Residential Zoning by Race:

How Pittsburgh's Zoning Districts Promote Different Housing Options for Black and White Residents

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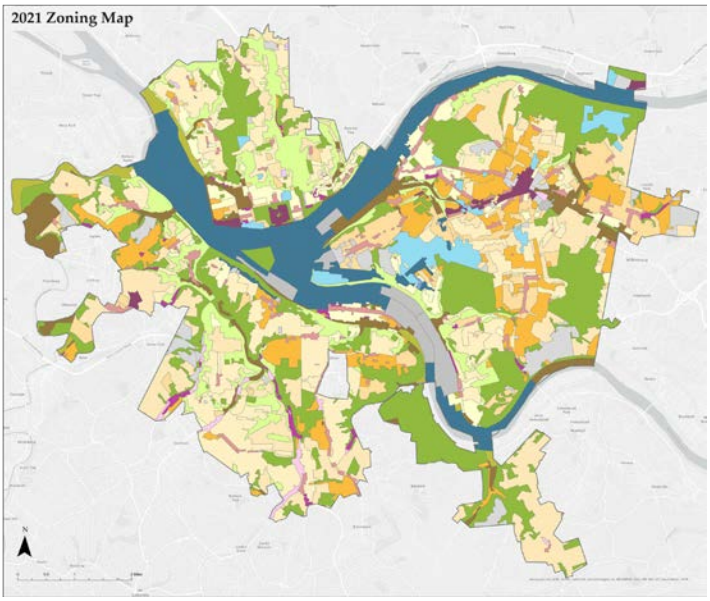
Introduction

Residential Zoning by Race explores the evolution of single-family and multi-family zoning districts in Pittsburgh in the context of redlining and race in the city. The hypothesis of this project is that Pittsburgh's current single-family and multi-family zoning districts follow a racial and exclusionary pattern that affects the housing choices available to White and Black residents. This pattern is tested through a GIS analysis of historic and current zoning maps, the 1937 Home Owner's Loan Corporation (HOLC) map, and the historic racial compositions of the city by census tract.



Zoning is a local land use law that divides a municipality into different districts or zones, each with different use and density regulations. Zoning districts are often characterized by the uses they allow: residential, commercial, mixed-use, or industrial. The most common uses in residential zoning districts are single-family dwellings, rowhouses or townhouses, duplexes, triplexes, and apartments with four or more units. Most municipalities have multiple residential zoning districts.

In distinguishing the uses between the residential zoning districts, the municipality may take a hierarchical approach, a flat - or segregated - approach, or a combination of these approaches. In a hierarchical approach, the districts are ranked from most restrictive to least restrictive. As the districts progress toward least restrictive, they carry over all the uses permitted in the previous district and add more uses. In a flat approach, each use or group of uses has its own district where it is permitted and it is not permitted in any other district. In either approach, there is a zoning district that only permits detached single-family dwellings and no other residential use.

Nationally, there is a conversation to reform zoning because this exclusive single-family zoning district is contributing to the crises of housing availability and affordability. Minneapolis, San Francisco,

and Connecticut are early adopters of this reform. Minneapolis and San Francisco are taking local approaches to eliminate the single-family zoning district and add more housing options in the single-family zone respectively. DesegregateCT is pursuing a statewide approach to zoning reform. More municipalities and states are taking on these and other reforms. In these changes to zoning, there is consensus that the exclusive single-family zoning district is a problem because it limits housing options and therefore housing affordability, but by focusing on this district type the conversation and solutions are limited. The single-family zoning district did not grow in isolation; it is important to consider the other districts, particularly the multi-family zoning district, in formulating a solution to the limitations and exclusions of the single-family zone.

Residential Zoning by Race seeks to expand this conversation about how to address the issues of housing availability and affordability by looking at the patterns of where single-family and multi-family zoning districts are located in Pittsburgh in the context of race and redlining. This pattern is important because zoning affects housing choice and affordability by designating what types of housing can and cannot be built or renovated in a given area.

In the context of this research, single-family zoning districts refer to districts that permit detached single-family dwellings exclusively while multi-family zoning districts refer to districts that permit housing types with 4 or more dwelling units.

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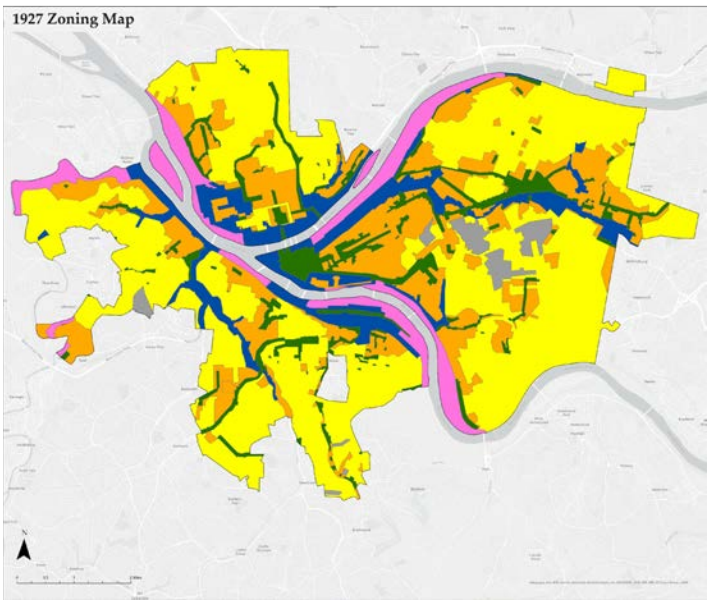
Pittsburgh's Zoning History



Residential Zoning by Race uses three of the maps from Pittsburgh's 100 years of zoning to trace and analyze the development of the single-family and multi-family zoning districts.

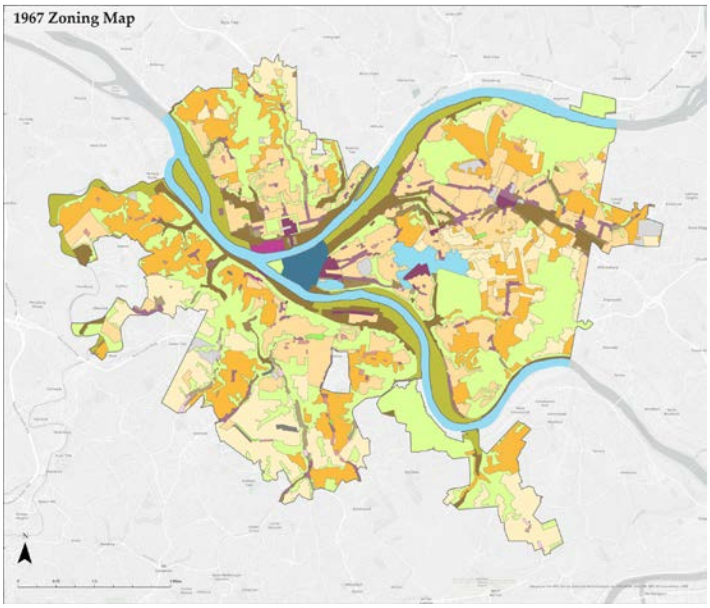
Pittsburgh adopted its first zoning ordinance in 1923. All residential areas at that time permitted a variety of housing types.

In 1926, the US Supreme Court ruled that exclusive single-family zoning districts were constitutional. The rational was that the single-family dwelling, and those that lived there, needed to be protected from the polluting influences of the following:

- Industrial factories
- Businesses
- Apartments

While the Supreme Court was writing its decision, Pittsburgh's City Council was writing and voting on a zoning amendment to add an exclusive single-family zoning district. The new map with this district was issued in 1927.

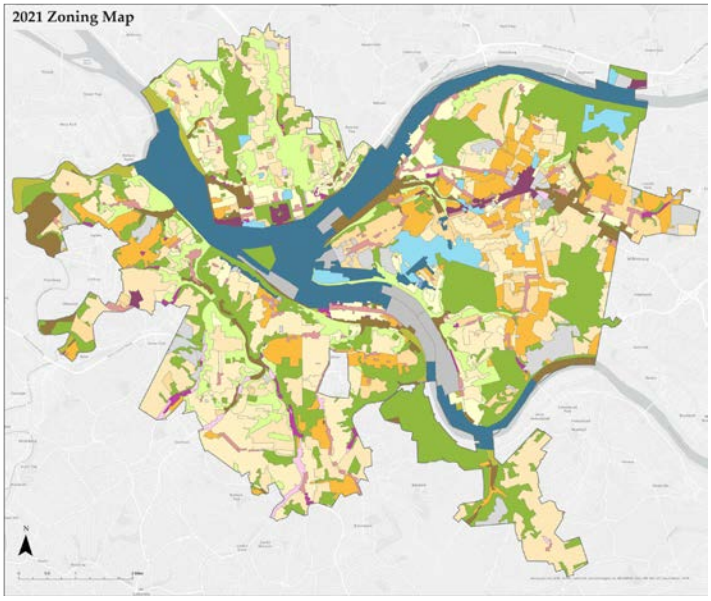
In 1958, Pittsburgh replaced its 40-page pamphlet zoning ordinance with a 200+ page book. This was the birth of modern zoning in the city. A new zoning map was issued at that time. At the time of this research, the 1958 map was not available. The next available zoning map from 1967, is used as a proxy. The zoning districts on this map substantially match the districts identified in the 1958 code suggesting that the 1967 map is substantially similar to the 1958 map.



The new map shows that in addition to adding pages of regulations, the zoning districts became more nuanced, with numerous districts in each of the categories of residential, commercial, and industrial. In addition, the exclusive single-family zoning district grew between 1927 and 1967.

The changes in Pittsburgh's zoning from 1927 to 1967 may have been influenced in part by policies at the federal level. This

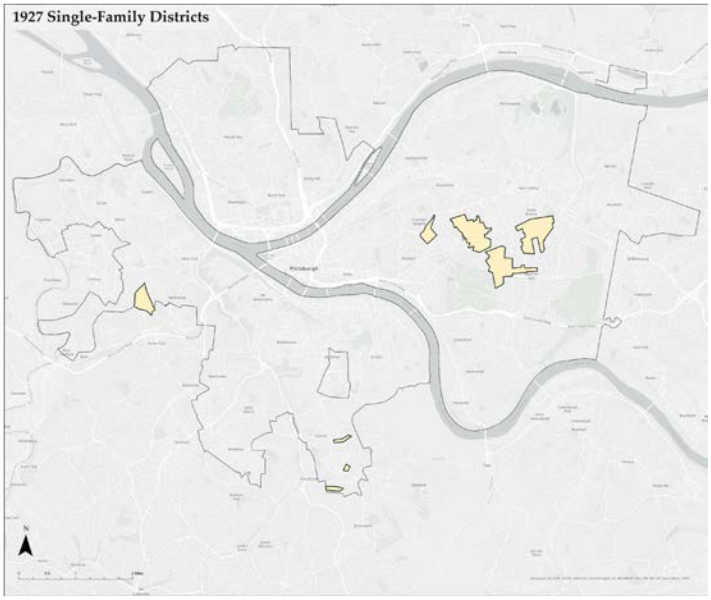
period covers the era when the federal government began to subsidize the building of masses of single-family dwellings across the country after World War II. In addition, federal funding for transportation, disaster recovery, and other issues was often tied to conditions that required zoning.

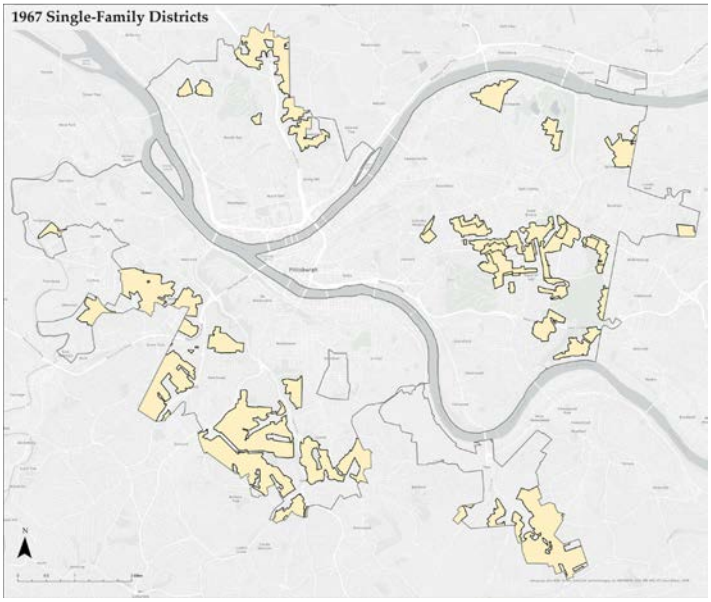


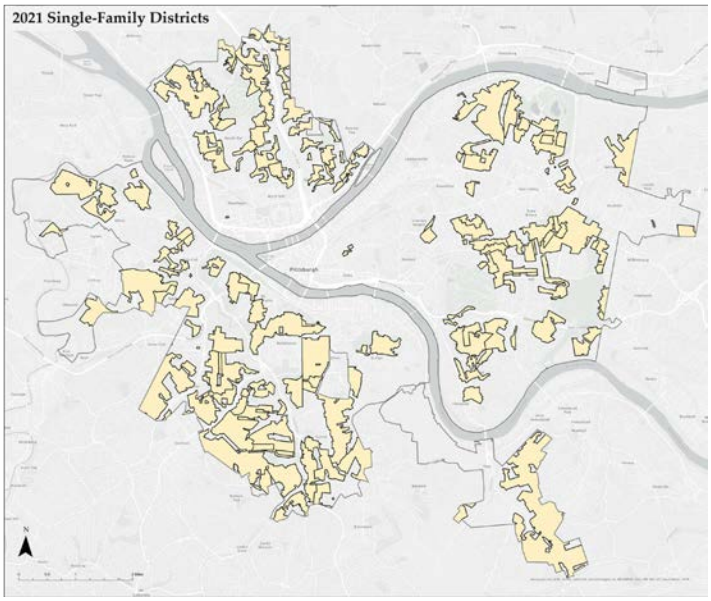
By 2021, Pittsburgh adopted several more zoning text and map amendments. The exclusive single-family zoning district continued to expand across the city, while the areas that permit multi-unit residential buildings diminished. The zoning text became more complex, and the number of total zoning districts increased again as shown in the map pictured above.

