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Station Area Market Trend Analysis

Rail Route Introduction

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Introduction

- In the opening year (2014), a commuter rail line began providing service to 12 stations in the area.

Methodology

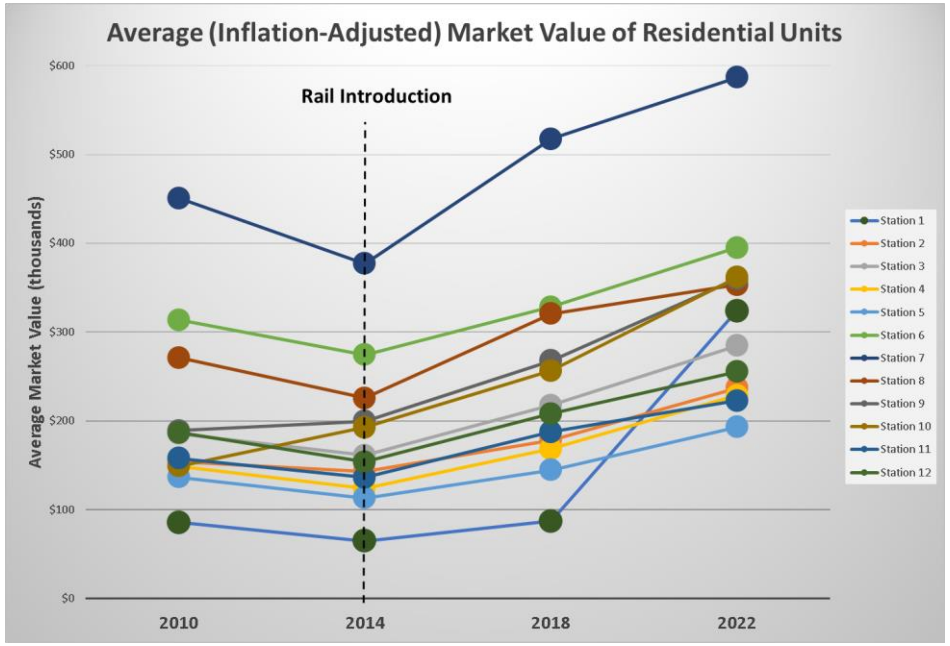
- Parcel data for the counties comprising the study area, were obtained from the Department of Revenue.
- Parcel datasets were collected for each year from 2010 to 2022.
  - 2010 (4 years before the opening), and 2014 and 2022 (after opening).
- Utilized buffering in GIS to identify the subset of parcels in each county that lie within a one-mile radius of a specific station.
- The average market values per unit were calculated for each stops, by station area, separated by Residential and Commercial land use categories.
  - Market values were adjusted to 2022 price levels for consistency and comparability using the inflation factor.

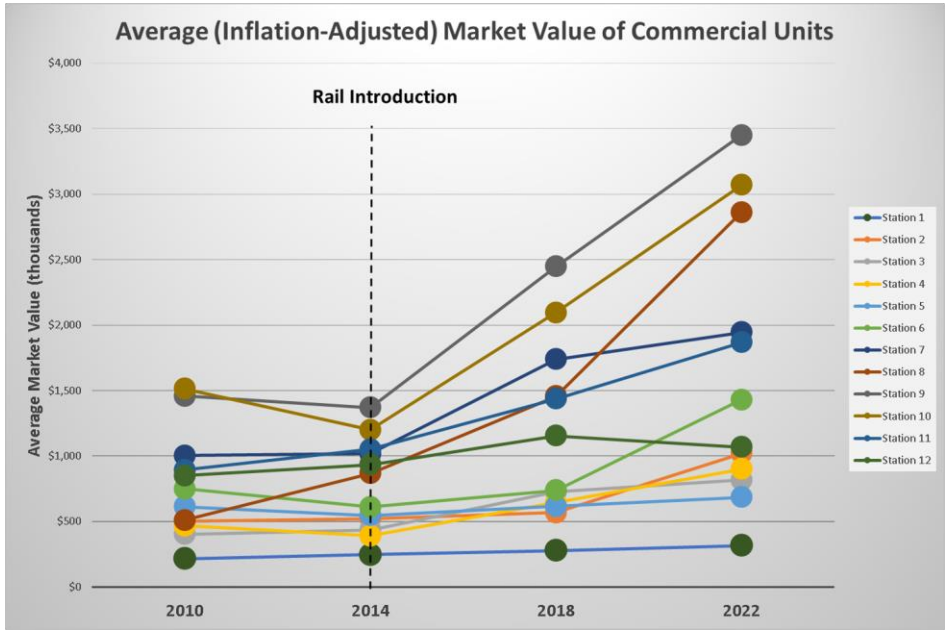
Market Values of Residential and Commercial Units over time

- 2010–2014 (Pre-opening): mixed trends.
- 2014–2022: strong acceleration in most areas; several stations spike dramatically to new highs.

