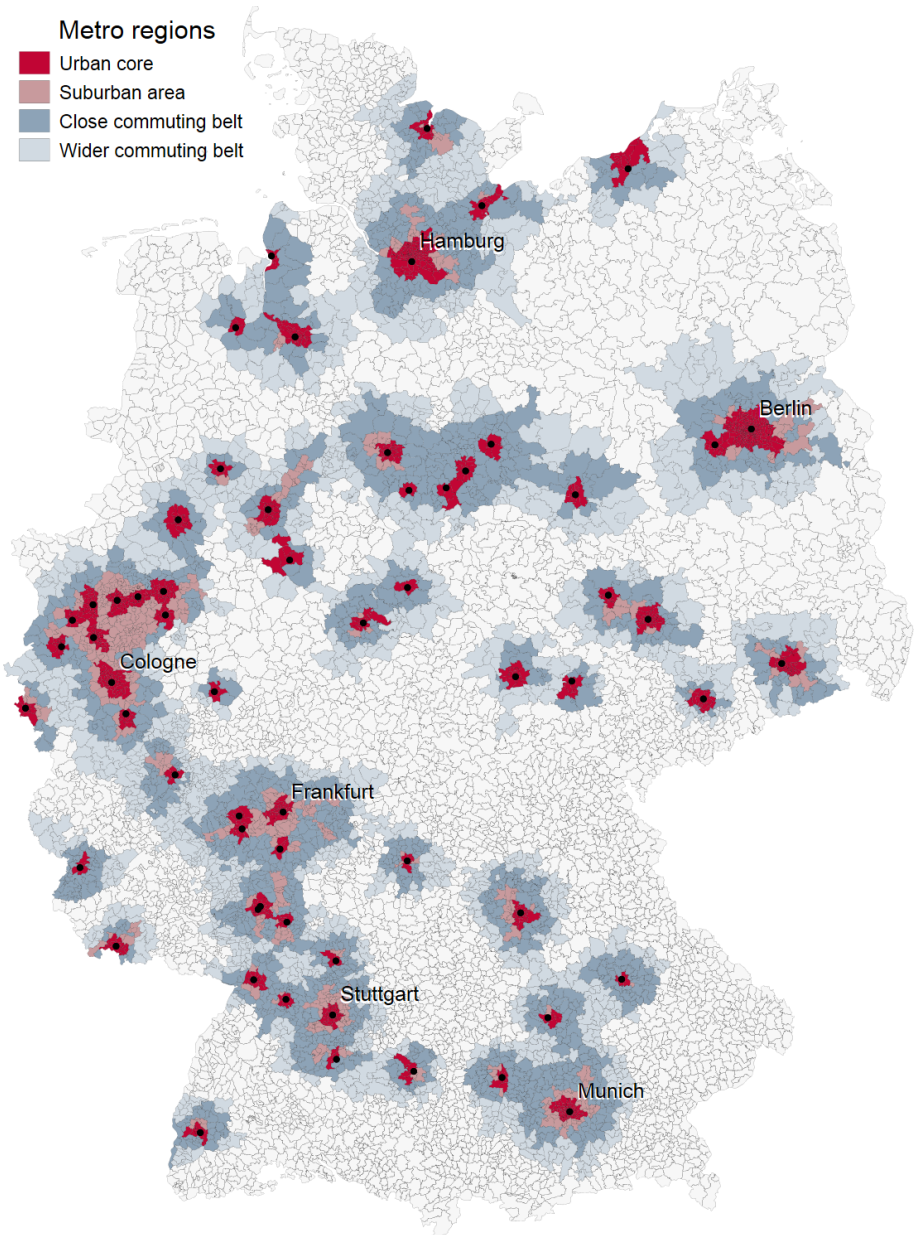


Figure 2: WFH Rate in Germany over Time, 2012–Post-Covid Future

This Paper: Future of Work and Urban Real Estate

- **RQ: What is the causal effect of WFH shock on urban real estate prices and rents?**
- **Data:** real estate prices and WFH in 50 German cities 2014–2022
- **Empirical strategy:** exploit spatial differences in exposure to the WFH shock induced by Covid pandemic
- **Main results:**
  - Decline in price premiums on population density and proximity to urban centers since pandemic
  - Declines largely explained by uptake in WFH
- **Contributions:**
  - Differences in WFH potential **within** metro regions (rich, granular data)
  - German market: 50 metro regions + private residential and commercial properties
  - Observation period covers post-pandemic economy

Setting & Data



- **4,500 postcode areas** in 50 German metro regions
- Near-universe of **real estate offers** 2014 – 2022 (FuB)
- **WFH potential** survey information based on residence and jobs (infas360)
- **Areas characteristics** (various data sources)

Descriptive Evidence

How did the price premium on proximity to urban center change over time?

$$y_{ct} = \sum_{k \neq Feb\_2020} [\pi^k \mathbb{1}(k = t) \times Log\_distance_c] + \alpha_c + \delta_{m(c)t} + \epsilon_{ct}, \tag{1}$$

- y_{ct}: Log avg. price/rent per sqm in postcode c in month t
- $\delta_{m(c)t}$: metro region $\times$ month-year FE, α_c: postcode FE

Descriptive Evidence: Decreasing premium on proximity to urban centers leads to flattening of urban property price gradient

