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Elin Boyce

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# Changing Segregation Levels in Pittsburgh's Neighborhoods as a Result of Deindustrialization

Elin Boyce

*Abstract:* Pittsburgh has changed considerably since deindustrialization, with a shift in industry from steel to medicine and from public to private infrastructure. Segregation patterns form in response to the economic statuses within a region. Exclusionary zoning codes have shaped segregation patterns in Pittsburgh. As these zones become increasingly obsolete with the decline of the steel industry and the subsequent rise in the white-collar economy, the potential for these zones to change increases. This study uses the Dissimilarity Index to measure changes in segregation levels in Pittsburgh's twenty most segregated neighborhoods as measured in 1970, to 2020. Segregation levels have decreased in all neighborhoods evaluated except one. This reveals that overall, Pittsburgh is desegregating. The results of this study also indicate the effects of private infrastructure, decreasing population, and areas of concentrated poverty on the demographics of a city.

*Keywords:* Segregation · Deindustrialization · Redlining · Zoning Ordinances · Housing

## Introduction

Redlining has been illegal since the 1968 *Fair Housing Act*, but its influences still affect many people today. Pittsburgh is defined by a geography of uneven development that creates modern disparities for minority groups (Kasler, 2022; Rutan, 2017). The city of Pittsburgh has one of the highest rates of occupational segregation between White and Black people in America (Dickinson, 2021). As regions within America have replaced traditional blue-collar industries with white-collar industries, the impact of deindustrialization on minority groups is becoming increasingly apparent. Deindustrialization shifts to job markets lacking the same protections that minimum wage and

trade unions afforded all workers during the period of industrialization. The division in employment and occupational inequality between White and Black people has the potential to lead to significant differences in wealth accumulation across races (Dickinson, 2021). The segregated nature of inequality offers insight as to why Americans underestimate the extent of inequality (Mijs, 2021). Racial segregation patterns in Pittsburgh have had time to respond to economic changes since deindustrialization. Historically, segregation patterns have reflected the economic needs of the region's primary industry. In Pittsburgh, the need for factory workers in the steel mills created enclaves of blue-collar workers in proximity to these mills. When a region's economy changes, segregation

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patterns tend to shift in response. With this in mind, racial segregation patterns formed in Pittsburgh in the 1950s and 60s should change with the economy's shift away from these previous blue-collar demands (Cardelli, n.d.; Dickerson, 2021).

## Definitions

*Fair Housing Act 1968* - an act that protected fair housing opportunity; "As a condition of receiving federal program funds, states and localities must certify that they are affirmatively furthering fair and equal opportunity in housing for individuals and groups" ("Fair", n.d.).

*Blockbusting* - a process that blocked integration by decreasing market value of a residency when a Black family moved in. It often involved White investors and would be based on misconceptions about Black people's "erosion of home values". Many Black families would pay more than market value for homes as a way of avoiding neighborhoods that were victim to clearance programs. This often reduced wealth accumulation for Black families (Cardelli, n.d.; Dickerson, 2021).

*Exclusionary Zoning Laws* - policies that prevent people of certain races, ethnicities, or income levels from purchasing homes in specific neighborhoods (Sheldon, n.d.).

*Project Based Vouchers* - a housing unit rented to low-income families, in which the landlord contracts with the state or local public housing authority ("Policy", 2023).

*Redevelopment Project* - urban renewal projects that were implemented in partnership with government officials, developers, and corporate leaders. These projects were often redone under eminent domain, with targeted neighborhoods usually having significant African American, immigrant, or low-income populations (King, 2023).

*Redlining* - a practice that allowed residents of certain areas marked as "high-risk" by "Residential Security" maps to be denied services such as mortgages,

insurance loans, and other financial services based on their race or ethnicity ("Redlining", n.d.).

*Deindustrialization* - As referenced in this paper, Deindustrialization refers to the Twin Recession in Pittsburgh, a series of recessions from 1980-1982, which is largely agreed to be the end of steel as Pittsburgh's primary industry.

*Zoning Ordinance* - "A municipal law that outlines permitted uses for various sections of land. Some parts of a city may be dedicated to industrial use, while others may be set aside for residential or commercial use only." ("Zoning", n.d.).

## Literature Review

### History

African-Americans became a predominantly urban group between the Reconstruction (1863-1877) and the Great Migration (1916-1970), a period that ushered in Jim Crow laws and other racial-restrictive codes (Logan, 2017.) Many Black people came to the Pittsburgh area to take jobs in the steel mills in the 1920s-1930s during the Great Migration (Cardelli, n.d.). Land use and zoning have been co-evolving for over a century in most American cities, shrouding the distinction between inequitable treatment and nuisance siting correlated with land use. Racial zoning ordinances faced legal pushbacks from their establishment. Despite this, racially restrictive covenants were not struck down by the Supreme Court until 1948, which allowed them decades of influence on the demographics of neighborhoods (Shertzer, 2021). After the Supreme Court decision *Buchanan v. Warley* banned the use of explicit race-based zoning, city planners remained capable of segregating through indirect methods. Regional economic restructuring through zoning often placed minority neighborhoods in close proximity to less desirable industrial centers. Zoning thus served as a channel for government action to reduce the value of minority-owned homes as opposed to White-owned homes ("Buchanan", 1916; Haller, 2005; Rahman, 2021; Rouse, 2021; Shertzer, 2014).

