



Housing inequalities: Eviction patterns in Salt Lake County, Utah

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ABSTRACT

Housing insecurity affects millions of Americans. Many cases in which individuals or families lack secure housing are the result of involuntary residential displacement, which often comes in the form of eviction and eviction threat from rental residences. This study takes a spatial analysis approach to understand patterns of evictions filed in Salt Lake County, Utah at the block group level. Modeling the geography of housing security attributes in urban areas is key to identifying inequality issues in potentially segregated regions. Two regression models are constructed that provide insight into inequalities based on race/ethnicity and socioeconomic vulnerability. The models show that there are clear inequalities in Salt Lake County, whereby those living in block groups of minority populations are affected by eviction at a substantially higher rate than those living in majority White population block groups. There is also a higher likelihood of threat of eviction if residents are already economically stressed. The implications of these findings are not limited to individual or family suffering, but also have negative community and larger social effects. Potential pathways to alleviating these issues are discussed in the conclusions section.

1. Introduction

Eviction rates in many cities throughout the United States are amplified by the problems of unaffordable and maintained housing. For example, a studio apartment in San Francisco, CA can cost \$30,000/year (Erwert, 2018). A residence large enough for multiple people in the same area will cost much more. Today's housing crisis on a national scale is the result of climbing housing costs, stagnant or falling incomes for those in poverty, and the lack of adequate federal assistance (Desmond & Kimbro, 2015). Housing commodification in many residential markets throughout the world is raising rent prices and effectively driving working class people out of their neighborhoods in favor of the wealthy (Forrest & Williams, 1984). Furthermore, opportunities to build affordable housing in desirable urban areas are often passed up to build expensive luxury housing.

Many evictions and instances of housing instability can be deterred if the right policies are enacted and enforced. For example, previous to eviction procedures, aid can be distributed to tenants who experience hardship and have problems affording rent (Desmond, 2015; National Law Center of Homelessness & Poverty, 2018). Affordable and stable housing initiatives are lacking or inefficient in some cases. Many renters cannot afford unreasonable increases in rent (Desmond, 2015; National Law Center of Homelessness & Poverty, 2018). Maybe most importantly for this research, the enforcement of laws that limit unfair evictions with respect to discrimination (e.g., race/ethnicity, source of income, renter histories, economic status) (American Civil Liberties Union,

2020; National Law Center of Homelessness & Poverty, 2018). Laws can also be enacted to protect renters from eviction after foreclosure and eviction due to nuisance ordinances (National Law Center of Homelessness & Poverty, 2018). But laws do not always protect those they were intended for. Renters may misinterpret laws, or not know they exist at all, or may be in a situation in which they fear bigger repercussions than eviction (e.g., citizen status). Tenants often cannot afford legal representation, while it is common for landlords to have attorneys. Likelihood of eviction is much higher without legal representation to interpret existing fair housing laws and stop unfair evictions (Desmond, 2015). In some cases, laws exist to protect tenants at the federal level (e.g., Fair Housing Act (U.S. Department of Housing and Urban Development, 2020)) and for some states, but without legal representation, tenants can still be unfairly forced out.

Living with housing insecurities is a difficult task, especially for those who are already socially and/or economically disadvantaged. There is a widely established connection between poverty and residential mobility (Desmond, 2012; Sampson & Sharkey, 2008; South & Crowder, 1998), and poverty is often compounded by other issues. For example, single mothers experience larger expenses based on child needs and may not receive adequate support (Cancian & Meyer, 2005). Those on welfare and other public assistance may not be able to afford living expenses, given increases in housing costs and other instances of inflation. And Black women have been found to be the most threatened by eviction in some research (Desmond, 2012).

Life after eviction can prove to be even more difficult than living

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under threat of eviction. Many evictions result in immediate homelessness that can last for an indefinite amount of time (Burt, 2001; Kleysteuber, 2006). The subsequent and often desperate search for housing leads to a residence and neighborhood of lower quality than the one they were forced out of in many cases (Desmond, 2012; Desmond, Gershenson, & Kiviat, 2015; Desmond & Shollenberger, 2015). Landlords are less likely to rent to those with evictions on their records (Desmond, 2012; Kleysteuber, 2006), and it can be difficult to receive credit and qualify for affordable housing programs after an eviction (Desmond, 2012; Desmond & Kimbro, 2015). This downward spiral of housing insecurity can have negative impacts on individuals and the communities they reside in. These issues can be compounded by food insecurity, educational instability, lack of resources, such as clothing, and inaccessibility to medical attention and employment (Desmond et al., 2015; Desmond & Gershenson, 2016; Desmond & Kimbro, 2015). Health issues correlating with housing insecurity can include psychological distress and depression, developmental delays in children, and malnutrition (Cutts et al., 2011; Desmond & Kimbro, 2015; Desmond & Shollenberger, 2015), where distress can lead to suicide (Desmond et al., 2015; Serby, Brody, Amin, & Yanowitch, 2006). The stress caused by eviction and housing instability can also lead to child neglect and maltreatment (Desmond & Kimbro, 2015; Warren & Font, 2015). Families can lose their belongings in the eviction process (Cohen & Wardrip, 2011; Jelleyman & Spencer, 2008). On a community level, individual residential instability can drive community instability when aggregated. In communities with residents that are more mobile due to forced or involuntary displacement, community bonds are less likely to occur (Desmond et al., 2015).