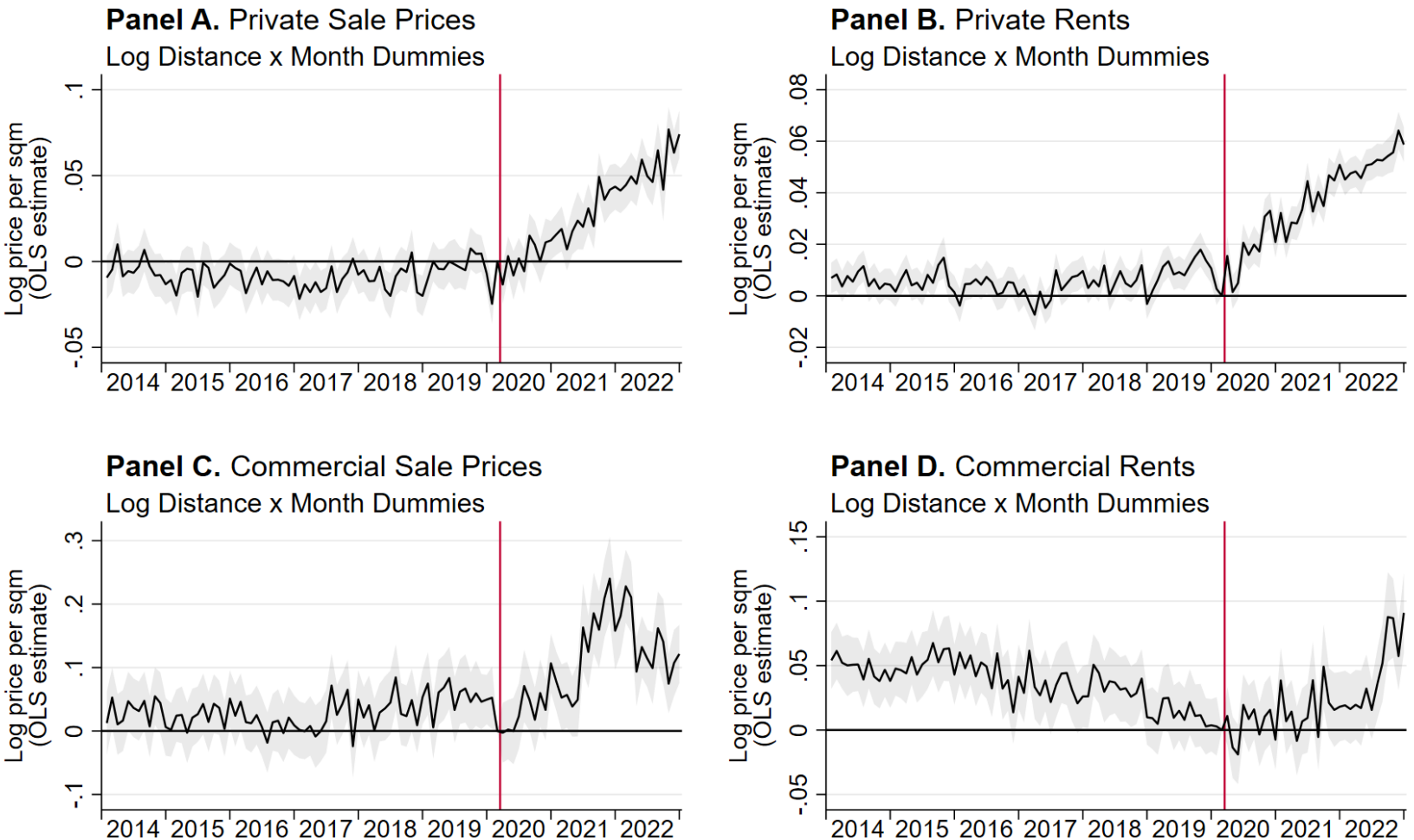


Figure 3: Changes in premium on proximity to urban center

Descriptive Evidence: Decrease in Premium on Population Density

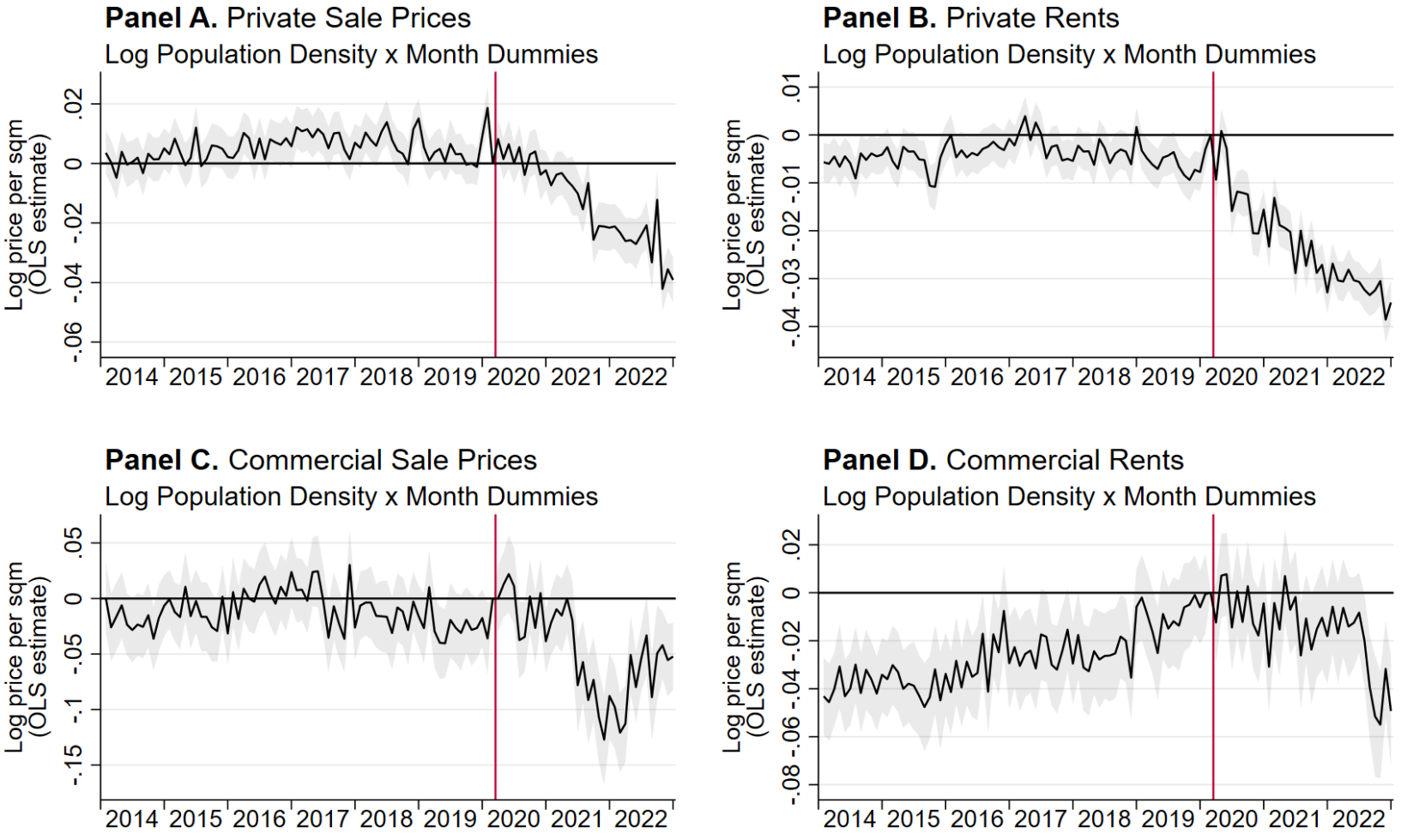


