

Exploring the Relationship between Housing Discrimination and Gentrification in Philadelphia

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Introduction

In the United States, discrimination has been proven, both empirically and anecdotally, to be a significant hurdle facing minority communities. One of the most damaging forms has been housing discrimination, which has hindered the ability for minority communities, notably the African American community, to build generational wealth through property. After slavery was abolished in 1865 by the 13th Amendment, the following century saw numerous discriminatory practices put into place, many of which limited the housing options available to African Americans. The discrimination was explicit, and repercussions can clearly be seen today. A major victory in the fight against discrimination came in 1968 with the Civil Rights Act. This legislation included the Fair Housing Act, which made it illegal to discriminate against current or potential renters and buyers on the basis of race, religion, sex, national origin, and later, familial status and disability. While the Fair Housing Act has eliminated some of the most egregious instances of housing discrimination, more subtle forms have appeared. These subtleties can make it difficult for victims of housing discrimination to prove their case. With recent changes to the Department of Housing and Urban Development's disparate impact rule, the burden of proof lies solely with the victim, making it difficult to identify and fight housing discrimination (National Low Income Housing Coalition, 2020).

One of the long-term impacts of housing discrimination has been a heavily segregated United States, with African American neighborhoods being poorer than their white counterparts on average (Pager and Shepherd, 2008). Today, the segregation of some neighborhoods comes to the forefront due to gentrification. As wealthier people move into poorer neighborhoods, it becomes harder for the original residents to stay in their homes for numerous reasons. Often, this is wealthier white people moving into poorer, predominately African American neighborhoods. As we often see, this demographic shift in gentrifying neighborhoods begs the question of how gentrification is related to housing discrimination. We hypothesize that city neighborhoods undergoing gentrification experience more housing discrimination, especially against African Americans.

As Philadelphia is the fourth most segregated city in the United States (Silver, 2015), and, according to the 2010 Census, minority communities comprise almost two-thirds of its population, Philadelphia is an apt choice in which to test our hypothesis. Furthermore, in Christensen et al. (2020), Philadelphia was found to display among the highest rates of housing discrimination against African Americans. With data collected from the 2000 Census and the American Community Survey 5-year on demographic characteristics of Philadelphia, we will determine what census tracts are gentrifying. Subsequently, we use data compiled by Christensen et al. on the likelihood of being discriminated against to analyze differences in discrimination in gentrifying and non-gentrifying tracts in Philadelphia. Our results support our hypothesis and suggest that neighborhoods that gentrify also have higher housing discrimination on average.

It is crucial to keep in mind that many factors, both visible and hidden, impact the housing market and the ability of people to find homes. Nonetheless, our findings indicate that African Americans have a more difficult time finding homes in gentrifying Philadelphia neighborhoods. It is similarly hard to generalize this to the entire United States, but given the history of housing discrimination and the significant adverse impacts that gentrification can have on minority communities, it seems likely that a subsequent study extended to the entire United States would find similar results. With housing discrimination being so hard to spot in many instances, the ability to predict where it may be happening can help influence policies in the quest to eliminate it.

Background

Over the past several decades, gentrification has occurred at an increasing rate across major U.S. cities. Banzhaf and McCormick identify four hallmarks of gentrification: rising house prices, new construction and renovations of existing infrastructure, the increased conversion of rental units to owner-occupied properties, and an overall shift from low socio-economic status to high socio-economic status (Banzhaf and McCormick, 2006). The overall costs and benefits of gentrification have long been debated. It can revitalize the city and bring in new streams of income but, in the process, harm original residents. These residents, especially renters, may be displaced because they can no longer afford to live there or the neighborhood does not suit their needs anymore. Gentrification can also result in a loss of community and culture and dredge up a history of segregation. Although more research is now being conducted on gentrification, many of its effects remain undetermined. This paper investigates and sheds light on one of them: the prevalence of housing discrimination in gentrifying neighborhoods.

