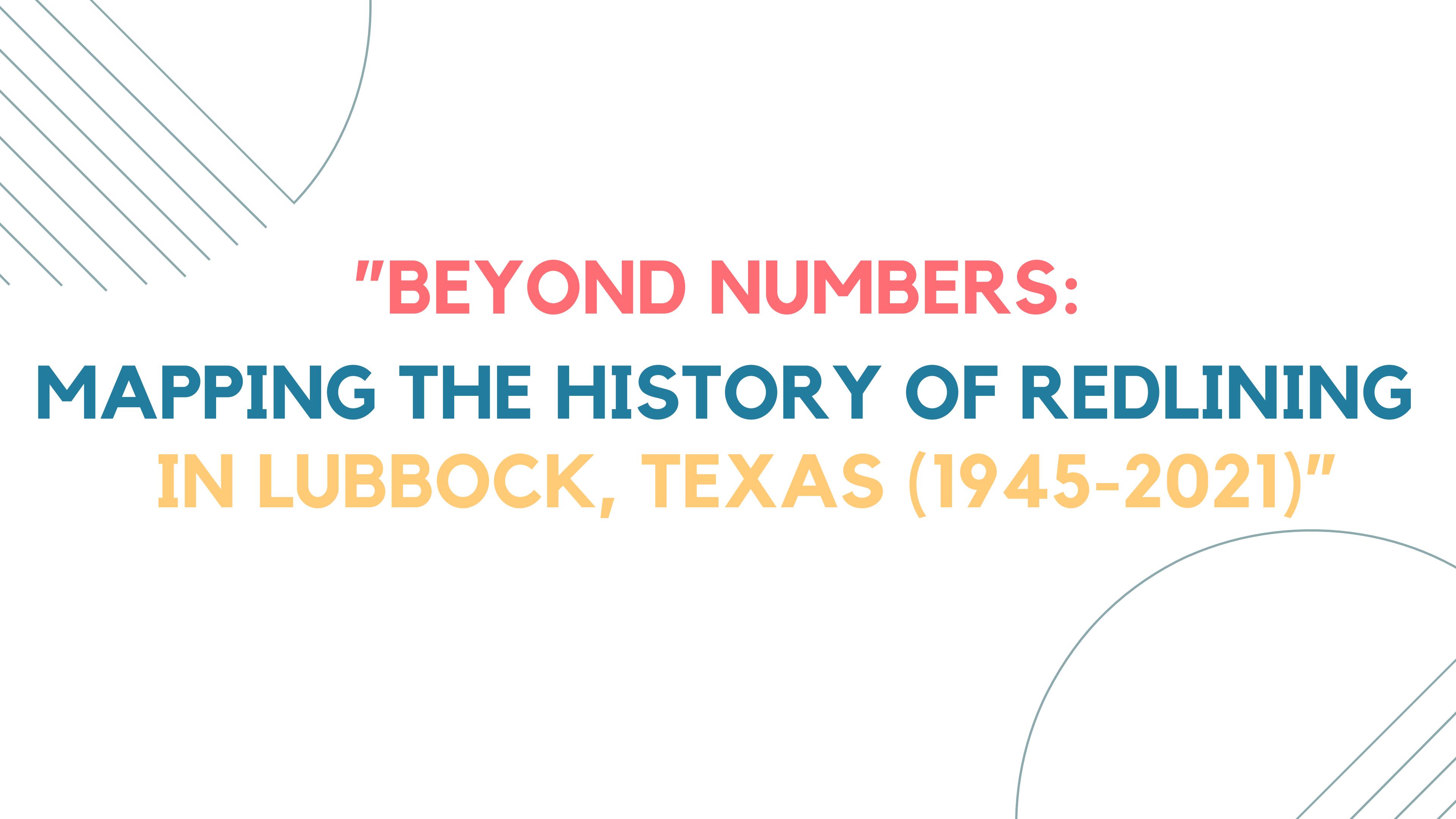


PERSISTENT EFFECTS OF JIM CROW-ERA REDLINING ON LUBBOCK PROPERTY VALUES

A Data-Driven Analysis: 1945–2021



"BEYOND NUMBERS: MAPPING THE HISTORY OF REDLINING IN LUBBOCK, TEXAS (1945-2021)"

WHAT IS THE PROBLEM IN LUBBOCK?



Lubbock, Texas has a long history of Jim Crow-era segregation and discriminatory practices that continue to impact the city today, particularly affecting its Black and Hispanic residents. The main Jim Crow problems in Lubbock include:

- In 1923, Lubbock City Council passed an ordinance forcing Black residents to live only in the east side of town, specifically east of Avenue C and south of 16th Street.
- The 1943 land use plan surrounded the Chatman Hill neighborhood with industrial uses and created an industrial buffer zone between Black and White residents
- The city deliberately created industrial zones around Black and Hispanic neighborhoods, exposing residents to environmental hazards
- Subsequent plans expanded industrial zoning in East and North Lubbock, areas predominantly populated by Black and Hispanic residents

1923 Lubbock Ordinance - Area of Black Residents

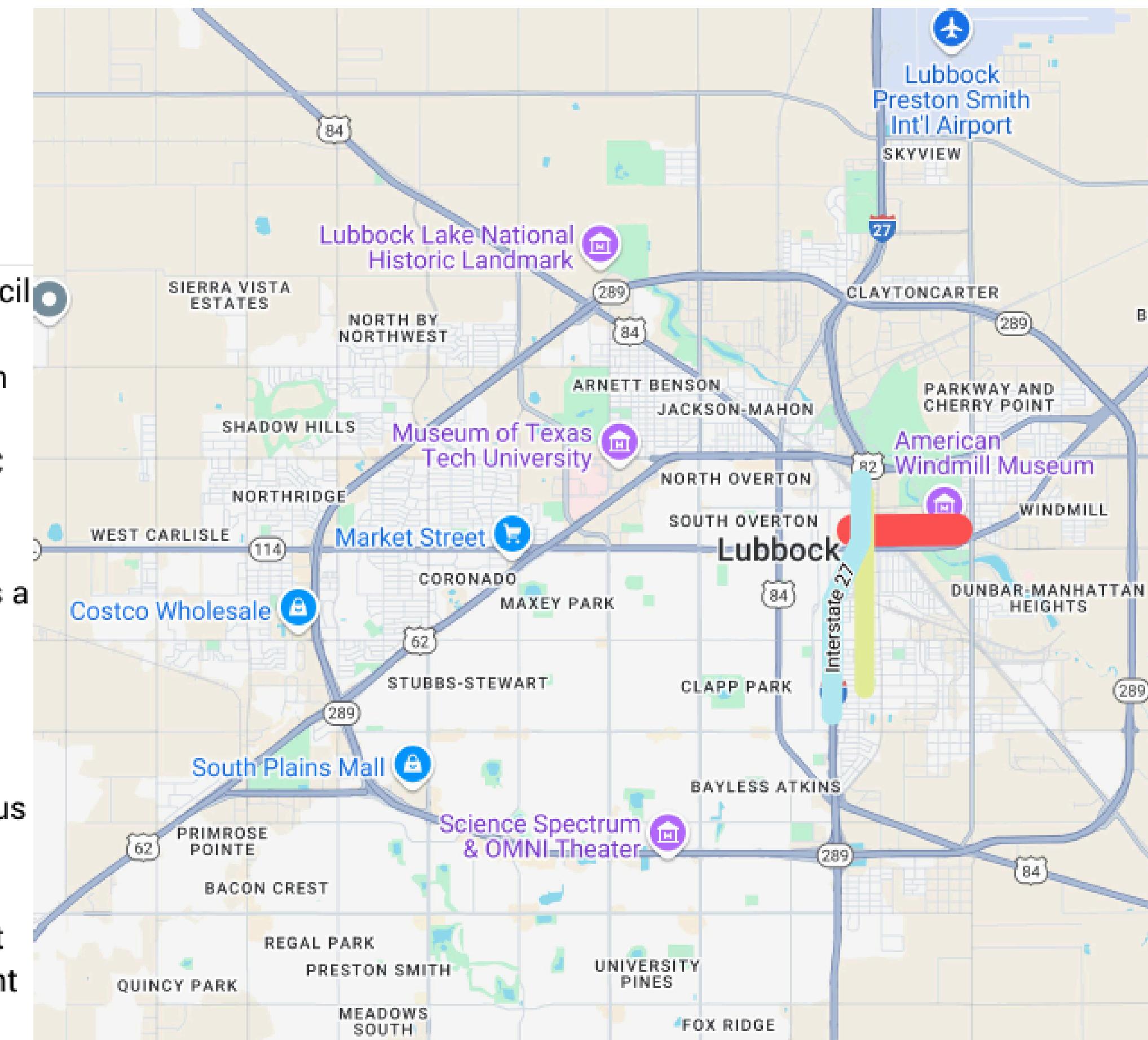
Black People Residence - 1923
Lubbock Ordinance

- 16th ST, Lubbock, TX
- Avenue C, Lubbock, TX
- Interstate 27

- In 1923, Lubbock City Council passed an ordinance forcing Black residents to live only in the east side of town, specifically east of Avenue C and south of 16th Street.

- Interstate 27 now serves as a physical barrier, effectively isolating East Lubbock from the rest of the city

- The city's development focus has shifted to the predominantly white Southwest area, leaving East Lubbock with less investment and attention



PROJECT INTRODUCTION

This comprehensive analysis examines the lasting effects of **Jim Crow-era redlining** on property values in Lubbock, Texas from 1945 to 2021.

Through detailed examination of nearly **30,000 properties**, this study reveals how these **historical discriminatory practices**, combined with **industrial zoning**, have influenced property values and urban development across Lubbock's **six district councils**.

By analyzing property values across **redlined zones**, **buffer zones**, and **district councils**, this research aims to **inform future policy decisions and identify opportunities** for creating more equitable urban development strategies.

01 - MERGING AND CLEANING

Conducted comprehensive data integration of property records spanning 1945 to 2021. This involved merging datasets from six distinct time periods (1945, 1975, 1985, 2012, 2020, 2021), standardizing column names, cleaning numerical values, and ensuring data consistency, resulting in a robust longitudinal dataset tracking property values across Lubbock.

02 - ARCGIS PRO ANALYSIS

Through advanced spatial analysis using ArcGIS Pro, I enhanced the dataset with crucial geographic information. Properties were classified based on their location within **redlined zones**, **half-mile** and **one-mile buffer zones**, and **district council boundaries**. This spatial enrichment enabled understanding of how historical segregation patterns intersect with modern administrative divisions.

03 - EXPLORATORY DATA ANALYSIS

Detailed exploratory data analysis uncovered significant patterns in property value evolution from 1945 to 2021. The analysis revealed how redlining's impact varies across different district councils, examined the relationship between industrial zones and property values, and identified areas of persistent disparity. This comprehensive analysis provides insights for policy-making and future urban development strategies.

DATA OVERVIEW

Redlining Zones

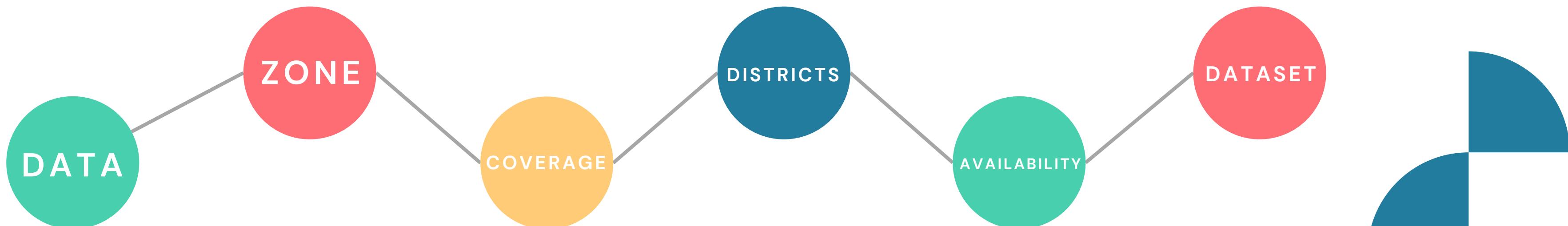
- Redlined Zone: 205 properties (0.72%)
- Half-Mile Buffer: 1,892 properties (6.61%)
- One-Mile Buffer: 4,592 properties (16.05%)
- Outside All Zones: 23,814 properties (83.23%)

Properties by Districts

- District 1: 6,704 properties (23.43%)
- District 2: 7,566 properties (26.44%)
- District 3: 8,766 properties (30.64%)
- District 4: 3,015 properties (10.54%)
- District 5: 516 properties (1.80%)
- District 6: 2,044 properties (7.14%)

Dataset overview

- Consists a total of 53 columns
 - Location and Identification Columns – 3
 - 1945 Assessment Data – 6
 - 1975 Assessment Data – 7
 - 1985 Assessment Data – 13
 - 2012 Assessment Data – 6
 - 2020 Assessment Data – 6
 - 2021 Assessment Data – 6
 - Historical and Geographic Indicators – 6
- Common column across all years – TotalValue_{year}



Property Distribution

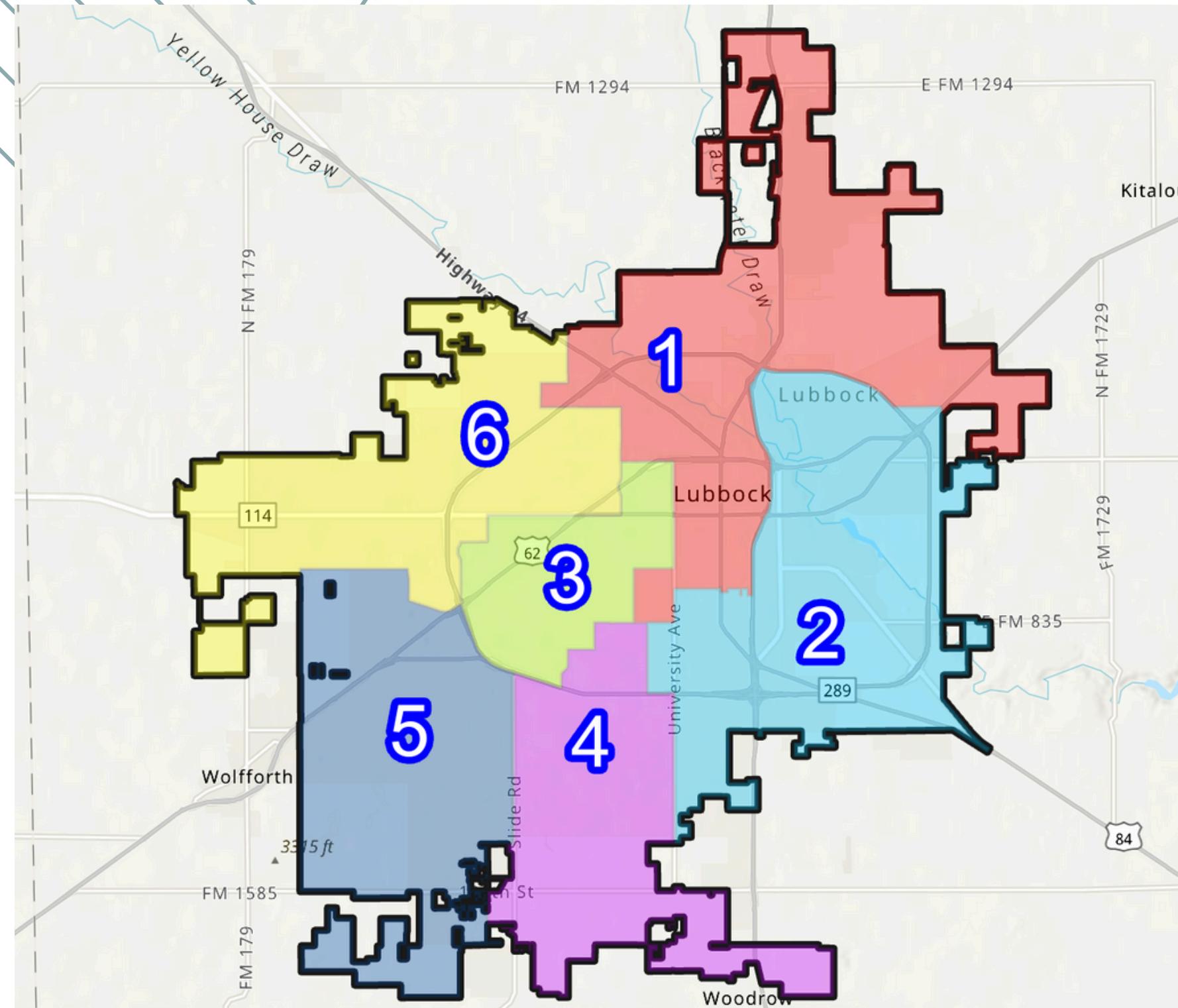
- Total properties in dataset: 29,713
- Properties within Lubbock city limits: 28,611
- Percentage of properties in Lubbock: 96.29%
- Properties spread across 6 district councils
- Properties are categorized among 4 zones