## Pittsburgh's Zoning Process

Pittsburgh created its first exclusionary zoning code in 1923, meant to separate low-income renters and homeowners. Pittsburgh's planning commission created a report and certified the redevelopment of over 500 acres of land in the Point, East Carson Street, the Lower Hill District, 2nd avenue at Rutherglen Street, Hazelwood Avenue, and Area #3 on the south to Bluff Street. Gentrification has brought substantial economic disparity and differences in wealth accumulation to the Pittsburgh area (Cardelli, n.d.; Dickinson, 2021). Logan, a research associate at the National Bureau of Economic Research notes, "While urban segregation as measured by isolation and dissimilarity was generally rising, the segregation patterns across cities tended to persist over time, with the most segregated cities at the turn of the century also being the most segregated at the end of the century" (Logan, 2017).

## Disparities in Property Value

In 1955, the Pennsylvania Human Relations Commission declared it unconstitutional to "sell, lease, finance, or otherwise withhold housing or commercial property based on race or color." Despite this, private homes for African-Americans were virtually nonexistent during this time period due to corrupt real estate practices such as Blockbusting, that made it difficult to own a home as a Black person (Cardelli, n.d.). In the late 1960's, half of Black families were able to afford public housing but were unable to find it. Eventually, large numbers of vacancies existed across the country in White projects but none in Black projects. "Housing," the US Commission on Civil Rights wrote in 1959, "seems to be the one commodity in the American Market that is not freely available on equal terms to everyone who can afford to pay" (Cardelli, n.d.). The situation became so dire that the government and local housing agencies had to open all projects to African-Americans. During this time period, most high-density public housing units were overcrowded, non-white, and built in racially segregated neighborhoods. Only after an organized effort by the real-estate industry to create all-Black suburbs and overcrowd them did property values decline (Nodjimbadem, 2017). A report published by the Allegheny

County Housing Authority in 1972 stated: "Mention 'public housing' and some people inevitably think of deteriorating projects and blighted areas" (Cardelli, n.d.). Often, central-city Black neighborhoods are blighted due to their underdeveloped infrastructure and urban-removal programs. The separation of Black and White neighborhoods during Pittsburgh's industrial age created an inability for urban African-Americans to create wealth.

## Redlining

Many North American cities also felt the effects of racial segregation through the practice of redlining (Blanc, 2021). Racially mixed neighborhoods were deemed "unsafe" for investment and would thus be avoided. Pittsburgh city councilman, James Jordan, disclosed to the Pittsburgh *Post-Gazette* that the reason Black people were concentrated in Homewood was because, "Banks won't give Negroes mortgages for homes in new areas." Due to this, Black people struggled to qualify for low-cost and low-risk federally insured mortgage loans to buy homes (Cardelli, n.d.; Dickerson, 2021). Banks have had a history of denying mortgages to people of color. High levels of segregation create defined minority neighborhoods that give mortgage lenders the tools to discriminate based on demographics (Rugh, 2014). Before the subprime boom (2002–2005), Black borrowers were less likely to be approved for loans. Afterward, the status of minority borrowers made them targets for subprime lenders (Rugh, 2014). The invention of securitized mortgages shifted minority households from undesired to desirable clients, making segregation an easy way for brokers to target minority households for subprime loans (Cardelli, n.d.; Rugh 2014). Redlining reduced the number of potential buyers for homes in Black neighborhoods, which in turn depressed the market values of homes that were often occupied by minority groups. If Black families are excluded from higher priced neighborhoods or zoning diminishes the value of their neighborhood, the homes purchased by Black families will not accumulate as much wealth as those of White families. Racist lending and housing practices have deprived minority groups decades of wealth accumulation (Dickerson, 2021; Rouse, 2021).

## Deindustrialization of Pittsburgh

Pittsburgh entered the 20th century with the sixth largest Black population in the country. Due to Pittsburgh's opportunities for harsh work offered in the steel mills, migrants and immigrants came in droves (Issacson, 2014). The towns along the Monongahela – Homestead, Braddock, McKeesport, and Duquesne – were home to some of the largest and most modern steel mills of the time. In 1950, nearly half of Pittsburgh's regional workforce was employed in manufacturing, mining, construction, rail, or trucking and warehousing. Traditionally, steel employment concentration in cities defined the socioeconomic regions of the city, with those who worked in the mill more likely to live in closer proximity to it. The globalization of steel not only meant increased international competition but was also characterized by increased domestic competition. Labor-saving technologies meant decreased organized labor and transportation costs, causing structural changes to employment in the manufacturing sector. During the five years following the Twin Recession, Allegheny County lost nearly 16,000 steel-related jobs, close to 3 percent of its overall employment. From January to July 1980, the economy shrank at an 8% annual rate (Alfaro, 2022; Haller, 2005; Venkatu, 2018). The decline in industrial employment gradually remade the population in Pittsburgh. This rapid decline compromised job security, middle-class income, and industrial identity. The remaining population, which was mostly elderly, had not developed the skills for the new technology-based economy. The former industrial sites and deteriorated neighborhoods that were previously steel sectors were now suffering the collapse of an industry through disappearance of municipal services and school closures. This economic restructuring profoundly affected Pittsburgh's population, which transformed into one of the oldest counties in the United States, without the skills to retrain for employment in a new, technology-based economy ("Chapter", n.d.; Haller, 2005; Isaacson, 2014).