Gentrification in Philadelphia

Philadelphia is one of many U.S. cities that have undergone drastic changes in the past two decades. It is one of the fastest gentrifying areas in the country, and its gentrified

neighborhoods are experiencing substantial shifts in socio-economic and racial composition (Richardson et. al, 2019). A recent study by the Pew Charitable Trusts identifies fifteen gentrified tracts in Philadelphia, with multiple more in the process of gentrifying (Dowdall, 2016). The majority of these gentrified neighborhoods are urban, located in or around the downtown area of Philadelphia, known as Center City. By 2000, most of the gentrified neighborhoods had a higher population of white residents, but by 2015 they all did (Dowdall, 2016). These areas—especially ones that had been predominantly occupied by working-class African American individuals—experienced a dramatic drop in African American residents. Simultaneously, the population of white individuals, especially those who are college-educated, multiplied. Construction and renovation increased in these neighborhoods and housing prices rose due to the influx of higher-income newcomers. Additionally, there has been a loss of tens of thousands of rental units in these gentrified areas, marking a shift from affordable rental housing to higher-priced houses and apartment complexes, a hallmark of gentrification (Adkins, 2019).

One mechanism that could potentially explain the pattern of gentrification in Philadelphia is Hurst et. al's model of endogenous gentrification. This model posits the notion that households segregate by income and that individuals gain utility from living near high-income neighbors (Hurst et. al, 2013). Wealthy communities tend to have higher-quality amenities such as restaurants, cafés, parks, and gyms. At a certain point, however, a high-income neighborhood will reach its maximum population, since only a limited amount of housing is available. The model predicts that the next areas to gentrify will be those immediately surrounding the wealthier neighborhood because the proximity to a wealthier neighborhood still affords benefits to those who live nearby. As a result, higher-income individuals will move into neighborhoods surrounding a wealthy one and push original residents out into the periphery. Many of Philadelphia's gentrified neighborhoods are concentrated in one area, in or around Center City. The model could explain why this cluster exists: as one neighborhood of Philadelphia gentrified and the average income of its residents rose, individuals began to move into the neighborhoods immediately surrounding it. This could have triggered a rippling effect, with the process repeating itself over time. Endogenous gentrification can be seen in glancing over recently proposed areas of development in Philadelphia. American Street, an area where there are plans to renovate and build complexes to attract wealthier individuals, is one of the city's poorest areas and is located right by Center City (Laughlin, 2020). This proposal is likely attributable to the area's proximity to a newly-wealthy, gentrified, neighborhood in Philadelphia.

Additionally, the changes in preferences of young, white professionals could be among the primary driving factors for gentrification. In gentrifying areas, there has been an influx of college-educated, childless, white individuals who are attracted to high-quality amenities and labor market opportunities (Baum-Snow and Hartley, 2016). Because these individuals do not have children to support, they have more disposable income they can put towards amenities; this increases the value they place on amenities. In particular, non-tradable services, such as

restaurants, salons, and gyms, are valued increasingly by these individuals because of the opportunities they provide for socialization and homophily (Couture and Handbury, 2000). Since many of those moving into these areas are recent college graduates, these prospective residents are looking for ways that they can meet new people; these amenities offer them the opportunity to socialize and relax during free time. This idea is supported by the fact that gentrification in Philadelphia started picking up in the late 1990s after Center City and the areas around it became renovated with multiple new luxury apartment complexes and restaurants (Dowdall, 2016). Significant renovation generally leads to new populations, demographic change, and thus gentrification. However, such accommodations may incur harm on the original residents of the area and decrease welfare. The new urban area may no longer be compatible with their needs. For example, there could be less affordable housing or public transportation and rising prices, causing them to move out of their homes to a neighborhood with fewer amenities.

Gentrification and Discrimination

Discussions of segregation and discrimination have largely been absent from most studies examining gentrification, except when discussing displacement. Although important, displacement is not the only outcome that harms minority residents. Philadelphia has a history of segregation, where restricted covenants and redlining previously limited where African Americans could live (Dowdall, 2016). Many of the neighborhoods which have gentrified or are gentrifying have previously had predominantly African American residents. This phenomenon has caused tension because there is the sentiment that they are being pushed out of their neighborhoods once again. In addition, some areas that are gentrifying have existing problems that are being ignored; for example, the residents of American Street live significantly below the median income level due to high unemployment (Laughlin, 2020). Instead of creating more jobs, the neighborhood is building new amenities and complexes.