Below are two series of maps that highlight the growth of the single-family zoning district and the contraction of the multi-family zoning district across the three zoning maps.

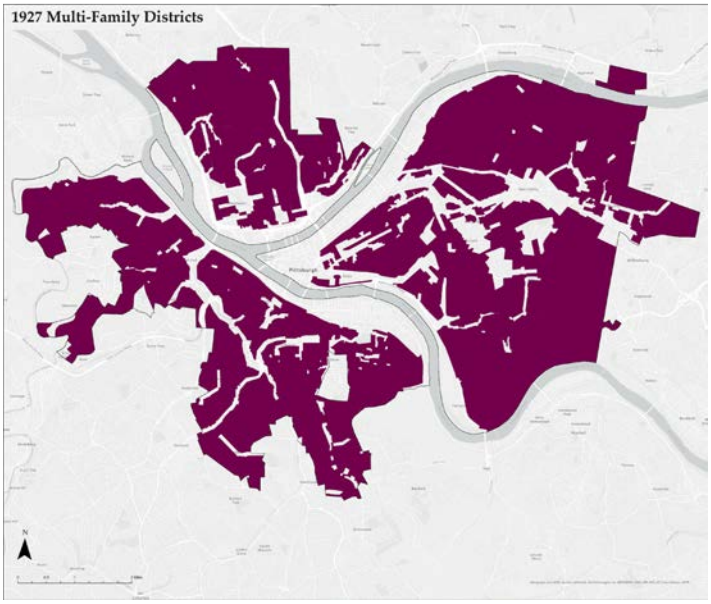
Single-Family Zoning District Expansion 1927-2021

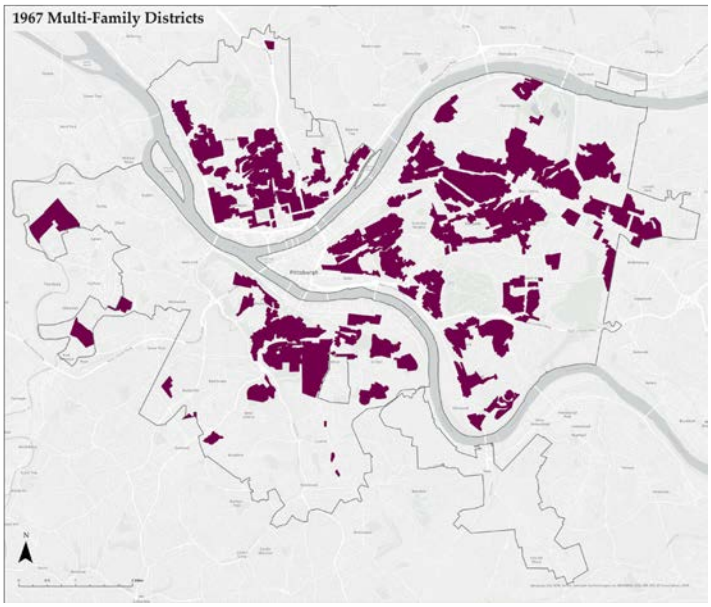


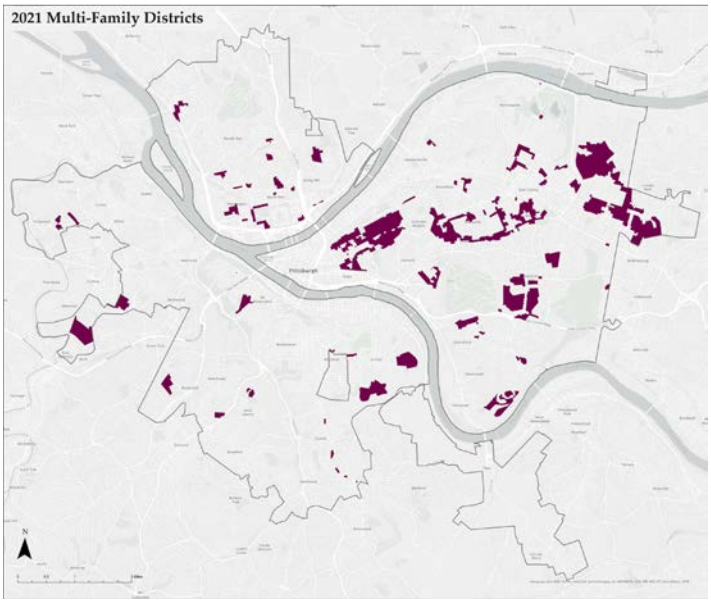




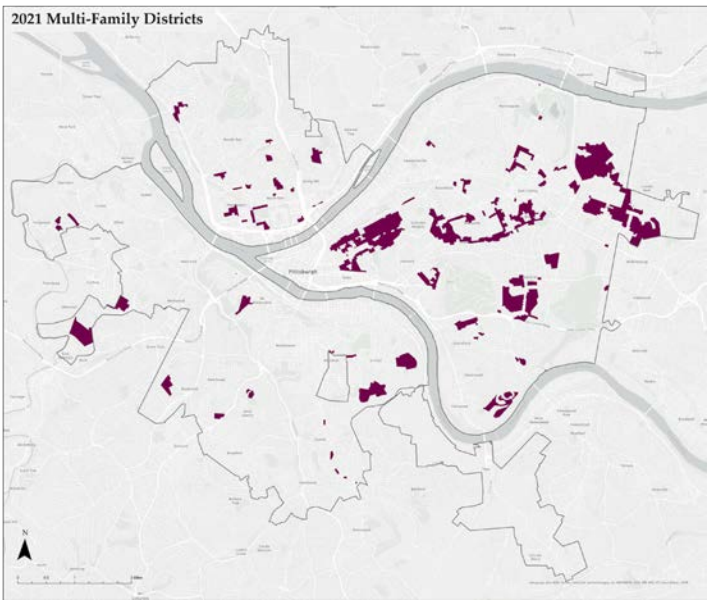
Multi-Family Zoning District Contraction 1927-2021







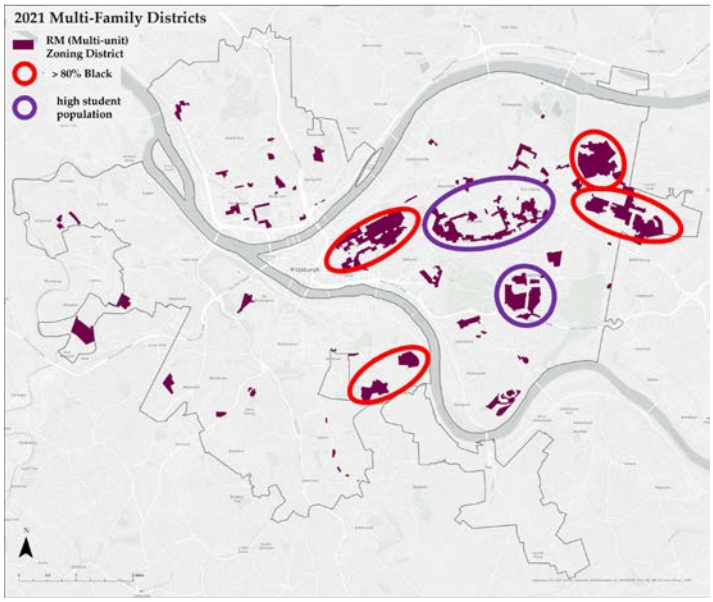
Current Context



Over the 100 years of zoning in Pittsburgh, zoning districts that permitted housing types with four or more units dropped from covering 74% of the city in 1927 to covering only 5% of the city in 2021. When the rest of the current zoning districts are stripped away, the location of the 5% zoned for multi-family uses suggests a strong correlation between race and the location of multi-family zoning.

The Emergence of a Pattern

There are a handful of significant clusters of multi-family zoning districts at this perspective. Two are in the Oakland, Shadyside, and Squirrel Hill neighborhoods, areas with a high percent of university students. Three are in the Hill District, Homewood, Larimer, and Lincoln-Lemington-Belmar neighborhoods, where 80% or more of the residents are Black. The cluster south of the rivers is an area of public housing, much of which has been demolished, but what remains also has a high percentage of Black residents. Several of the smaller areas of multi-family zoning that remain are other public housing complexes.



The Factors

This pattern raises the question of what factors determined the locations where multi-family zoning districts consolidated and where single-family zoning districts grew in the city over the last 100 years. The next section will show the gap between where these districts are located and the four factors commonly discussed in the zoning field as determinants in deciding the location of zoning districts. These factors are:

- Existing built environment
- Proximity to other uses
- Transportation options
- Future land use goals

This research proposes two other factors to fill that gap. These two factors may stand on their own or may be connected to the future land use goals factor above.

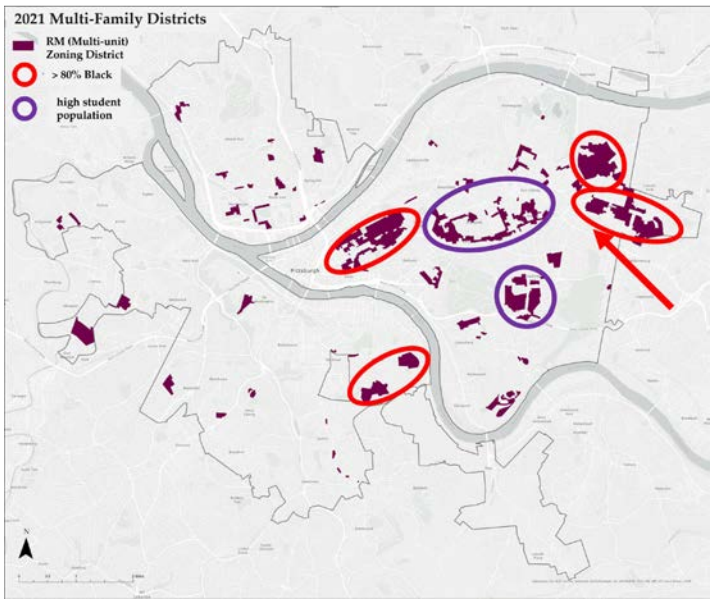
- Home Owner's Loan Corporation's Residential Security grading (aka "Redlining")
- Race

The next section takes a closer look at the Point Breeze and Homewood neighborhoods on the eastern side of Pittsburgh to illustrate how the six factors fit or don't fit in Pittsburgh.