Figure 4: Changes in premium on density within metro regions

Descriptive Evidence: Heterogeneity Within Metro Areas

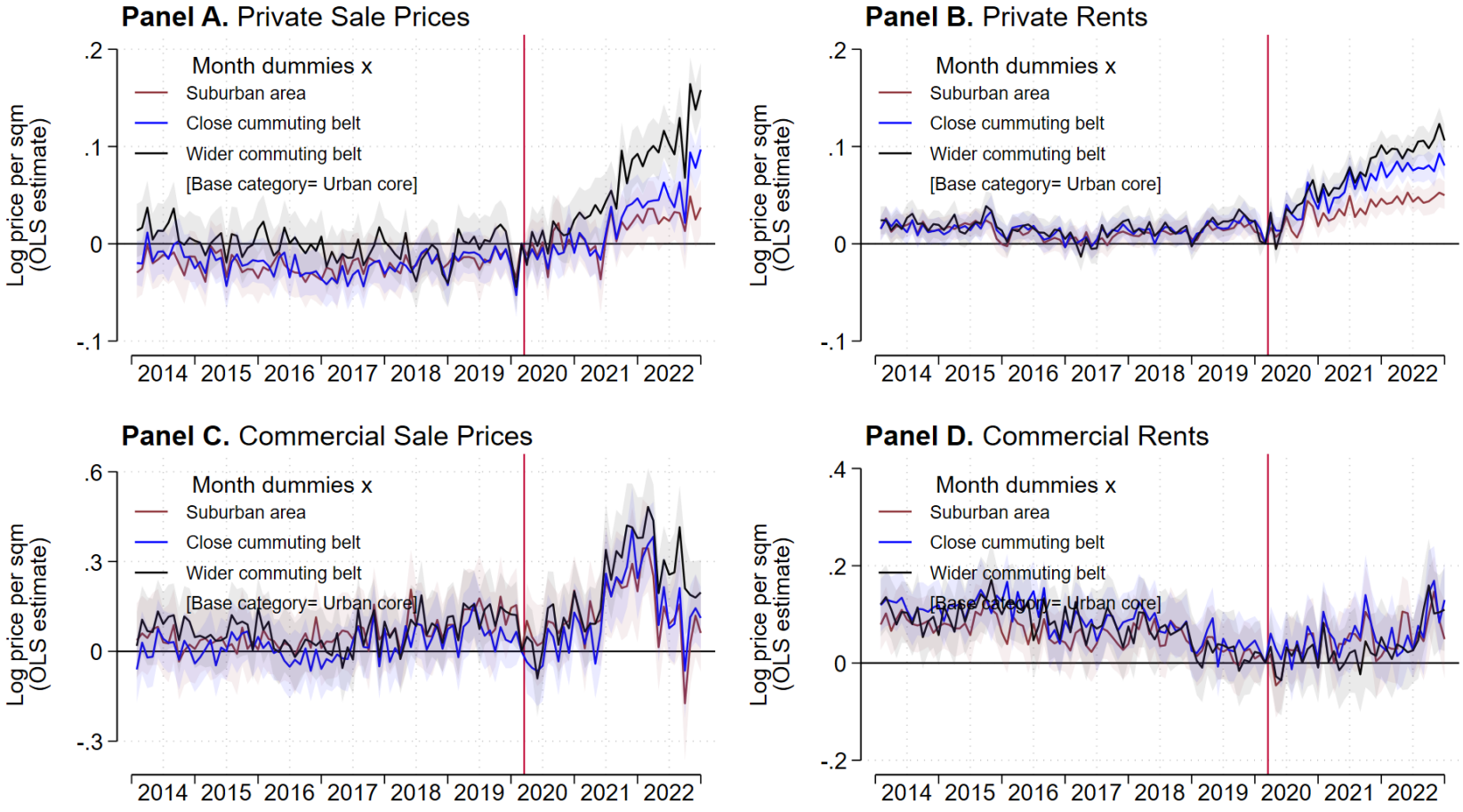


Figure 5: Changes in premium on urban categories within metro regions

Descriptive Evidence of Donut Effect:
Sale Price Changes in Berlin Metro Area

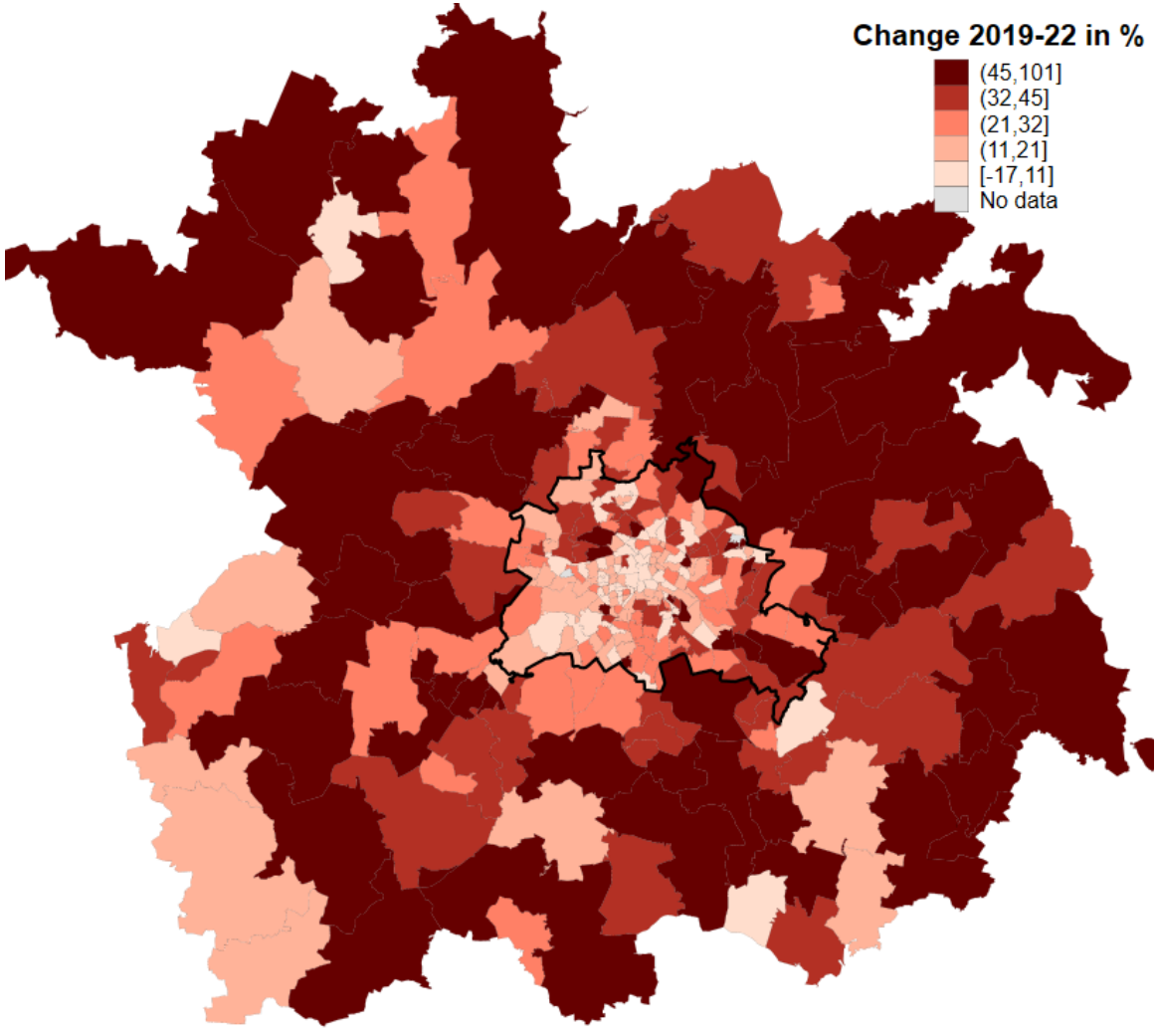


Figure 6: Changes in private property sale prices in Berlin Q4 2019 – Q4 2022

Spatial Distribution of Pre-Pandemic WFH Potential:

Higher WFH Potential in Urban Centers Than Periphery Before Covid

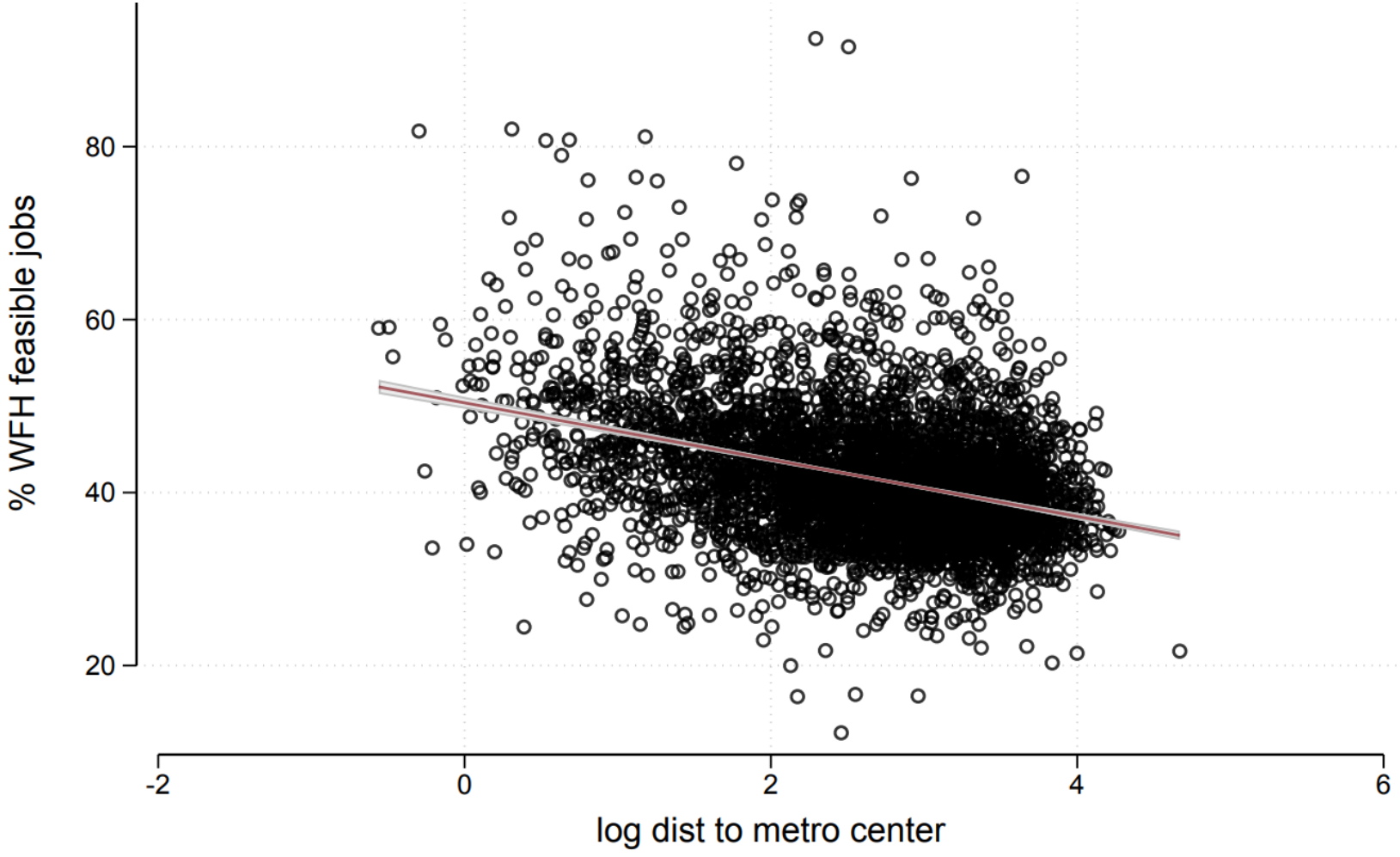


Figure 7: Correlation of WFH Potential and Distance to City Center

Theoretical Motivations

Simple framework

- Monocentric metro regions are differentiated by productivity/amenities
- WFH shock => high-earners can move into cheaper/ high-amenity areas without loosing their high-productivity job
- Moves *WITHIN* metro regions stronger if **partial** WFH shock

Implications

- Flattening of price/rent gradient within metro regions (**focus today**)
- Flattening of price/rent differential across high-low productivity metro regions

ID Strategy

Challenge: Can we disentangle WFH effect from other sources?

Idea: Estimate *changes* in prices in high versus low WFH potential postcode *within* metro regions, *clean* of trends across density and distance to metro center

$$y_{ct} = \sum_{k \neq Feb\_2020} [\beta^k \mathbb{1}(k = t) \times WFH\_Potential_c + \gamma^k \mathbb{1}(k = t) \times Log\_density_c + \pi^k \mathbb{1}(k = t) \times Log\_distance_c] + \alpha_c + \delta_{m(c)t} + \varepsilon_{ct}, \quad (2)$$

- $WFH\_Potential_c$: postcode-level WFH potential at **place of residence** (private housing) OR **workplace** (commercial real estate)
- $\delta_{m(c)t}$: metro region $\times$ month-year FE, α_c: postcode FE