It has been found in previous studies that while gentrification can have positive effects, like the unification of communities to fight for affordable housing, it can also have adverse negative effects by amplifying class segregation and discrimination (Kirkland, 2008). It can pit wealthier inhabitants of the neighborhood, who are often European, against poorer inhabitants, who are often minorities, against each other. This could be in part due to Schelling's theory of neighborhood tipping, which suggests that segregation can evolve out of individuals who prefer to live near others of the same race (Schelling, 1972). Discrimination in communities undergoing gentrification could affect which way the neighborhood tips.

This extends to the housing process; it has been uncovered that African Americans seeking home loans in gentrified metropolitan cities were 2.33 times more likely to be rejected (Wyly and Hammel, 2004). One plausible explanation is that real estate agents in cities might discriminate against minorities to accelerate gentrification and gain profits faster. Real estate

agents, like the home loaners in Wyly and Hammel's study, may hold minority candidates to a higher standard when looking at paperwork and may view white candidates with the same credentials as being less of a risk. Alternatively, they may just feel more comfortable lending to white individuals. Gentrifying areas in cities might also have more discrimination since they have a financial incentive to discriminate. When neighborhoods gentrify, it is typically motivated by the prospect of economic gain. This is achieved by increasing the number of high-income residents, who are typically white, college-educated professionals and discriminating against the original inhabitants, who are likely to be minorities or have lower incomes. In this paper, we aim to investigate the prevalence of housing discrimination against African American individuals in gentrified tracts of Philadelphia.

Data

Our study examines gentrification and discrimination at the Census tract-level in the city of Philadelphia (coterminous with Philadelphia County). We gather data about neighborhood demographics and characteristics from the 2000 Census and the 2013-2017 American Community Survey 5-Year estimates. These sources provide us with tract-level data on race, percent owner-occupied and renter-occupied housing, median household income, median gross rent, and median home value. We also use data on the tracts' demographics, including information about residents' races, education levels, ages, and genders.

We use discrimination data from a recent study by Christensen et al. (2020). In this study, the experimenters constructed 18 fictitious personas with names that are typically associated with three different race groups: white, African American, and Hispanic/LatinX. Six names were made for each group, three male and three female. These personas were then used to send inquiries to rental listings on a major online real estate platform such that each listing would receive one inquiry from each race group over the span of multiple days. The responses were then analyzed based on whether a response was received within seven days and if the response indicated that the property was available to rent. The frequency of responses were compared across race groups. Of the cities studied, Philadelphia was found to have among the highest rates of housing discrimination against African American renters. This study produced data yielding the probability that a renter will receive a response to an inquiry by Census tract.

For each tract, we calculate the difference between the percent response for inquirers with predominantly white names and that for those with predominantly African American names; we call this the response gap. For the remainder of the paper, we use the response gap as a proxy for housing discrimination; a larger response gap indicates more discrimination. A positive response gap indicates that African American renters will receive fewer responses to their rental inquiries than white renters solely because of their names. This response gap suggests that there are fewer housing options available to African Americans, hindering their ability to choose their optimal

location and maximize their utility. Figure 1 and Table 1 show the response rates for whites and African Americans, as well as the response gap for African Americans in Philadelphia.