Involuntary residential displacement and mobility for renters is considered to be any coerced or reluctant residential movement. In the United States a substantial proportion of urban moves are involuntary. These moves can be forced, whereby landlords or city representatives initiate the movement process, or responsive, in which a resident is responding to environmental factors. Forced moves include formal (e.g., complaint-based eviction) and informal evictions (e.g., landlord property evictions, housing condemnations) (Desmond & Shollenberger, 2015). The moves can be the result of housing discrimination, which also includes selective non-lending, sexual harassment, predatory loans, refusal to rent, lack of access to affordable housing, and homeowner association restrictions. An estimated 4 million residents are discriminated against annually in the United States (National Fair Housing Alliance, 2017).

Eviction is a category of involuntary displacement and the main focus in this study. It does not include non-court related coercion by landlords (e.g., threatening to turn residents into authorities based on illegal resident status) or other forms of involuntary displacement, such as unlivable conditions. In the case of eviction, a claim must be filed with the court requesting the removal of a tenant and the breaking of a law or contractual agreement should be cited for a legal removal of the tenant to take place.

This research incorporates spatial analysis and Geographic Information Systems (GIS) to investigate potential inequalities in Salt Lake County, UT. The county is an appropriate location to examine this question, given the community needs and county demographics. At the time of this study, Salt Lake County's minority populations (around 26% of the population) were concentrated in Salt Lake City, but interestingly, Salt Lake City's minority shares were nearly equal to the nations at 34.4% (Perlich & Li, 2010). The county has also experienced its own housing crisis, with a dwindling inventory of affordable and stables homes (Salt Lake City Corporation, 2013). Our specific methods include simple statistics, cartographic visualization techniques, and two regression models, adjusted for autocorrelation, to test the correlations between underrepresented and already socioeconomically stressed populations and evictions filed in the county.

Spatial analysis approaches have proven to be valuable in previous research on housing, foreclosure, and eviction (e.g., Gutiérrez &

Arauzo-Carod, 2018; Gutiérrez & Domènech, 2018; Maharawal & McElroy, 2018; Shelton, 2018). A particularly salient study utilizing analyses relevant to our community needs was authored by Gutiérrez and Delclòs (2016), who describe a spatial distribution of evictions in similar urban settings in Spain. As in these studies, we consider the spatial analysis approach to the study of housing insecurity a key contribution. Evictions are not random in space, nor are related aspects of poverty, race, and ethnicity. Applying spatial analysis methods to research the mechanisms of eviction and impacts on residents is vital to identifying inequities and unfair treatment. Locating areas of concentrated evictions and eviction threats can help identify connections between social factors and housing insecurity. Furthermore, residents in neighborhoods populated by those that are already socially vulnerable are negatively affected by continuous cycles of housing instability. In this article, we hope to communicate the importance of spatial analysis for social problems where ignoring geographic processes can lead to misdiagnosing or failing to identify a problem at all.

Our research questions are: are underrepresented minorities in various Salt Lake County neighborhoods potentially being unfairly targeted for evictions by landlords, and are already economically stressed populations more at risk for further housing and economic instability? GIS allows us to break down the county into smaller geographic areas that may be subject to segregation and less access to resources and opportunities. Populations that are cost burdened and socioeconomically vulnerable are much more likely to be renters in Salt Lake City, the largest city in Salt Lake County (BBC Research and Consulting, 2013). We test for correlation between race/ethnicity and housing insecurity, here identified as evictions filed, and whether or not people who are already disadvantaged are at higher risk. We hypothesize that much of eviction risk can be explained by racial and ethnic patterns in the county, both directly and indirectly. As such, we use structural racism theory¹ as a framework to explain, in part, the potential higher risk for eviction experienced by minority groups in Salt Lake County and possibly in other areas in the United States.

The main overarching goals of this interdisciplinary research are to produce findings that can assist in 1) reducing the number of those that are disadvantaged by better diagnosing regions affected by cycles of housing insecurity, and 2) reducing the negative effects from mechanisms that drive residential displacement in socially vulnerable areas. Understanding geographic patterns of eviction threat and resulting effects can inform steps to prevent housing insecurities and lessen the impact on individuals and families. We hope to contribute to important literature identifying risk factors and spatial distribution of eviction in order to prevent involuntary residential displacement in an urban setting.