Key Takeaways

- Clear post-opening boost in residential and commercial market values.
- **inflation-adjusted** increases indicate **real price growth**, not just inflation effects.





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Control Group (Alternative Stations)

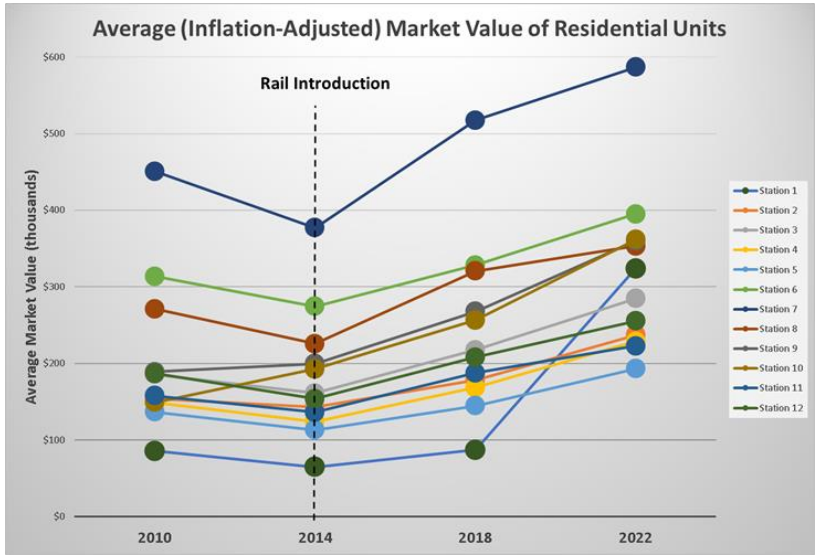
We need to measure the change in the market value that can be attributed specifically to the opening of the new rail, beyond normal growth trends (economic cycles, regional growth, etc.).

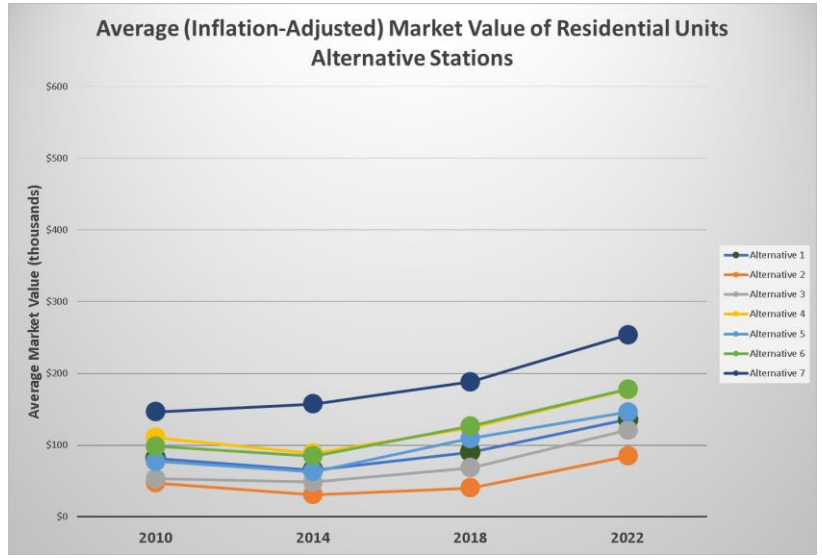
- **Why control group?**
  - Helps isolate the rail effect by separating it from broader general market trends.
- **Why these controls?**
  - These stations were identified by the state for potential extension.
- **Property values over time:**
  - Values rise more gradually and modestly; No sharp post-2014 jump compared to treatment group.

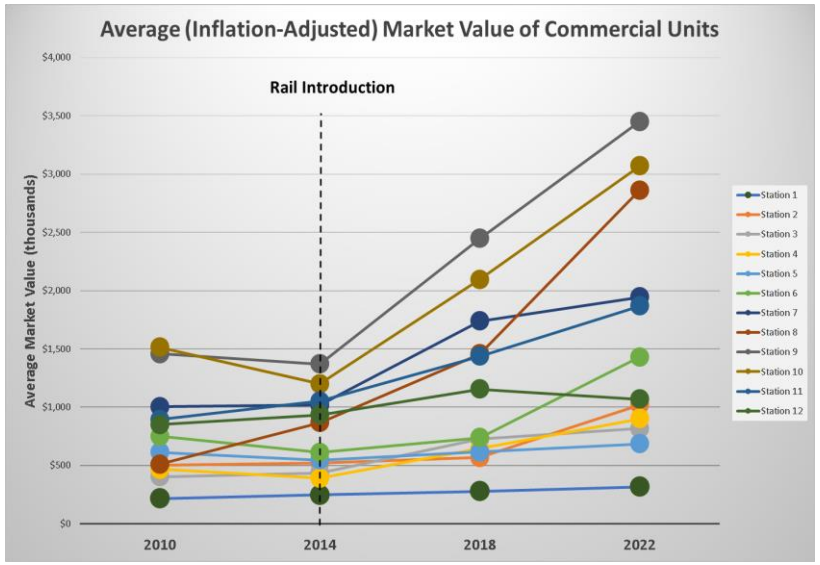
✓ New rail introduction is associated with faster growth in property values at treatment stations compared to controls.