Figure 1. Maps: Response Rates and Response Gap

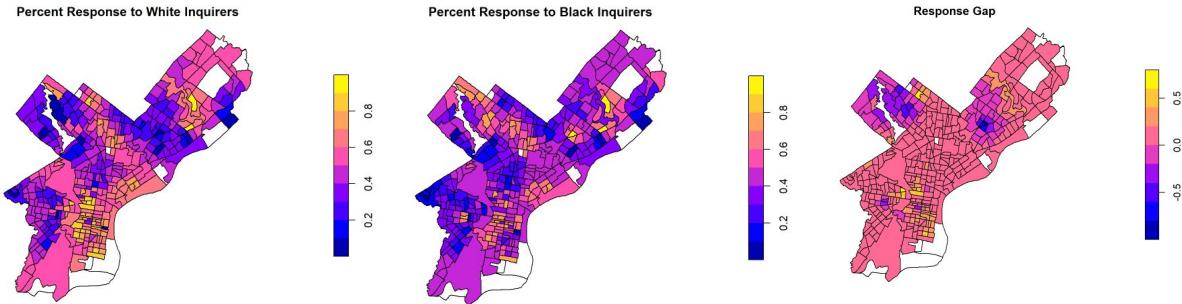


Table 1. Summary Statistics: Response Rates and Response Gap

<i>Mean White</i>	0.4810450
<i>SD White</i>	0.1796314
<i>Mean African American</i>	0.4255405
<i>SD African American</i>	0.1577488
<i>Mean Gap</i>	0.0555046
<i>SD Gap</i>	0.1521817

From the neighborhood data, we create three separate measures of gentrification. A neighborhood is determined to be gentrifying under the *GENTRIFY_COMPOSITE* measure if the tract's median household income in 2000 is less than \$50,000, the tract's median house value appreciates by more than 50%, its median gross rent increases by more than 50%, its median household income increases by more than 30%, and the percent of housing units occupied by their owners increases by any amount. This measure is based on Banzhaf and McCormick's hallmarks of gentrification. Figure 2 highlights the tracts determined under this definition to be gentrifying in yellow. Table 2 shows the summary statistics for the expected characteristics of neighborhoods that gentrify under the *GENTRIFY_COMPOSITE* definition. Notably, incomes and home values increase significantly more in gentrifying tracts than in non-gentrifying tracts.

Figure 2. Gentrifying tracts based on the *GENTRIFY_COMPOSITE* definition

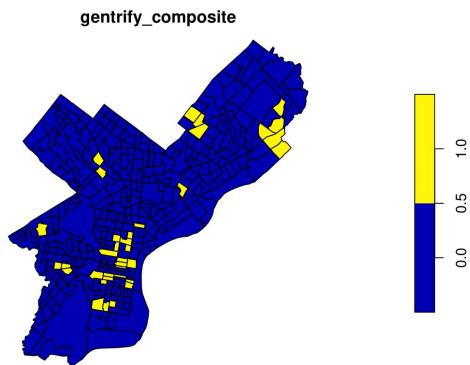


Table 2. Summary Statistics: *GENTRIFY_COMPOSITE* definition

<i>GENTRIFY_COMPOSITE</i>	0	1
<i>Total</i>	336	36
<i>Mean White Response</i>	0.48	0.52
<i>Mean Black Response</i>	0.43	0.43
<i>Mean Response Gap</i>	0.05	0.09
<i>Mean Income 2000</i>	31284.46	30299.58
<i>Mean Income 2017</i>	42628.96	57276.11
<i>Mean Value 2000</i>	62745.11	87136.11
<i>Mean Value 2017</i>	178653.94	266033.33
<i>Mean Gross Rent 2000</i>	556.66	574.31
<i>Mean Gross Rent 2017</i>	997.67	1107.06
<i>Mean Owner Occupied 2000</i>	0.6	0.45
<i>Mean Owner Occupied 2017</i>	0.51	0.51

GENTRIFY_INCOME is based on the definition of gentrification used by the Pew Charitable Trusts in their study of gentrification in Philadelphia in the early 21st century (Dowdall, 2016). A tract is determined to be gentrifying under this measure if it has a median household median income in 2000 less than the overall median income, a median income in 2017 greater than the overall median income, and its median income increases by more than 10%. Figure 3 highlights the tracts determined under this definition to be gentrifying in yellow. Table

3 shows the summary statistics for the expected characteristics of neighborhoods that gentrify under the *GENTRIFY_INCOME* definition, and the patterns are similar to those in Table 2.