Temporal Coverage

- Data spans from 1945 to 2021
- Most properties (15,806) have data for 1975, 2012, 2020, and 2021
- Only 230 properties have complete data across all six time periods
- Strong recent data coverage (2012, 2020, 2021)

Data Availability

- Top 10 most common year combinations:
 - 1975 2012 2020 2021: 15,806 properties
 - 1975 1985 2012 2020 2021: 6,646 properties
 - 1985 2012 2020 2021: 4,329 properties
 - 1945 2012 2020 2021: 517 properties
 - 1945 1975 2012 2020 2021: 407 properties
 - 1945 1975 1985 2012 2020 2021: 230 properties



CITY LIMITS AND COUNCIL DISTRICTS

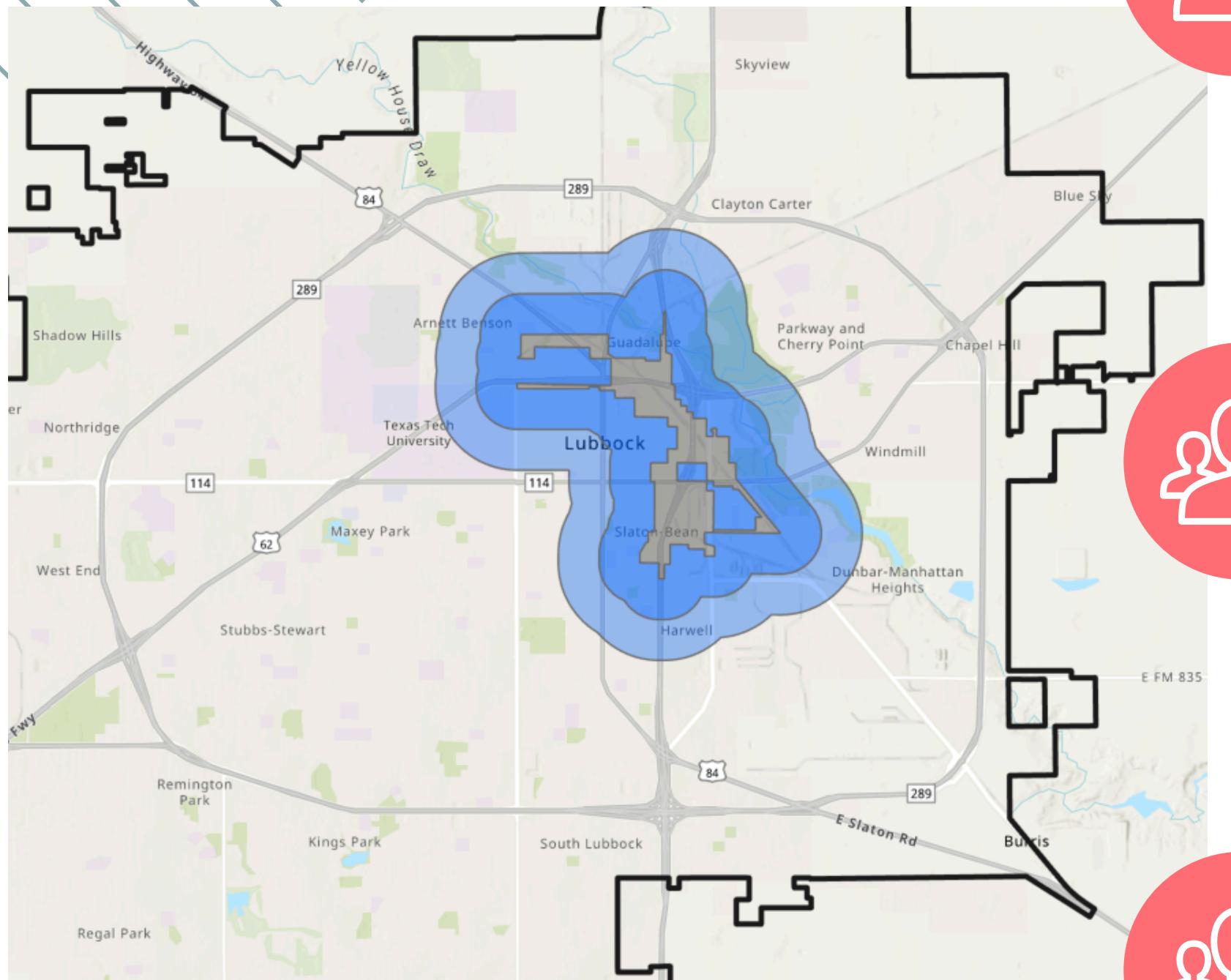
 "The bold black border in the map shows the Lubbock city limits. This has been taken from the Lubbock official website"
• <https://ci.lubbock.tx.us/pages/transparency/maps>

City Limit

 "Lubbock's government is structured around six council districts, each electing one representative to serve alongside the mayor. These districts represent specific areas of Lubbock, ensuring diverse local representation. The council members and mayor collectively form the city's governing legislative body."

Council Districts

REDLINING ZONES



Redlining Zone

"Areas historically designated under Jim Crow laws where Black residents were concentrated, overlapping with industrial zones that potentially influenced property values negatively. These zones represent the direct impact of discriminatory housing policies and continue to show distinct patterns in property values and development today."



Half mile buffer – Redlining Zone

"Properties located within a half-mile radius of redlining zones (but not in redlined zones themselves), representing immediate transition areas around historically segregated neighborhoods. These areas often show intermediate property value patterns and serve as crucial indicators of how redlining's effects ripple outward into surrounding communities."



One mile buffer – Redlining Zone

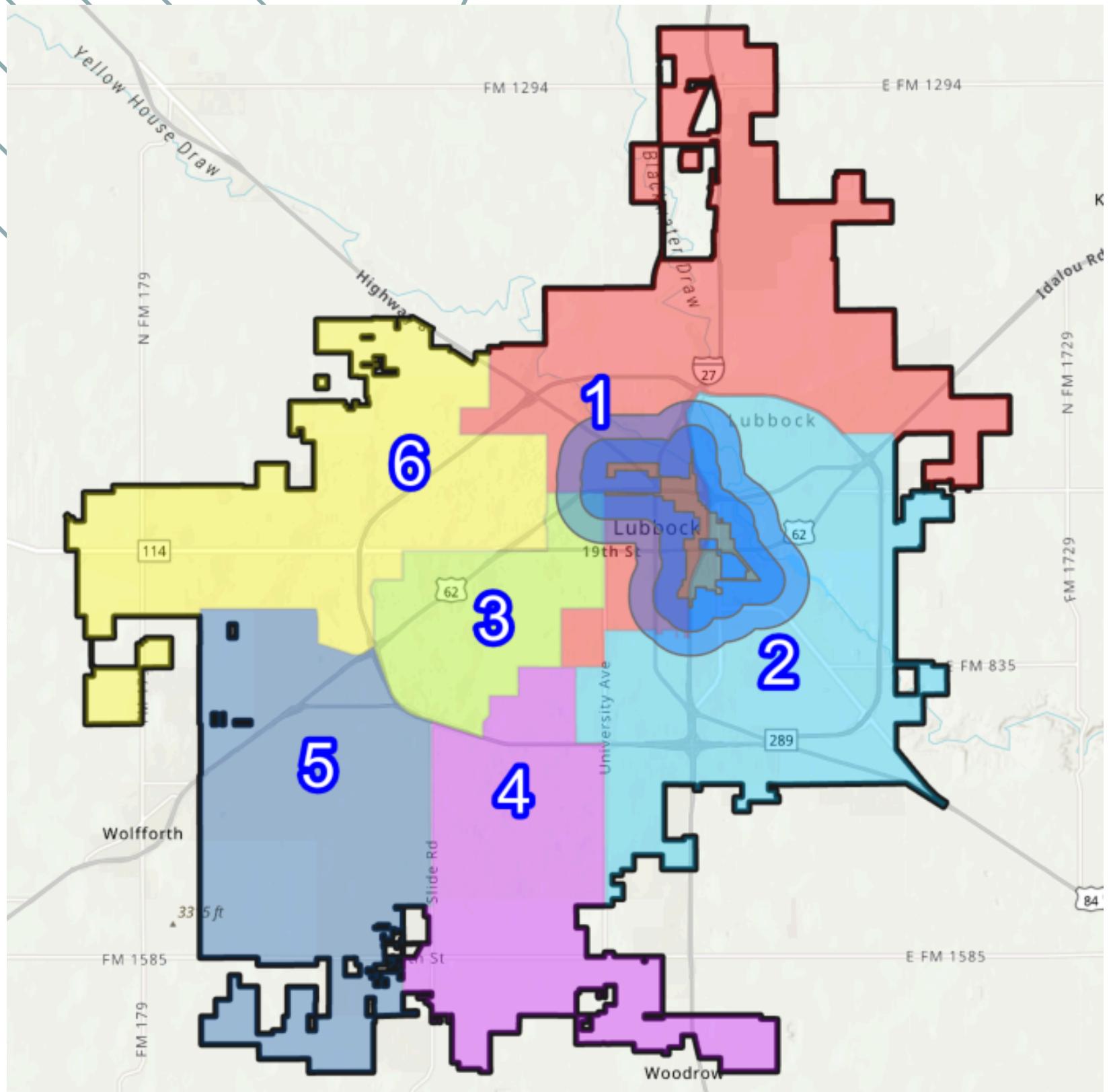
"Properties within one mile of redlining zones (but not in redlined or half-mile zones), showing broader transitional impacts of historical segregation patterns. This extended buffer helps understand how far redlining's influence reaches into neighboring areas and reveals gradual changes in property values as distance from redlined zones increases."



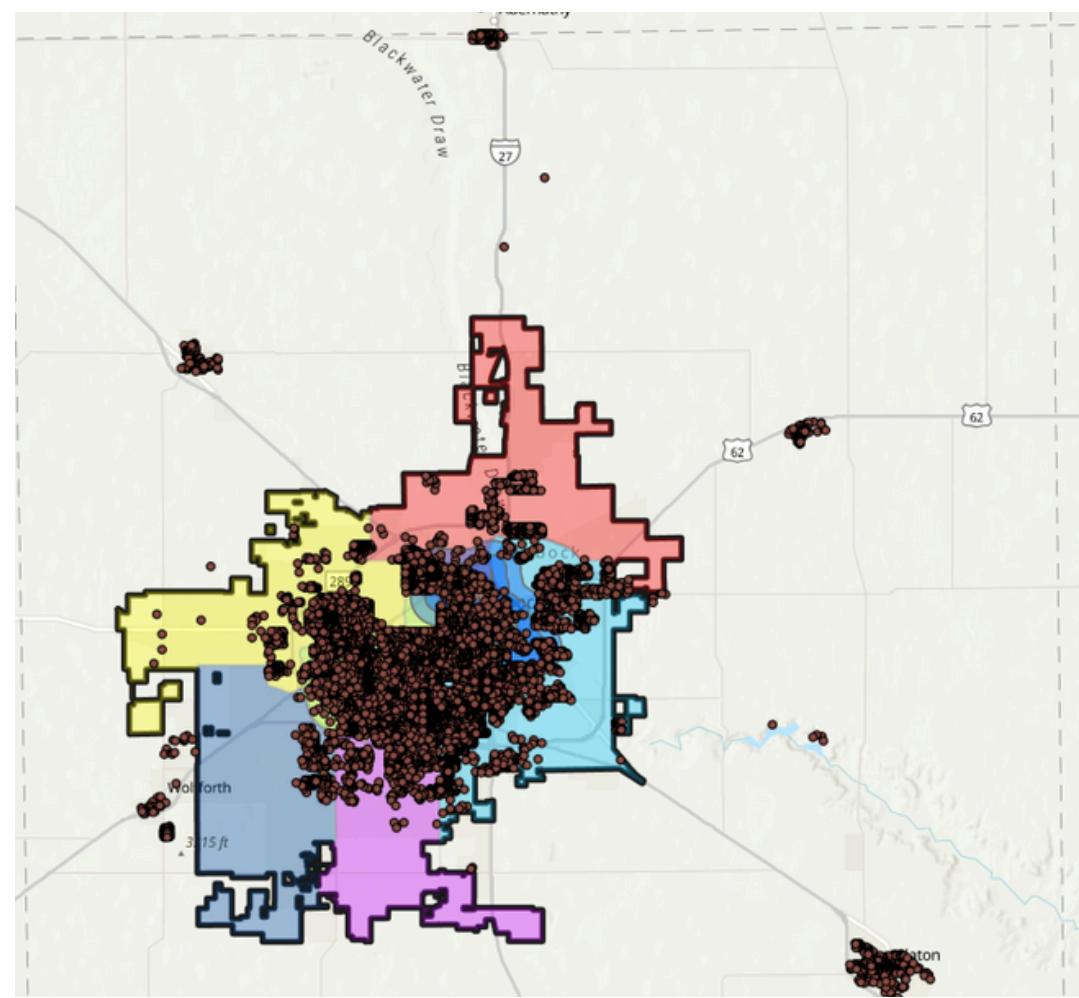


Redlining Zones and Council Districts

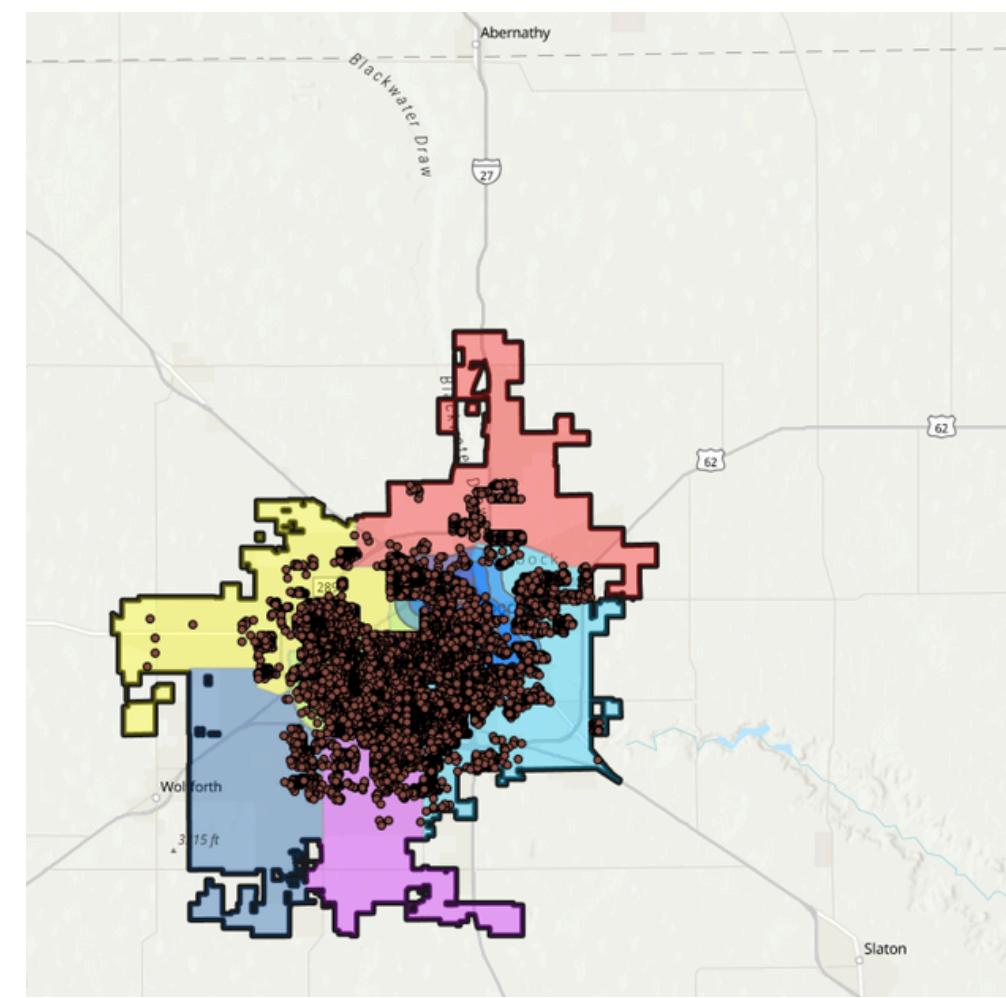
- "Properties located within the redlining zones and their buffers are found solely in Council Districts 1 and 2."
- "Districts are labeled as follows: 0, 1, 2, 3, 4, 5, 6. 0 indicates that the property lies outside the Lubbock city limits."
- "Redlined properties are exclusively situated in Council Districts 1 and 2, absent from the other districts."
- "Anticipated outcome of the analysis is that properties within redlining zones will demonstrate a decline in value over the years when compared to those in non-redlined area."