## The Pittsburgh Renaissance

Pittsburgh's transition to a post-industrial economy was buffered by a planning movement known as the Pittsburgh Renaissance. Renaissance organizers be-

gan to work alongside the University of Pittsburgh to upgrade its educational facilities to initiate future economic growth in Pittsburgh. The medical center and scientific research facilities became a basis for the city's post-industrial economy. The city's second industrial renaissance, Renaissance II (1977–1990) brought cultural development, corporate investment, and a new identity to the city. Pittsburgh, once known as “the city of steel”, became a city known for healthcare and technology (Isaacson, 2014). While other sources of economic security were becoming increasingly unstable, institutionally based health provision continued to grow and fill this gap. When manufacturing became less prominent in Pittsburgh's economy, the new specialization of the high-tech industries and health services moved in its place. The growth of health services, technology, and banking establishment led to increased opportunities for college graduates with specialization in engineering, computer, and healthcare skills. As Pittsburgh's population was aging and well-insured, the transition from steel to health-services through UPMC was natural (Rahman, 2021; Venkatu, 2018). The locations of the city that were once undesirable due to their proximity to the now-closed steel mills and the dissolving need for enclaves of blue-collar workers dramatically shifted the economic needs of the region. This created the potential for desegregation throughout the Pittsburgh Renaissance.

## Privatization of Pittsburgh

One initiative of the Pittsburgh Renaissance movement was to utilize eminent domain to instigate reform. The movement tore down properties marked as blight and created opportunities for private investors, such as PPG Place (King, 2023). These new opportunities attracted private investors, beginning the city's transition from public to private infrastructure. Pittsburgh's rising housing costs can be attributed to policies that prioritize the development of “luxury” housing over working-class family housing. As McClymonds notes, “When housing is treated as a commodity—a vehicle for wealth and investment—rather than a social good, it becomes inaccessible to many residents of communities” (McClymonds, 2022). To maximize incentive and return, private developers often initiate housing projects in low-income neighborhoods. This tends to concentrate affordable housing to where private

investors can get the most out of federal subsidies. Additionally, with the historical lack of homeownership within low-income communities, renters are more likely to be subject to fluctuating rates based on leases as opposed to mortgages. Gentrification has drastically altered the economic complexion of some neighborhoods while driving down the cost of home ownership in neighborhoods seen as less profitable for corporate private investment (Cerna, 2014; McClymonds, 2022; "Residential", 2019). The Pittsburgh Renaissance was an instrumental driver of modernizing industry and culture in Pittsburgh, but not all of its benefits were equally shared.

### Assumptions

This study relies on several assumptions to qualify its validity:

- Segregation patterns are multi-dimensional and responsive to both culture and the economy.
- The Black and White demographics of a city alone can reflect the segregation patterns of a city.
- Census data is an accurate indicator of housing in Pittsburgh in 1970 and in 2020.
- The 20-neighborhood sample used is reflective of changes within Pittsburgh.

### Justification

Segregation patterns in Pittsburgh have had time to respond to economic changes since deindustrialization. Historically, segregation patterns have reflected the economic needs of a region. When a region's economy changes, segregation patterns tend to shift in response. Based upon previous segregation patterns in Pittsburgh as measured in the 1970s, segregation patterns should change with the city's shifting economy (Cardelli, n.d.; Dickerson, 2021). As no current studies have analyzed if this shift is occurring, this study could provide insight into the extent to which Pittsburgh's previously highly segregated neighborhoods are changing in attempt to answer the question: To what extent has segregation in Pittsburgh's most historically segregated neighborhoods changed since deindustrialization?

## Methodology

### Purpose

The purpose of this study is to examine whether the transition of Pittsburgh's economy from primarily steel to primarily healthcare and technology has affected the city's neighborhoods which were most segregated before deindustrialization. By examining the city's twenty most segregated neighborhoods, insight can be gained on whether neighborhoods in Pittsburgh are desegregating. To measure segregation, this study chose the Dissimilarity Index. Originally, the Exposure Index was considered as this equation is generally used for measuring isolation, i.e. how often different racial groups interact with one another (Forest, 2005). This equation is often used in sociological studies to measure interactions between racial groups. Generally, the value of this index will be highest when two groups are spread evenly and have equal numbers across tracts (Forest, 2005). This way, this study would also be able to analyze segregation within the neighborhoods themselves. This equation was rejected as it would narrow focus and would no longer be relevant to the economy, but to changing social norms within the city of Pittsburgh. The Dissimilarity Index allows for a broader perspective of segregation in Pittsburgh rooted in economic changes as well as a study that can be repeated based on census data.

