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**The Rental Snapback: Return-to-Office Mandates and the Decoupling of Urban Housing Markets  
(2020–2025)**

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[Course Number]: Research Methods and Design

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**Abstract**

The post-pandemic recovery of United States metropolitan areas presents a unique economic paradox: while urban rental markets have experienced a robust "snapback" in demand and pricing since 2023, urban home purchase markets remain largely stagnant. This phenomenon, herein defined as the "decoupling" of the housing market, suggests a structural shift in how households value proximity to city centers in an era of high interest rates and mandated office attendance. While the initial "Donut Effect" (the flight to suburbs) is well-documented, a validated quantitative framework to measure the causal impact of Return-to-Office (RTO) mandates on this specific rental recovery is conspicuously missing from the literature. This study develops and tests a Difference-in-Differences (DiD) econometric model to quantify the impact of RTO mandates on the divergence between rental and sales prices. Employing a quantitative design, the study analyzes high-frequency monthly data from January 2019 to January 2025, sourced from Zillow Research (ZHVI and ZORI indices) across the Top 50 U.S. Metropolitan Statistical Areas (MSAs). The model compares "Tech Hubs" (high RTO friction) against "Service-Oriented Cities" (low RTO friction) to isolate the labor market shock from general inflationary trends. This research fills a critical theoretical gap by providing empirical evidence that RTO mandates act as a geographic constraint funneling demand specifically into the rental sector, offering vital insights for urban planners, real estate investors, and policymakers navigating the "new normal" of urban economics.

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## **Introduction**

The spatial structure of the American city has undergone its most radical transformation in a century following the COVID-19 pandemic. Early in the crisis, the dominant economic narrative was the "Donut Effect"—a hollowing out of dense city centers as knowledge workers, untethered by the need to commute, fled to suburbs and exurbs in search of space and affordability (Ramani & Bloom, 2021). This exodus flattened the "bid-rent curve," the fundamental urban economic theory stating that housing costs should decrease as distance from the Central Business District (CBD) increases. However, as the pandemic era waned and the "Return-to-Office" (RTO) era began in late 2022 and 2023, a new, more complex dynamic emerged. Data indicates that while people are physically returning to cities, they are doing so as renters, not buyers.

This study investigates the "Rental Snapback"—a phenomenon where urban rental prices have rebounded to or exceeded pre-pandemic levels, while urban home values remain suppressed. This divergence suggests a decoupling of the housing market driven by two colliding forces: corporate mandates forcing workers back to the office (increasing the value of proximity) and historically high mortgage rates (decreasing the feasibility of ownership).

## **Problem Statement**

This research solves the problem that there is currently no validated quantitative framework to causally link Return-to-Office (RTO) mandates to the specific divergence between urban rental and home purchase markets. While the "Donut Effect" is widely acknowledged in policy and academic circles, the understanding of the subsequent recovery is predominantly based on broad generalizations or anecdotal evidence regarding "Zoom Towns" (Ramani et al., 2024). Existing studies often conflate RTO-driven migration with voluntary lifestyle migration or general population growth. Furthermore, most real estate literature utilizes lagging Census data or aggregate MSA-level data, which fails to capture the granular, neighborhood-level "snapback" occurring within the 5-mile radius of city centers. This leaves

stakeholders—specifically real estate developers and urban planners—with a reliable tool to assess whether the current rental boom is a temporary correction or a structural shift driven by the new labor contract of the hybrid era.

### Purpose of the Study and Research Questions

The purpose of this quantitative study is to develop and test a Difference-in-Differences (DiD) model that defines and quantifies the impact of Return-to-Office mandates on the price divergence between the rental and sales markets in the Top 50 U.S. MSAs. This research will analyze the statistical relationship between the "shock" of RTO enforcement (post-2023) and the price growth gradients of urban versus suburban zip codes. The study will first establish the existence of the "decoupling" phenomenon and then use a heterogeneity analysis (comparing Tech Hubs vs. Service Cities) to prove causality.