2. Discrimination and housing security

The election of President Obama signaled to some the mark of a post-racial society (Love & Tosolt, 2010). Yet, the success of a few highly talented individuals is not necessarily reflective of the fates of the many. On average, White Americans still have disproportionate access to resources that ensure their innate potential is achieved. One of these resources, housing security, is the foundation that allows all other progress. The reality is that racism today is more difficult to see only because the most visible (often legalized) forms of racism (*de jure* segregation) are no longer permitted while implicit racism (*de facto* segregation) continues unabated (Lawrence, Sutton, Kubisch, Susi, & Fulbright-Anderson, 2010; Walsemann & Bell, 2010).

Discriminatory housing practices today are situated within the

¹ Structural racism “refers to the totality of ways in which societies foster racial discrimination through mutually reinforcing systems of housing, education, employment, earnings, benefits, credit, media, health care, and criminal justice” (Bailey et al., 2017, p. 1453).

context of a racialized American society. The American national values of individualism, meritocracy, and equal opportunity are widely assumed to be race neutral. However, the opportunities we are born into shape our potential as individuals (Gee & Ford, 2011). Race continues to be a social and economic resource for White Americans. White privilege, or “Whites’ historical and contemporary advantage in all of the principal opportunity domains, including education, employment, housing, health care, political representation, media influence, and so on” (Lawrence et al., 2010, p. 147) perpetuates inequitable access to power and resources and leads to significant health inequalities (Gee & Ford, 2011). Contemporary culture further reinforces racial stereotyping; for example, by portraying people of color in the media as violent. Individual attitudes toward particular social constructions of race can lead to a national consensus about race that influences policies and practices (Gee & Ford, 2011; Lawrence et al., 2010).

Statistics made available by the US Census and other survey-based measures underline persistent disparities between Whites and people of color in all of the most fundamental measurements of quality of life, including income, education, health and housing. Today discriminatory practices such as employers making hiring decisions based on telephone area or ZIP codes, or on the basis of White-sounding names, continue the U.S. legacy of discrimination and White privilege. de Castro, Fujishiro, Sweitzer, and Oliva (2006), describe factory work for people who have immigrated to the United States as segregated, unsafe, and negligible in respecting workers’ rights. The education system today is still segregated, even with the passage of *Brown v. Board of Education* in 1954. Segregation occurs between and within schools in the development of curriculum and access to opportunities (Walsemann & Bell, 2010). Predominantly minority schools can be under-resourced, providing fewer academic opportunities and treating minority students more punitively (Lawrence et al., 2010; Walsemann & Bell, 2010). Racial inequities are also seen with respect to the criminal justice system. In 2016, there remains a large overrepresentation of Blacks in state and federal prisons at 33% compared to Whites at 30%, with respect to the difference between Black and White populations in the U.S. Hispanics make up the smallest population of the three at 23%, but also a sizable overrepresentation. In 2016, the rates of Blacks, Hispanics, and Whites incarcerated within state and federal prison system per 100,000 are 1608, 856, and 274, respectively (Carson, 2018). Subtle racialized practices such as these are ubiquitous amongst the political, economic, and social structures that constitute the U.S. and maintain racial hierarchies (Lawrence et al., 2010).

Racialized income inequality in the U.S., despite popular belief (Kraus, Rucker, & Richeson, 2017) has not decreased over time. In terms of median wealth, White (non-Hispanic) households (\$171,000) in 2016 held 10 times the wealth of Black households (\$17,100), and eight times the wealth of Hispanic households (\$20,600) (Pew Research Center, 2017). In terms of median income in 2016, White (non-Hispanic) households (\$65,041) took home \$24,976 more than Black households (\$40,065), and \$17,366 more than Hispanic households (\$47,675). Poverty rates paint a similar picture: 8.8% of Whites (non-Hispanic) in 2016 were living below the federal poverty level, compared to 22% of Blacks and 19.4% of Hispanics (Semega, Fontenot, & Kollar, 2017).

These inequalities lead to an uneven distribution of housing security risk. From 1880 to the mid-twentieth century, southern Jim Crow laws, paramilitarization, and violence that biased voting and led to the murder of African American neighbors predated legalized housing segregation practices, and attitudes of hatred against African American’s spread around the nation (Rothstein, 2017). Legalized forms of housing segregation date back to the Home Owners’ Loan Corporation’s (HOLC) 1933 and the Federal Housing Administration’s (FHS) 1934 legal practice of redlining, which denied mortgages to anyone based on risk associated with neighborhoods with African American, minority, or mixed populations (Bailey et al., 2017; Massey & Denton, 1998; Rothstein, 2017). In a practical sense, redlining entailed lines

around neighborhoods, or coloring neighborhoods red on maps, where African American or minority populations lived (Bailey et al., 2017; Rothstein, 2017). Redlining was evidence of legalized neighborhood segregation and as Rothstein (2017) states, “the maps had a huge impact and put the federal government on record as judging that African Americans, simply because of their race, were poor risks” (p. 64). In 1968, The Fair Housing Act was enacted to guarantee equal access to housing, but in practice, communities of color today are still excluded from high-quality suburban neighborhoods via the practices of discrimination in lending practices, zoning regulations that prohibit multifamily houses or the size of a house, and governmental underinvestment in public transit between metropolitan areas and suburbia (Massey & Denton, 1998).