### IRB Approval for Ethical Concerns

The proposed design for the research study was approved by the [REDACTED] Review Board. Along with ethical concerns, both relevance and plausibility were considered for approval. To avoid any researcher bias or ethical concerns, this study used census data.

### Dissimilarity Index

The Dissimilarity Index measures the evenness with which two groups are distributed across the geographic units that make up a larger geographic entity. This study chose to measure the Dissimilarity values of African-American and White residents in Pittsburgh, as they were the largest demographic groups in 1970 ("1970 Census", 1970). This equation is the most com-

mon way to measure segregation as it is accurate and often uses open-source data. The use of the Dissimilarity Index would allow for accurate and repeatable results to allow replication of this study in other cities that have deindustrialized such as Buffalo, New York or Chicago, Illinois. The use of the Dissimilarity Index also allows this study to join the scholarly conversation surrounding segregation in deindustrialized cities due to the ease of comparison across research studies. The Dissimilarity Index can be interpreted as the percentage of one of the two groups that would have to move to produce a distribution that matches the larger geographic area (Forest, 2005). The equation produces a number from -.5 (complete segregation of the race not being measured) to .5 (complete segregation of the race being measured), with 0 representing complete integration.

**Equation One: Dissimilarity Index**

$x_i$  = the population of group A in the  $i$ th area

$x_j$  = the total population of group A in the large geographic entity

$y_i$  = the population of group B in the  $i$ th area

$y_j$  = the total population of group B in the large geographic entity

$$DI_k = \frac{1}{2} \sum_{i=1}^T \left| \frac{x_i}{\sum_{j=1}^{T_W} x_j} - \frac{y_i}{\sum_{j=1}^{T_B} y_j} \right|$$

This research study measures 20 geographical neighborhoods in the greater geographic context of Pittsburgh. The 10 neighborhoods with the highest percentage of White residents in 1970 and the 10 with the highest percentage of Black residents in 1970 were chosen. These neighborhoods were evaluated based on the 1970 census data in order to account for changes in segregation patterns due to Redevelopment (1963), President Lyndon B. Johnson's *Fair Housing Act 1968*, and any provisions of the Twin Recessions that occurred in Pittsburgh in 1981 and 1982/1983. Neighborhoods with populations under 3000 residents were not considered due to their small population size. By using percentages found by dividing the subgroup by the entire population of the neighborhood, this study quantified the ten most White neighborhoods and

Figure One:

*Most Segregated Neighborhoods in 1970 in Pittsburgh*

Most Predominantly White Neighborhoods in 1970:

1. Banksville
2. Troy Hill
3. Carrick
4. Overbrook
5. Crafton Heights
6. Upper Lawrenceville
7. Lincoln Place
8. Westwood
9. Central Lawrenceville
10. Brighton Heights

Most Predominantly Black Neighborhoods in 1970:

1. Middle Hill
2. Homewood North
3. Homewood South
4. Bedford Dwellings
5. Terrace Village
6. Crawford-Roberts
7. Upper Hill
8. East Hills
9. Manchester
10. Northview Heights

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Table 1

Neighborhoods with the Highest Percentage of White Residents

## Neighborhoods with the Highest Percentage of White Residents:

Associated Neighborhood	Total Population	White Residents	Black Residents	Percent White	Percent Black
Banksville	6235	6234	0	99.98%	0.00%
Troy Hill	5241	5235	3	99.89%	0.06%
Carrick	15491	15467	6	99.85%	0.04%
Overbrook	6462	6449	10	99.80%	0.15%
Crafton Heights	4855	4839	14	99.67%	0.29%
Upper Lawrenceville	5747	5728	14	99.67%	0.24%
Lincoln Place	5300	5277	20	99.57%	0.38%
Westwood	5829	5804	22	99.57%	0.38%
Central Lawrenceville	8043	8006	12	99.54%	0.15%
Brighton Heights	10615	10548	60	99.37%	0.57%

Note. Adapted from *1970 Census of Population and Housing*. (1970). U.S. Census Bureau. Retrieved June 12, 2024, from <https://www2.census.gov/prod2/decennial/documents/39204513p17ch01.pdf>

the ten most Black neighborhoods as depicted in figure one. Following this, the Dissimilarity Index can be applied twice for each neighborhood, once using 1970 variables and once using 2020 variables. This allows comparison between 1970 and 2020 to examine changes in levels of segregation in this time period that may have resulted in the city's large economic shift.

## Findings

### Focused Neighborhoods

To properly assess differences in segregation levels in Pittsburgh, the 10 most predominantly White and 10 most predominantly Black neighborhoods in 1970 were identified (Figure 1). To identify the most segregated neighborhoods, percentages of the population of the predominant race over the total population of a neighborhood were evaluated from greatest to least.