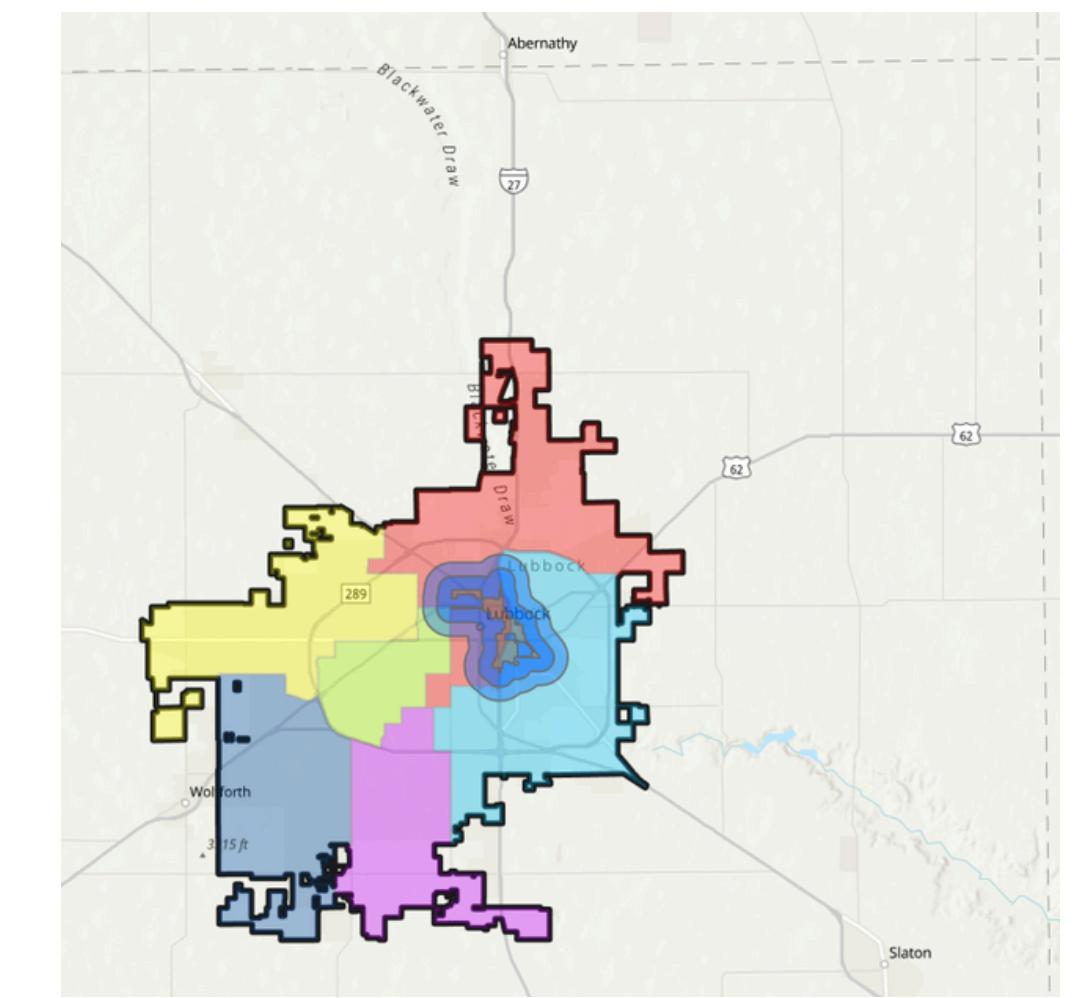
OVERLAP OF BOTH



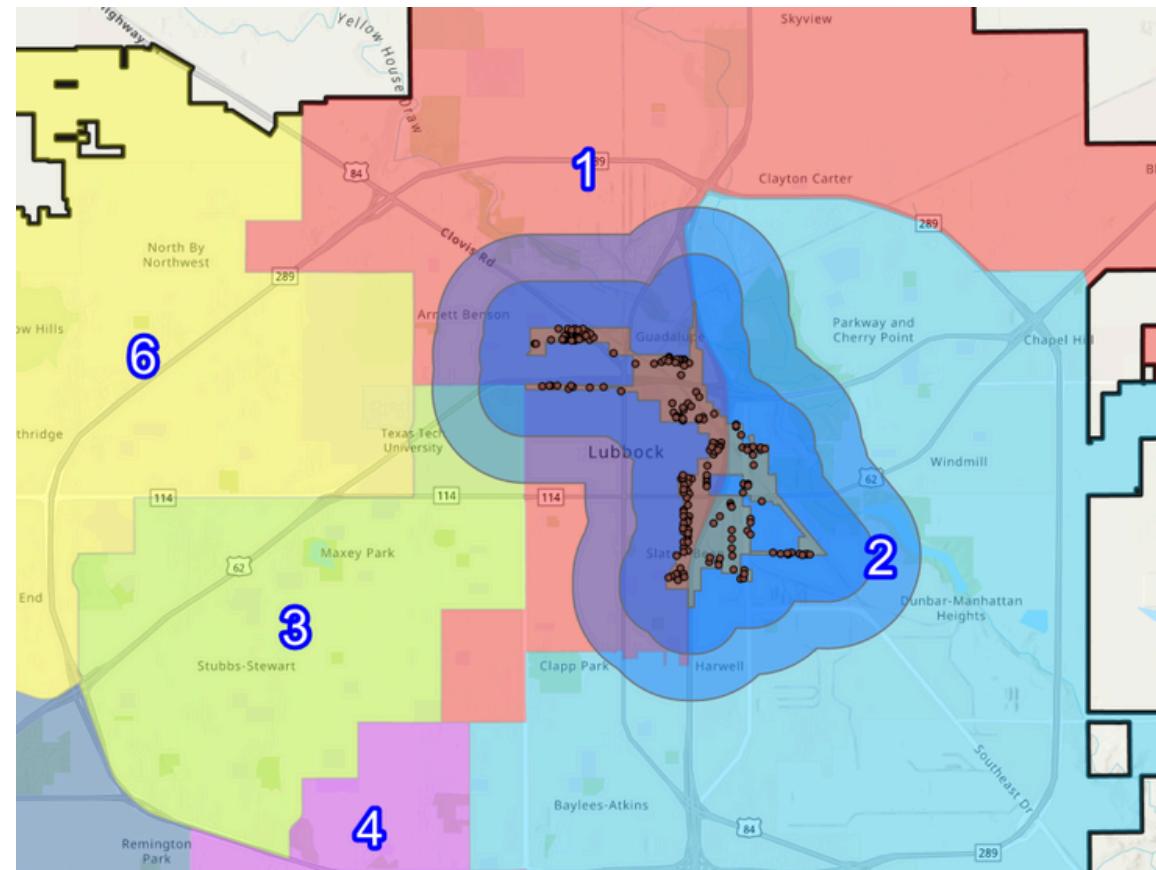
ALL DATA



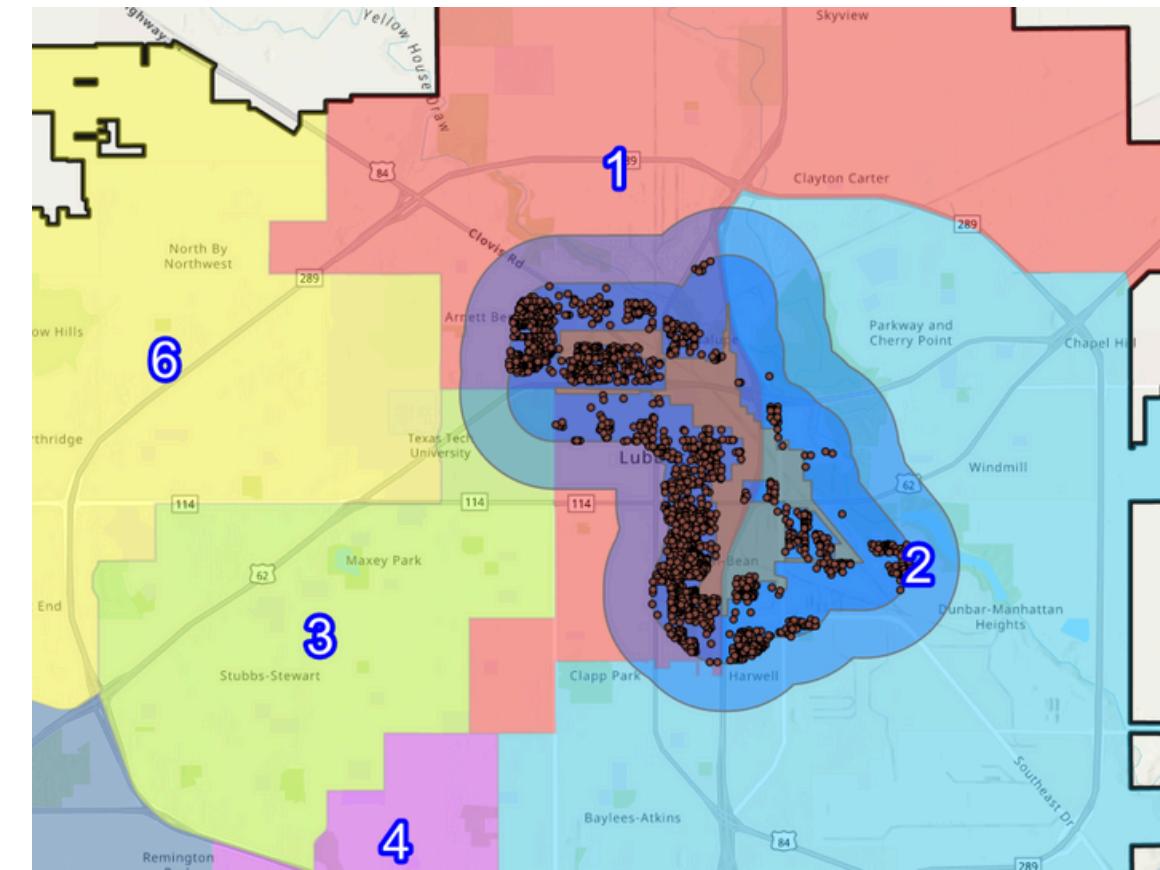
ALL DATA INSIDE LUBBOCK



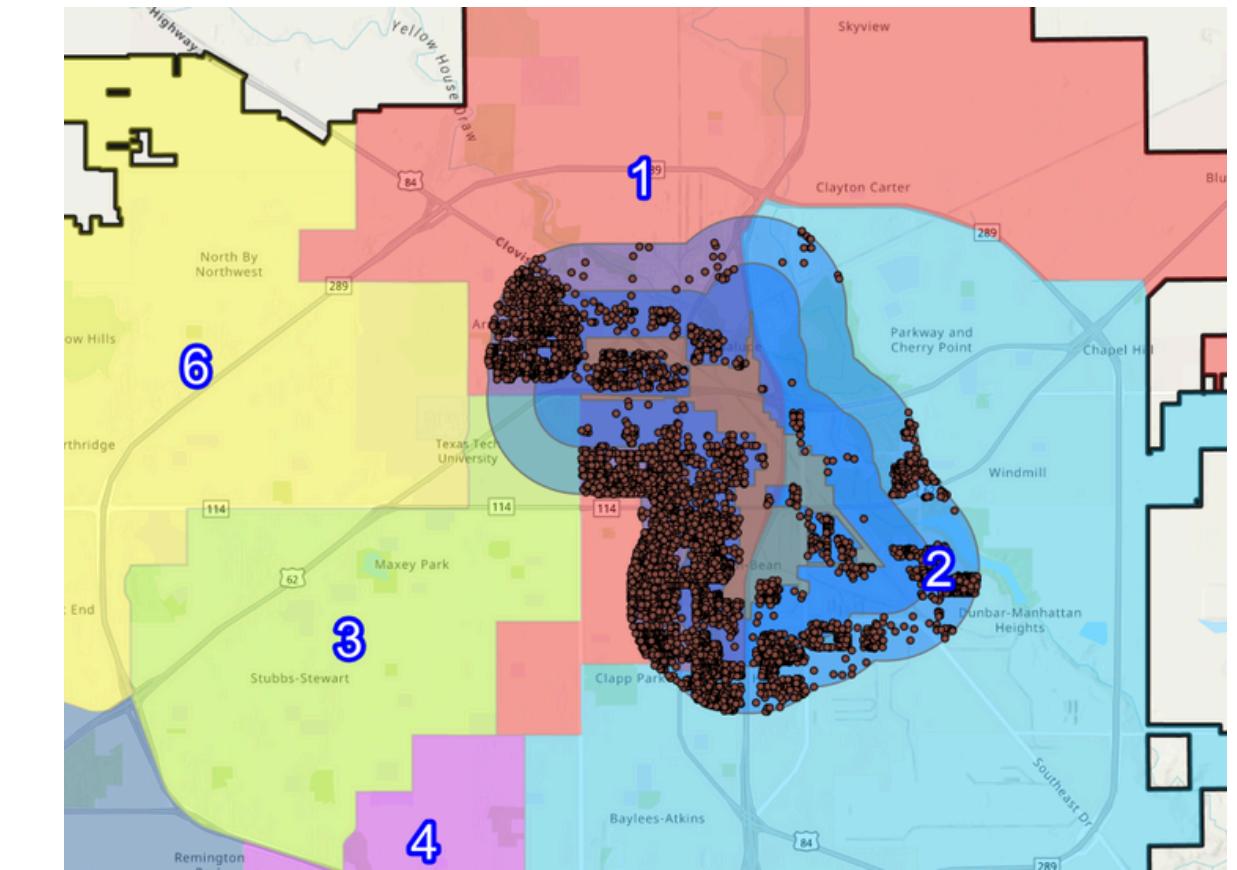
NO DATA



INSIDE REDLINING ZONE



INSIDE HALF-MILE BUFFER REDLINING ZONE



INSIDE ONE-MILE BUFFER REDLINING ZONE

MEDIAN PROPERTY VALUES ACROSS DISTRICTS (2021)

> \$195K

Districts 4 and 5 show highest median property values (>\$195,000), highlighting economic strength in non-redlined areas

↓ 59%

Redlining's impact most severe in District 2, showing 59% lower values in redlined areas

DISTRICT 1

Moderate gap (-11.6%) between redlined (\$66,670) and non-redlined (\$75,409) properties