Most Americans live in racially and economically segregated neighborhoods today (Bailey et al., 2017). A recent study using 2010 US Census data found that “the average White person in metropolitan America lives in a neighborhood that is 75% White,” whereas “a typical African American lives in a neighborhood that is only 35% White (not much different from 1940) and as much as 45% Black” (Logan & Stults, 2011). Residential segregation is linked to disparities in health via substandard housing, lower educational and employment opportunities, exposure to toxics and pollution, and lower quality health care associated with neighborhoods of color (Bailey et al., 2017). Salt Lake City’s own history and current practice of greater investment in wealthier communities (east side of Salt Lake County) has contributed to an ongoing divide between east- and west-side neighborhoods in Salt Lake County. Racially or ethnically concentrated areas of poverty (RCPA/ECAP) show that not only is poverty disproportionately affecting communities of color, but also that poverty is concentrated in specific areas and segregation exists in Salt Lake County (Wood, Downen, Benway, & Li, 2013). Lower homeownership rates amongst people of color are a consequence of inaccess to legacies of wealth accumulation that privilege Whites. The consequences of lower homeownership are manifold. Adult renters lack home equity that might be used to make investments such as their children’s education. In addition, retired renters lack the resource of a paid-off home, which may lead to dependence on their children for income, and additional dis-accumulation of wealth via the inability of their children to inherit a home (Lawrence et al., 2010).

The context of White privilege, national values, and American culture inevitably shape the policies and practices of American institutions and opportunity areas, perpetuating the reproduction of racially inequitable outcomes (Lawrence et al., 2010). Racialized disparities in evictions are one example of structural racism. Evictions and frequent moves have snowballing negative impacts on renters, beginning with being forced to move to lower quality housing due to fewer choices available to those with an eviction record, and potentially leading to issues with for example food security, employment, and access to medical care. Evictions also can have consequences for the stability of entire communities when aggregated.

3. Methodology

3.1. Methods overview

In this study, we set out to explore racialized outcomes in relation to threat of eviction specifically, and recognizing the legacy of residential segregation, take a geographical perspective in the analysis. We reiterate here that our research questions are 1) are underrepresented minorities in various Salt Lake County neighborhoods potentially being unfairly targeted for evictions by landlords, and 2) are already economically stressed populations more at risk for further housing and economic instability? To answer these questions we apply two regression models with spatial filtering on US Census Block Groups. The first model represents the populations within the block groups with respect to poverty and minority status, while the second model represents

resident hardships. Both models use evictions filed as the dependent variable.

3.2. Data

The evictions filed data used for this research were collected from the Matheson Courthouse Library in Salt Lake City, UT and represent filings solely for 2015. Some bulk data were provided; however, addresses for each eviction case filed had to be recorded manually from courthouse library computers. Fields of data other than address are Case Number, Case Type, Filing Date, Disposition, Civil Judgment, Amount in Controversy, Party, and Attorney. The evictions filed dataset for 2015 includes a total of 4019 evictions in and around Salt Lake County. Sixty of the 4019 could not be geocoded and 25 fell outside the Salt Lake County boundary, leaving a total of 3934 (98% of the initial dataset). To isolate the residential evictions, records where the defendants in the cases were identified as companies (e.g., LLC, INC, DBA) were extracted. This removed another 57 records, leaving a total of 3877 (96.5%), which would comprise the final dataset.

The evictions filed points were aggregated to census block groups where they were joined with Census 5-year American Community Survey, 2011–2015 data, which provide an average over the five years for a stable characterization of each census block group (see Fig. 1). Census data at the block group level are not available in 1-year increments. The block group is selected as the scale for the unit of analysis of population/neighborhood attributes and housing insecurities. Block groups typically contain between 600 and 3000 people (Iceland & Steinmetz, 2003), and are likely a better representation for residential neighborhoods than Census Blocks, which may be too small, and Census Tracts, which may be too large in many cases. Census Block Groups are also the smallest aggregate unit to include detailed survey data. Multiple socioeconomic and demographic census variables were explored to construct the final models. All variables are standardized by either

total population, total households, or total occupied rent units. Block groups with zero rentals recorded by the U.S. Census were removed from all models, as they created compatibility issues with the negative binomial regression. This removed 13 of the 612 block groups in Salt Lake County, for a total of 599 used in the analysis. ESRI ArcGIS software was used for all data processing for initial preparation.

3.3. Preliminary visualization of areas of higher and lower eviction filing rates

A preliminary map is created to visualize patterns of evictions in Salt Lake County, UT. The Getis-Ord G_i^* statistic is applied to create this visualization. The Getis-Ord G_i^* is a local statistic that identifies statistically significant regions of clustered high and/or low values. Each block group in the study area is considered within the context of its neighbors, such that spatial dependence is recorded within regions of contiguous high or low values. Results are given as z scores and p-values. The sum value for the attributes of each block group and its neighbors, in this case, the sum of standardized evictions filed, is calculated and compared to the expected sum for the attribute calculated by considering all block groups in the study space. Statistical significance is assumed when the local sum is different from the expected sum for the given attribute (ESRI, n.d.; Getis & Ord, 1992). The attribute used here in the hot spot analysis is the block group eviction filing rates standardized by the number of renter occupied units.