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*Table 2*  
*Neighborhoods with the Highest Percentage of Black Residents*

<b>Associated Neighborhood</b>	<b>Total Population</b>	<b>White Residents</b>	<b>Black Residents</b>	<b>Percent White</b>	<b>Percent Black</b>
<b>Middle Hill</b>	7867	63	7771	0.80%	98.78%
<b>Homewood North</b>	8645	266	8347	3.08%	96.55%
<b>Homewood South</b>	8876	374	8446	4.21%	95.16%
<b>Bedford Dwellings</b>	3635	164	3438	4.51%	94.58%
<b>Terrace Village</b>	5665	402	5237	7.10%	92.44%
<b>Crawford-Roberts</b>	5634	413	5184	7.33%	92.01%
<b>Upper Hill</b>	4187	505	3657	12.06%	87.34%
<b>East Hills</b>	5303	1327	3944	25.02%	74.37%
<b>Manchester</b>	4228	1098	3111	25.97%	73.58%
<b>Northview Heights</b>	4561	1242	3304	27.23%	72.44%

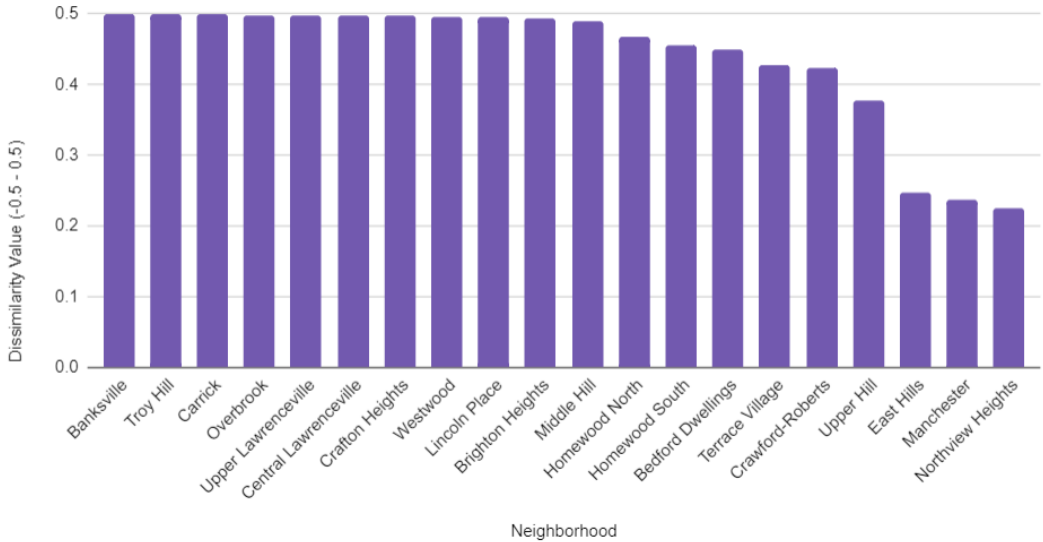
*Note.* Adapted from *1970 Census of Population and Housing*. (1970). U.S. Census Bureau. Retrieved June 12, 2024, from <https://www2.census.gov/prod2/decennial/documents/39204513p17ch01.pdf>

### Dissimilarity Index

To evaluate how economic shifts are changing segregation levels in Pittsburgh, segregation must be evaluated as the dependent variable. To quantify segregation, this study used the Dissimilarity Index to evaluate changes in levels of segregation. This equation is a consistent measure of segregation that can be comparable with many other research studies and enable the research paper to contribute to the scholarly conversation surrounding economic changes and segregation. The use of this equation is further justified in the Methods Section.

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Figure Two:  
1970 Dissimilarity Index Values  
Pittsburgh Neighborhoods



Figures 2 and 3 show the Dissimilarity Values that represent the percentage of the population that would need to move to have an equal population of two groups. For Example, in Figure 2, Banksville has a Dissimilarity Value of 0.5, meaning that 50% of the population would have to move for an equal racial distribution, signifying that almost 100% of the population is one race. It can be seen that between 1970 and 2020, there have been significant changes in Dissimilarity Value. In 1970, three neighborhoods had a Dissimilarity Value below 0.25: East Hills, Manchester, and Northview Heights (Figure 2). In 2020, seven neighborhoods have Dissimilarity Values below 0.25: Crafton Heights, Brighton Heights, Terrace Village, Crawford-Roberts, Upper Hill, Manchester, and Northview Heights (Figure 3). Manchester has had a dramatic change in population; its Dissimilarity Value was of the same magnitude, but negative, meaning that the entire population has shifted from one race to another. Terrace Village is also notable, with an almost equal racial distribution in 2020, a stark contrast to its 1970 value (Figure 2 and 3). In 2020, Dissimilarity Value decreases, just to a less dramatic extent.