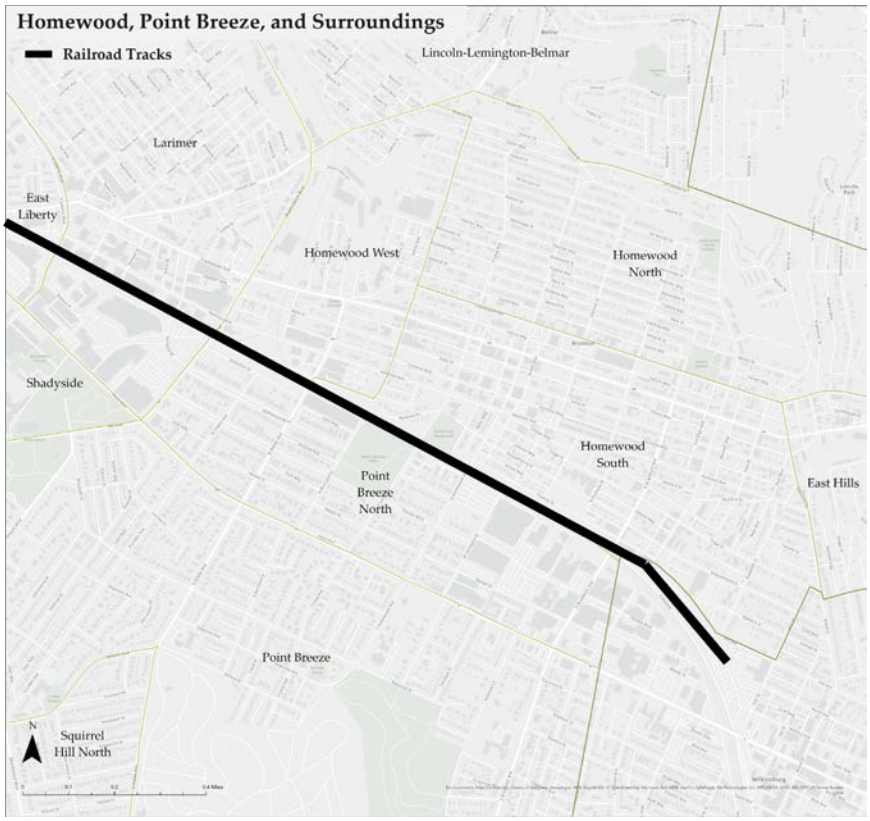
Case Study Context

A Closer Look

We will periodically zoom into the Homewood and Point Breeze neighborhoods of Pittsburgh. The arrow in the city-wide map points to the boundary between these neighborhoods which epitomizes the phrase "the wrong side of the tracks." The Homewood neighborhoods designated by the City as Homewood West, Homewood North, and Homewood South are on the north side of a substantial railroad line and busway. Point Breeze and Point Breeze North are on the south side of this barrier.



The differences between these neighborhoods are illustrative of the different factors that were previously discussed as influencing the location of single-family versus multi-family zoning districts.



Factor 1: Existing Built Environment

The Homewood neighborhoods are predominately zoned with multi-unit districts, but when driving or walking around these neighborhoods, the pre-1950 housing stock is predominately detached single-family dwellings (Figure 1).

Immediately across the railroad tracks, North Point Breeze is almost entirely in a single-family zoning district. However, the pre-1950 housing stock includes a significant number of three-story apartment buildings and duplexes (Figure 2).

The contradictions in both areas between the existing built environment and the current zoning districts show that the existing built environment carried little to no weight in determining the location of these single-family and multi-family zoning districts.

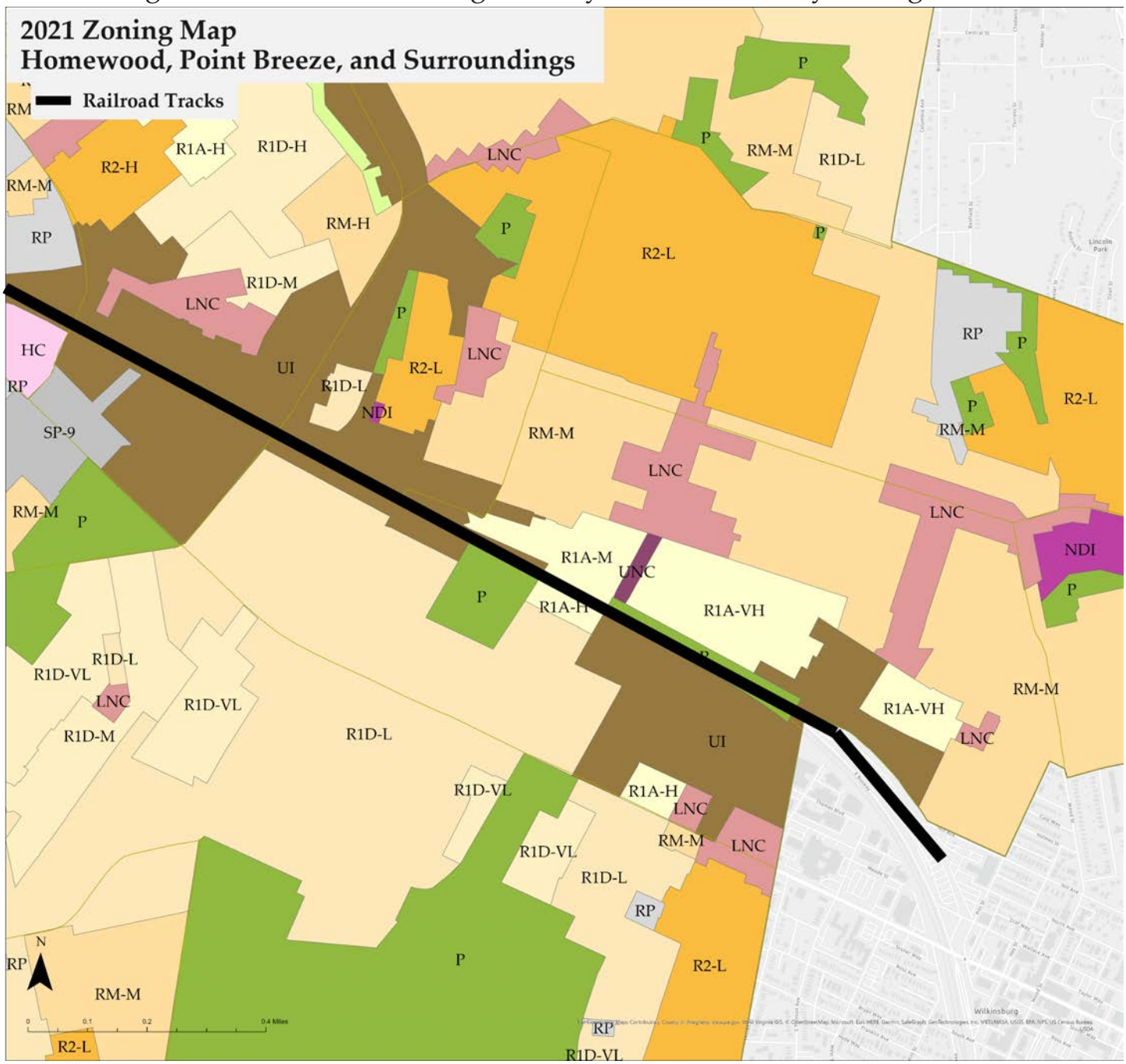


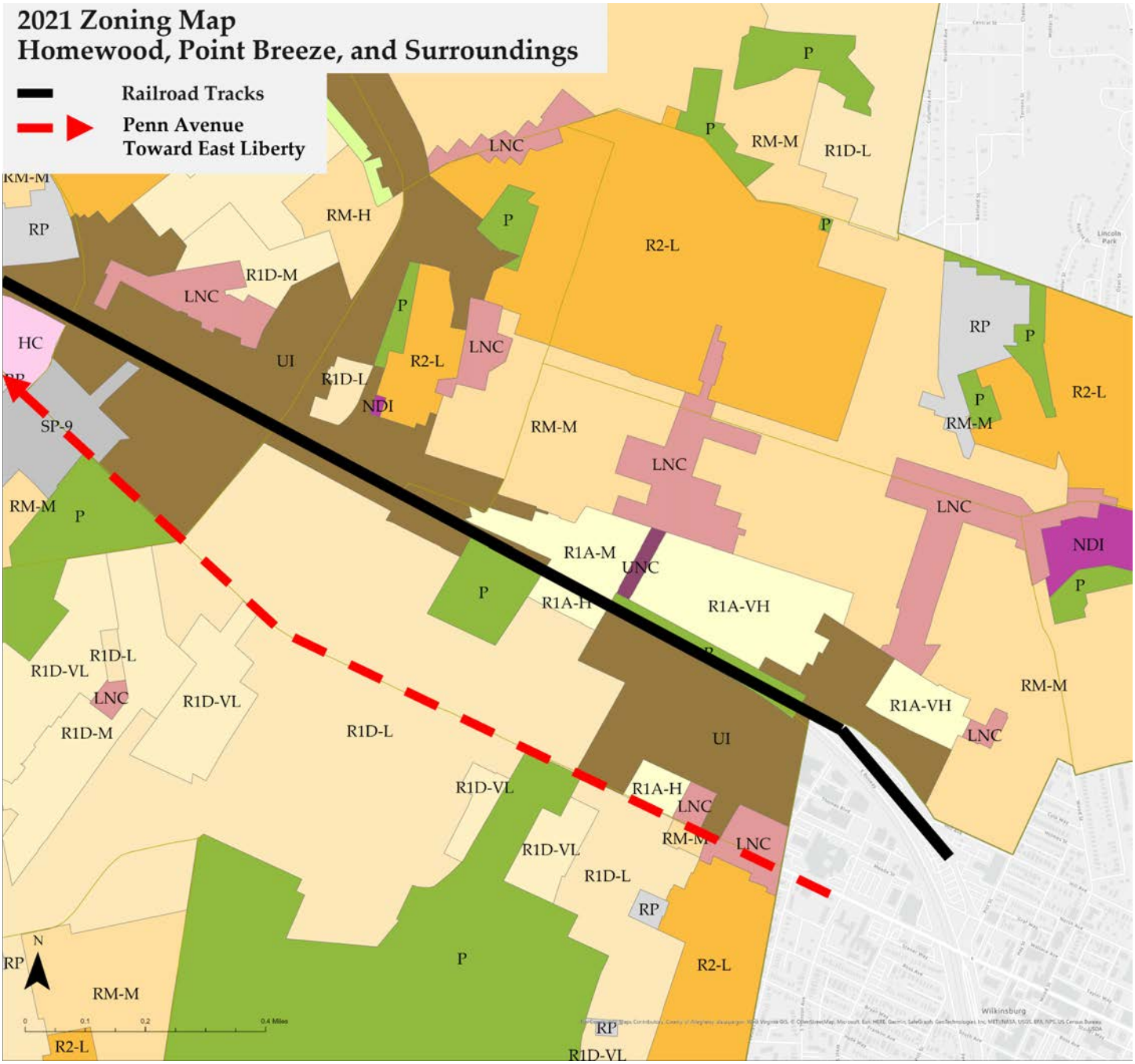
Figure 1: Single-Family Homes in Homewood

Figure 2: Apartments in Point Breeze North

Factor 2: Proximity to Other Uses

In the city-wide map of multi-family zoning districts on the previous page, the clusters of districts with a high student population are an example of zoning that is likely influenced by proximity to other uses. The two largest universities in the city plus two smaller universities are adjacent to these clusters.

When looking at the Homewood and Point Breeze neighborhoods, proximity to other uses is another potential factor that doesn't appear to have significant weight with the current location of the zoning districts. Both areas are similarly situated next to industrial areas—the brown UI districts on the map—and a similar distance from the East Liberty neighborhood's commercial core. In the latter situation, Point Breeze has a slight advantage as Penn Avenue, the main artery through East Liberty, is the dividing



line between Point Breeze North and Point Breeze.

Based on the existing built environment analysis above, 75-100 years ago, when East Liberty was considered Pittsburgh's second downtown, Point Breeze's edge in proximity to this area may have been reflected in the denser housing located there. However, it is not reflected in the current zoning districts.

Factor 3: Transportation Options

In the 1970s, the number of tracks needed by the railroad had diminished and about half of the lines were converted to a busway. While the remaining tracks are on the Homewood side, both Homewood and Point Breeze have access to the same stations along this busway. In addition, there are buses on the roads through both areas, including a line for each neighborhood that connects to the universities and downtown.

As the options for transportation are substantially similar between these areas, this factor again does not explain the difference between the zoning districts in Homewood versus Point Breeze.

Factor 4: Future Land Use Goals

As the three factors discussed above do not appear to have had significant weight in determining the location of the single-family and multi-family zoning districts, future land use goals seem to be the most likely factor of the four commonly discussed factors. However, as the City of Pittsburgh has never adopted a comprehensive plan, there is no easy reference to understand the future land use goals for any area of the city at any point in the 100 years of zoning. As a result, this project looks for other factors to help explain the location of the single-family and multi-family districts in the city.

Other Factors

Exploring the Home Owner's Loan Corporation's Residential Security Map—aka "redlining" map—for the neighborhoods of Homewood and Point Breeze suggests that the redlining map may be a determinant of the location of multi-family versus single-family zoning districts in Pittsburgh. As mentioned in the previous section, race is another factor that appears to play into the location of these districts.