Figure 3. Gentrifying tracts based on the *GENTRIFY_INCOME* definition

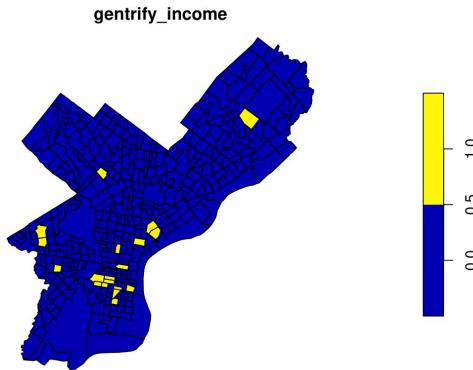


Table 3. Summary Statistics: *GENTRIFY_INCOME* definition

<i>GENTRIFY_INCOME</i>	0	1
<i>Total</i>	353	19
<i>Mean White Response</i>	0.47	0.61
<i>Mean Black Response</i>	0.42	0.49
<i>Mean Response Gap</i>	0.05	0.12
<i>Mean Income 2000</i>	31610.02	25100.32
<i>Mean Income 2017</i>	43409.45	55963.00
<i>Mean Value 2000</i>	66044.84	65194.74
<i>Mean Value 2017</i>	184190.78	243094.74
<i>Mean Gross Rent 2000</i>	561.04	531.89
<i>Mean Gross Rent 2017</i>	1003.30	1101.47
<i>Mean Owner Occupied 2000</i>	0.59	0.49
<i>Mean Owner Occupied 2017</i>	0.51	0.51

A tract is determined to be gentrifying under the *GENTRIFY_HOUSEVALUE* measure if it has a median household income in 2000 less than the overall median and if either (1) median house value appreciates by at least 100% and increases by more than \$120,000 or (2) median house value appreciates by at least 50% and increases by more than \$150,000. Under this definition, low-value housing must appreciate more than high-value housing to be labeled as gentrifying. Figure 4 highlights the tracts determined under this definition to be gentrifying in

yellow. Table 4 shows the summary statistics for the expected characteristics of neighborhoods that gentrify under the *GENTRIFY_HOUSEVALUE* definition, and the patterns are similar to those in Table 2.

Figure 4. Gentrifying tracts based on the *GENTRIFY_HOUSEVALUE* definition

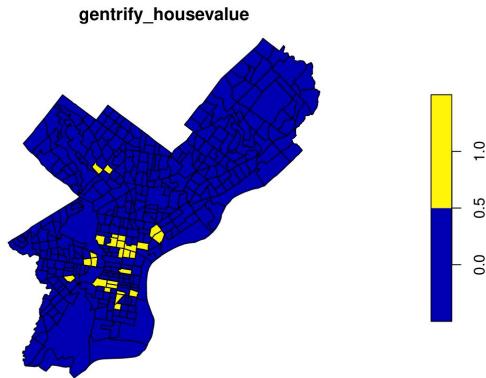


Table 4. Summary Statistics: *GENTRIFY_HOUSEVALUE* definition

<i>GENTRIFY_HOUSEVALUE</i>	0	1
<i>Total</i>	345	27
<i>Mean White Response</i>	0.47	0.61
<i>Mean Black Response</i>	0.42	0.46
<i>Mean Response Gap</i>	0.05	0.15
<i>Mean Income 2000</i>	32367.69	20182.07
<i>Mean Income 2017</i>	44201.10	42186.44
<i>Mean Value 2000</i>	66579.92	60611.11
<i>Mean Value 2017</i>	181237.76	262718.52
<i>Mean Gross Rent 2000</i>	570.57	454.41
<i>Mean Gross Rent 2017</i>	1011.69	966.41
<i>Mean Owner Occupied 2000</i>	0.61	0.35
<i>Mean Owner Occupied 2017</i>	0.52	0.37

The three measures we use each yield different values for the number of census tracts that gentrify. Table 5 shows the number of gentrifying census tracts based on each definition. As a comparison, of the 372 tracts in Philadelphia, the Pew Charitable Trusts found that 15 of them gentrified between 2000 and 2014 (Dowdall, 2016). This context makes our measures of gentrification and the number of tracts we define as gentrifying seem reasonable.