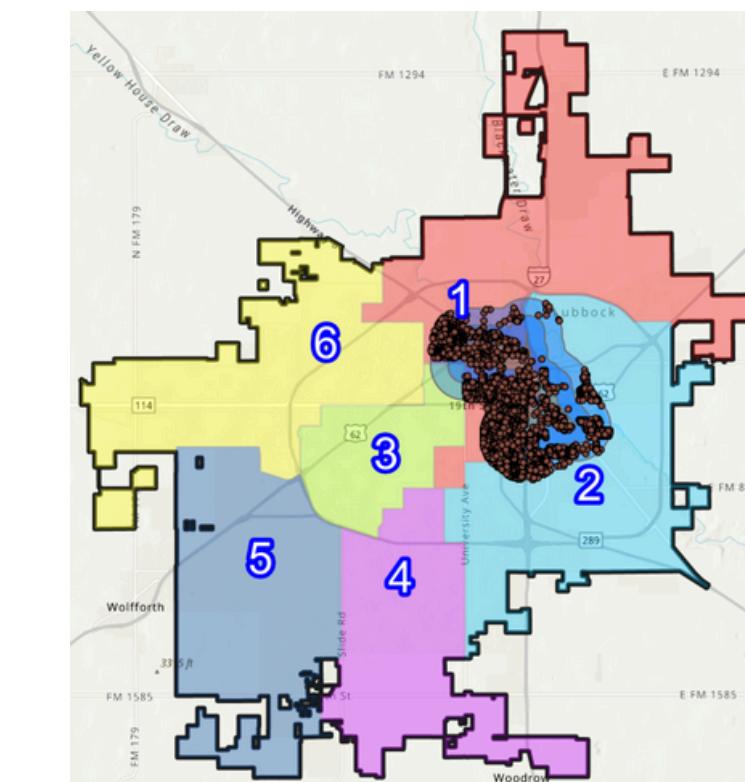
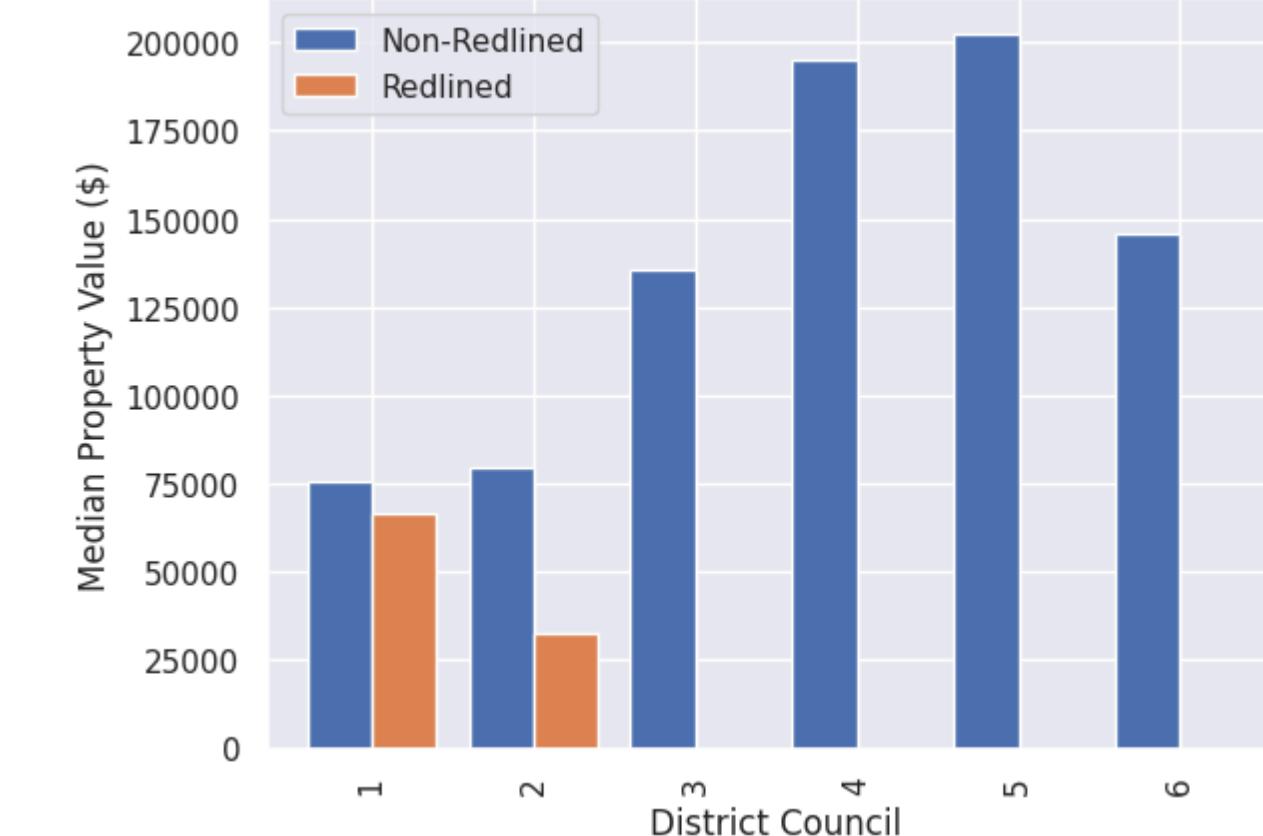
DISTRICT 2

Severe disparity with redlined properties (\$32,594) worth less than half of non-redlined (\$79,519)

DISTRICT 3-6

No redlined properties, consistently higher median values (\$135,000-\$202,000)

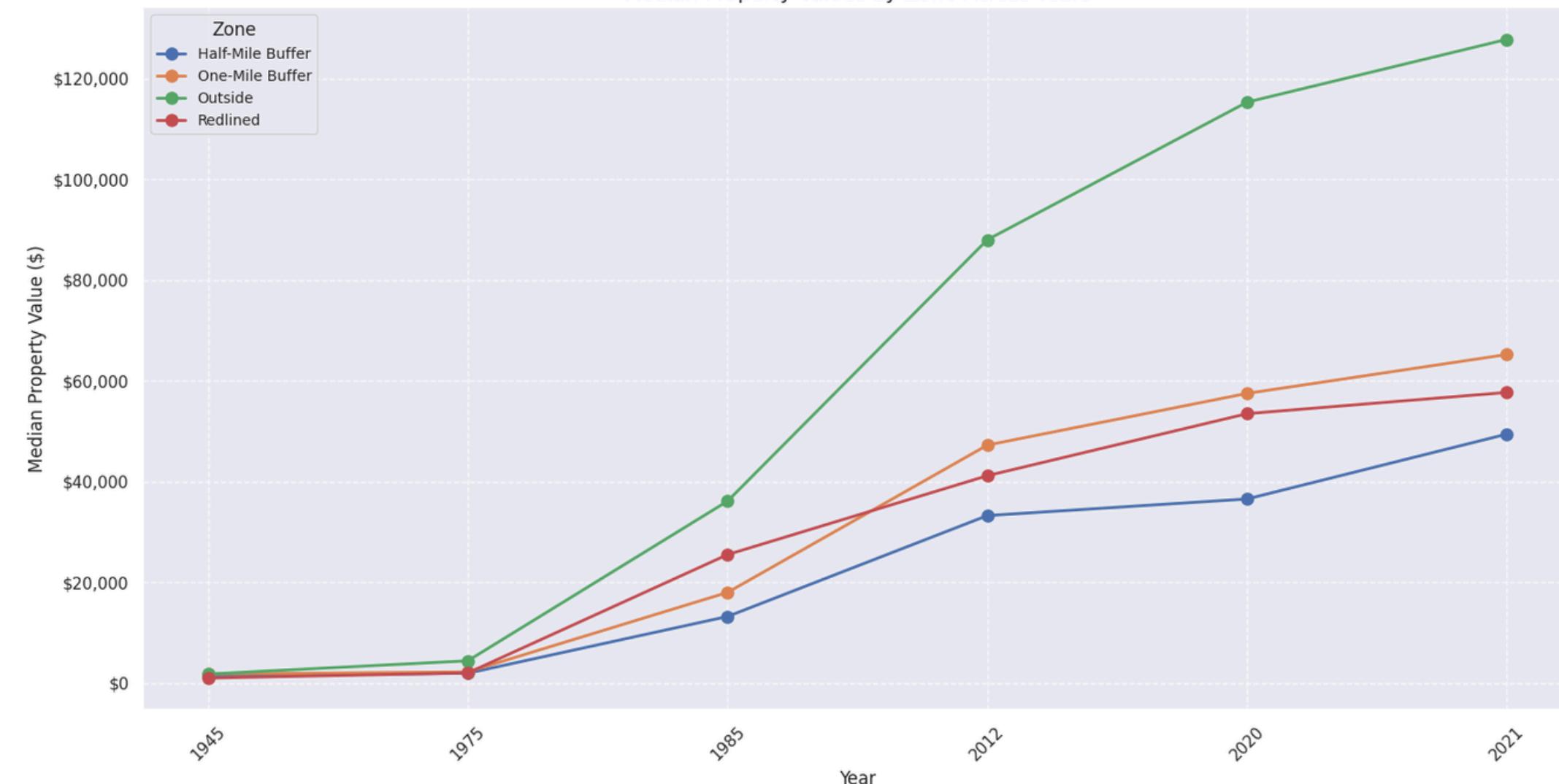
Median Property Values: Redlined vs Non-Redlined Areas by District (2021)



MEDIAN PROPERTY VALUES BY ZONE ACROSS YEARS

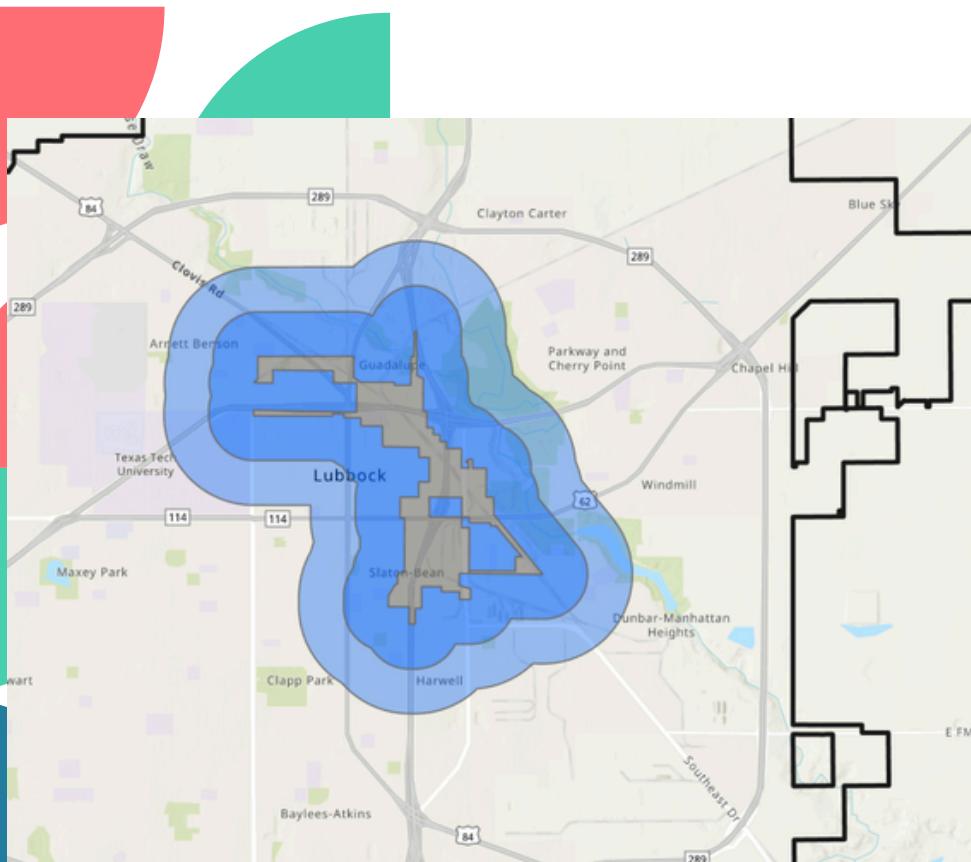
OVERALL TREND

- Outside zones consistently show highest property values, reaching \$127,805 in 2021
- Clear and persistent value gap between redlined and non-redlined areas
- All zones show significant growth from 1945–2021, but at different rates



CRITICAL GROWTH PERIOD

- Most dramatic growth occurred during 1975–1985 for all zones
- Outside zones experienced highest total growth (7,000%)
- Post-2012 shows slowing growth across all zones



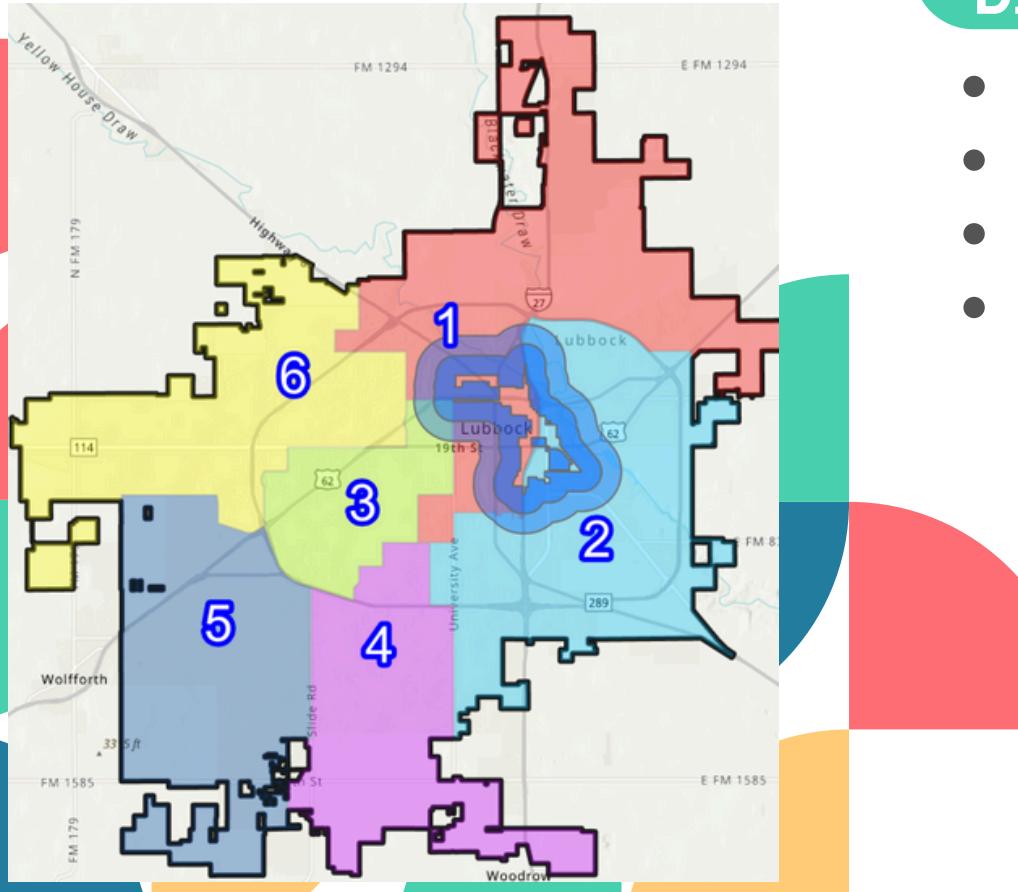
VALUE GAP EVOLUTION

- 1945: \$800 gap between redlined and outside zones
- 2021: Gap widened to \$70,093
- Gap percentage increased from 80% (1945) to 121.5% (2021)
- Shows persistent and widening economic disparity

HISTORICAL PROPERTY VALUE TRENDS BY DISTRICTS ACROSS YEARS

GROWTH PATTERNS

- District 6 shows exceptional growth (10,292.1%), highest among all districts
- Districts 2 and 3 demonstrate strong growth (>6,600%)
- Districts 1 and 4 show moderate growth (~4,300%)
- District 5 has limited historical data, showing growth only from 1975



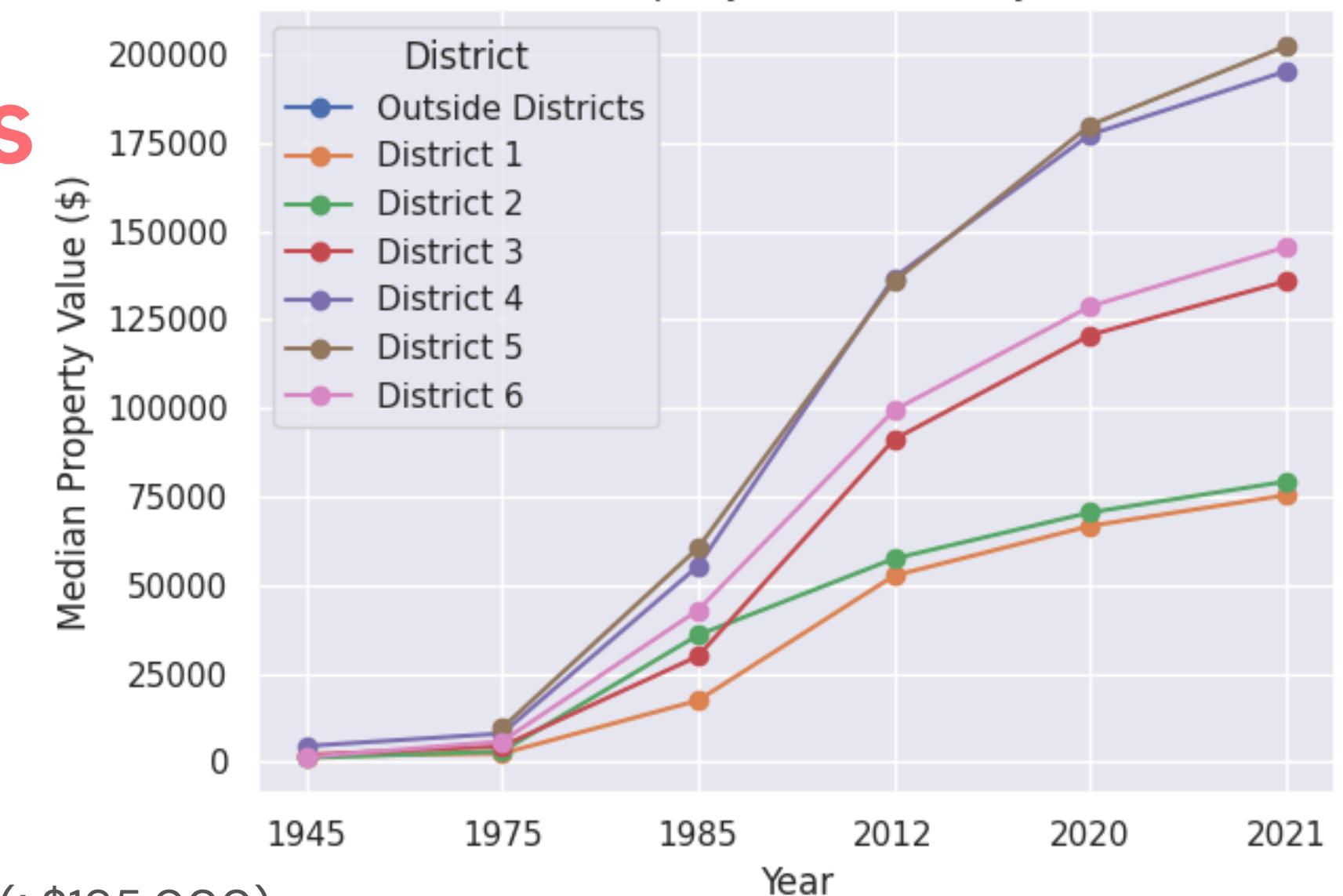
CURRENT VALUE DISTRIBUTION (2021)