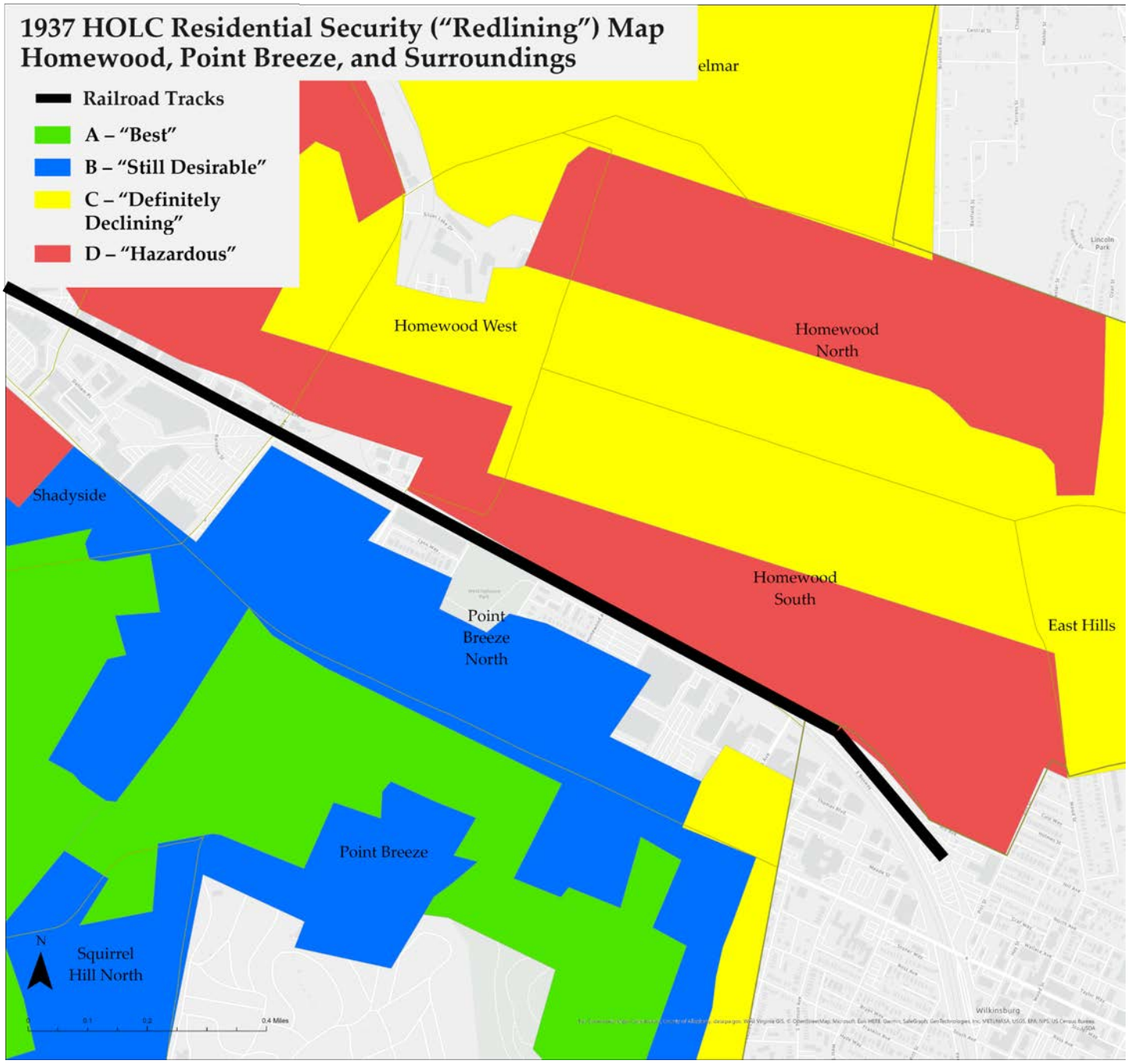
The following sections will explore the correlations between the redlining and race factors and the locations of single-family and multi-family zoning districts in 1927, 1967, and 2021.

The Redlining Factor

Redlining as a Factor Influencing the Location of Residential Zoning Districts

Ten years after Pittsburgh adopted its first exclusive single-family zoning district, the Home Owner's Loan Corporation (HOLC) issued its Residential Security Map that graded residential areas A, B, C, or D, with A as best, for Pittsburgh and its vicinity as part of a series of over 200 maps across the country.

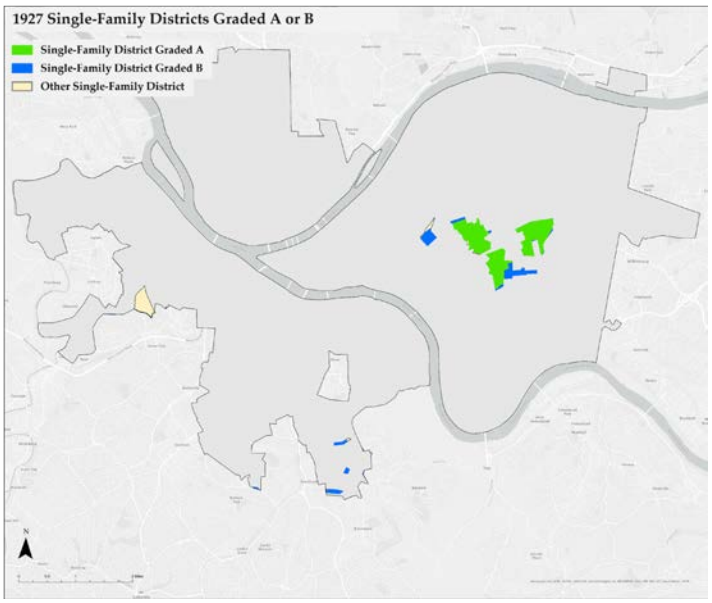
Green = A "Best"
Blue = B "Still Desirable"
Yellow = C "Definitely Declining"
Red = D "Hazardous"



The HOLC maps are commonly referred to as “redlining” maps because of the red color used to mark the areas HOLC identified as the riskiest for investment. The unequal impacts of the HOLC maps on metropolitan areas across the country is well documented, included on the Mapping Inequality project led by the University of Richmond’s Digital Scholarship Lab. Mapping Inequality is the source of the HOLC data used throughout Residential Zoning by Race.

There is a strong correlation between Pittsburgh’s single-family zoning districts and areas graded A “Best” and B “Still Desirable” and the City’s multi-family zoning districts and areas graded C “Definitely Declining” and D “Hazardous.” The following series of maps illustrates this correlation across the 1927, 1967, and 2021 zoning maps.

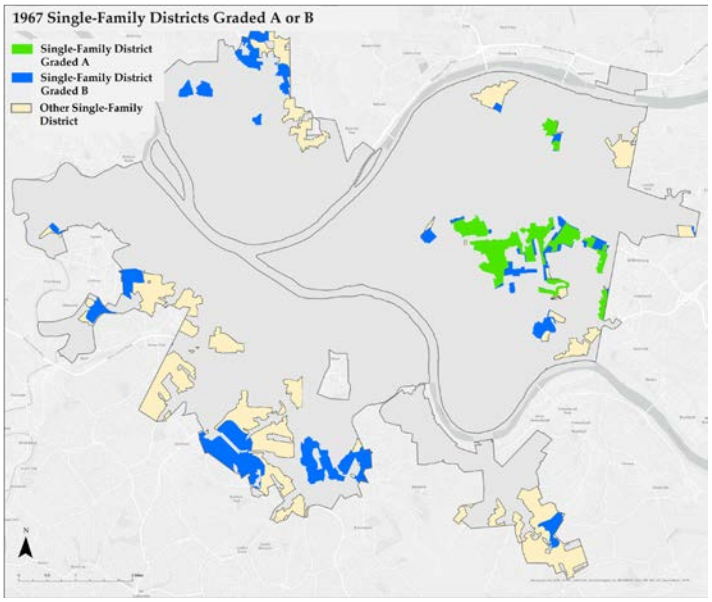
Redlining and Single-Family Zoning Districts 1927-2021



1927 Single-Family Districts & Redlining

87% of the single-family zoning districts established in 1927 were graded by HOLC in 1937.

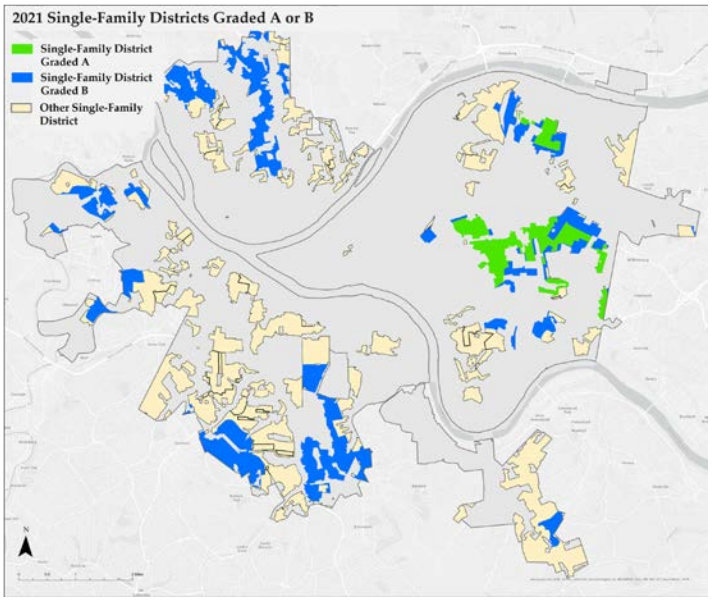
99% of the graded single-family zoning districts are in A "Best" and B "Still Desirable" areas.



1967 Single-Family Districts & Redlining

70% of the single-family zoning districts in 1967 were areas graded by HOLC in 1937.

62% of the graded single-family zoning districts are in A "Best" and B "Still Desirable" areas.

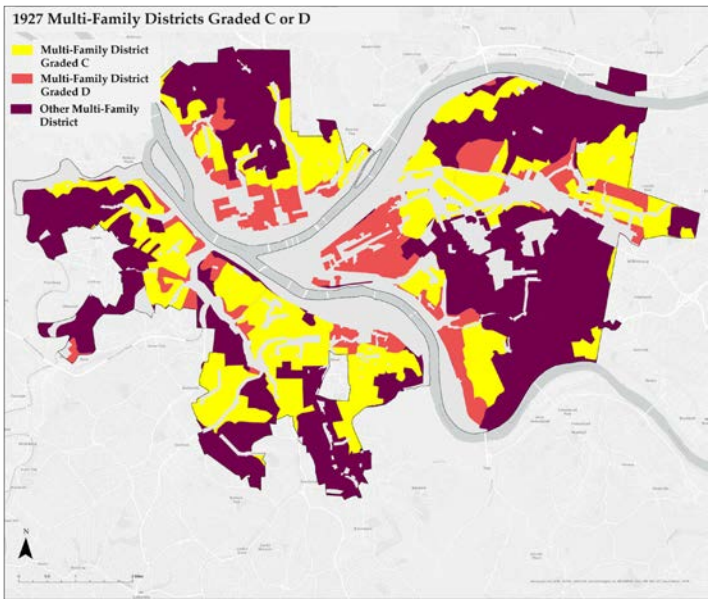


2021 Single-Family Districts & Redlining

82% of the single-family zoning districts in 2021 were areas graded by HOLC in 1937.

46% of the graded single-family zoning districts are in A "Best" and B "Still Desirable" areas.

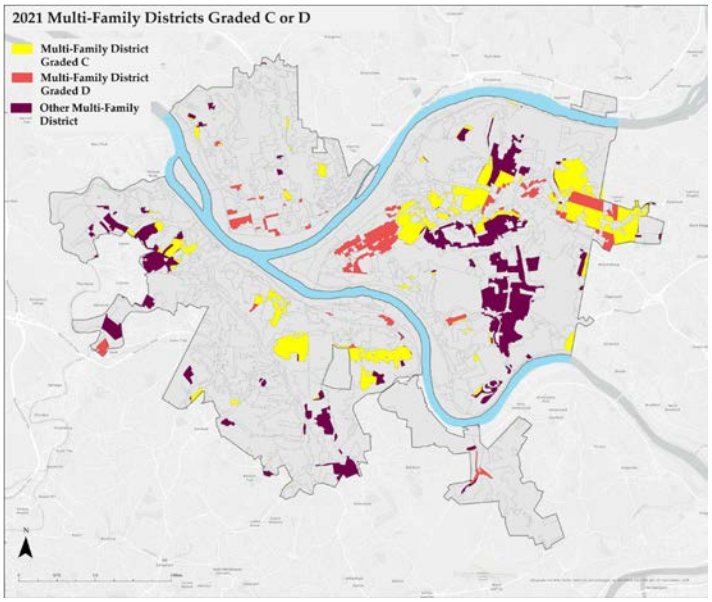
Redlining and Multi-Family Zoning Districts 1927-2021



1927 Multi-Family Districts & Redlining

72% of the 1927 multi-family zoning districts were graded by HOLC in 1937.