Table 5. Number of Gentrifying Tracts in Philadelphia by Measure

Total Tracts	372
<i>GENTRIFY_COMPOSITE</i>	36
<i>GENTRIFY_INCOME</i>	19
<i>GENTRIFY_HOUSEVALUE</i>	27

Empirics

We use propensity score matching to compare the response gap in gentrifying and non-gentrifying areas. We call the group of tracts that go on to gentrify our treatment group and construct two different control groups. First, we construct a control group by matching based on neighborhood characteristics in 2000. We compare the prevalence of housing discrimination between tracts that go on to gentrify and tracts that do not. Second, we construct a control group based on neighborhood characteristics in 2017. We compare discrimination between tracts that had recently gentrified and those that had not. We conduct this analysis using each of our three measures of gentrification.

Control Group 1: Similar in 2000

First, we use data from the 2000 Census about the characteristics of Philadelphia county neighborhoods to estimate a logit model of the probability a tract will gentrify. We include median household income, percent white, median gross rent, median house value, and percent owner-occupied in this model, as shown in Eq. (1).

$$GENTRIFY_i = F(\beta_1 INCOME_i^{2000} + \beta_2 PERC_WHITE_i^{2000} + \beta_3 RENT_i^{2000} + \beta_4 VALUE_i^{2000} + \beta_5 OWNER_OCCUPIED_i^{2000}) \quad (1)$$

Next, we use the results of these models to estimate the propensity score for each tract, which indicates the probability a tract will gentrify based on its observed characteristics in the 2000 Census. For each tract that goes on to gentrify, we find the two tracts that do not go on to gentrify that have the nearest propensity scores to create a control group (henceforth the 2000 control group). Tracts in the control group have similar propensity scores to the tracts that do gentrify but do not gentrify themselves.

We then use a simple difference-in-means test to compare the response gap between the control group and the treatment group. This is an estimate of the average treatment effect on the

treated (ATT): the effect that gentrification had on discrimination in the tracts that went on to gentrify.

Control Group 2: Similar in 2017

We conduct a similar procedure to form the second control group (henceforth the 2017 control group). We use 2013-2017 ACS data to estimate a logit model of the probability that a tract had gentrified since 2000, as shown in Eq. (2).

$$GENTRIFY_i = F(\beta_1 INCOME_i^{2017} + \beta_2 PERC_WHITE_i^{2017} + \beta_3 RENT_i^{2017} + \beta_4 VALUE_i^{2017} + \beta_5 OWNER_OCCUPIED_i^{2017}) \quad (2)$$

Like before, we estimate propensity scores and match gentrified tracts with the two non-gentrified tracts that have the nearest propensity scores. The control group contains tracts that have not recently gentrified but have similar characteristics to the tracts that have. We compare the response gaps between the treatment and control group using a difference-in-means test.

Results

The response gap in the treatment group is higher in tracts that gentrify than in either of the control groups. The level of significance is dependent on the measure of gentrification used. For the 2000 control group, the response gap is about 3 to 4% higher in tracts that went on to gentrify than those that did not, depending on the measure of gentrification used. The exact estimates are displayed in Table 6. None of the differences are statistically significant, but this could be attributable to the relatively small sample size (with between 19 and 36 tracts in the treatment group and twice that in the control). These results suggest that a neighborhood that experiences gentrification will on average face higher housing discrimination than it would had it not gentrified.

Table 6. Difference in Response Gaps, 2000 Control Group

GENTRIFY_COMPOSITE

Sample	Treated	Controls	Difference	SE	T-stat
<i>Unmatched</i>	0.0912	0.0485	0.0427	0.0281	1.52
<i>ATT</i>	0.0912	0.0399	0.0512	0.0356	1.44

GENTRIFY_INCOME

Sample	Treated	Controls	Difference	SE	T-stat
<i>Unmatched</i>	0.1231	0.0489	0.0741	0.0372	1.99
<i>ATT</i>	0.1231	0.0903	0.0328	0.0324	1.01

GENTRIFY_HOUSEVALUE

Sample	Treated	Controls	Difference	SE	T-stat
<i>Unmatched</i>	0.1545	0.0431	0.1114	0.0312	3.56
<i>ATT</i>	0.1545	0.0971	0.0574	0.0408	1.41

For the 2017 control group, the response gap is 4 to 10% higher in tracts that had recently gentrified than those that did not, depending on the measure of gentrification used. The exact estimates are displayed in Table 7. The difference using the income-based measure of gentrification is significant at the 1% level and the difference using the house value-based measure is significant at the 5% level. These results suggest that neighborhoods that have recently gentrified on average display higher housing discrimination than neighborhoods with similar characteristics that have not recently gentrified.