- Highest values: Districts 4 and 5 (>\$195,000)
- Middle range: Districts 3 and 6 (\$135,000-\$145,000)
- Lower range: Districts 1 and 2 (<\$80,000)
- Clear northeast-southwest divide in property values

VALUE GAP EVOLUTION

- Southwestern districts (4, 5) show highest current values despite lower growth rates
- Northeastern districts (1, 2) show lower current values despite substantial growth
- District 6's high growth hasn't translated to highest current values

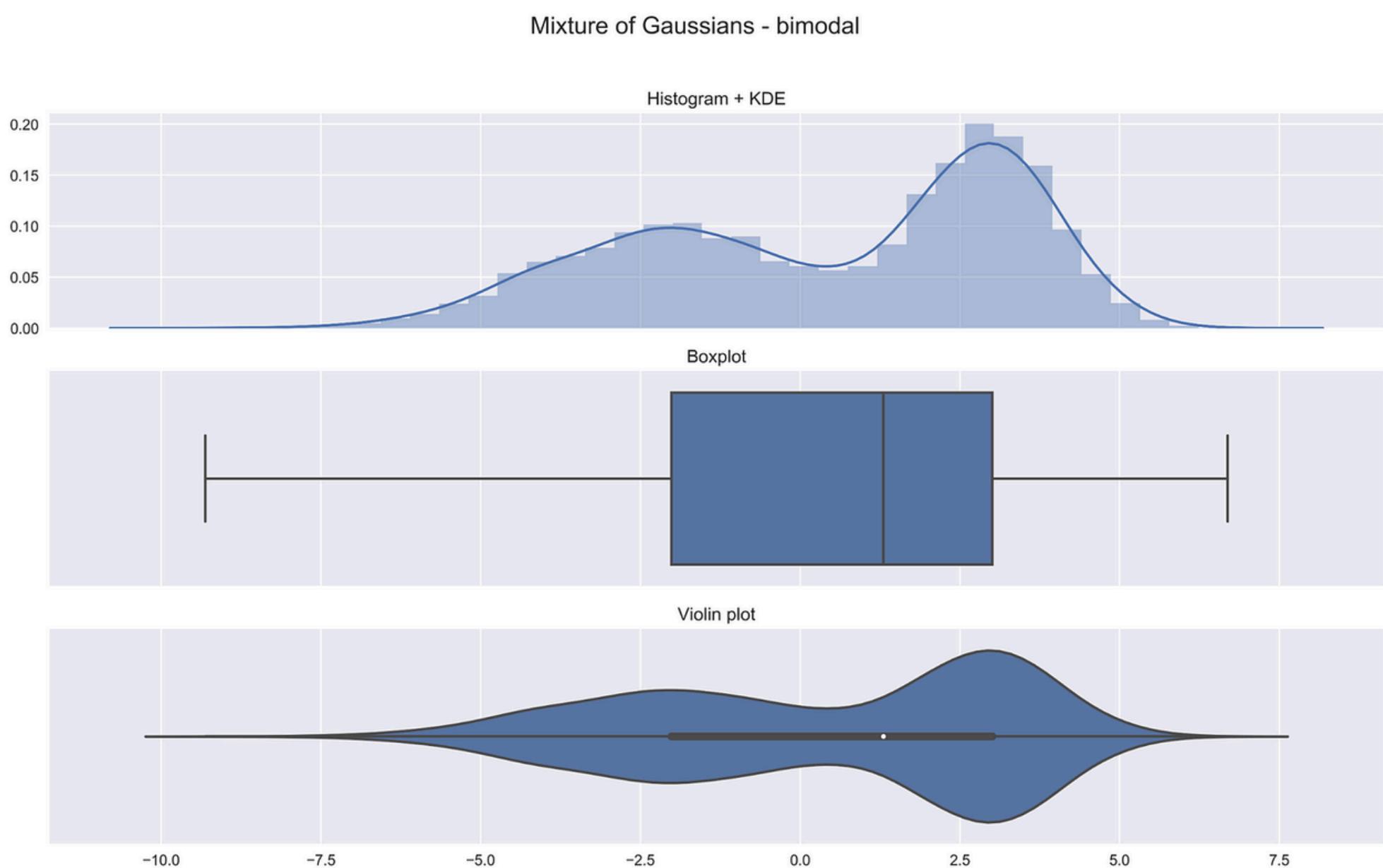
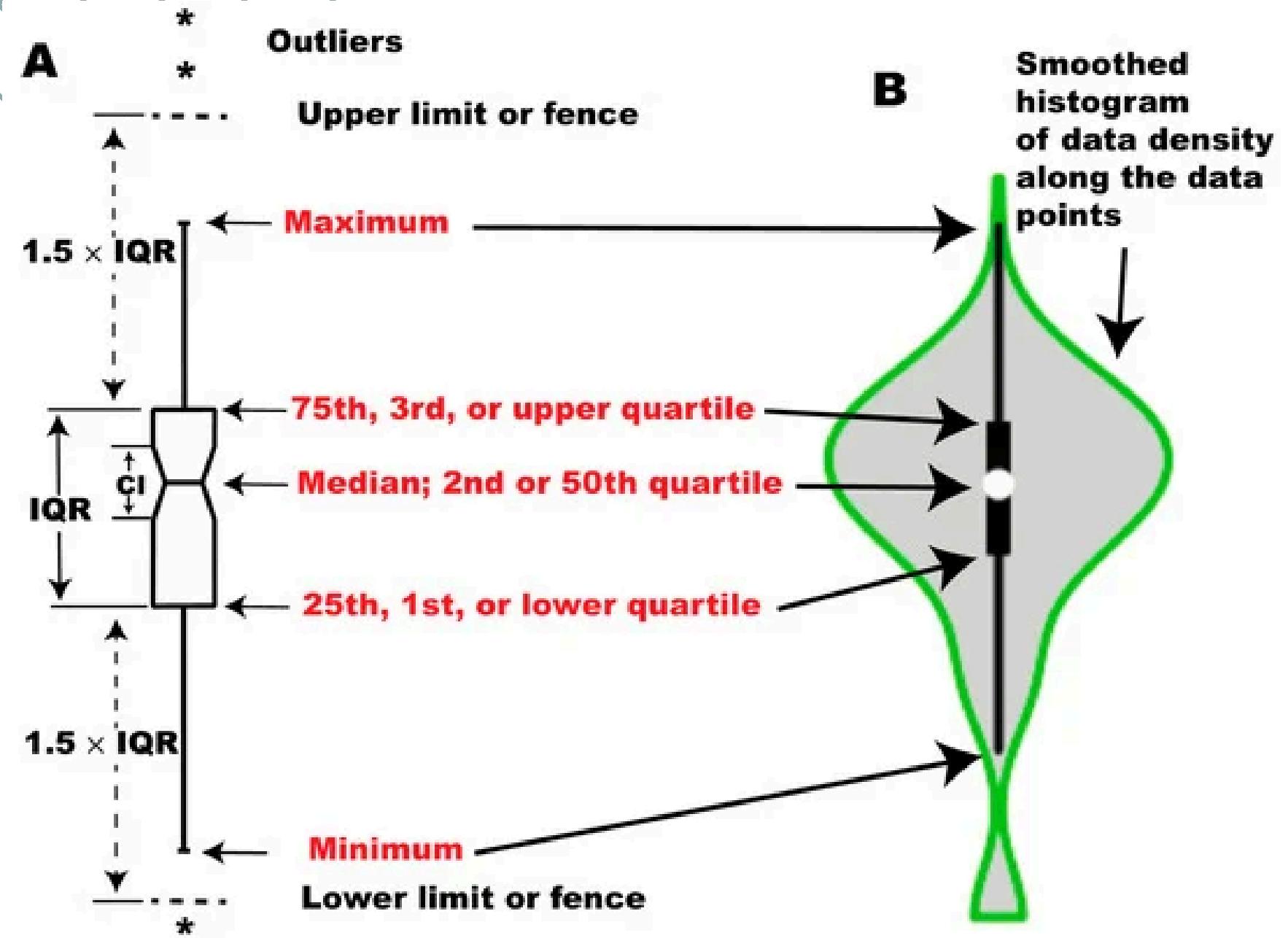
Historical Property Value Trends by District



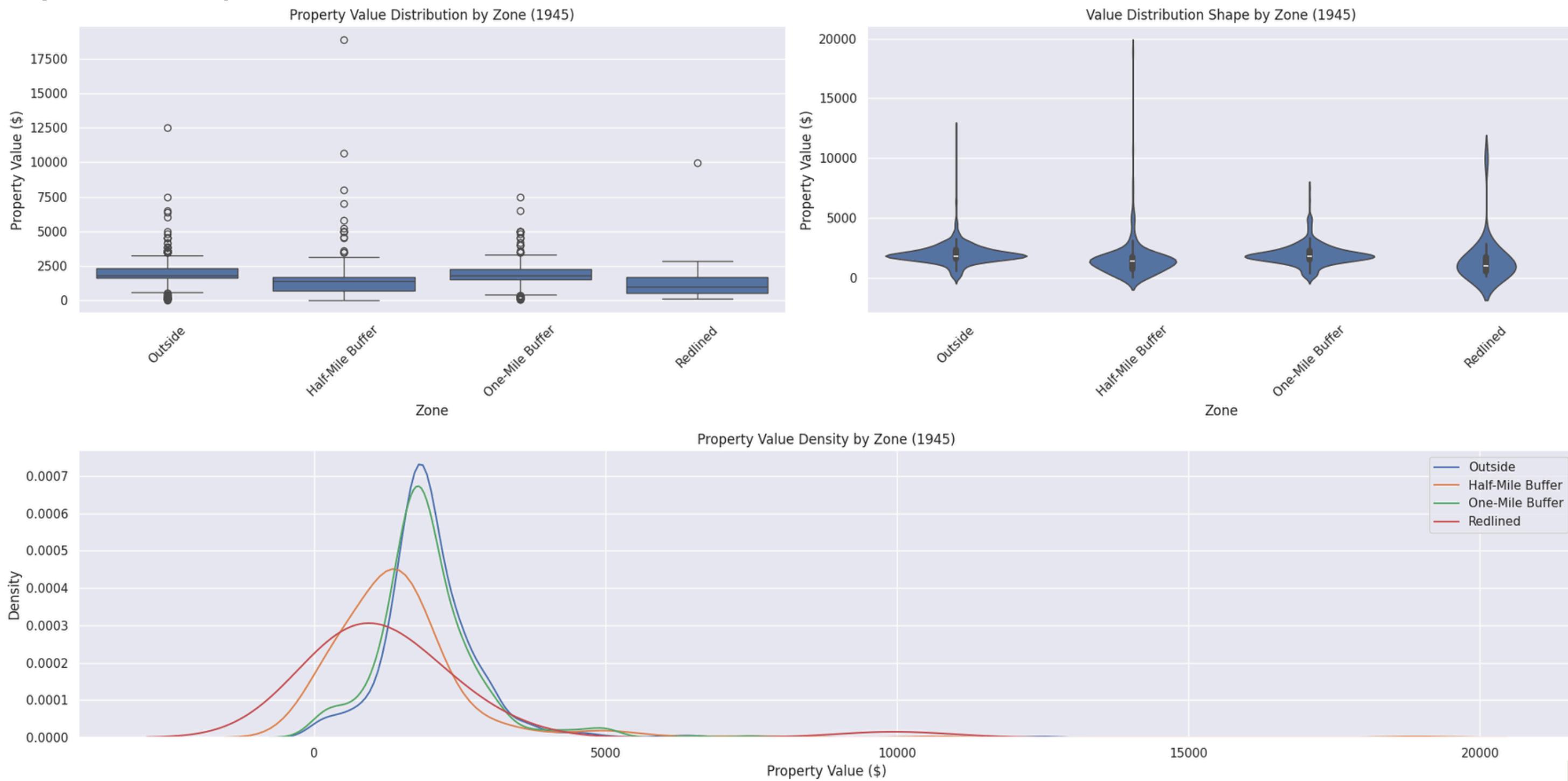
YEAR WISE ANALYSIS

- 1945: Post-WWII baseline, reflecting early Jim Crow era
- 1975: Period of urban expansion and development
- 1985: Era of significant property value acceleration
- 2012–2021: Modern period showing persistent value disparities and growth patterns