To achieve this purpose, the study is guided by a primary research question, followed by two secondary questions that structure the analysis:

- **Primary Research Question:** To what extent have Return-to-Office (RTO) mandates caused a "decoupling" of urban housing markets, characterized by a statistically significant recovery in rental prices but stagnation in home values?
- **Secondary Question 1:** Is the "Rental Snapback" (the recovery of urban rent premiums) significantly stronger in "Tech Hubs"—cities with high concentrations of remote-capable jobs and aggressive RTO mandates—compared to "Service-Oriented Cities"?
- **Secondary Question 2:** Does the Price-to-Rent ratio in urban cores show a statistically significant deviation from its pre-pandemic baseline in the post-2023 period?

### Significance of Study

This research is significant for its direct contribution to a rapidly evolving gap in Urban Economics literature and for its practical implications for industry strategy.

Theoretically, the study addresses the tension between the "Monocentric City Model" (Alonso-Muth-Mills) and the emerging "Hybrid City Model." While classical theory suggests rents and prices should move in tandem based on the present value of future utility, this study posits that **labor market constraints (RTO)** and **capital market constraints (Interest Rates)** can cause these two markets to move in opposite directions. Validating this "decoupling" adds a necessary nuance to post-pandemic urban theory.

For **Policymakers**, this research offers a quantitative tool to move beyond qualitative debates about "downtown death spirals." By proving that demand is returning via rentals, it suggests that policy should pivot toward supporting high-density rental developments and office-to-residential conversions rather than subsidizing homeownership in the urban core, which is currently financially unfeasible for the workforce.

For **Real Estate Investors**, this study provides a macro-level signal for capital allocation. If the Price-to-Rent ratio in Tech Hubs is historically low (high rents, flat prices), it signals a "Buy" opportunity for institutional investors. By quantifying the "Snapback," this research aligns with modern investment theses that prioritize "Build-to-Rent" communities over traditional condo developments in urban cores.

## **Definition of Terms**

This study defines its key theoretical concepts and operational variables with precision, supported by established use in scholarly literature.

- **The Rental Snapback:** Conceptually defined as the rapid recovery of rental price growth in the Urban Core relative to the Suburbs following the nadir of the pandemic. Operationally, it is measured as a positive coefficient in the interaction term of the DiD model for the Zillow Observed Rent Index (ZORI).
- **Decoupling (Divergence):** The statistical phenomenon where the correlation between rental price growth and home value growth weakens or becomes negative. In this study, it refers to the scenario where Urban Rent Growth is positive while Urban Home Value Growth is flat or negative.
- **Return-to-Office (RTO) Mandate:** A corporate policy requiring employees to be physically present in the office for a specific number of days (typically 3–4). For the purpose of this study, the "RTO Era" is operationalized as the period beginning January 2023, when major tech employers (Amazon, Meta, Zoom) began enforcing attendance.
- **Tech Hub (Treatment Group):** MSAs with a high concentration of "STEM" and "Knowledge" jobs that were capable of remote work. Operationally defined as the MSAs including San Francisco, Seattle, Austin, San Jose, Boston, and New York.
- **Urban Core:** Conceptually, the Central Business District and immediate surrounding neighborhoods. Operationally defined using geodesic distance as any Zip Code where the centroid is within 5 miles of the City Hall coordinates.

## **Hypothesis**

To provide empirical answers to the research questions, this study will test two primary hypotheses:

- **H1 (The Divergence Hypothesis):** In the post-2023 period, Urban Zip Codes in the Top 50 MSAs will exhibit a statistically significant *positive* differential in Rental Growth (relative to suburbs) but a *null or negative* differential in Home Value Growth.
  - *Null Hypothesis (H0):* There is no significant difference between the urban-suburban gradient for rents versus home values post-2023.
- **H2 (The RTO Causality Hypothesis):** The magnitude of the "Rental Snapback" will be significantly higher in "Tech Hub" MSAs compared to "Service-Oriented" MSAs, indicating that the recovery is driven by labor market mandates rather than general population trends.
  - *Null Hypothesis (H0):* The recovery of urban rents is uniform across all MSAs regardless of economic sectoral composition.