3.4. Modeling eviction correlates in space

The distribution of residential evictions in Salt Lake County, UT proved to be overdispersed (variance, 120.85 and mean, 6.33), so a negative binomial regression model was selected to best fit the data, rather than a standard Ordinary Least Squares or Poisson regression model. A likelihood ratio test was used to determine that a negative

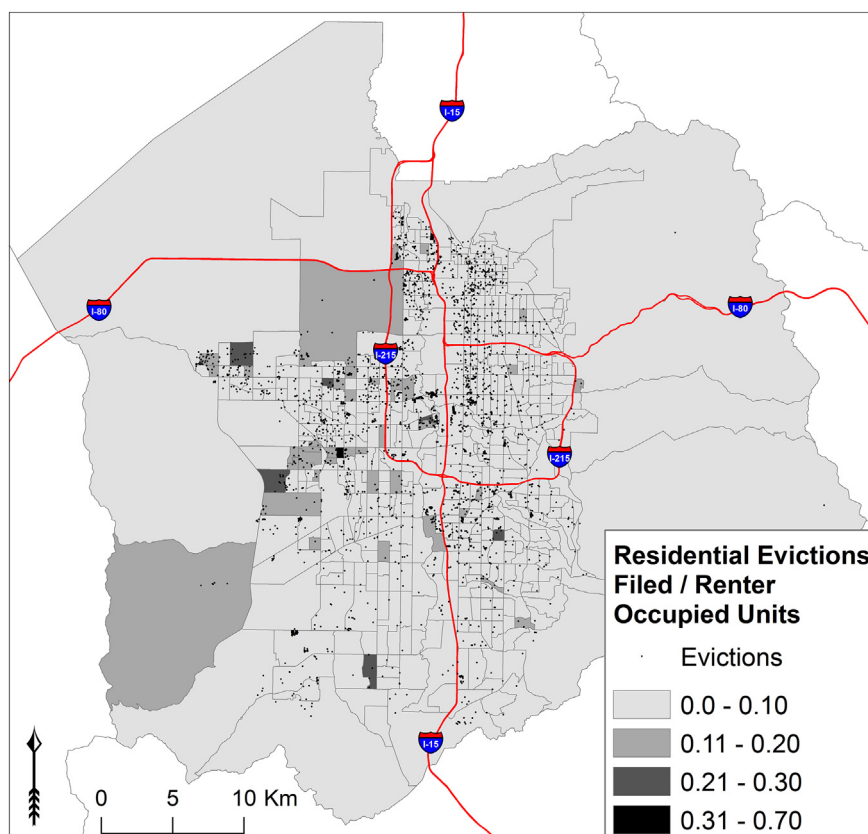


Fig. 1. Evictions filed and the occupied rent unit standardized evictions filed by Salt Lake County block group.

binomial regression model was the proper model to use in this case ($p < 2.2 \times 10^{-16}$).

To ensure that multicollinearity between independent variables of all models is acceptable, variance inflation factors (VIF) are calculated. For all variables, VIFs are under 2, suggesting that any multicollinearity is negligible (Neter, Wasserman, & Kutner, 1989).

We test two models; the first explores the relationship between race/ethnicity, poverty, and evictions, while the second investigates economically vulnerable populations and their potential risk of eviction. These models represent two different phenomena and their results will be discussed in detail in sections to come. The first model describes potential racial/ethnic bias for those experiencing poverty, and can be written as:

$$\log(\text{Residential Evictions Filed}_i) = B_0 + B_1 \text{Poverty}_i + B_2 \text{Minority}_i + e$$

The Evictions Filed variable represents the number of residential evictions filed within each block group within the study area and poverty represents the percentage of households below or above the mean percent of households in poverty. This variable is calculated by subtracting the mean percentage of households in poverty for the entire study area (11.16%) from the percent of households in poverty for each block group. This variable is mean-centered for ease of interpretation, as few block groups have 0% poverty. Minority is a binary variable, 1 where the majority of the population is considered to be the minority in this research (i.e., Latino, Black non-Latino, Asian non-Latino, Native American and Alaskan non-Latino, Pacific Islander non-Latino, and some other race non-Latino), and 0 where the majority of the population within a given block group is White non-Latino. An offset (rent units) is applied to the eviction variable, such that it is converted from count to rate data within the model. This offset is also applied to all following regression models.