Table 7. Difference in Response Gaps, 2017 Control Group

GENTRIFY_COMPOSITE

Sample	Treated	Controls	Difference	SE	T-stat
<i>Unmatched</i>	0.0912	0.0498	0.0414	0.0268	1.55
<i>ATT</i>	0.0912	0.0506	0.0406	0.0327	1.24

GENTRIFY_INCOME

Sample	Treated	Controls	Difference	SE	T-stat
<i>Unmatched</i>	0.1231	0.0500	0.0731	0.0359	2.04
<i>ATT</i>	0.1231	0.0315	0.0916	0.0348	2.63

GENTRIFY_HOUSEVALUE

Sample	Treated	Controls	Difference	SE	T-stat
<i>Unmatched</i>	0.1545	0.0458	0.1087	0.0301	3.61
<i>ATT</i>	0.1545	0.0585	0.0960	0.0391	2.45

Policy Implications

These results may have a number of policy implications. The tendency for gentrified neighborhoods to have higher housing discrimination may accelerate the pace of gentrification. White renters could move to the neighborhood at a higher frequency than they would have otherwise, which could result in a positive feedback effect. Additionally, minority renters in gentrifying areas may find it hard to stay within their neighborhood, especially if their lease expires and they face discrimination when renewing it. These trends could contribute to cultural displacement and suggests that the cumulative impacts of gentrification could be even higher than previously realized.

We propose a few potential explanations as to why gentrifying areas may have higher housing discrimination; however, more research, both sociological and economic, needs to be conducted to determine the validity of these theories or suggest alternate ones. Real estate agents in cities might discriminate against minorities, aiming to accelerate gentrification and thus gain profits faster from higher rents and house values. These agents could also aim to cement the new neighborhood characteristics to prevent it from reverting to its original demographics. There may also be implicit biases in favor of potential residents that are white (including statistical discrimination based on income and education level), especially when those types of people have not inquired about properties in the past. Additionally, race may be more salient than usual in a

gentrifying area due to the ongoing changes. Communities that have not recently gentrified might not be as worried about race or losing the character of their neighborhood.

There are a few potential ways in which this could be addressed. Local organizations could provide legal aid to historically discriminated communities to help fight incidences of explicit discrimination. These organizations could actively seek out cases rather than waiting for cases to present themselves and provide support to historically discriminated communities in their housing search. They could also collect data to identify where more subtle and implicit forms of discrimination may be occurring. Other policies could aim to mitigate the harmful effects of discrimination by creating or strengthening various support systems, prioritizing focus on gentrifying neighborhoods. These policies could supplement rent costs or mandate affordable rents, reduce financial barriers to homeownership (perhaps by providing property tax breaks to counteract rising property value), or help minorities accrue wealth and gain access to higher-quality amenities.

Conclusion

This paper examines the link between housing discrimination and gentrification, which to our knowledge has not previously been investigated empirically. We hypothesized that real estate agents in gentrified urban areas discriminate more against African American inquirers. We find more discrimination in areas that recently gentrified when compared to other tracts that had similar characteristics in 2017, supporting our original hypothesis. This result is relevant to discussions about the effects of gentrification, including displacement and the cumulative harms experienced by the neighborhoods' original inhabitants. In order to mitigate the negative effects of discrimination in gentrifying neighborhoods, community organizations and policy institutions could make an active effort to identify instances of discrimination and call attention to them. Furthermore, these organizations could fight for affordable and fair housing practices or aid minorities through other means. The results from our study of Philadelphia, one of the fastest gentrifying cities in the country, indicate that further research on the link between housing discrimination and gentrification may be fruitful.

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