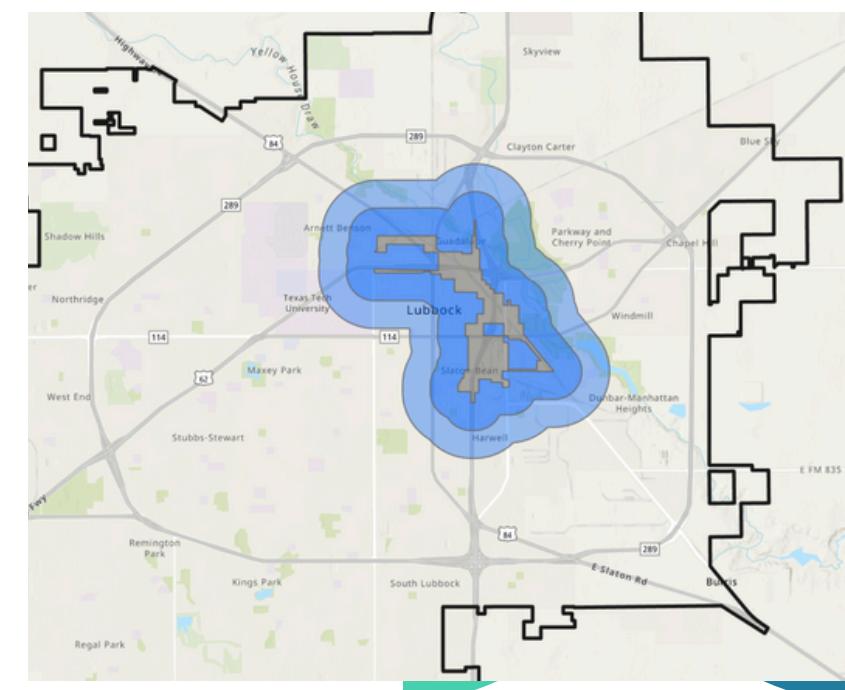
UNDERSTANDING BOXPLOT AND VIOLIN PLOT



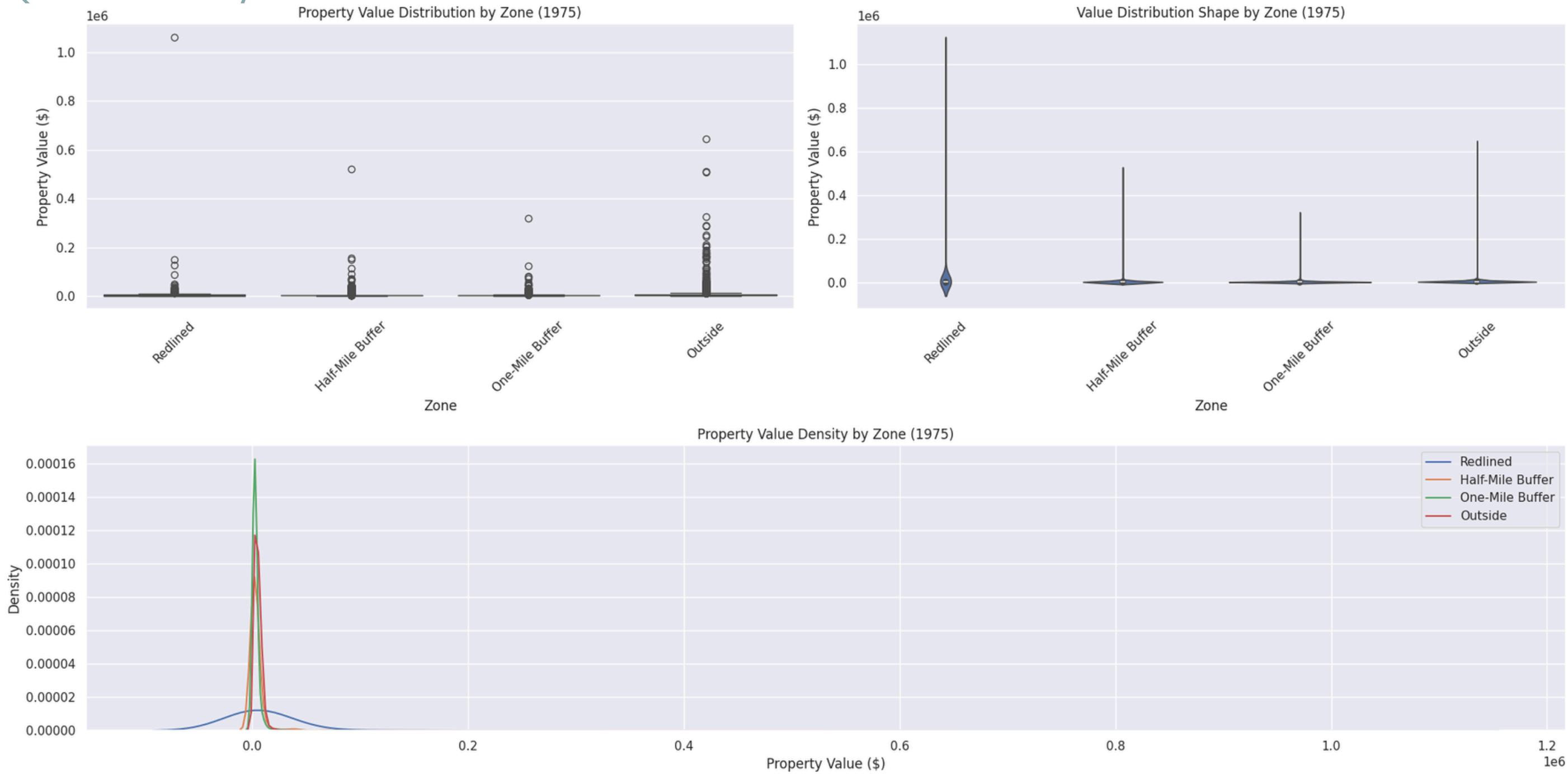
1945



- Clear evidence of systematic property value differences
- Buffer zones demonstrate transitional value patterns
- High volatility in redlined areas suggests unstable market
- Outside areas show more stable, higher values
- Foundation for long-term value disparities already established



1975

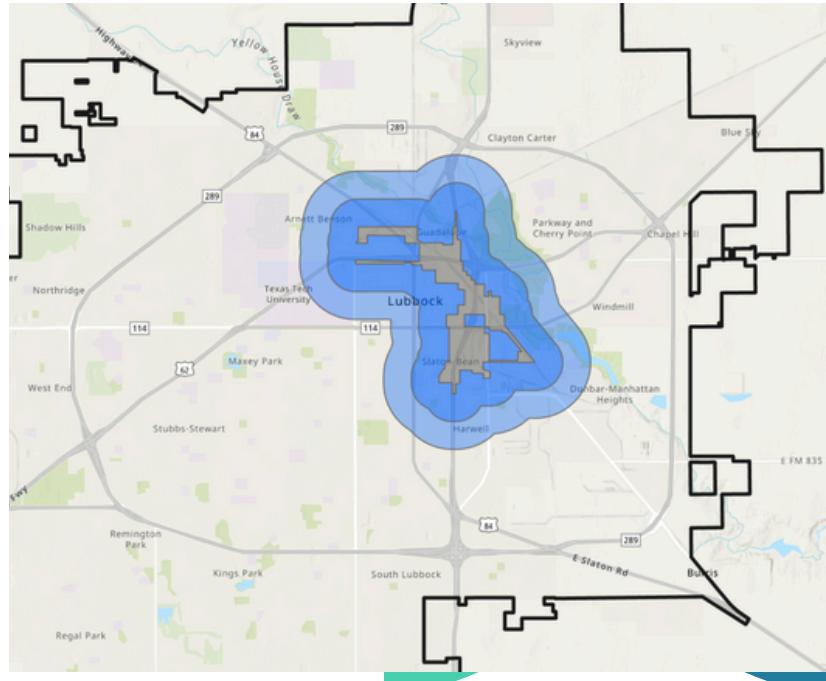


What Changed from 1945 to 1975?

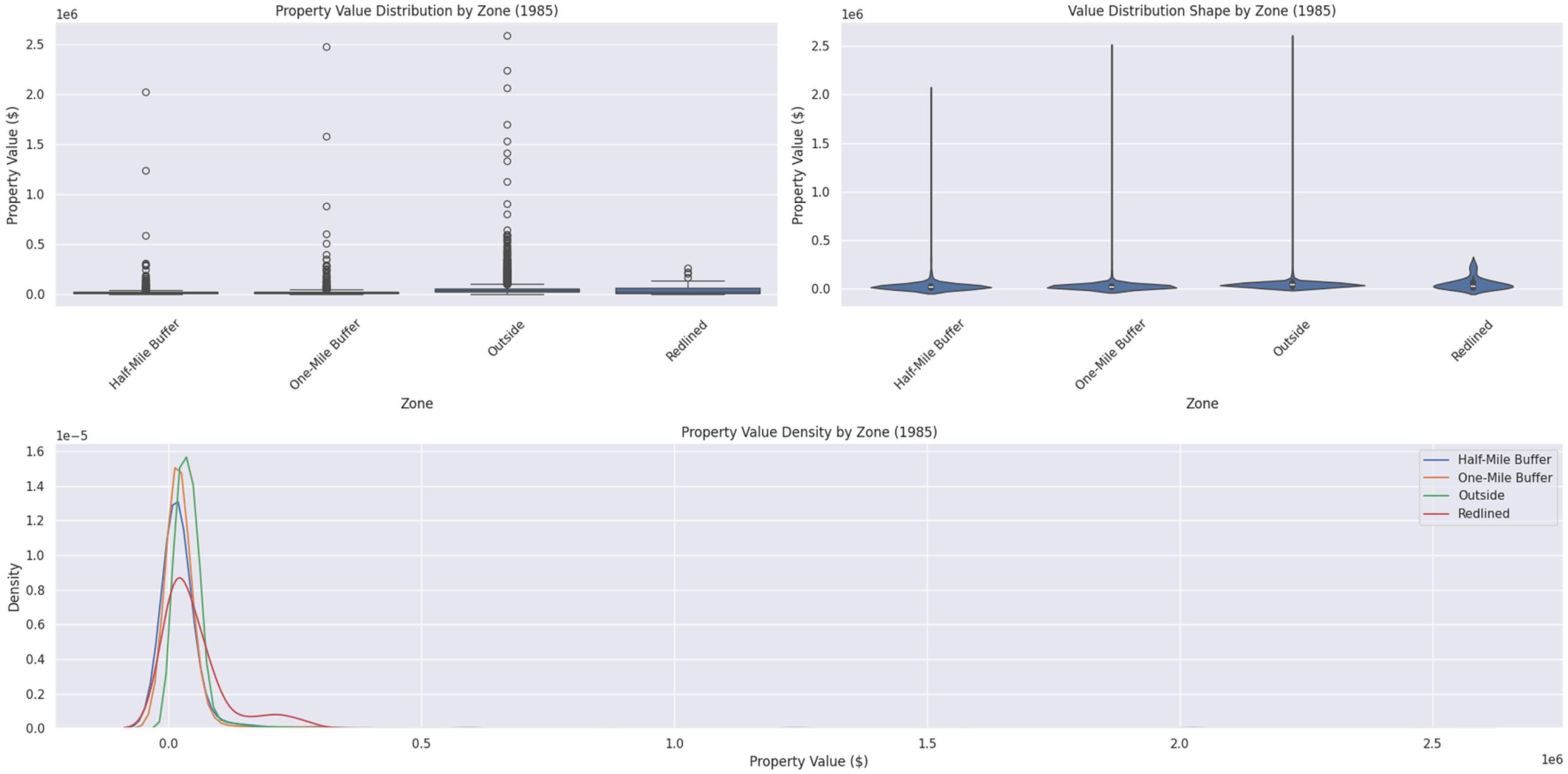
- Value gap between redlined and outside areas grew from 80% to 119%
- Many more properties were documented in city records
- Biggest difference in values appeared between zones
- More extreme property values started showing up
- Buffer zones became clearer "transition areas" between redlined and outside zones

What This Tells Us About 1975

- Property values showed clearer separation between areas
- Some properties had unusually high or low values
- Clear "steps down" in value from outside areas through buffer zones to redlined areas
- Property records became more complete
- Areas became more distinctly divided by value



1985

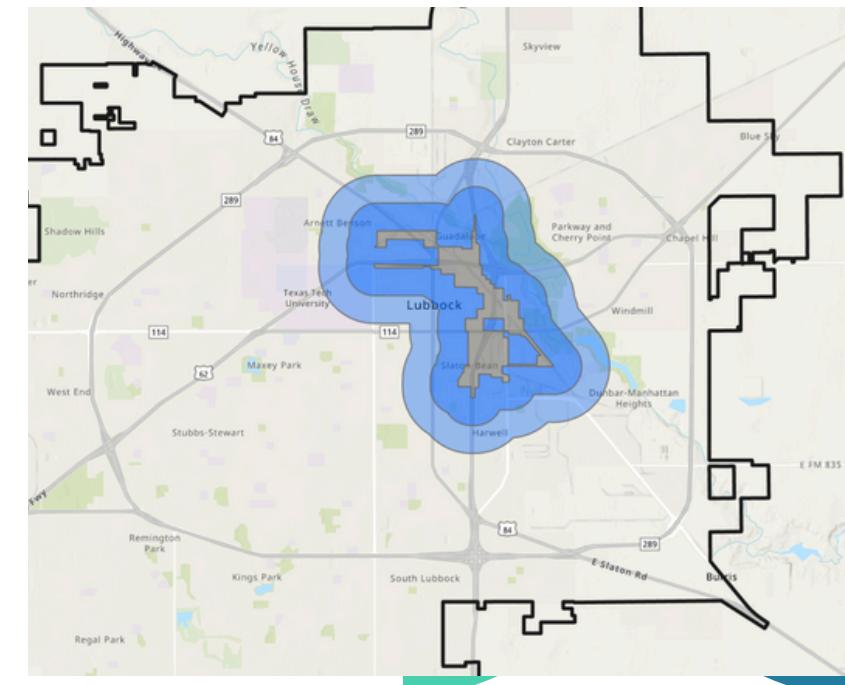


What Changed from 1975 to 1985?

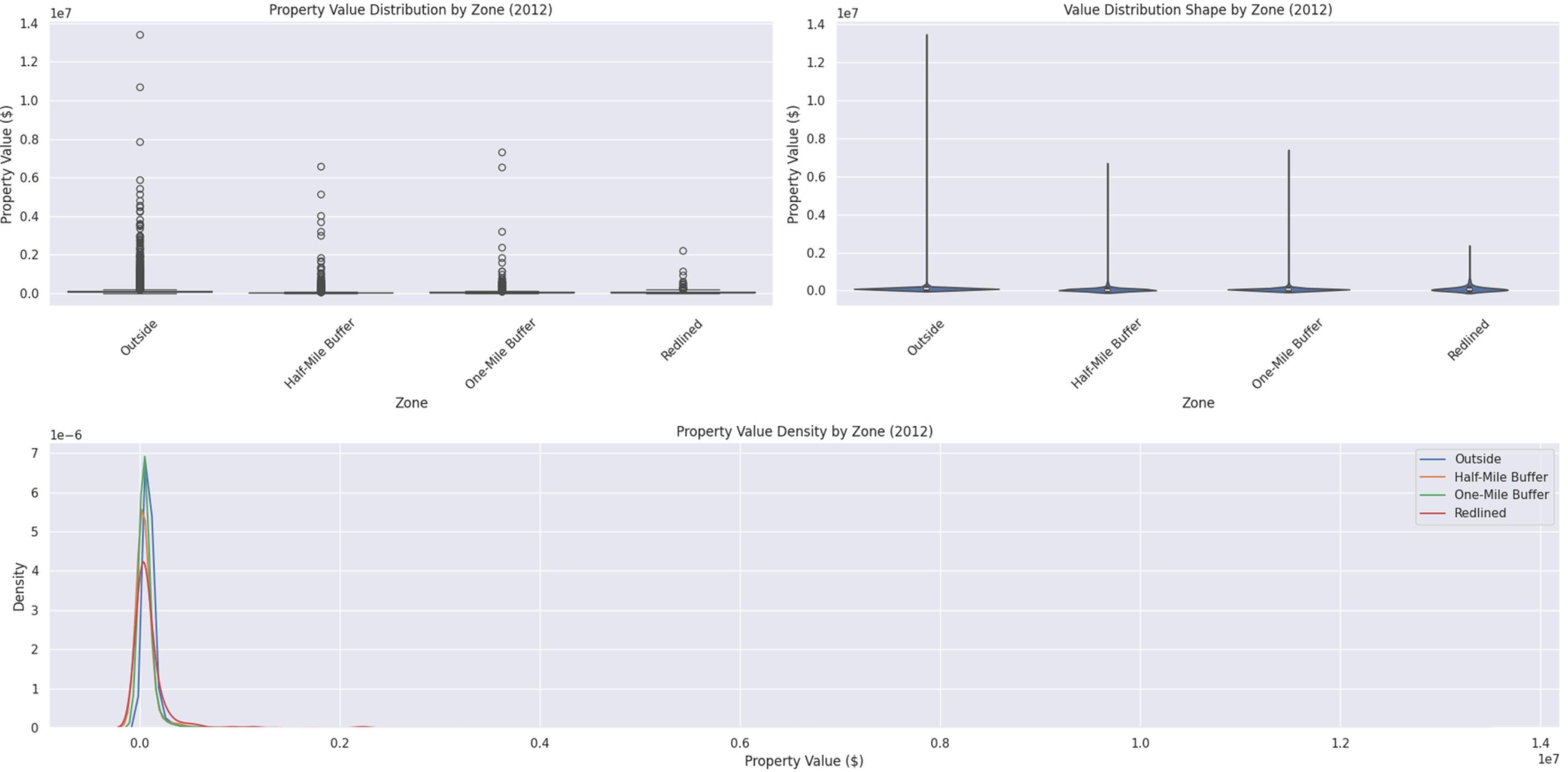
- Dramatic increase in all property values (median values now in \$13,000-\$36,000 range)
- Value gap surprisingly decreased to 41.6% (down from 119%)
- Property values showed higher clustering in each zone
- All zones saw significant value jumps (5-10 times higher than 1975)
- Buffer zones maintained clear value progression patterns

What This Tells Us About 1985

- Property values increased substantially across all areas
- Outside areas maintained highest stability (CV: 1.535)
- Interesting shift: redlined areas showed increased stability (CV: 1.238)
- Clear value steps between zones:
 - Outside: \$36,135 median
 - One-Mile Buffer: \$18,008 median
 - Half-Mile Buffer: \$13,230 median
 - Redlined: \$25,515 median



2012

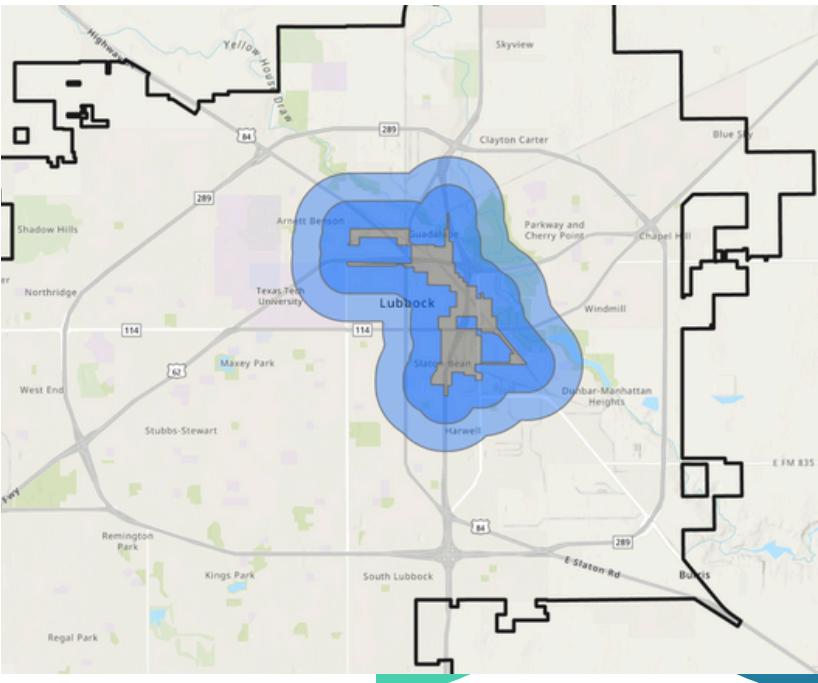


What Changed from 1985 to 2012?