Results: Price Decreases in Previously High WFH Potential Postcodes

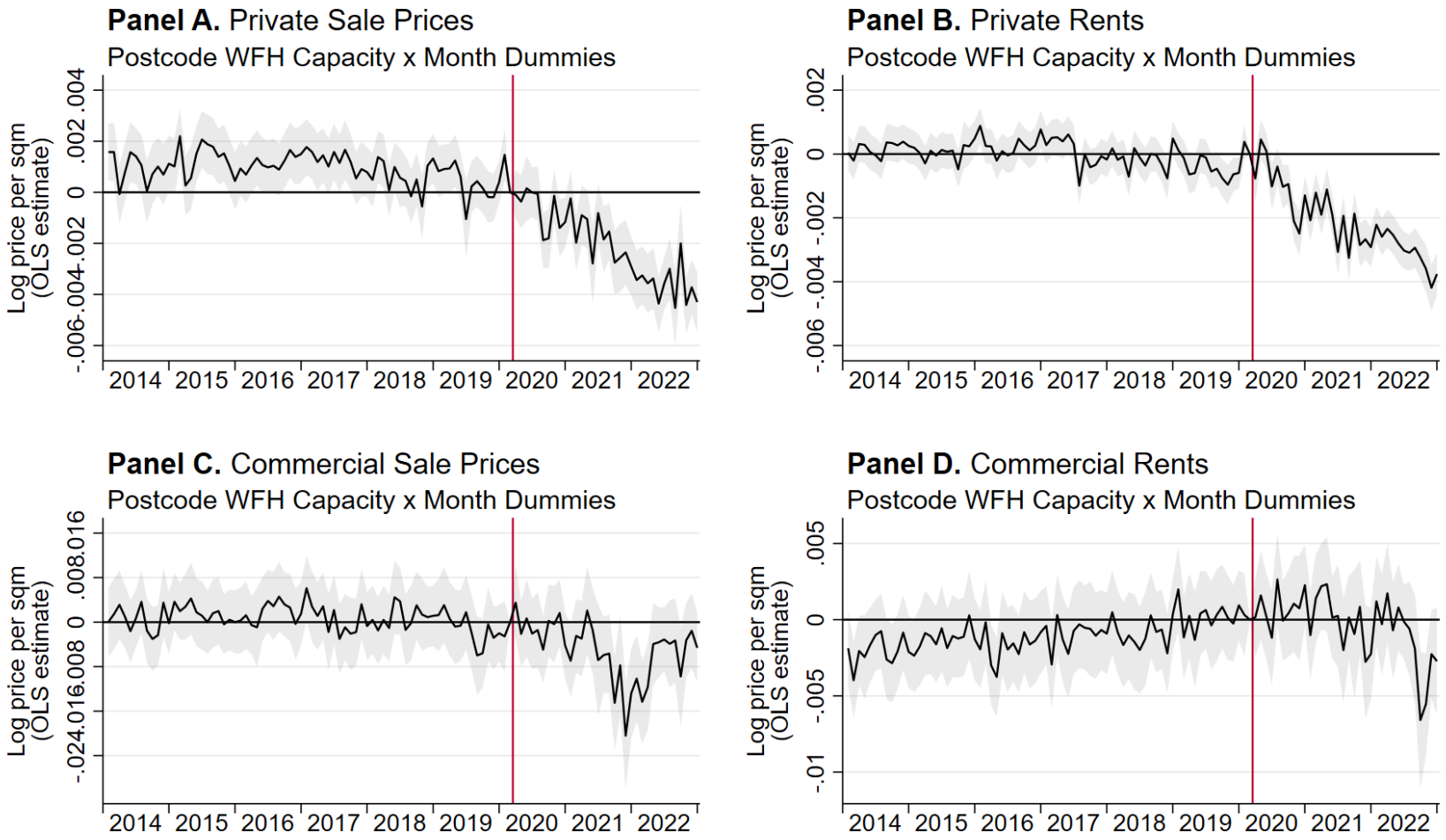


Figure 8: Price and Rent Changes Explained by WFH Potential

Results: WFH Potential Clean of Distance and Density Trends

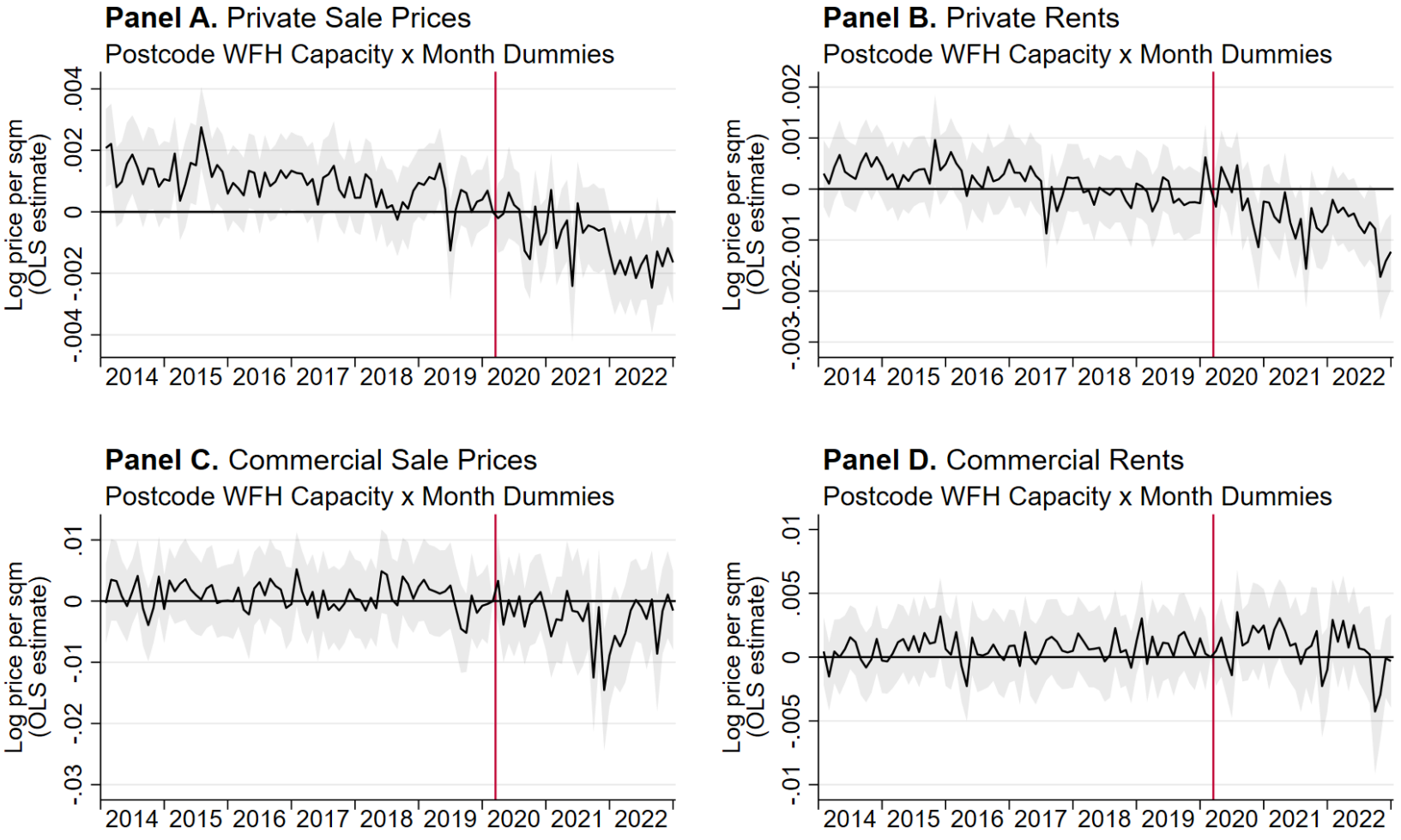


Figure 9: Price and Rent Changes Explained by WFH Potential

Urbanization Trend Broken Since Covid

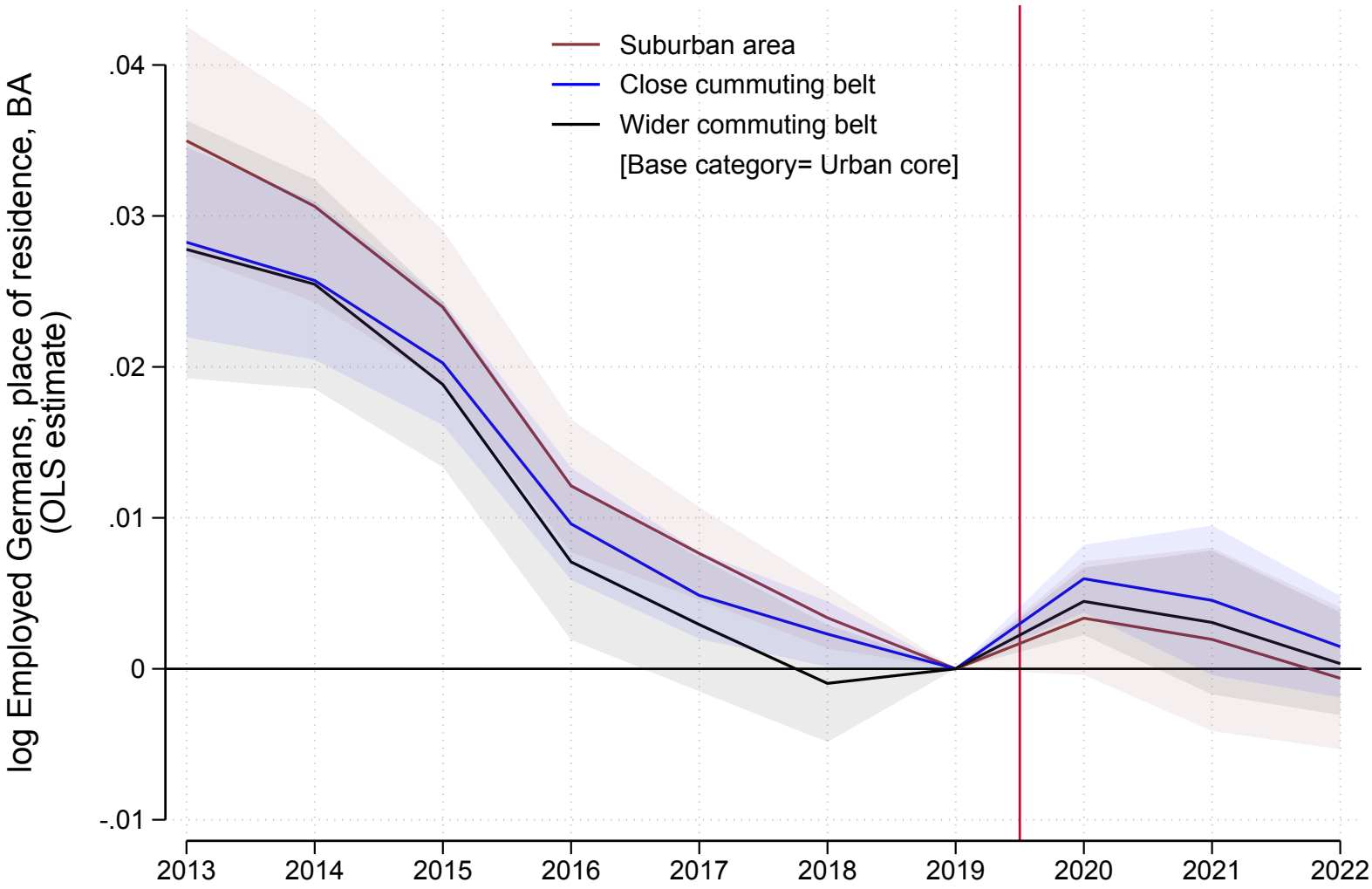