## Significance

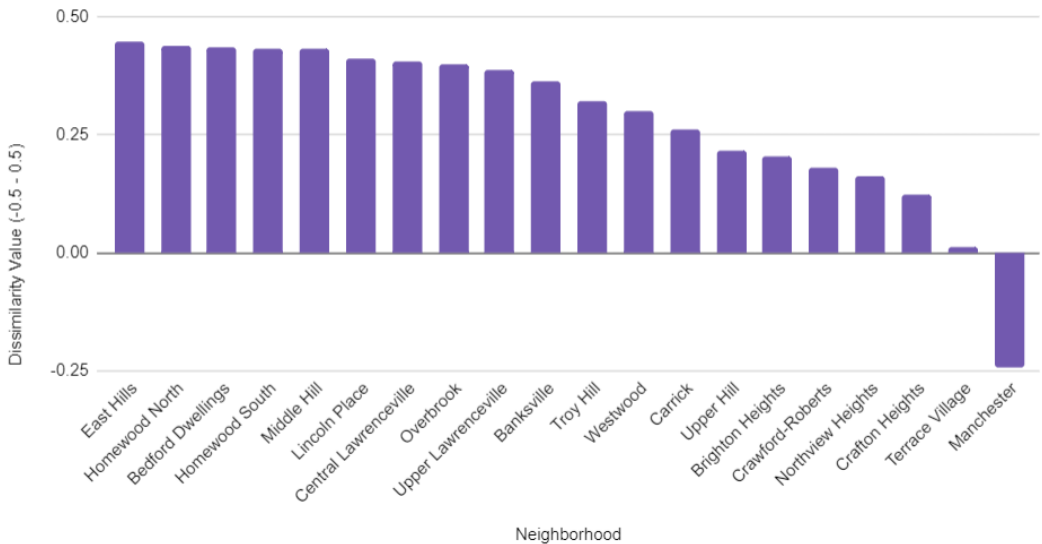
A two-tailed, two type t-test was used to evaluate significance. The data proved to be statistically significant, rejecting the null hypothesis: Deindustrialization has not affected geographical segregation levels in Pittsburgh's most historically segregated neighborhoods. The t-test resulted in  $p=0.00146$ . Since this value is below the significance value of 0.05, deindustrialization has decreased geographical segregation levels in Pittsburgh's most historically segregated neighborhoods.

## Analysis

Applying Dissimilarity Index on 20 of Pittsburgh's most historically segregated neighborhoods can lead to a new understanding about how geographic segregation in Pittsburgh has changed. Evaluating the neighborhoods individually allows for the granularity needed to recognize patterns within the city. The number of neighborhoods with a Dissimilarity Index Value below 0.25 increased from two to seven between

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Figure Three:  
2020 Dissimilarity Index Values  
Pittsburgh Neighborhoods



1970 and 2020, signifying increased levels of diversity. When evaluating the significance of the Dissimilarity values as a whole, between 1970 and 2020, the t-test resulted in  $p=0.1$ . As a whole, segregation levels in Pittsburgh's most segregated neighborhoods in 1970 are lowering. Since 1970, Pittsburgh has undergone substantial economic changes; a shift in industry from steel to technology and medicine along with a shift from public to private infrastructure.

### Privatization of Pittsburgh

Since the 1974 Housing and Community Development Act, there has been a deliberate effort to augment the role of private companies in public housing. During the Pittsburgh Renaissance, private companies and investors, alongside the University of Pittsburgh, led the reform, creating the modern, post-industrial Pittsburgh many recognize today. Since then, many cities have shifted away from the hierarchical control of public institutions over private companies, with many private stakeholders making leading decisions in city reform. A major result of this shift is the consistent increase in levels of racial and ethnic diversity

across urban areas (Issacson, 2014; Katz, 2011; McClymonds, 2022; Russo, 2017). This is apparent in the results of this study. The contrast between Figures 2 and 3 convey the economic changes in Pittsburgh in the last 50 years. In 1970 (Figure 2), 17/20 neighborhoods had Dissimilarity Index Values above 0.25. Eleven of these neighborhoods are very close to 0.5, meaning one half of the dominant population would have to move for an even racial distribution. By 2020 (Figure 3), only 12/20 neighborhoods have Dissimilarity Index Values above 0.25. The neighborhood closest to a value of 0.5 was East Hills, with a value of 0.34. These changes clearly indicate decreasing segregation levels in these neighborhoods. The private housing initiative in Pittsburgh allows for a shift in urban development, with individuals that are members of racial groups altering where they are centered based not on segregation patterns, but cultural and economic push and pull factors. This naturally spreads out previously concentrated populations, which were based primarily on public zoning ordinances. When looking at the specific neighborhood's poverty levels, Crafton Heights, Middle Hill, Homewood North, Homewood South, Crawford-Roberts, East Hills, and Northview Heights

all had high poverty. Troy Hill, Bedford Dwellings, and Upper Hill had moderately high poverty levels. All other neighborhoods evaluated had low poverty levels. When analyzing the neighborhoods that have significantly decreased in segregation level, three of these neighborhoods fall in areas of high poverty in 2020: Crafton Heights, Crawford-Roberts, and Northview Heights. The two neighborhoods that have transitioned from high/moderate poverty levels in 1970 to low poverty levels in 2020, Manchester and Terrace Village, have become more predominantly White. This may be due to the displacement of low-income families from the collapse of public housing units, a process known as gentrification. According to the 2016 Pittsburgh Housing Needs Assessment, the neighborhoods with the greatest percentage of public housing are Northview Heights (90.4%), Bedford Dwellings (57.2%), Terrace Village (39.5%), Fineview (34.4%), and Middle Hill (23.8%) (“2016”, 2016). Four of the five mentioned neighborhoods were evaluated in this study, indicating that public housing and high levels of segregation are related. The collapse of projects, such as the St. Clair Village Public Housing Project and the Allequippa Terrace in the early 2000s, may lower the level of segregation. In recent years, Pittsburgh has been embracing the Department of Housing and Urban Development’s RAD program, which converts Public Housing to Project Based Vouchers. This initiative, while it would keep low-income families in the same area, should alleviate Pittsburgh’s rising cost of living. With this in mind, according to the 2022 Pittsburgh Housing Needs Assessment, many neighborhoods lack income-restricted, affordable housing, with 12/90 neighborhoods containing over ½ of Pittsburgh’s affordable housing stock. It can be construed that the neighborhoods with high poverty levels are most volatile to demographic shifts in a changing economy (“2022”, 2022). Thus, neighborhoods such as Manchester and Terrace Village shifting from a high to a low poverty rate may be a result of a changing demographic in these neighborhoods. Neighborhoods that have drastically decreased in segregation level remain at high poverty levels, with the exception of Brighton Heights. This signifies that, while overall Pittsburgh is desegregating, socioeconomic differences promote a wealth gap that is still prevalent.