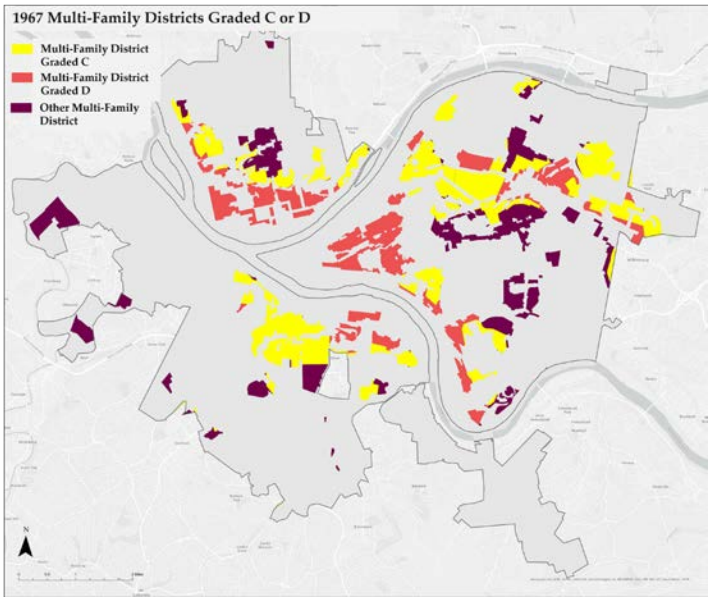
64% of the graded multi-family zoning districts were identified as C "Definitely Declining" and D "Hazardous."



1967 Multi-Family Districts & Redlining

93% of the 1967 multi-family zoning districts were areas graded by HOLC in 1937.

77% of the graded multi-family zoning districts were identified as C "Definitely Declining" and D "Hazardous."



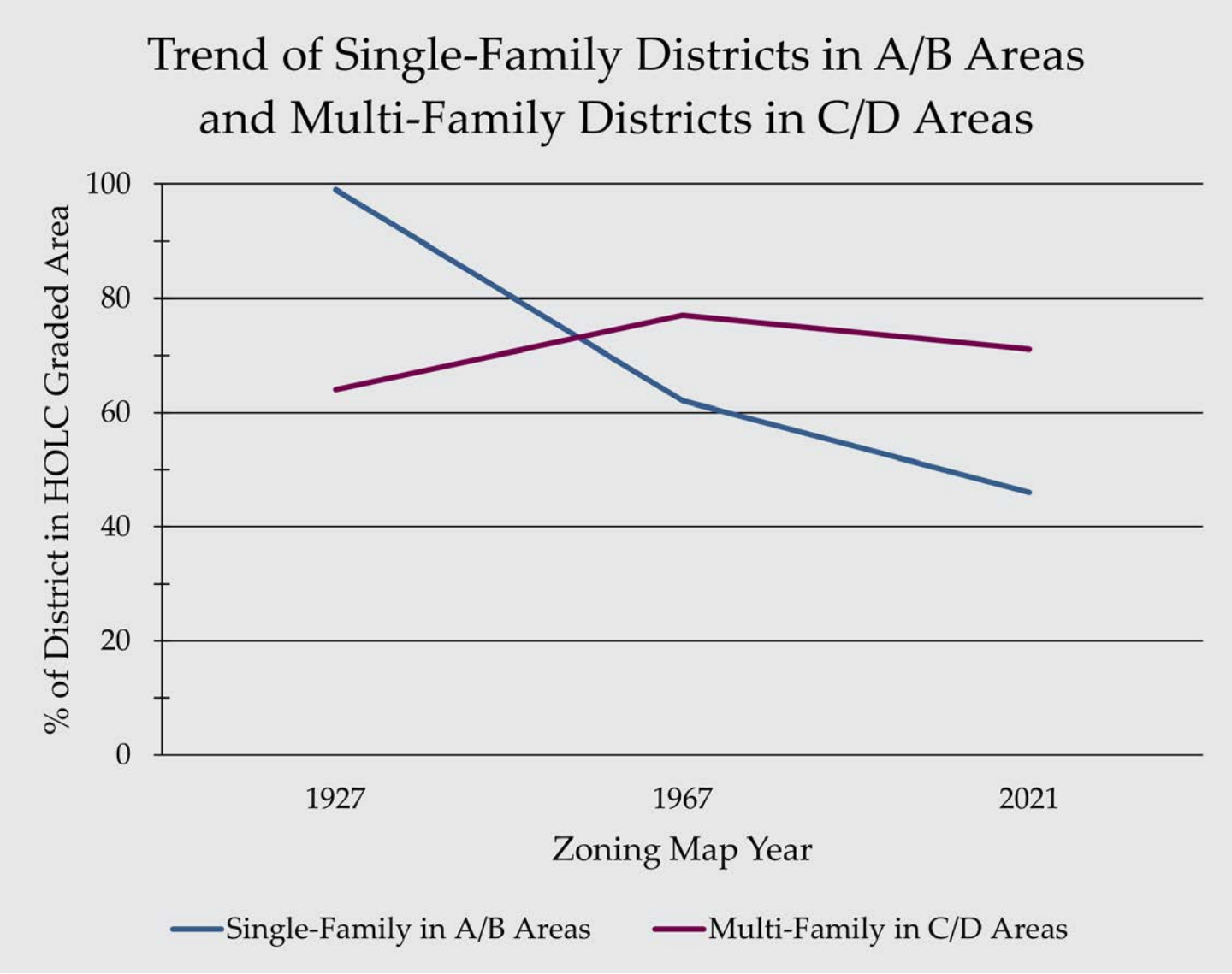
2021 Multi-Family Districts & Redlining

88% of the 2021 multi-family zoning districts were areas graded by HOLC in 1937.

71% of the graded multi-family zoning districts were identified as C "Definitely Declining" and D "Hazardous."

Zoning and Redlining Summary

As these maps show, there is a strong relationship between the location of 1927 single-family zoning districts and areas that were graded A "Best" and B "Still Declining." This relationship drops by 2021. However, the relationship between the location of multi-family zoning districts and areas that were graded C "Definitely Declining" and D "Hazardous" remains strong across all three years of zoning maps.



The Race Factor

Race as a Factor Influencing the Location of Zoning Districts

Race is the second factor that this research explores as influencing the location of zoning districts in Pittsburgh. This analysis explores the correlation between the racial demographics of the city by census tract and the three zoning maps. The percentage of White residents per census tract is the most consistent variable across the three census data sets and is therefore the one used in this analysis.

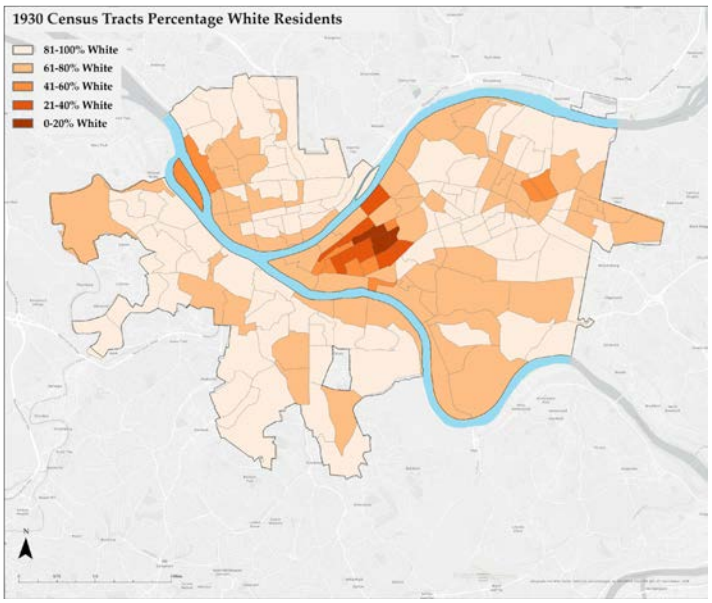
In 1930 and 1960, census tracts where there was a supermajority of White residents made up approximately 95% of the city. By 2010, the census tracts with a supermajority of White residents reduced to 69% of the city.

Over the same period of time, the single-family zoning districts became more diverse from 100% of the districts in 1927 having a supermajority of White residents to 77% of the districts in 2021.

While the city and its single-family zoning districts saw an increase in diversity from 1927 to 2021, the multi-family zoning districts become more concentrated in nonwhite areas. In 1927, multi-family zoning districts covered the majority of the city's residential areas. Only 3% of these districts did not have a supermajority of White residents. However, by 2021 when multi-family zoning districts covered a small portion of the city's residential areas, 56% of these districts did not have a supermajority of White residents.

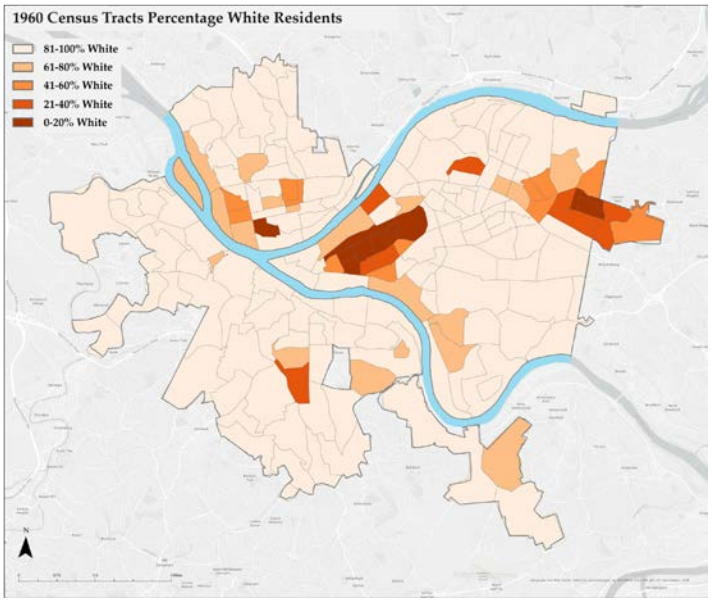
The following series of maps show these three trends at the city-level, the single-family zoning districts, and the multi-family zoning districts.

White Residents by Census Tract 1930-2010



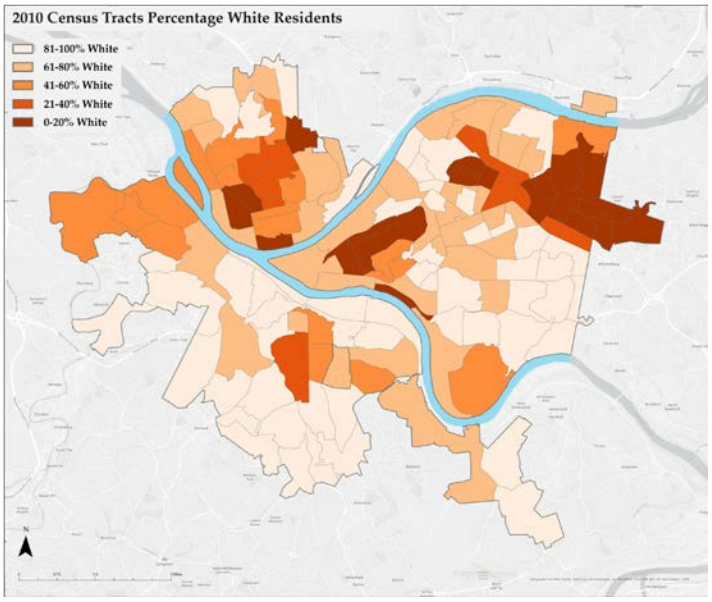
1930 Census Tracts

In 1930, census tracts where residents were over 60% White made up 94% of the city.



1960 Census Tracts

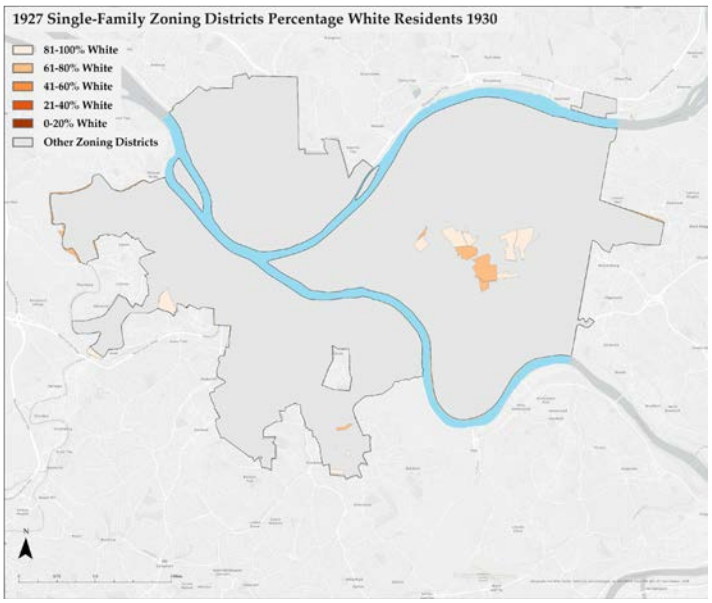
In 1960, census tracts where residents were over 60% White made up 96% of the city.