Figure 10: Changes in Local Employment Relative to Urban Core

Increased Migration Towards Metro Outskirts and Rural Areas

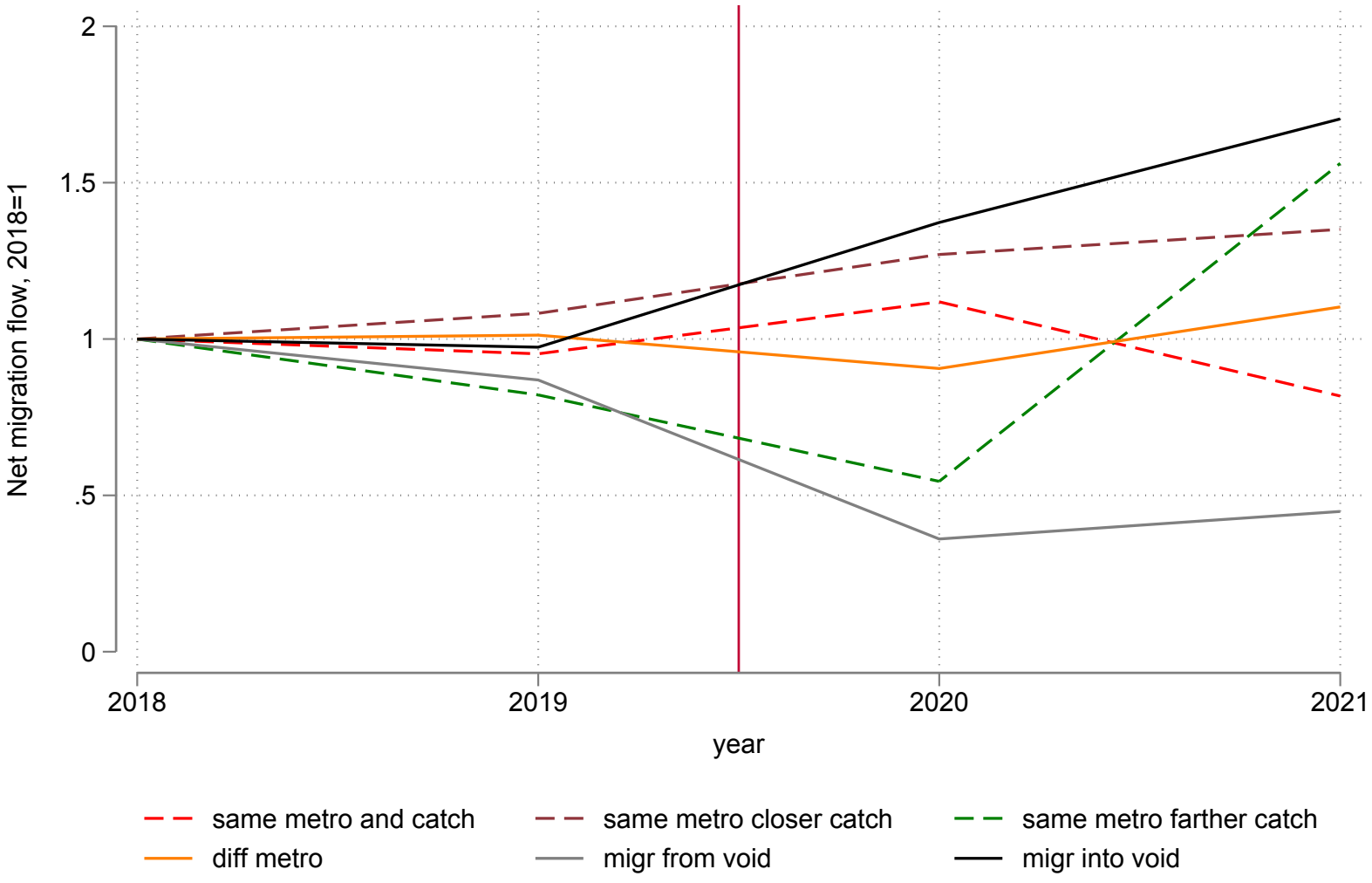


Figure 11: Changes in Net Migration Flows

Outlook

Summary

- Strong evidence of flattening of price/rent gradient for private housing, less so for commercial properties
- WFH potential explains price changes beyond the fall in premium on density/proximity
- Migration trends support moves towards metro outskirts

Outlook

- Heterogeneity by property types and metro size
- How much of the effects are explained by different valuation of **property features**?
- What is the relative importance of **cross-metro migration** relative to migration within metro regions?

Thank you!

Questions and suggestions?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