## Declining Population

Since the fall of the steel industry, Pittsburgh has decreased in population. During the five years following the Twin Recession, Allegheny County lost nearly 16,000 steel-related jobs, close to 3% of its overall employment (Haller, 2005). By 2000, Pittsburgh reduced funding for public housing and the federal government had tightened fiscal constraints on municipal governments. The 2021 census documented a 13% decline in the Black population from 2010; from 2000–2016, Pittsburgh lost nearly 9% of its population. McClymonds ties this decline directly to the lack of affordable housing in the city. A 2021 report found that from 2007–2019, only 7% of the \$12 billion in home loans in Pittsburgh went to minority residents (Haller, 2005; McClymonds, 2022; Russo, 2017). Although the private housing initiative in Pittsburgh is supposed to help minority residents, it often displaces minorities and such displacement can also, according to McClymonds, “initiate gentrification, raising housing costs for other renters and homeowners in the community” (McClymonds, 2022). With McClymonds claim in mind, it would be logical that the most predominantly Black neighborhoods would be changing the most. When examining these neighborhoods listed in Figure 2, the Black neighborhoods with noticeably large changes in segregation are: Terrace Village, Crawford-Roberts, Upper Hill, East Hills, and Manchester. These showed a difference of more than 0.25. The exception is East Hills, which had a 0.20-point increase in segregation level, which was notable as it is the only neighborhood to become more segregated from 1970–2020. The other Black neighborhoods are desegregating at a similar rate to most of the White neighborhoods, with the exception of Crafton Heights and Brighton Heights. This finding that 5/10 Black neighborhoods are noticeably desegregating as compared with the 2/10 noticeably desegregating White neighborhoods may represent a declining overall Black population in Pittsburgh. The neighborhoods that are desegregating, all except East Hills, offer potential for a more integrated Pittsburgh. The neighborhoods that have significantly changed offer insight to how changes in infrastructure and industry in Pittsburgh are affecting neighborhoods on an individual level. It is clear that not all neighborhoods are equally affected by the city’s changing economy. Crafton Heights, Brighton

Heights, Terrace Village, Crawford-Roberts, Upper Hill, and Manchester are all integral to understanding how Pittsburgh's economy is affecting neighborhoods with dramatic demographic changes. All of the listed neighborhoods have had a decline of at least 1000 residents from 1970–2020, with the exception of Terrace Village, which had 811 fewer residents in 2020 (see the Appendix). When looking at the specific neighborhoods, all follow the same pattern of an extreme decrease in their dominant race, and an increase in the opposite race. Since Pittsburgh's overall population is decreasing, it is logical that much of the decrease in segregation levels can be allotted to decrease in the dominant populations. The increase in levels of the non-dominant population, however, indicates that populations in Pittsburgh are changing and are slowly becoming independent from the segregation patterns that formed Pittsburgh in the 1970s.

## Limitations

This study may be limited by a lack of similar studies regarding use of the Dissimilarity Index. The Dissimilarity Index is often used for evaluating small scale populations, such as workplaces or schools. Since very little large-scale geographic research surrounding deindustrialization has been conducted using the Dissimilarity Index, it may be difficult to draw conclusions about the city of Pittsburgh with no comparisons to other deindustrialized cities since the fall of their industries. The Dissimilarity Index is also limited to two demographic groups, in which this study only considered Black and White races, since they were the two largest racial groups in Pittsburgh in 1970. This may confound the results of this study as non-Black people of color have become a larger demographic of the city since 1970. With this in mind, it may also be difficult to draw conclusions about Pittsburgh's changing levels of segregation as a whole. Since the scope of this study was relatively limited, with this study evaluating 20/90 total Pittsburgh neighborhoods, it is difficult to make generalizations about the city as a whole, as this sample is just a glimpse into how the city's geographic segregation levels are changing from 1970–2020.