The second model looks at vulnerable populations and three other independent variables are included. The variables applied are intended to represent households that already suffer economic and/or other hardship. This model can be written as:

$$\log(\text{Residential Evictions Filed}_i) = B_0 + B_1 \text{Single Parent}_i + B_2 \text{Food Stamps}_i + B_3 \text{Public Assistance}_i + e$$

Single Parent represents the percentage of single parent households within a given block group. Food stamp is the percentage of households receiving food stamps, and Public Assistance is the percentage of households receiving public assistance. As with the poverty variable in the previous model, the mean percentage value for each independent variable is subtracted from the block group totals for ease of interpretation: Single Parent (8.50%), Food Stamps (9.01%), and Public Assistance (1.89%).

We chose these variables to answer the second research question, because we wanted to move beyond poverty and sought to understand how social circumstances (with poverty as an outcome, not necessarily a determining factor) can impact risk for housing instability. Instead of focusing on income and percentages of income to housing costs, we instead focused on variables that can predict vulnerability, based on existing literature. Single-parent households and households receiving public assistance have been found to be disproportionately affected by eviction (Desmond, 2012).

We use Global Moran's I to test whether or not spatial dependence exists between the aggregated residential evictions filed per block group. If spatial dependence is identified for the eviction variable it is good practice to account for it in the regression model using further steps. The null hypothesis for this Moran's I test is that evictions in Salt Lake County occur in a spatially random pattern. Moran's I results range between -1 and $+1$, where -1 suggests dissimilarity between neighbors, 0 suggests a random distribution, and 1 suggests clustering of similar neighbors, and therefore a lack of independence between observations. Results from this test are: Moran's $I = 0.088$, z -

score = 18.53, and p -value = 0.00, inferring that there is positive spatial autocorrelation. In this case, we reject the null hypothesis and fail to reject the alternate hypothesis, that block groups with similar numbers of evictions filed are clustered. Because this is the case, we choose to use implement spatial filtering with eigenvectors into the regression model to account for residual spatial correlation.

Spatial filtering is implemented to remove the dependency between observations in a similar manner to differencing approaches used in time series analysis (Getis & Griffith, 2002). This introduces a new term, the spatial filter, into the standard regression equation. For a spatial error model, the filter is applied directly to the model residuals:

$$y = \beta X + (I - \rho W)\epsilon$$

The spatial filter ($I - \rho W$) is estimated by an eigendecomposition of the spatial weight matrix (W), an $n \times n$ matrix, where non-zero matrix elements imply spatial proximity between locations, and can be taken to represent the spatially varying random error. For GLMs, the filter also includes the model design matrix (Griffith & Peres-Neto, 2006).

Upon application of both SFE models (underrepresentation and vulnerability), a likelihood ratio test was used to compare the spatially filtered and the non-spatial negative binomial regression models. In both cases, including the spatial filtering significantly improves the model ($p < 0.00$) suggesting that the filtered models account for the spatially autocorrelated error.

4. Analysis of spatial patterns of evictions in Salt Lake County, Utah

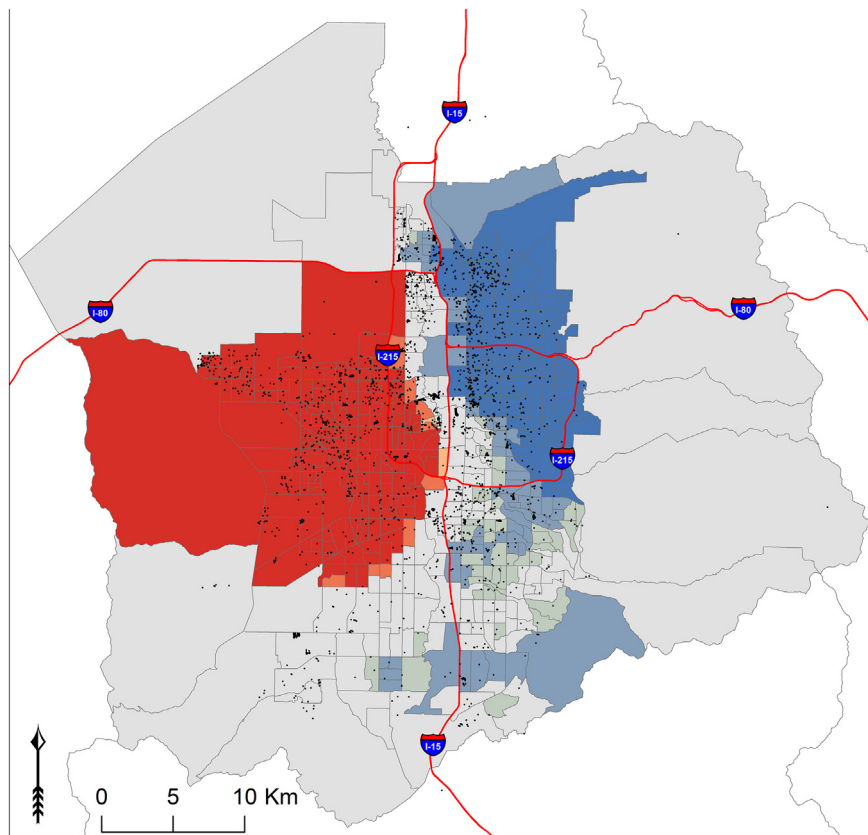
4.1. Correlations between evictions filed, socioeconomic, and demographic variables