2010 Census Tracts

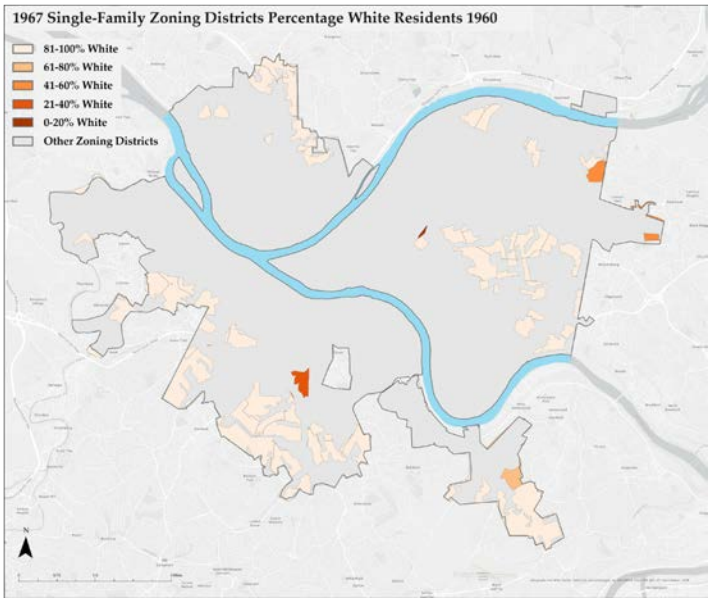
In 2010, census tracts where residents were over 60% White made up 69% of the city.

Race and Single-Family Zoning Districts 1927-2021



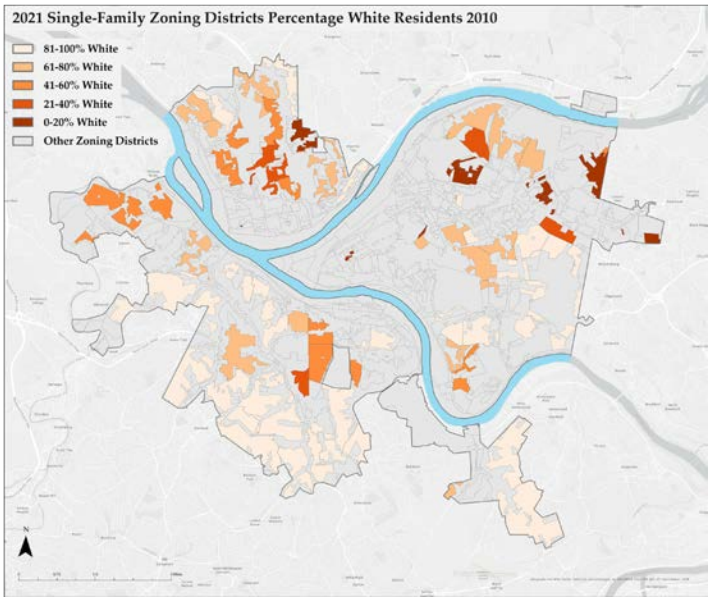
1927 Single-Family Districts Percentage White Residents

100% of the single-family zoning districts that were established in 1927 cover 1930 census tracts with a supermajority of White residents.



1967 Single-Family Districts Percentage White Residents

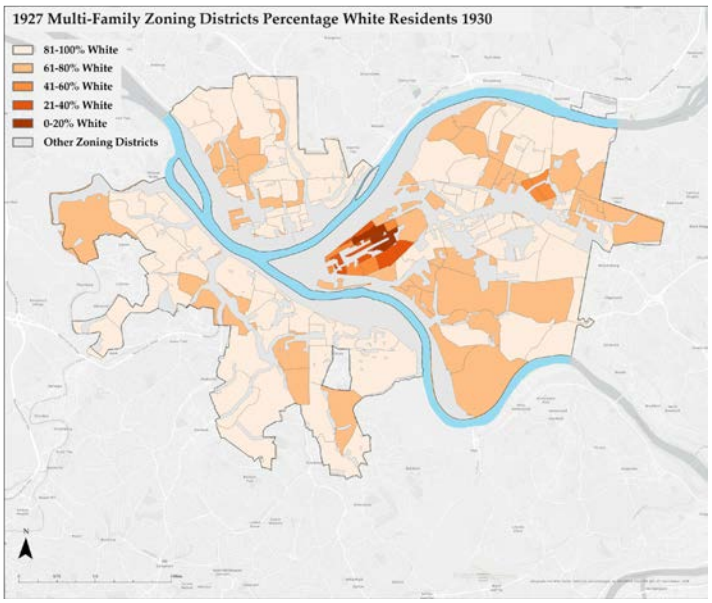
98% of the 1967 single-family zoning districts cover 1960 census tracts with a supermajority of White residents.



2021 Single-Family Districts Percentage White Residents

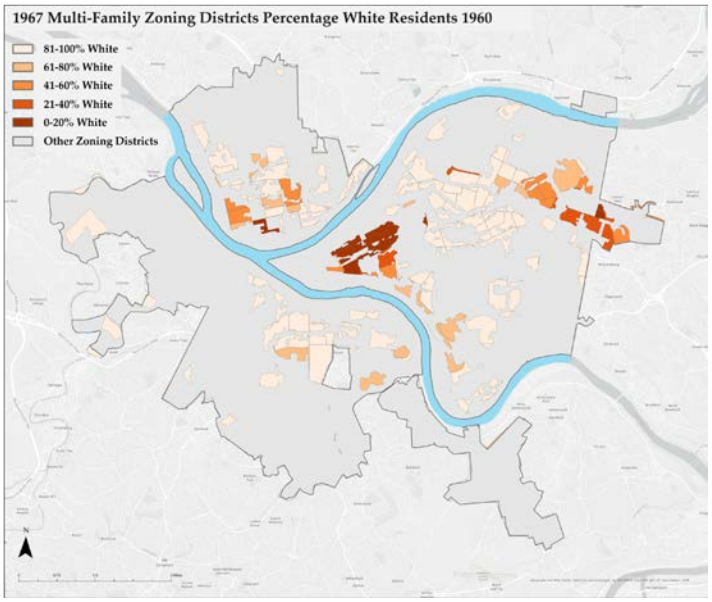
77% of the 2021 single-family zoning districts cover 2010 census tracts with a supermajority of White residents.

Race and Multi-Family Zoning Districts 1927-2021



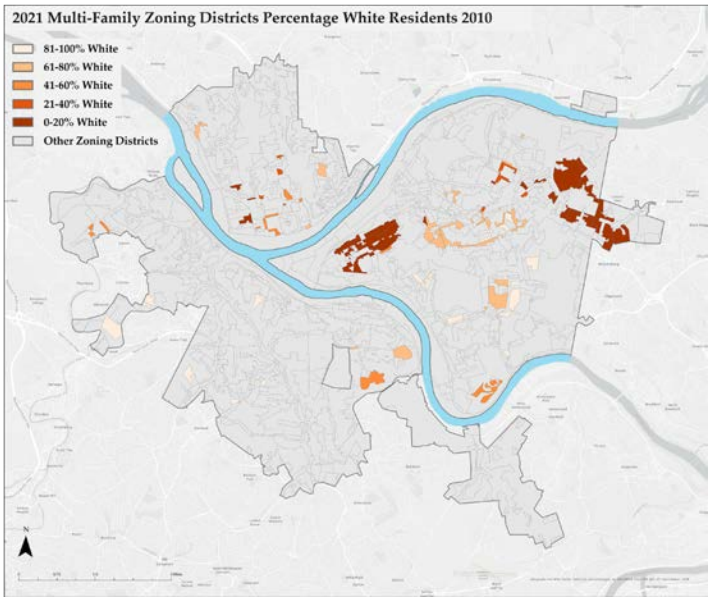
1927 Multi-Family Zoning Districts Percent White Residents

3% of the 1927 multi-family zoning districts cover 1930 census tracts where at least 40% of the residents were not White.



1967 Multi-Family Zoning Districts Percent White Residents

18% of the 1967 multi-family zoning districts cover 1960 census tracts where at least 40% of the residents were not White.



2021 Multi-Family Zoning Districts Percent White Residents

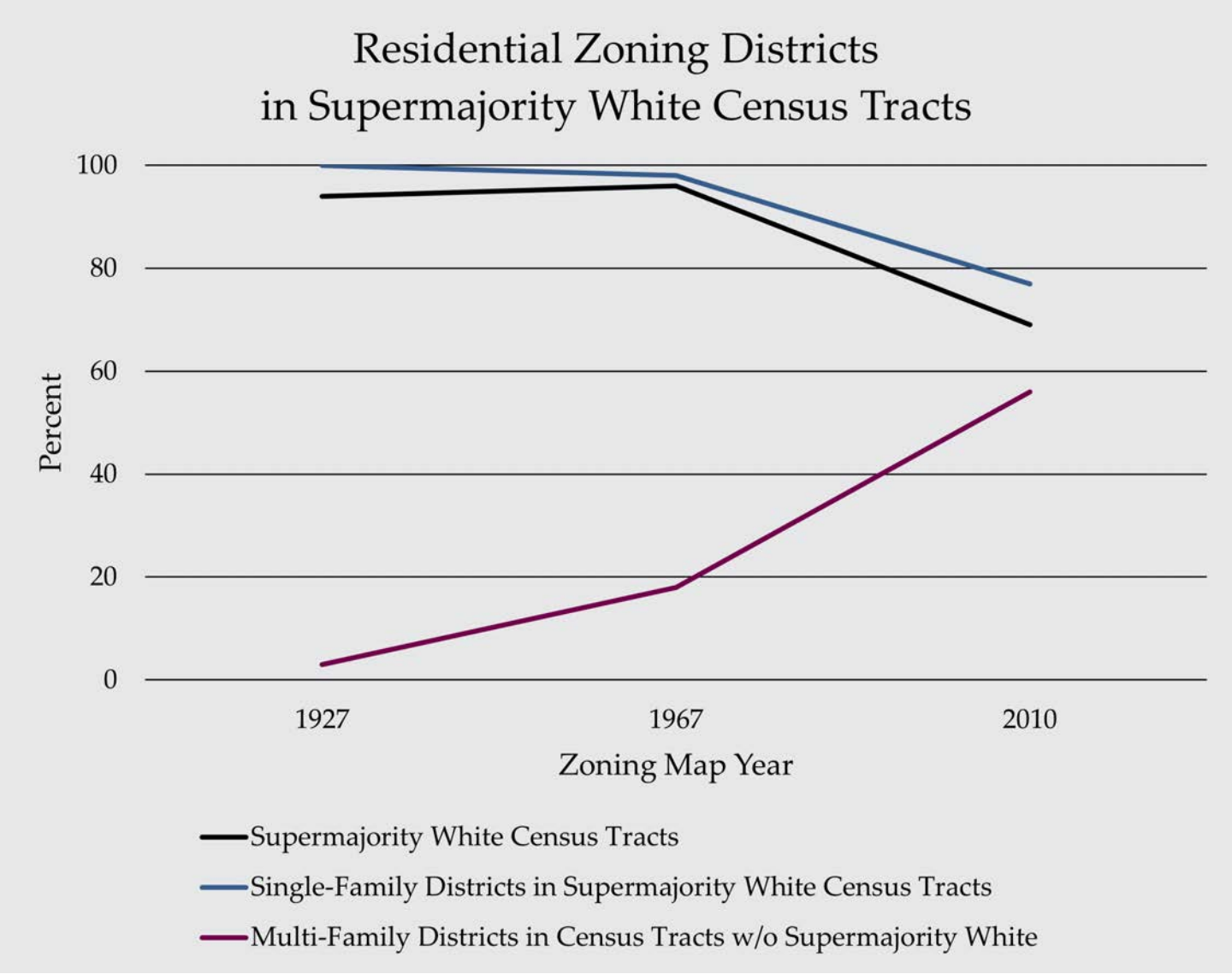
56% of the 2021 multi-family zoning districts cover 2010 census tracts where at least 40% of the residents were not White.

53% of these districts cover 2010 census tracts where at least 40% of the residents were Black.

Zoning and Race Summary

Between 1927 and 2010, the percent of the city with a supermajority of White residents diminished. There is a corresponding reduction in the link between supermajority White areas and the location of single-family zoning districts. However, over three-quarters of the 2021 single-family districts are still in areas with a supermajority of White residents in 2010.

Over the same 1927-to-2010 timespan, the multi-family zoning districts have seen an increasing concentration in areas of the city without a supermajority of White residents.