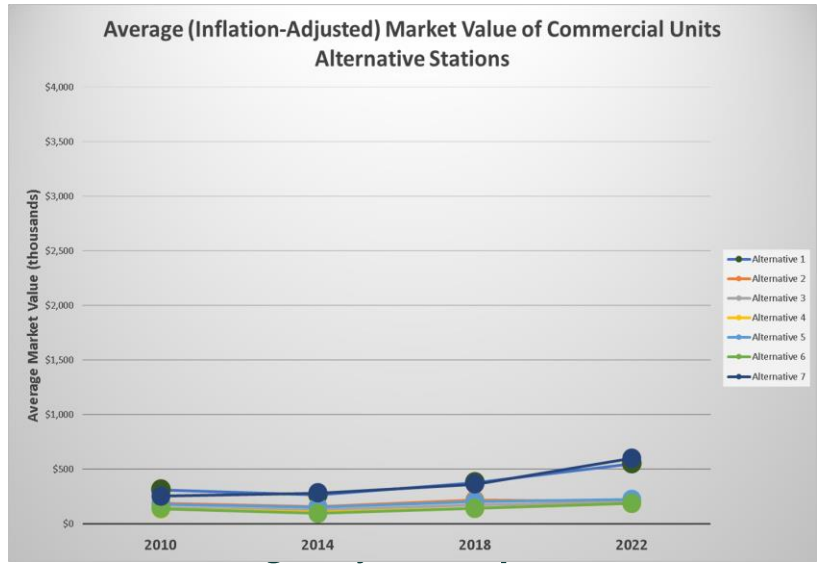
Treatment Group
Existing Stations
(with rail)

Control Group
Alternative Stations
(without rail)









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Regression Analysis - Methodology

Difference-in-Differences (DiD): Compare changes in average (inflation-adjusted) residential market values between existing stations (treated) and alternative stations (controls).

- Model Specification:

$$ResV_{it} = \alpha + \boldsymbol{\beta}(Treatment \times Post) + \text{Year Effects} + \text{Station Effects} + \varepsilon_{it}$$

Residential Market Value ($ResV_{it}$) is explained by:

- Treatment × Post → the effect of the new rail opening on the stations over time
- Year Effects → captures broader economic/inflation trends
- Station Effects → controls for fixed local characteristics
- $\boldsymbol{\beta}$ measures the **causal impact of new rail opening on residential market values**.
- Run the same regression using commercial market values

Regression Analysis - Results

Outcome	Coefficient (β)	Std. Error	Significance	Interpretation
Residential Market Value (log)	**0.735*** **	0.045	p < 0.001	≈ **+73%** higher values ↑
Commercial Market Value (log)	**0.478****	0.185	p < 0.05	≈ **+48%** higher values ↑

*= 90% confidence (p < 0.10)
** = 95% confidence (p < 0.05)
*** = 99% confidence (p < 0.01)

- Residential and Commercial Market Values
  - Statistically significant positive effect after opening of the new rail.

- Overall Takeaway
  - DiD analysis indicate that new rail opening is associated with statistically significant increases in both residential and commercial property values.
  - In the areas where new rail service was introduced, property values increased by about 73% for residential and 48% for commercial compared to control locations.

- Next Step:
  - Conduct the same analysis for number of units.
  - Explore additional socio-economic controls (e.g., demographics, land use).
  - Expand time horizon by adding more years to the analysis.

Land value Capture Strategies

- Review & Align Local Plans
  - Comprehensive plans and city ordinances on:
    - Land-use density
    - Building height
    - Parking structures
    - Access to multi-modal networks
- Update Funding Mechanisms
  - Implement/update **mobility fee plans** to support infrastructure and shape desired development patterns
- Leverage Targeted Programs
  - Use tools like **Community Reinvestment Areas (CRA)** to reinvest in station areas and encourage transit-oriented growth

✓ These strategies can help maximize the benefits of transit investment through supportive land use and reinvestment policies.

Thank You!

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