An initial matrix is given to show the Spearman's Rank correlations between eviction filing rates and socioeconomic and demographic variables (Table 1). Most variables selected are correlated with residential evictions per number of occupied rental units at $p < 0.05$. Three exceptions are Median Rent, Percent of Asian Population, and Percent Population 18+ with Veteran Status. There are two negatively correlated variables, Percent White (non-Latino), and percent population 65+. This indicates that regions with higher rent, higher percentages of non-Latino Whites, and higher percentages of senior citizens (65+) should have relatively lower risk of eviction in Salt Lake County. These general results were expected and are supported by previous literature (Desmond, 2012; Hartman & Robinson, 2003). They are also useful here in the selection and construction of the regression models

Table 1

Spearman's Rank correlation matrix: variables correlated with residential evictions per number of rentals (***0.000, **0.05, *0.10).

Correlate variable	p-Value	R
Percent household poverty	0.00***	0.197
Median year built	0.002***	0.124
Median rent	0.163	-0.063
Percent households with single parents	0.000***	0.306
Percent population White (non-Latino)	0.000***	-0.374
Percent population Black (non-Latino)	0.002***	0.127
Percent population Native American (non-Latino)	0.000***	0.197
Percent population Asian (non-Latino)	0.708	-0.015
Percent population Pacific Islander (non-Latino)	0.000***	0.148
Percent population Latino	0.000***	0.401
Percent population minority	0.000***	0.374
Percent population foreign born	0.000***	0.251
Percent population 65+	0.000***	-0.205
Percent households with limited English	0.000***	0.200
Percent households receiving food stamps	0.000***	0.313
Percent households receiving public assistance	0.000***	0.205
Percent population 18+ with veteran status	0.090*	-0.069
Percent households with disability	0.020**	0.094



**Getis-Ord Gi* Hot Spot Analysis
Residential Evictions Filed / Renter Occupied Units**

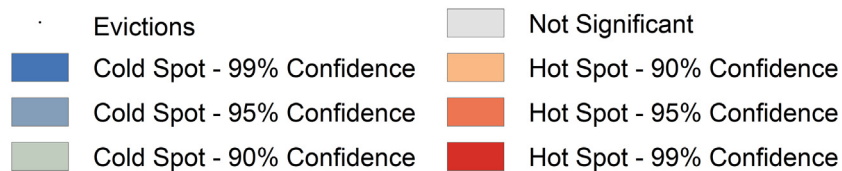


Fig. 2. Hot spot analysis of evictions filed per renter occupied units in Salt Lake County, UT.

applied in this research.

4.2. Visualizing local hot spots of evictions in Salt Lake County, UT

Looking at hot and cold spots (Getis-Ord Gi* values) of renter occupied standardized evictions in Fig. 2, there is a clear divide between areas of high and low risk. This divide is also representative of a class divide in Salt Lake County, UT, sitting loosely about the 15 Freeway running north and south. House prices and percentages of wealth for block groups are much higher at the bench of the Wasatch Mountain range to the east. As well, more diversity exists west of the 15 Freeway running north and south down the middle of the county. The results are reported in confidence levels, where 90% confidence = $p(0.10)$, 95% confidence = $p(0.05)$, and 99% confidence = $p(0.01)$. This preliminary analysis and visualization identifies a clear spatial pattern of difference in the ways residents of rental units experience housing security in Salt Lake County. However, this considers only evictions filed on rental properties. The following analyses add demographic and economic variables in an attempt to answer the research questions stated in the Introduction section.

4.3. Interpreting the underrepresented minority models

We analyzed the relationship between poverty, minority status, and evictions filed for block groups in Salt Lake County. Positive correlations between the two independent variables (poverty, minority) and the dependent variable (evictions filed) would infer relationships between these variables, whereby increases in poverty and/or minority status within block groups will likely result in increases in evictions filed, and in turn, increases in housing insecurity. Furthermore, by using these two independent variables, we will be able to see interactions between them (i.e., patterns of one variable against the other) to identify and visualize which one is more influential to evictions filed in this case.

The negative binomial regression on poverty and minority within block groups was implemented twice, once as a standard regression and once applying spatial filtering with eigenvectors. Recall that the dependent variable is the number of residential evictions filed within block groups and the independent variables are standardized household poverty and a minority binary variable. An offset is applied to transform the dependent variable, residential evictions filed, into a rate by using $\log(\text{occupied rent units})$. The household poverty variable is transformed such that it is distributed about the mean for ease of interpretation (i.e., the mean household poverty percentage for Salt Lake County block

Table 2
Results for minority negative binomial regression models.