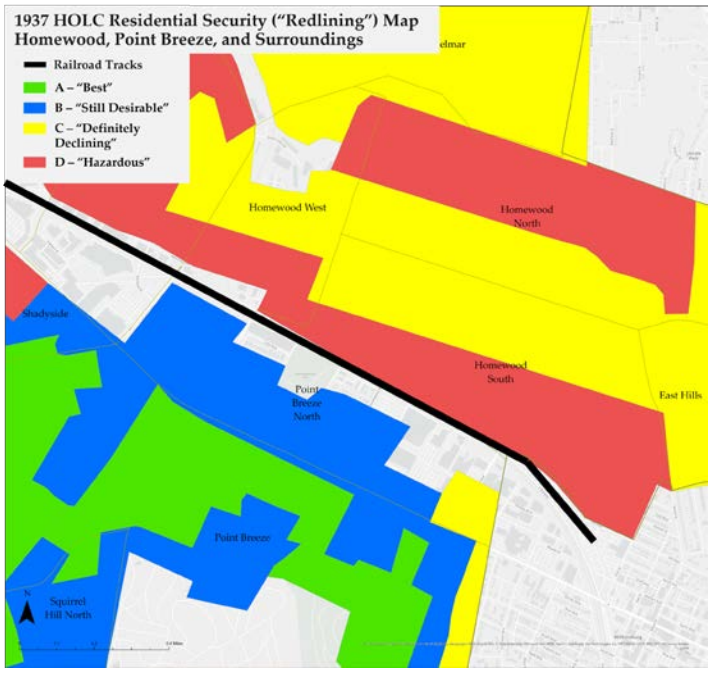
Case Study and the Factors

The Redlining and Race Factors

In the city-wide analysis of single-family and multi-family zoning districts in 1927, 1967, and 2021, this research found the following:

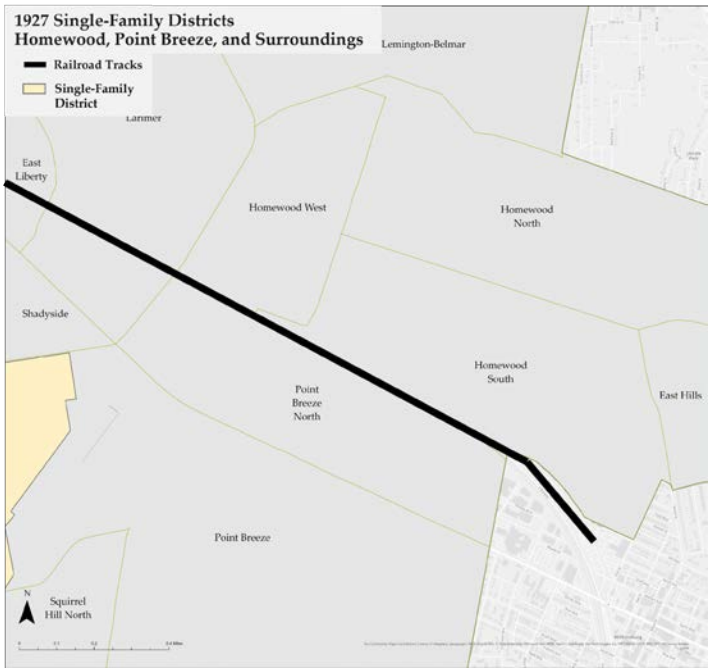
- Single-family zoning districts grew significantly across the city
- Multi-family zoning districts contracted from 74% to 5% of the city
- Multi-family zoning districts in 1927, 1967, and 2021 have a strong correlation with areas graded C "Definitely Declining" and D "Hazardous"
- Multi-family zoning districts are increasingly concentrated in areas without a supermajority of White residents

The Homewood and Point Breeze neighborhoods of our case study support these findings.

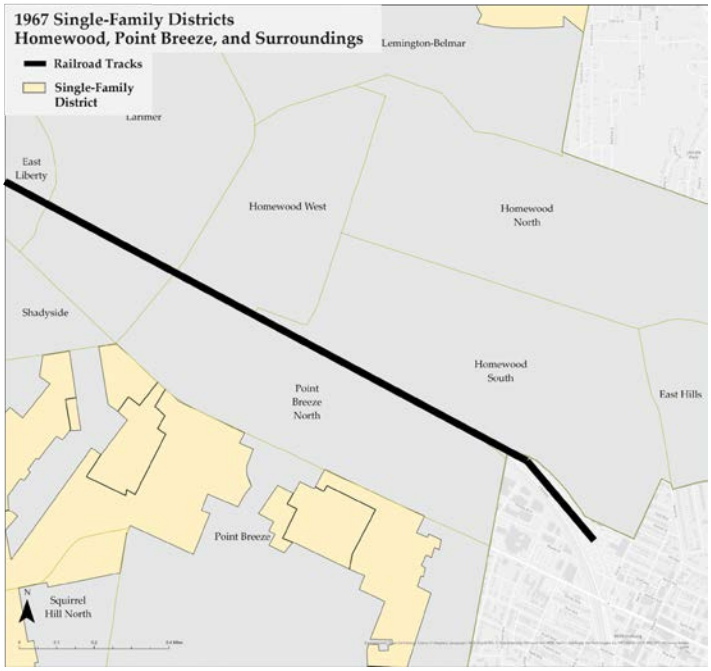


Single-Family Zoning Districts 1927-2021

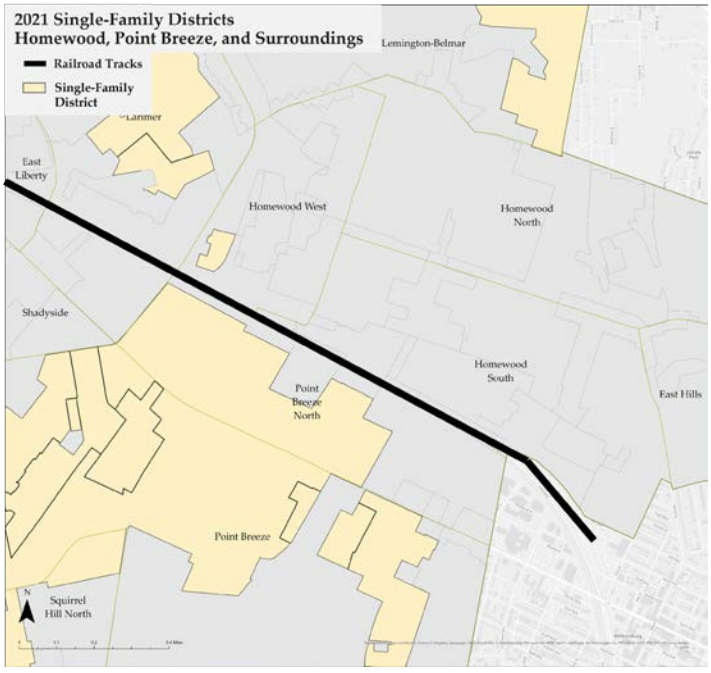
Single-family zoning district grew across the city from 1927 to 2021. In the Homewood and Point Breeze neighborhoods, the single-family zoning districts also grew, but most of that growth happened on the Point Breeze side of the tracks.



1927 Single-Family Zoning Districts



1967 Single-Family Zoning Districts



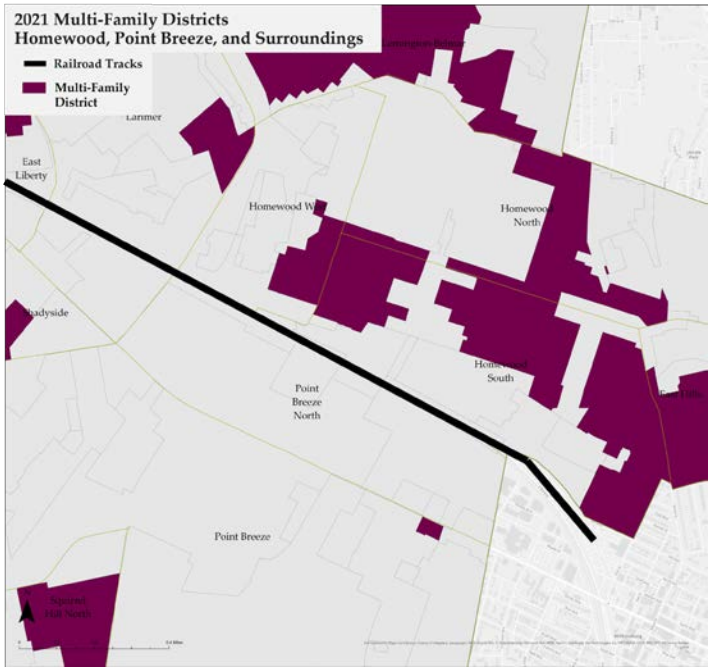
2021 Single-Family Zoning Districts

Multi-Family Zoning Districts 1927-2021

Multi-family zoning districts contracted across the city from 1927 to 2021. In the Homewood and Point Breeze neighborhoods, the multi-family zoning districts also contracted, nearly disappearing from the Point Breeze side of the railroad tracks. However, a significant amount of multi-family zoning districts remains on the Homewood side.

1927 Multi-Family Zoning Districts

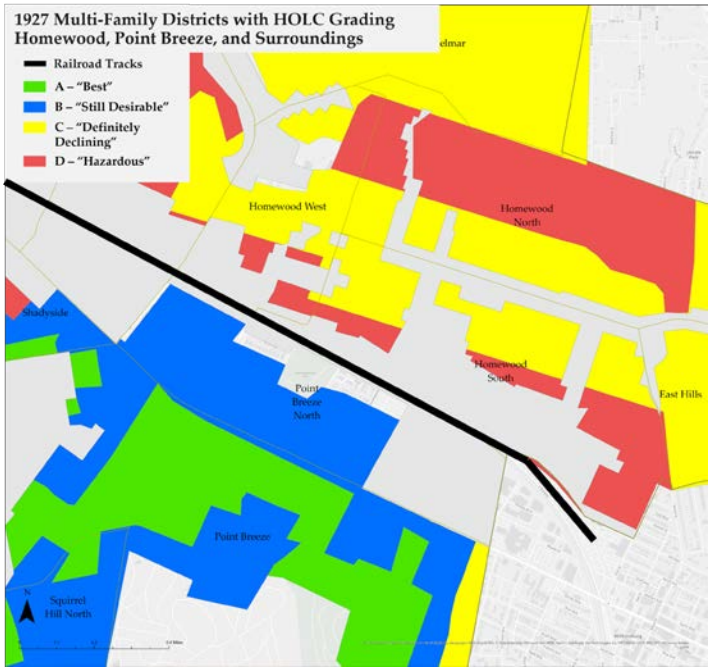
1967 Multi-Family Zoning Districts



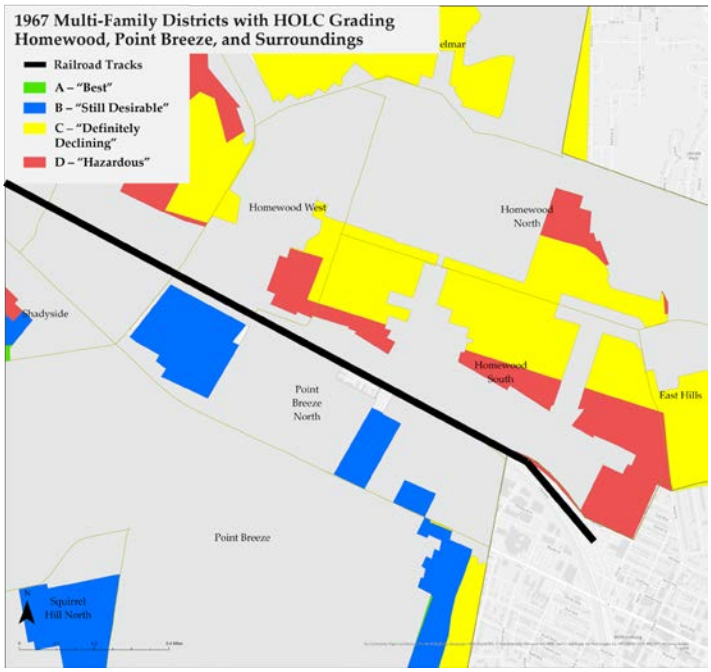
2021 Multi-Family Zoning Districts

Redlining in Multi-Family Zoning Districts 1927-2021

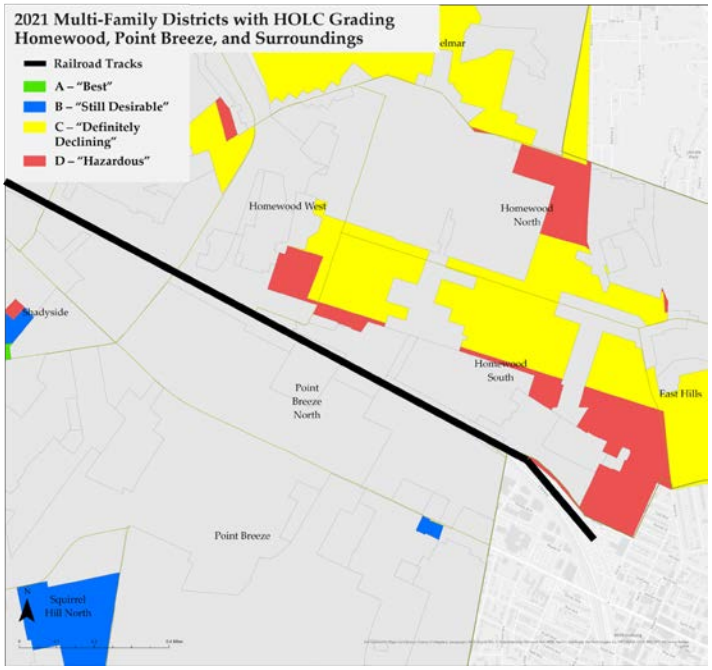
As the multi-family residential districts contract in the Homewood and Point Breeze neighborhoods, they are not only increasing located on the Homewood side of the railroad tracks, but also increasingly located in areas graded C "Definitely Declining" and D "Hazardous."