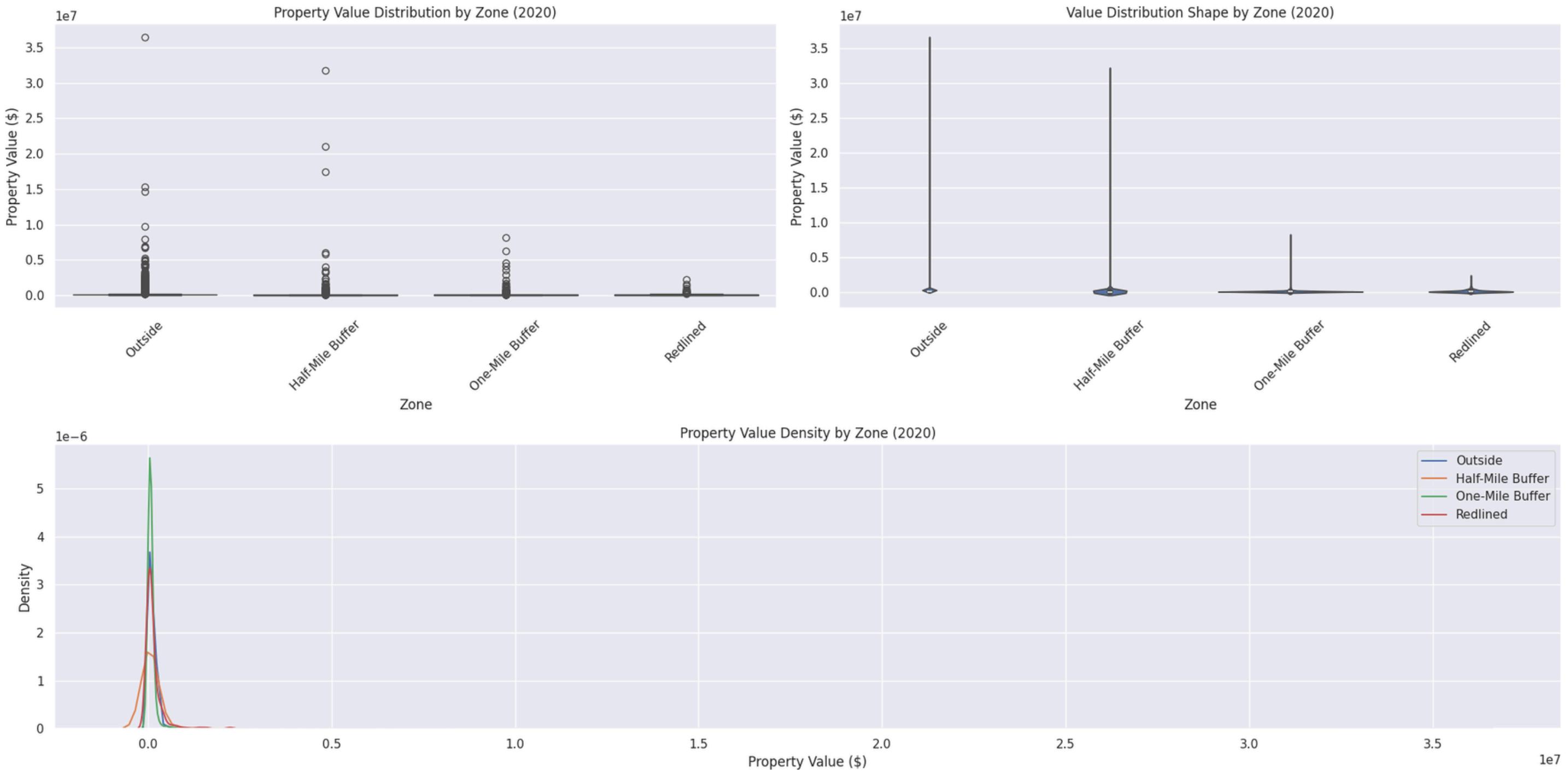
- Massive increase in property values across all zones (now in \$33,000–\$88,000 range)
- Value gap widened significantly again to 113.6% (up from 41.6%)
- Much larger data sample (28,340 properties vs 11,475 in 1985)
- Property values more clearly stratified by zone
- Increased volatility in buffer zones (CV: 3.850 for half-mile)

What This Tells Us About 2012

- Clear value hierarchy emerged:
 - Outside areas: \$88,047 median
 - One-Mile Buffer: \$47,357 median
 - Redlined areas: \$41,218 median
 - Half-Mile Buffer: \$33,329 median
- Extensive data coverage:
 - Outside: 23,643 properties
 - Buffer zones: 4,500 properties combined
 - Redlined: 197 properties



2020

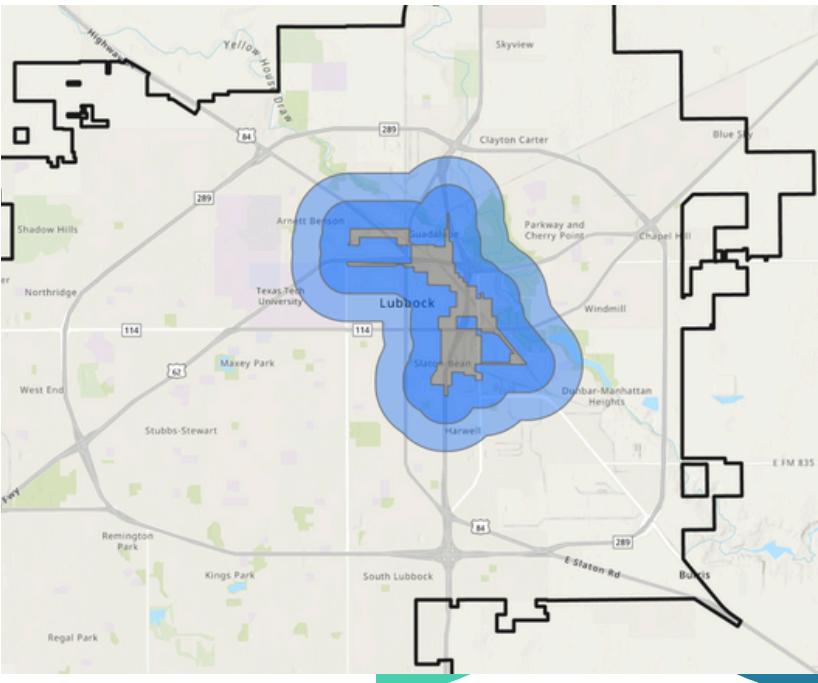


What Changed from 2012 to 2020?

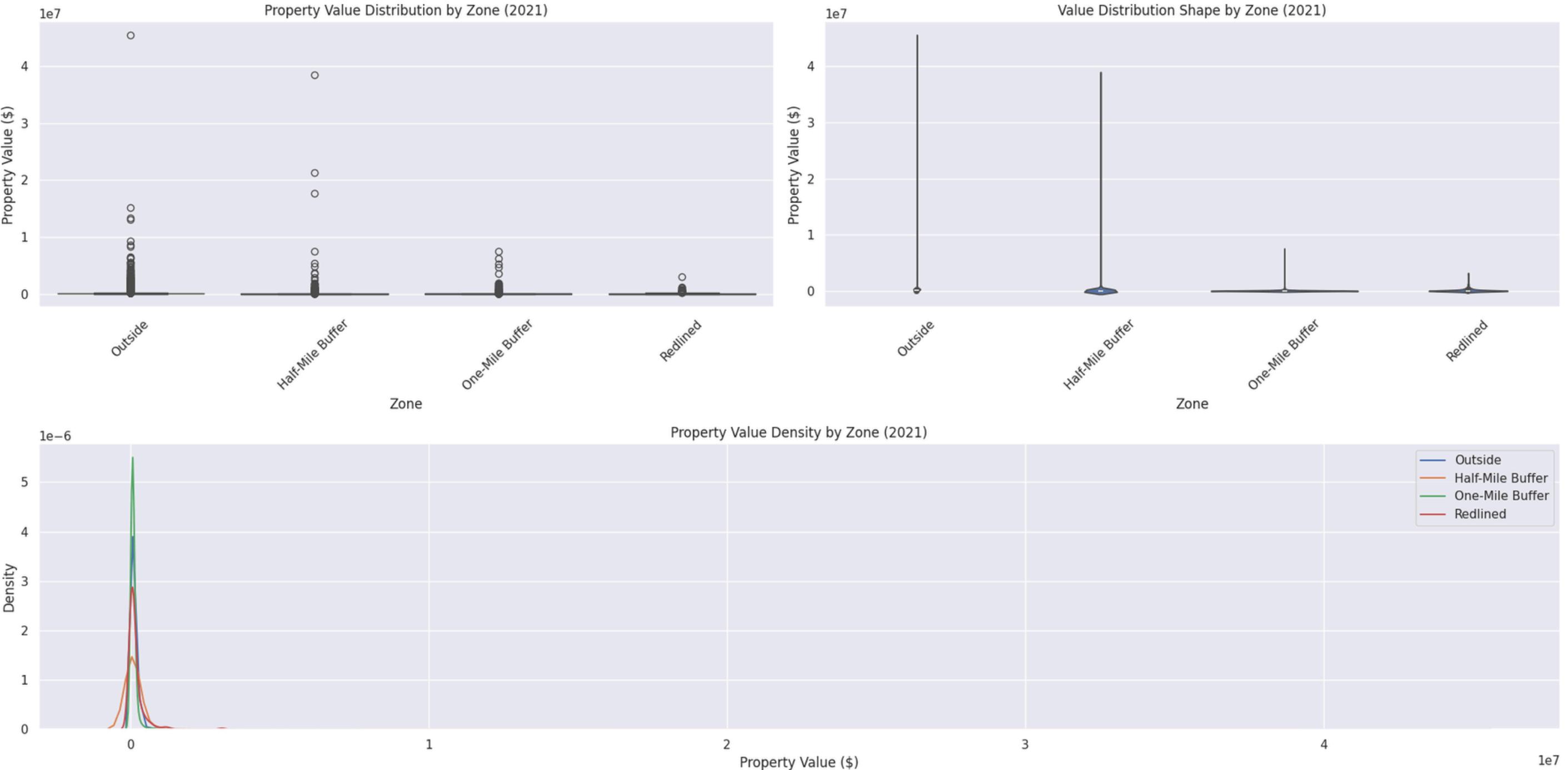
- All zones saw significant value increases:
 - Outside areas: \$88,047 → \$115,388
 - Redlined areas: \$41,218 → \$53,591
 - Value gap slightly increased to 115.3%
- Half-mile buffer showed highest volatility ever (CV: 8.044)
- Extreme value properties emerged (ranges now in millions)
- Sample sizes remained stable across zones

What This Tells Us About 2020

- Clear value tiers maintained:
 - Outside areas highest: \$115,388 median
 - One-Mile Buffer: \$57,609 median
 - Redlined areas: \$53,591 median
 - Half-Mile Buffer lowest: \$36,595 median
- Property numbers stayed consistent:
 - Outside: 23,636 properties
 - Buffer zones: 4,483 combined
 - Redlined: 195 properties



2021

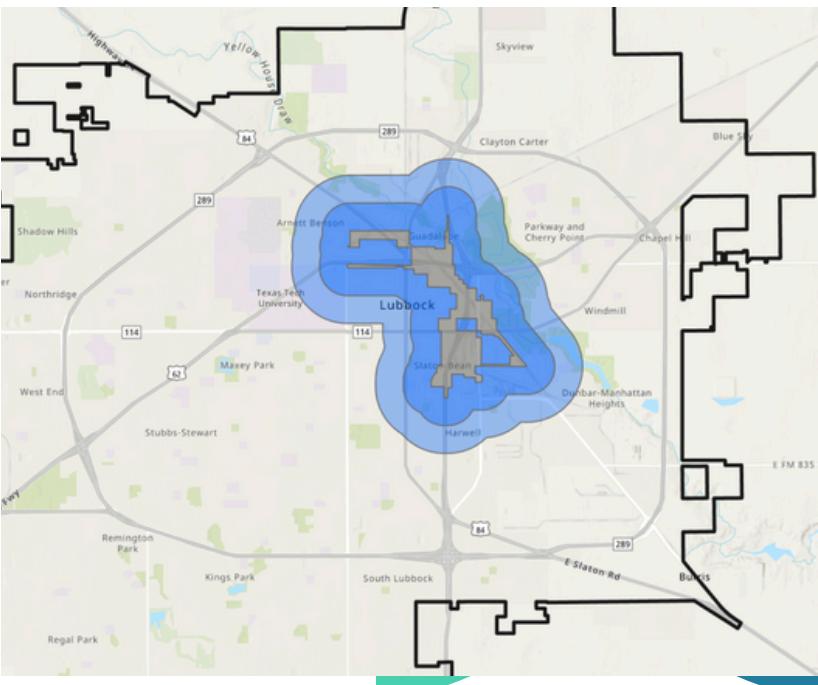


What Changed from 2020 to 2021?