## **Limitations of the Study and Mitigation Strategies**

The research acknowledges potential limitations. A primary limitation is **Data Aggregation**. Zillow data is aggregated at the Zip-Code level, which may mask block-by-block heterogeneity (e.g., a luxury building

next to a vacant lot). To mitigate this, the study focuses on the *trend* (change over time) rather than absolute levels, using Zip-Code Fixed Effects to control for unobserved neighborhood characteristics.

A second limitation is **Omitted Variable Bias**. Rents could be rising due to supply shortages rather than RTO demand. To mitigate this, the study employs the "Tech vs. Service" comparison. Since supply constraints (NIMBYism) exist in both types of cities, a significant difference in rental growth between them can be more confidently attributed to the demand shock of RTO.

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## Related Works

### The "Donut Effect" and the Hollowing of the Urban Core

The foundational literature for this study is the "Donut Effect," a term coined by Ramani and Bloom (2021) and expanded in Ramani et al. (2024). Their research utilized United States Postal Service (USPS) change-of-address data and Zillow indices to document a massive reallocation of housing demand from central business districts (the "hole") to the suburbs and exurbs (the "dough"). They argued that the pandemic reduced the "proximity premium" of living near work to zero, causing the bid-rent curve to flatten.

Monte et al. (2023) supported this with theoretical models showing that remote work reduced commuting costs, effectively expanding the functional size of the city and reducing the value of the center. This literature firmly established that during 2020–2022, both rents and home prices fell in city centers relative to suburbs. However, this body of work largely treats the "pandemic era" as a single shock, often failing to distinguish the nuances of the 2023–2025 recovery phase where remote work became "hybrid" rather than "fully remote."

### The Divergence: Rental Recovery vs. Stagnant Home Purchases

Recent scholarship has begun to identify a divergence from the original Donut Effect. Thackway et al. (2023) analyzed Australian rental markets and identified a "snapback," noting that rental demand in Sydney recovered faster than sales demand. Similarly, Yiu et al. (2023) found that while the rental gradient flattened during the pandemic, it began to steepen again (recover) in late 2022.

In the U.S. context, industry reports from Redfin and Zillow in late 2024 highlighted that rental affordability had improved relative to buying, creating a "lock-in" effect where high earners continued to rent. Khametshin et al. (2024) argued that suppressed home purchase demand is linked to credit constraints (interest rates) and cautious consumer behavior, while rental demand is driven by immediate necessity. This literature sets the stage for the "decoupling" hypothesis: the city is healing for tenants, but not for owners.

### The Role of Return-to-Office (RTO) Mandates in Tech Hubs

The specific mechanism of RTO mandates is explored by Forouhar et al. (2024) and Leong et al. (2023). They found that downtown recovery rates were heterogeneous; "Service Economies" (like Las Vegas or Miami) recovered faster initially because their jobs required physical presence. Conversely, "Tech Hubs" (San Francisco, Seattle) lagged significantly because their workforce remained remote longer.

However, these studies often stop at 2023. They fail to capture the *reversal* that occurred when major tech firms enforced RTO mandates in 2024. The literature identifies a "flight to quality" in commercial real estate (Matsuo et al., 2024), where companies consolidated into prime downtown offices, but it has not yet fully connected this commercial trend to the residential rental spike in the same neighborhoods.

### **Review of Existing Methods for Real Estate Analysis**

Methodologically, the literature relies heavily on **hedonic pricing models** and **spatial econometrics**. Kim & Long (2024) utilized granular transaction data to measure the flattening of price gradients. However, many of these studies rely on cross-sectional data (comparing one point in time to another) rather than longitudinal panel data.