1927 Multi-Family Zoning Districts Redlining Grades

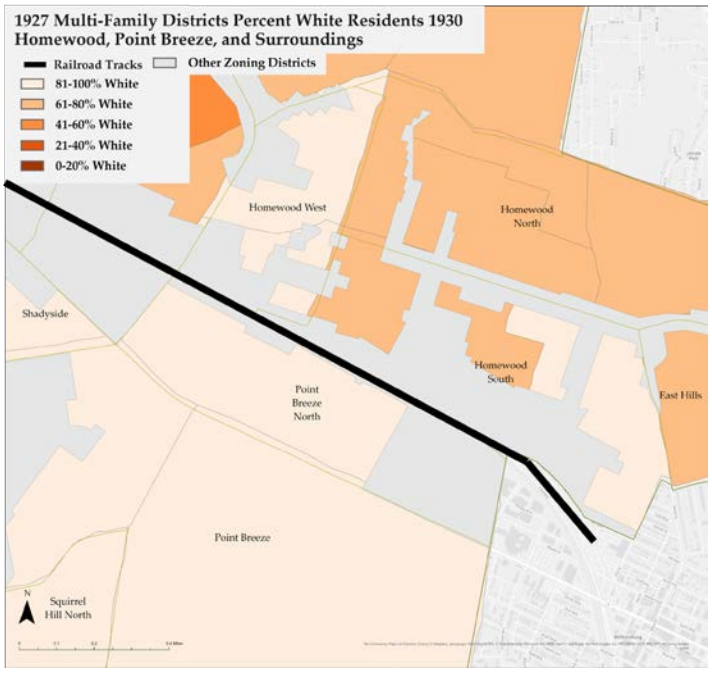


1967 Multi-Family Zoning Districts Redlining Grades

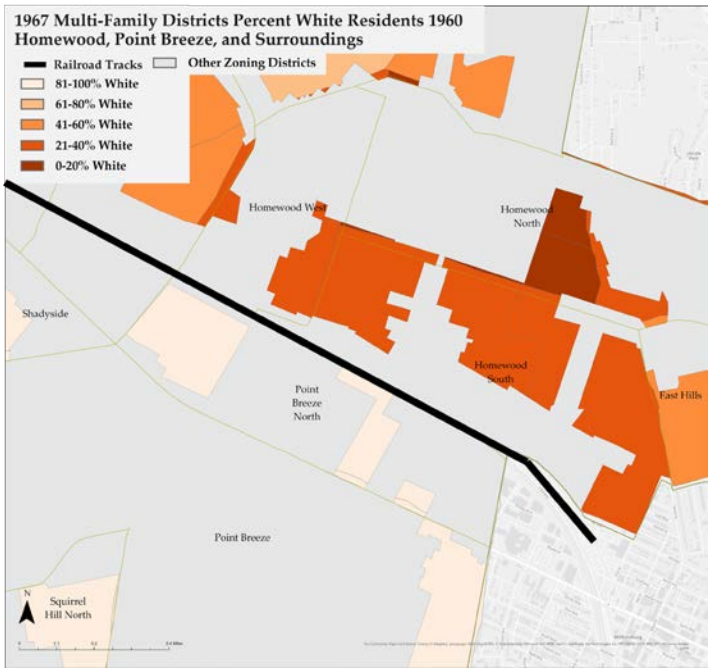


2021 Multi-Family Zoning Districts Redlining Grades

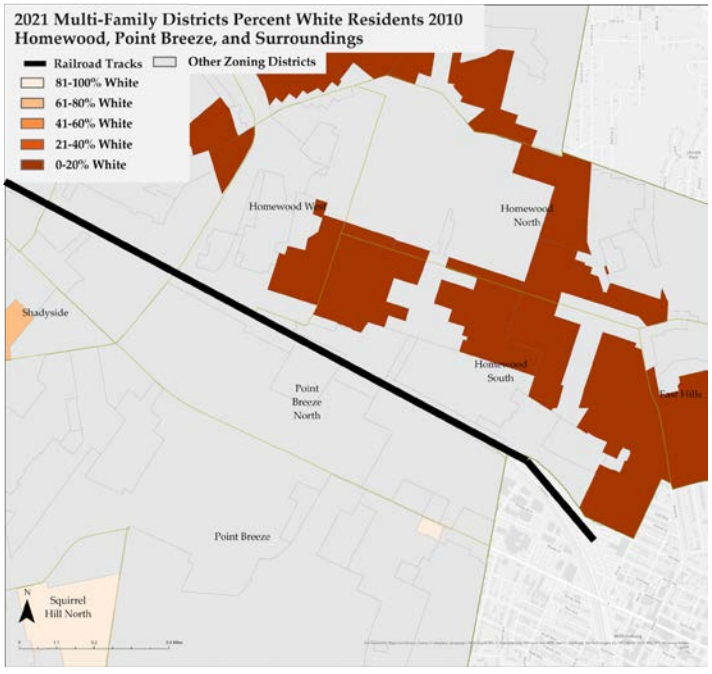
Race and Multi-Family Zoning Districts 1927-2021



1927 Multi-Family Zoning Districts
Percent White Residents



1967 Multi-Family Zoning Districts
Percent White Residents



2021 Multi-Family Zoning Districts
Percent White Residents

As we saw with the city-wide trends, multi-family zoning districts are increasingly concentrated in areas with higher percentages of non-White residents by 2021. In the case study area, as the multi-family zoning districts shrank, they nearly disappeared south of the railroad tracks in the Point Breeze neighborhoods, but maintained a presence in the Homewood neighborhoods. At the same time, the residents of these areas of the Homewood neighborhoods became increasingly non-White. More specifically, residents in the Homewood neighborhoods are over 80% Black in the 2010 census.

A significant contributing factor in the shift in the demographics of the Homewood neighborhoods is that this area was one of the places that Black residents were permitted to relocate when forced out of their homes in the Lower Hill District in the 1950s and 1960s to make way for the Civic Arena and a sea of parking lots. It is beyond the scope of this research to determine if Black residents were pushed to Homewood because of the presence of the multi-family zoning districts or if the multi-family zoning districts continued in the Homewood neighborhoods because Black residents resided there. In either case, there is a correlation between the location of the multi-family zoning districts and Black residents.

The next section discusses some of the impacts on housing choice that this correlation creates.

The Impact of Multi-Family Zoning on Black Neighborhoods

Why this Matters

As mentioned in the introduction, the national trend is to fix the single-family zoning district by either eliminating it all together or expanding the housing options permitted in it. In Pittsburgh, residential zoning districts take a hierarchical approach with the single-family detached district being the most restrictive and the multi-family district being the least restrictive. This means that while only a detached single-family dwelling can be built or renovated in a single-family detached district, in a multi-family zoning district, a single-family detached dwelling can be built or renovated as can a giant multi-story, multi-unit apartment building or tower and any nuclear-family-based housing style in-between. Therefore, on the face of it, the national conversation that the single-family zoning district needs to be "fixed" to remove that roadblock to the affordable housing crisis suggests that in Pittsburgh the Black neighborhoods with multi-family zoning districts are ahead of the curve.

However, the presence of multi-family zoning districts in Black neighborhoods is a contributing factor to the well-documented historical and on-going lack of equity available to Black residents through homeownership. Below are some examples of the ways multi-family zoning districts have removed options for homeownership in and near Homewood.

Impact 1: Reducing Homeownership Options through Demolition

In Larimer, the neighborhood immediately northwest of Homewood, the satellite images below (Figure 3 and 4) illustrate how a multi-family zoning district enabled the demolition of blocks of single-family homes for the construction of a multi-building apartment complex. This kind of action across the city in Black neighborhoods with multi-family zoning districts eliminated numerous housing units that could have been sources of equity through homeownership and replaced them with housing units that are only available for rent and therefore cannot be sources of equity.

Figure 3: Satellite View of Larimer 1957

Figure 4: Satellite View of Larimer 1967

Impact 2: Reducing Homeownership Options through Consolidation

Another way in which multi-family zoning districts reduce the options for homeownership in Black neighborhoods is consolidation. A specific example of this is found on Hamilton Avenue in Homewood where a block of rowhouses (Figure 5) was bought up by a single owner who then consolidated all the parcels of the individual units into a single parcel (Figure 6). This action removed 20 units of single-family dwellings from fee simple homeownership. The owner was able to take this step because a multi-family zoning district permits multiple units to be located on a single parcel. If these rowhouses were instead located in Lawrenceville, for example,—a neighborhood of Pittsburgh with many rowhouses, a high percentage of White residents, and single-family zoning districts—this consolidation would have been prohibited because the single-family zoning district prohibits more than 1 unit per lot.

These units in Homewood could one day return to a potential source of equity through homeownership either after undergoing a re-subdivision or by being converted to condos. Either option requires a cumbersome and expensive process.

Figure 5: Hamilton Avenue Rowhouses

Figure 6: Parcel Boundary for Hamilton Avenue Rowhouses

Conclusion

As multi-family zoning districts have decreased in their total land area in Pittsburgh over the last 100 years, they have increasingly concentrated in Black and other non-White neighborhoods. These areas also have a strong correlation to the areas of the city that were graded C "Definitely Declining" and D "Hazardous" by the Homeowner's Loan Corporation in 1937.

While multi-family zoning districts allow a wider range of housing options than single-family zoning districts in Pittsburgh, they also reduce the options for homeownership and the related ability to build equity. Based on the results of this research, Pittsburgh's current zoning districts are funneling White residents toward the option of a single-family dwelling as either homeowner or renter, while Black and other non-White residents are increasingly funneled toward rental and multi-unit housing options.

Policy changes beyond reforming the exclusive single-family zoning district will be needed to address the inequalities created by the locations of single-family and multi-family zoning districts.

Sources

Allegheny County Real Estate Portal. Accessed June 2021. https://www2.alleghenycounty.us/RealEstate/GeneralInfo.aspx?ParcelID=0174P00156000000&SearchType=3&CurrRow=0&SearchName=&SearchStreet=&SearchNum=&SearchMuni=&SearchParcel=0174p00156&pin=0174P00156000000

Brasuell, James. "Fourplexes on the Legislative Agenda in San Francisco." Planetizen, May 18, 2021. https://www.planetizen.com/news/2021/05/113361-fourplexes-legislative-agenda-san-francisco

Bureau of Social Research, Federation of Social Agencies of Pittsburgh and Allegheny County. Census Tract Tables of Population and Families Pittsburgh: 1930.

City of Pittsburgh. Zoning Map. Western Pennsylvania Regional Data Center. Accessed February 2021. https://data.wprdc.org/dataset/zoning

City Pittsburgh neighborhoods. eligthomas. Accessed January 2023. https://www.arcgis.com/home/item.html?id=387cd1050dcf4cc7a3a613df4d1e4e16

Department of City Planning. City of Pittsburgh Zone Map August 1927. Department of City Planning.

Department of City Planning. City of Pittsburgh zoning district map 1967. Archives of Industrial Society (AIS) Assorted Maps and Atlases.

Desegregate Connecticut. Accessed June 2021. https://www.desegregatect.org/

Gray, M. Nolan. Arbitrary Lines: How Zoning Broke the American City and How to Fix It. Island Press. 2022.

Mervosh, Sarah. "Minneapolis, Tackling Housing Crisis and Inequity, Votes to End Single-Family Zoning." The New York Times, December 13, 2018. https://www.nytimes.com/2018/12/13/us/minneapolis-single-family-zoning.html

Pittsburgh Historic Maps. Accessed June 2021. https://www.arcgis.com/apps/View/index.html?appid=63f24d1466f24695bf9dfc5bf6828126

Pittsburgh Rivers. pgh.admin. Accessed January 2023. https://www.arcgis.com/home/item.html?id=c0ef4330289e47bda3c2edc8c1208523

Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," American Panorama, ed. Accessed February 2022. https://dsl.richmond.edu/panorama/redlining/#loc=5/39.1/-94.58&text=downloads

Steven Manson, Jonathan Schroeder, David Van Riper, Tracy Kugler, and Steven Ruggles. IPUMS National Historical Geographic Information System: Version 17.0 [dataset]. Minneapolis, MN: IPUMS. 2022. http://doi.org/10.18128/D050.V17.0

United States Census Bureau. Census of Population and Housing, 1960, Final Report Series PHC (1), Census Tracts. Volume 9: Table P-1.—General Characteristics of the Population, By Census Tracts: 1960. https://www2.census.gov/library/publications/decennial/1960/population-and-housing-phc-1/41953654v9ch02.pdf