- Continued value increases across all zones:
 - Outside areas: \$115,388 → \$127,818
 - Redlined areas: \$53,591 → \$57,823
- Value gap increased to highest level: 121.1%
- Half-mile buffer volatility remained extremely high (CV: 7.979)
- Extreme property values reached new heights (\$45.4M maximum)

What This Tells Us About 2021

- Clearest value stratification to date:
 - Outside areas: \$127,818 median
 - One-Mile Buffer: \$65,480 median
 - Redlined areas: \$57,823 median
 - Half-Mile Buffer: \$49,439 median
- Property distribution remained stable:
 - Outside: 23,641 properties
 - Buffer zones: 4,488 combined
 - Redlined: 194 properties



VALUE STABILITY OVER TIME

REDLINED ZONE EVOLUTION

- Most dramatic CV change: $1.330 \rightarrow 5.858 \rightarrow 1.954$ (1945 \rightarrow 1975 \rightarrow 2021)
- 1975 volatility spike suggests major market disruption during urban changes
- Recent stability might indicate market stagnation and low data points
- Lower volatility could reflect lack of investment and development

HALF-MILE BUFFER VOLATILITY

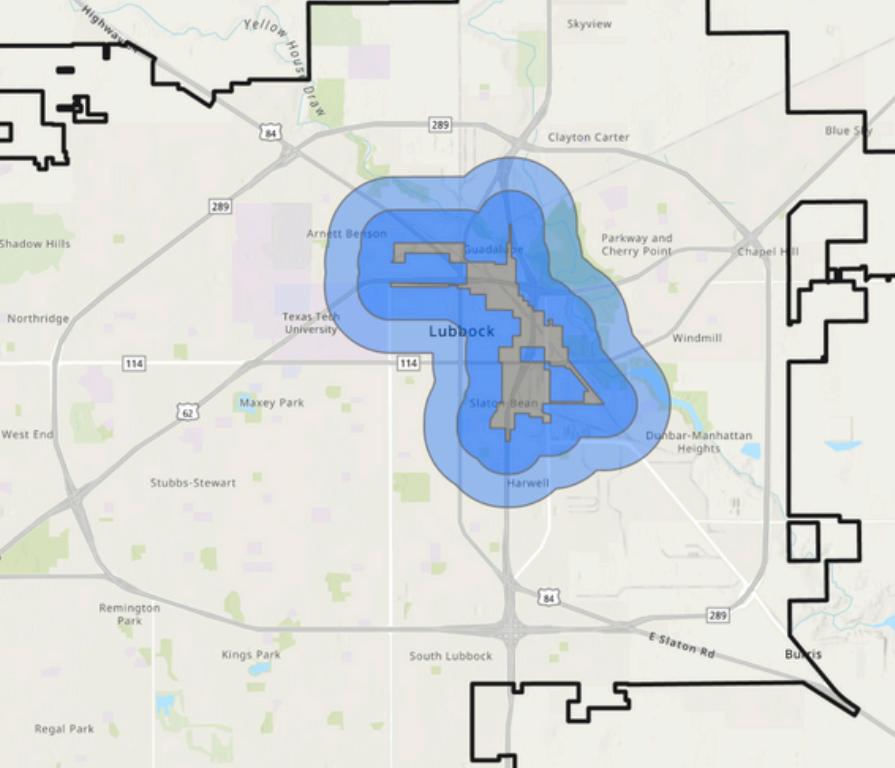
- Nearly 8x increase from 1945 ($1.050 \rightarrow 8.048$)
- Direct contact with redlined zones creates market uncertainty
- Property values highly sensitive to nearby redlined conditions
- Suggests active "transition zone" where property values are most unpredictable

ONE-MILE BUFFER PATTERNS

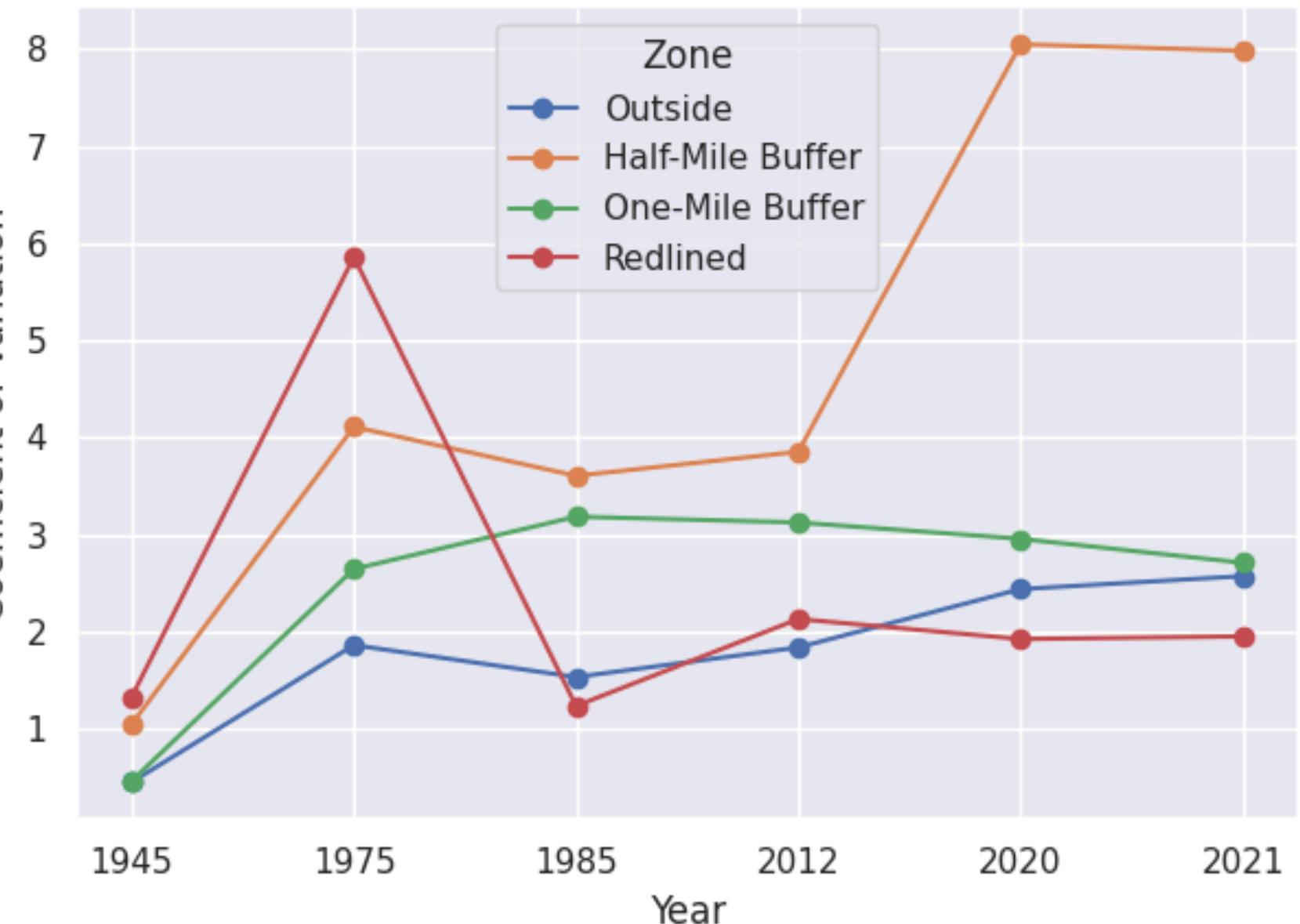
- Maintained consistent volatility
- Acts as secondary transition zone
- More stable than half-mile buffer suggests reduced redlining impact
- Consistent volatility indicates established market patterns

OUTSIDE ZONE TRANSFORMATION

- 5.7x increase in CV from 1945 to 2021
- Initial stability reflects historical market control/segregation
- Increasing volatility shows market diversification
- Higher modern volatility suggests more dynamic property market



Value Stability Over Time (Coefficient of Variation)



PROPERTY VALUE DECLINE PATTERNS

REDLINED ZONE PATTERN

- Stark increase in decline (0% → 37%) from 1945 to 1985–2012
- Sharp drop after 1985–2012 peak
- Recent uptick (16% in 2020–2021)
- **Implications:** Initially stable values gave way to significant decline, suggesting deteriorating conditions and possible disinvestment

HALF-MILE BUFFER TREND

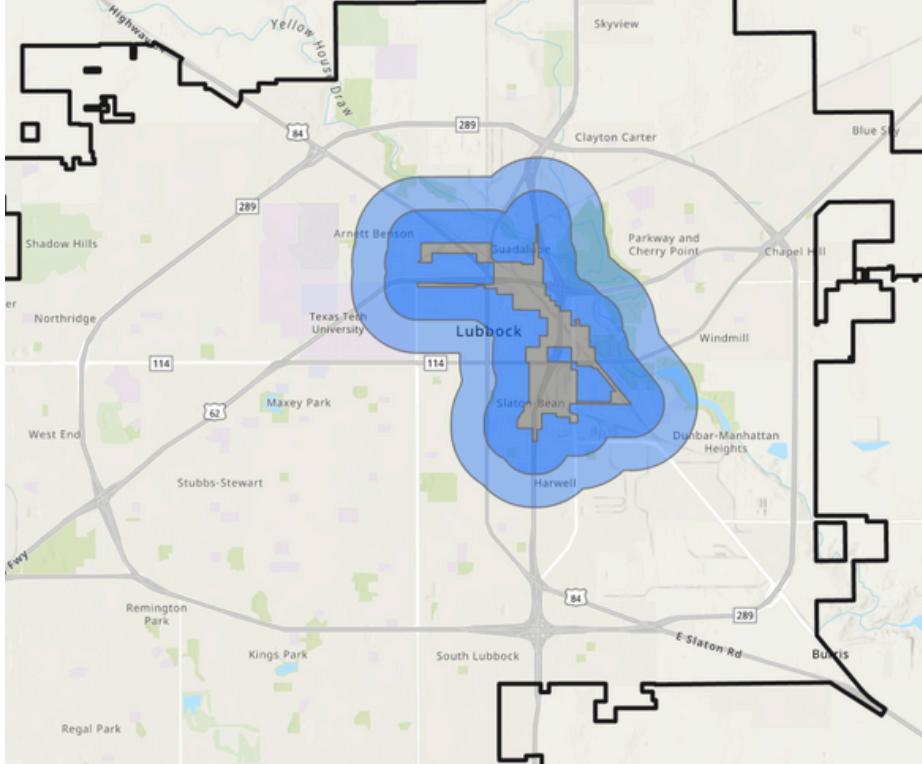
- Relatively stable until 2012–2020
- Dramatic spike (30%) in 2012–2020
- Recent sharp decrease
- **Implications:** Shows delayed impact of redlining effects, with increasing property value stress in recent decades

OUTSIDE ZONE STABILITY

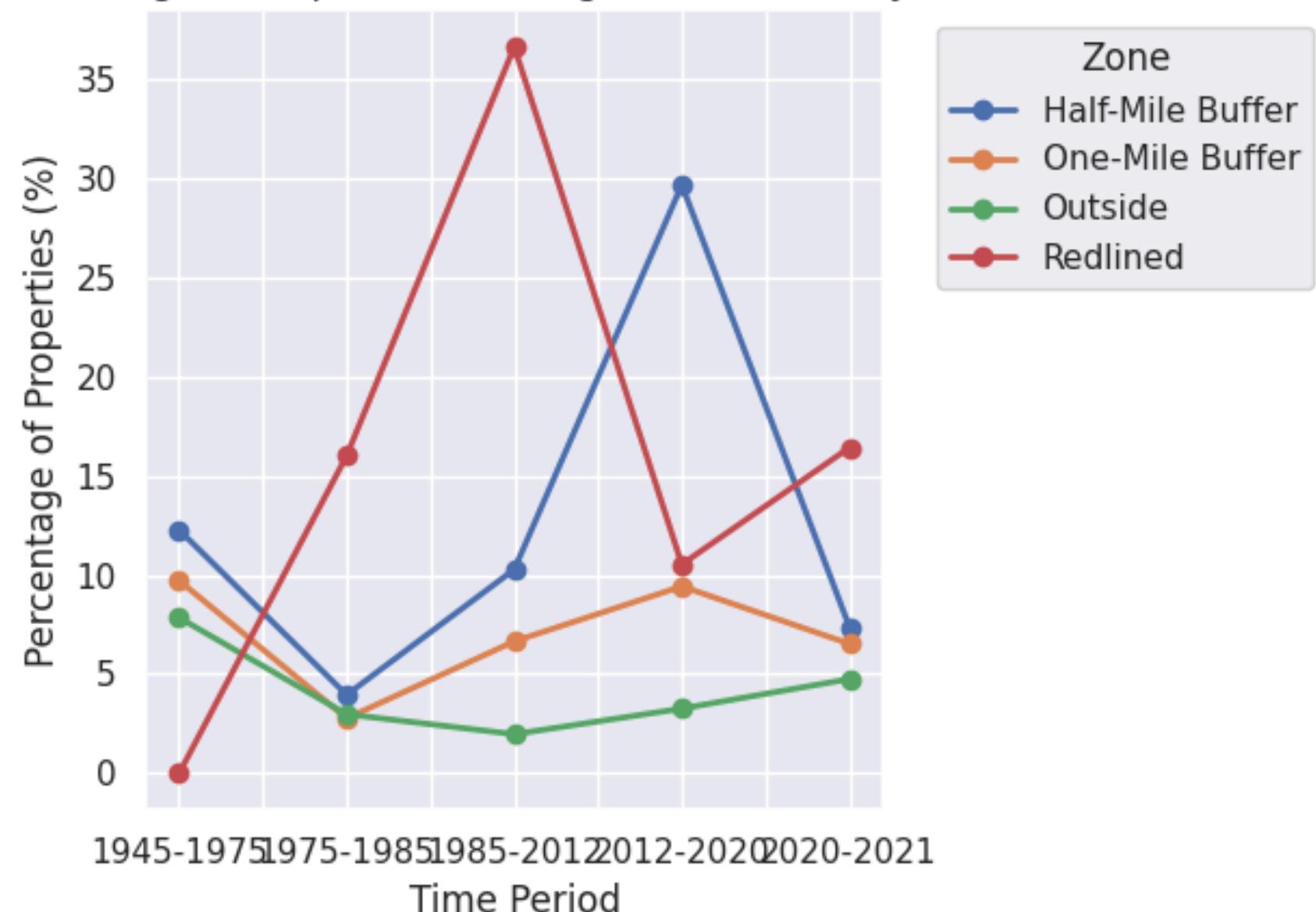
- Consistently lowest decline rates (3–10%)
- Minimal variation across periods
- Slight recent increase (5% in 2020–2021)
- **Implications:** Demonstrates resilience and market stability, largely unaffected by redlining impacts

ONE-MILE BUFFER PATTERNS

- Widest gap between zones in 1985–2012
- Buffer zones show increasing vulnerability over time
- Outside areas maintain stability while others fluctuate
- **Implications:** Clear evidence of how redlining's effects ripple outward, with strongest impact on immediately adjacent areas



Percentage of Properties Showing Value Decline by Period



COMPREHENSIVE CONCLUSIONS

Long-Term Property Value Evolution (1945–2021):

- The median property value in redlined areas increased from \$1,000 in 1945 to \$57,712 in 2021, while outside areas grew from \$1,800 to \$127,805, demonstrating how initial small differences (\$800) amplified into major disparities (\$70,093) over time.
- The most dramatic growth period occurred between 1975–1985, where redlined areas saw an exceptional 1,160% increase, but this brief period of rapid growth wasn't sustained, and the value gap subsequently widened again.

District-Level Performance:

- District 6 showed the most remarkable total growth at 10,292%, followed by Districts 2 and 3 at around 6,600%, yet this growth didn't translate to highest current values, suggesting that starting from a lower base masks persistent inequalities.
- Districts 4 and 5 maintain the highest current median values (over \$195,000) despite lower historical growth rates, indicating that areas unaffected by redlining have built and maintained wealth more effectively.
- Districts 1 and 2, which contain all redlined properties, show the lowest current values (under \$80,000) despite substantial growth, demonstrating how historical policies continue to suppress property values.

COMPREHENSIVE CONCLUSIONS

Buffer Zone Effects:

- Properties in the half-mile buffer zone show the highest volatility (coefficient of variation increasing from 1.050 in 1945 to 7.983 in 2021), indicating these transition areas face the most market uncertainty.
- The one-mile buffer zone maintains more stable values than the half-mile buffer but still shows suppressed values compared to outside areas, demonstrating how redlining's negative effects ripple outward.

Market Stability Patterns:

- Outside zones show increasing but managed volatility (coefficient of variation growing from 0.453 to 2.574), suggesting a dynamic but relatively stable market.
- Redlined areas show deceptively low volatility in recent years (coefficient of variation: 1.954 by 2021), which actually indicates market stagnation rather than stability.
- The stark increase in decline rates in buffer zones (reaching 37% in 1985–2012) suggests deteriorating conditions and possible disinvestment in these transition areas.

RECOMMENDATIONS

Targeted Investment Strategies:

- Implement focused property rehabilitation programs in Districts 1 and 2, where data shows the most severe value suppression, to help close the 121.5% value gap with outside areas.
- Create economic opportunity zones in half-mile buffer areas, where high volatility (7.983 CV) indicates the greatest potential for positive market intervention.

Policy Interventions:

- Develop property tax incentive programs specifically for redlined areas where median values remain stuck at \$57,712 (2021) compared to \$127,805 in outside areas.
- Establish maintenance support programs for properties in buffer zones where decline rates have reached concerning levels (16% in 2020–2021).

Infrastructure Development:

- Prioritize public infrastructure improvements in Districts 1 and 2, where data shows property values have failed to keep pace despite high growth rates.
- Create development grants targeting the half-mile buffer zone, where extreme volatility (CV: 7.983) suggests market uncertainty is deterring private investment.

RESOURCES AND REFERENCES

- [Analysis using Python on Google Colab](#)
- [Lubbock's zoning has a history of Jim Crow. City officials refuse to reckon with it.](#)
- [New complaint claims Lubbock's racist zoning violates Civil Rights Act](#)
- [A friendly city where the problems of race and equity go unacknowledged and unresolved](#)
- [Interstate 27 has divided Lubbock for decades. North and east side residents want that to change.](#)
- [Advocacy Groups Say Lubbock's 2040 Land Use Plan Violates the Fair Housing Act](#)
- [Google Map showing the 1923 ordinance black residents area](#)
- [Lubbock City Limits and Council District Map](#)
- [Perplexity AI](#)
- [Claude AI](#)

THANK YOU

-- Asheer Mogal