## Conclusion and Future Directions

This study addressed the gap surrounding changing segregation levels in Pittsburgh's most historically segregated neighborhoods. It seems, as a whole, that Pittsburgh's most historically segregated neighborhoods are desegregating. It was found that seven of 20 evaluated neighborhoods have significantly desegregated. The majority of other neighborhoods, with the exception of East Hills, are desegregating. This study found desegregation in Pittsburgh's most historically segregated neighborhoods. This study suggests that this is a result of a changing economy in Pittsburgh since deindustrialization. The majority of the neighborhoods that were desegregating were predominantly Black in 1970: Terrace Village, Crawford-Roberts, Upper Hill, and Northview Heights. Manchester, a previously predominantly Black neighborhood, shifted from majority Black to majority White. This change signified that as areas of wealth shift, so will racial groups. This study also suggests that privatization and areas of concentrated poverty in Pittsburgh create an increasingly volatile economy reflected in segregation levels. In the future, it may be beneficial to study how public policy and privatization of housing in Pittsburgh has led to changing segregation levels. Of the White neighborhoods, two out of 10 have significantly desegregated, and the majority of others are desegregating, which shows promise for a more integrated Pittsburgh. Considering that it is generally agreed upon that Pittsburgh handled its deindustrialization well in comparison to other cities, another suggestion for potential research is to calculate the Dissimilarity Values in other deindustrialized cities such as Cleveland, Buffalo, or Detroit. This would create a scope of comparison in the field that may lead to insight on how shifts in industry affected housing across the United States. This comparison is important for addressing housing needs across the country. Overall, this study provided insight on how Pittsburgh's changing economy is affecting segregation levels in the city's neighborhoods. This data can be used as a point of guidance for understanding what Pittsburgh needs, from its purest composition, the residents.

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DEINDUSTRIALIZATION'S EFFECT ON SEGREGATION IN PTTSBURGH

**Appendix:**

**Complete Census Data for Evaluated Neighborhoods**

1970	Total Population	White Residents	Black Residents	Percent White	Percent Black
Banksville	6235	6234	0	99.98%	0.00%
Troy Hill	5241	5235	3	99.89%	0.06%
Carrick	15491	15467	6	99.85%	0.04%
Overbrook	6462	5449	10	99.80%	0.15%
Crafton Heights	4855	4839	14	99.57%	0.29%
Upper Lawrenceville	5747	5728	14	99.67%	0.24%
Lincoln Place	5300	5277	20	99.57%	0.38%
Westwood	5829	5804	22	99.57%	0.38%
Central Lawrenceville	8043	8006	12	99.54%	0.15%
Brighton Heights	10615	10548	60	99.37%	0.57%

1970	Total Population	White Residents	Black Residents	Percent White	Percent Black
Middle Hill	7867	63	7771	0.80%	98.78%
Homewood North	8645	266	8347	3.08%	96.55%
Homewood South	8876	374	8446	4.21%	95.16%
Bedford Dwellings	3635	164	3438	4.51%	94.58%
Terrace Village	5665	402	5237	7.10%	92.44%
Crawford-Roberts	5634	413	5184	7.33%	92.01%
Upper Hill	4187	505	3657	12.06%	87.34%
East Hills	5303	1327	3944	25.02%	74.37%
Manchester	4228	1098	3111	25.97%	73.58%
Northview Heights	4561	1242	3304	27.23%	72.44%

*Note.* Adapted from *1970 Census of Population and Housing*. (1970). U.S. Census Bureau. Retrieved June 12, 2024, from <https://www2.census.gov/prod2/de-cennial/documents/39204513p17ch01.pdf>



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2020	Total Population	White Residents	Black Residents	Percent White	Percent Black
Banksville	4127	3191	194	77.32%	4.70%
Troy Hill	3395	2610	426	76.88%	12.55%
Carrick	10290	7076	1666	68.77%	16.19%
Overbrook	3483	2986	200	85.73%	5.74%
Crafton Heights	3999	2270	1281	56.76%	32.03%
Upper Lawrenceville	2394	2018	154	84.29%	6.43%
Lincoln Place	3155	2763	167	87.58%	5.29%
Westwood	3722	2538	302	68.19%	8.11%
Central Lawrenceville	4720	4056	218	85.93%	4.62%
Brighton Heights	7105	4692	1801	66.04%	25.35%

2020	Total Population	White Residents	Black Residents	Percent White	Percent Black
Middle Hill	1757	85	1604	4.84%	91.29%
Homewood North	3259	97	2955	2.98%	90.67%
Homewood South	2260	66	2023	2.92%	89.51%
Bedford Dwellings	1386	51	1262	3.68%	91.05%
Terrace Village	4854	2046	2165	42.15%	44.60%
Crawford-Roberts	3041	728	1831	23.94%	60.21%
Upper Hill	1723	392	1142	22.75%	66.28%
East Hills	2892	69	2665	2.39%	92.15%
Manchester	2204	1522	452	69.06%	20.51%
Northview Heights	2767	849	1744	30.68%	63.03%

Note. Adapted from RACE. (2020). U.S. Census Bureau. *Decennial Census, DEC Redistricting Data (PL 94-171), Table P1*, [https://data.census.gov/table/DECENNIALPL2020.P1?g=050XX00US42003\\$1400000&y=2020](https://data.census.gov/table/DECENNIALPL2020.P1?g=050XX00US42003$1400000&y=2020). Accessed on June 11, 2024.