The use of **Difference-in-Differences (DiD)** is established in urban economics to measure policy shocks (such as the introduction of a new subway line or rent control). Constructing a DiD model where the "Treatment" is the RTO era and the "Control" is the pre-RTO era (or Tech vs. Non-Tech cities) is a robust method supported by Angrist & Pischke (2009). The literature validates the use of Zillow indices (ZHVI/ZORI) as a superior proxy for high-frequency market movements compared to lagging Census data (Anenberg et al., 2018).

### **Synthesis and Identification of the Research Gap**

The preceding review paints a comprehensive picture: the "Donut Effect" emptied cities (2020-2022), and high interest rates are currently suppressing homeownership (2023-2025). However, a critical gap remains.

**The Missing Link:** Existing studies either analyze the "general recovery" without isolating the specific impact of RTO mandates, or they analyze RTO mandates without distinguishing between the rental and sales markets. There is no validated quantitative framework that isolates the **causal** link between the labor market shock (RTO) and the housing market divergence.

Most studies conflate the recent rise in urban rents with general population growth or the return of amenities (restaurants/nightlife). They do not rigorously test whether this recovery is stronger in cities subject to RTO mandates compared to those that are not. This study fills that gap. By juxtaposing Tech Hubs (High RTO) against Service Cities (Low RTO) using a DiD framework, this research provides the missing empirical evidence to determine if the "Rental Snapback" is a symptom of corporate policy rather than just a return to pre-pandemic preferences.

### **Implications for Theory, Policy, and Industry**

Filling this gap has significant implications. Theoretically, it refines the "Bid-Rent" model to account for "hybrid" constraints—where the commute cost is non-zero but frequency is lower. For Policy, it suggests that cities in Tech Hubs must prioritize rental density to accommodate returning workers who cannot buy. For Industry, it validates the "Build-to-Rent" investment thesis in urban cores, suggesting that rental demand is structurally supported by the interest rate/RTO pincer movement.

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### **Proposed Methods**

#### **Research Design and Rationale**

This study will employ a **quantitative, quasi-experimental research design**. The core methodology is a **Difference-in-Differences (DiD)** regression analysis applied to longitudinal panel data.

The choice of a time-series/panel approach is essential because the phenomenon being studied—the "Rental Snapback"—is dynamic. A cross-sectional snapshot cannot capture the *rate of change* or the divergence between the two markets (Rent vs. Buy) over time. The DiD framework is uniquely suited for this study because it allows for the isolation of a treatment effect (RTO Mandates) by comparing the "Treatment Group" (Tech Hubs/Urban Cores) against a "Control Group" (Service Cities/Suburbs) before and after the intervention (Post-2023).

This design moves beyond simple correlation (e.g., "rents are up") to causal inference (e.g., "rents are up *relative* to the control group *because* of the intervention").

### **Data Collection Method**

The study will construct a comprehensive panel dataset by merging data from three primary sources.

1. **Zillow Home Value Index (ZHVI):** This dataset will serve as the proxy for the "Home Purchase Market." It is a smoothed, seasonally adjusted measure of the typical home value and market changes across a given region and housing type. Data will be collected at the **Zip Code** level for the Top 50 MSAs.
  - *Source:* Zillow Research Data (Publicly Available).
  - *Justification:* ZHVI is superior to median sales price because it estimates the value of the *entire* housing stock, not just the homes that sold that month, reducing mix-bias.
2. **Zillow Observed Rent Index (ZORI):** This dataset will serve as the proxy for the "Rental Market." It is a smoothed, seasonally adjusted measure of market rent.
  - *Source:* Zillow Research Data (Publicly Available).
  - *Justification:* ZORI uses a repeat-rent index methodology, which controls for the quality of units, preventing luxury new builds from skewing the average.
3. **Geographic and Demographic Crosswalks:** To classify zip codes and MSAs, data will be extracted using the **uszipcode** Python library (based on Census data) and the **geopy** library.
  - *Data Points:* Latitude/Longitude of Zip Centroids, MSA population rankings, and City Hall coordinates.

**Sample Size:** The dataset will cover the **Top 50 Metropolitan Statistical Areas (MSAs)** by population. This ensures the analysis captures the major urban centers where the "Donut Effect" is relevant, excluding rural noise. The time horizon will span from **January 2019 to January 2025**, providing a 72-month window that covers the Pre-Pandemic baseline, the Pandemic Exodus, and the Post-Pandemic RTO Recovery.

### **Variables to be Included**

The study operationalizes its concepts into measurable variables as follows:

- **Dependent Variables (Outcome):**
  - Rent\_YoY\_Growth: The year-over-year percentage change in the ZORI index for a specific zip code.
  - Price\_YoY\_Growth: The year-over-year percentage change in the ZHVI index.
  - Price\_to\_Rent\_Ratio: Calculated as  $ZHVI/(ZORI \times 12)$
- **Independent Variables (Predictors):**
  - Post\_2023: A binary dummy variable equal to 1 if the date is after January 1, 2023 (start of RTO era), and 0 otherwise.
  - Urban\_Flag: A binary dummy variable equal to 1 if the zip code centroid is < 5 miles from the MSA's City Hall, and 0 if it is 5–20 miles away (Suburban Control).
  - Tech\_Hub: A binary dummy variable equal to 1 if the MSA is classified as a high-tech economy (e.g., San Francisco, San Jose, Austin, Seattle, Boston, NYC), and 0 if it is a Service/Manufacturing economy (e.g., Las Vegas, Orlando, Cleveland).
- **Control Variables:**
  - MSA\_Fixed\_Effects: To control for unobserved characteristics of specific cities (e.g., weather, culture).
  - Time\_Fixed\_Effects: To control for national macroeconomic trends (e.g., inflation, federal interest rates) that affect all cities equally.

### **Plan for Data Cleaning, Preprocessing, and Analysis**

The analysis will be conducted using **Python** (specifically the pandas and statsmodels libraries), following a rigorous four-step process.

#### **Step 1: Data Cleaning and Merging**

The ZHVI and ZORI datasets will be downloaded as CSVs. They will be "melted" from a wide format (dates as columns) to a long format (dates as rows). The two datasets will be merged on RegionName (Zip Code) and Date. Zip codes with missing data in either dataset will be dropped to ensure a balanced panel for the Price-to-Rent ratio analysis.

#### **Step 2: Spatial Classification**

A Python script will iterate through the unique zip codes. Using geopy, it will calculate the geodesic distance between the zip code centroid and the defined coordinates of the central city hall for that MSA. Based on this distance, the Urban\_Flag variable will be assigned.

### **Step 3: Descriptive Analysis**

Visualizations will be generated to establish "Parallel Trends" (a prerequisite for DiD). Line charts will plot the average Rental Growth of Urban vs. Suburban zones in Tech Hubs from 2019–2025. This will visually demonstrate the "Donut" (2020 drop) and the "Snapback" (2023 recovery).

### **Step 4: Econometric Modeling**

The core analysis will run the following regression equation:

$$Y_{it} = \beta_0 + \beta_1(Post2023) + \beta_2(Urban) + \beta_3(Post2023 \times Urban) + \epsilon$$

Where

$$Y_{it}$$

is the outcome (Rent Growth or Price Growth). The coefficient of interest is

$$\beta_3$$

, which measures the "Difference-in-Differences"—the extra growth urban areas experienced post-2023 relative to suburbs.

To test **H2 (Tech Hubs)**, a Triple-Difference (DDD) approach or split-sample analysis will be used, running the model separately for the "Tech Hub" subsample and the "Service City" subsample.

#### **Expected Outcome:**

- For the **Rental Market**, we expect
- $\beta_3$

to be positive and statistically significant (indicating a snapback).

- For the **Sales Market**, we expect
- $\beta_3$

to be insignificant or negative (indicating persistent stagnation).

- We expect the magnitude of
- $\beta_3$

(Rent) to be significantly larger in Tech Hubs than in Service Cities, confirming the causal role of RTO mandates.

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