Model	Poverty coefficient	Minority binary coefficient	Intercept
Pov/minority NB Regression	1.005, p = 0.232	1.622, p = 0.000	0.030, p = 0.000
Pov/minority NB Regression with SFE	1.014, p = 0.000	1.659, p = 0.000	0.028, p = 0.000

groups is subtracted from each block group value). The minority variable is constructed from summing the number Latino, Black non-Latino, Asian non-Latino, American Indian, Alaskan Native non-Latino, Pacific Islander non-Latino, and some other race non-Latino, which is then standardized by the total population. This is used to calculate the binary variable (1 = minorities in the block group > 50%, 0 = minorities in the block group < 50%). The results for both models are given in Table 2.

The coefficients in Table 2 are exponentiated as they are given as log values in the model results. The model applying the spatial filters does a better job in controlling for model errors and provides a better fit, so this is the model used for interpretation. The base rate for evictions filed at an average poverty level for a block group is 2.8%. Poverty affects residential evictions filed in Salt Lake County as such, a 1 unit increase in poverty within block groups results in a 1.4% increase in evictions filed. Block groups where minority populations make-up the majority of the block group have a much higher likelihood of eviction threat. Those living in minority led block groups are 65.9% more likely to have a threat of eviction than otherwise represented populations. This result provides evidence that minority race/ethnicity status for a neighborhood has a greater influence on eviction threat than poverty alone.

Another way to visualize the relationships between racial/ethnic representation and eviction is presented in Fig. 3, which shows the marginal effects from the negative binomial regression model, and the increasing rate of evictions filed as poverty level increases. Further, the estimated residential evictions filed for minority block groups (1 - blue) is substantially higher than for majority populations (0 - red) at all levels of poverty. The estimated eviction rate gap between the two populations begins at approximately 8% and increases as the percentage of households in poverty within the block group increases. Poverty is an important variable, and likely inseparable, from housing

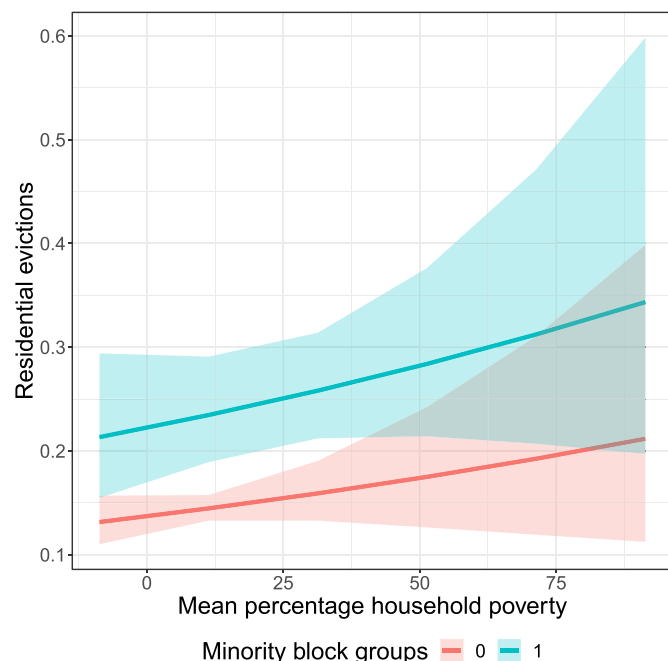


Fig. 3. Marginal effects from negative binomial regression model.

insecurity. As poverty increases within a neighborhood, evictions will increase. However, the results shown here provide evidence that minority neighborhoods will experience substantially greater housing insecurities, at all levels of poverty, thus supporting structural racism hypotheses here and in existing research.

4.4. Interpreting the vulnerability models

We also analyzed the relationship between households with single parents, receiving food stamps, receiving public assistance, and evictions filed. Positive correlations between the three independent variables (single parent, food stamps, public assistance) and the dependent variable (evictions filed) would infer that those residing in block groups with more economically vulnerable households live under a higher threat of housing insecurity.

The Negative Binomial Regression Model on Resident Vulnerability was also implemented twice, once as a standard NBR and once as an NBR with SFE. The dependent variable remains the same in these models. The offset is also used here. The independent variables employed are percentage of single parent households, percent of households using food stamps, and percent of households using public assistance. All three independent variables are transformed such that they are distributed about the mean for ease of interpretation (e.g., the mean single parent percentage for Salt Lake County block groups is subtracted from each block group value). The results for both vulnerability models are given in Table 3.

Again, the coefficients are exponentiated as they are given as log values in the model results.

In this case, there is a slightly better fit when applying the SFE. The base rate for evictions filed at a block group is 3%. Single parent household and food stamp percentages show that a 1 unit increase in each, results in a 1.8% and 1.2% increase in evictions filed, respectively. A 1 unit increase in houses using public assistance results in a 3.8% increase in evictions filed. In all, block groups that contain more vulnerable populations, as defined here, can increase the evictions filed by 6.8%. The results here support our concern that the vulnerable are more at-risk of housing insecurity. Those that need assistance with housing security may be getting anything but.

4.5. Policy implications and challenges

Our first model supports the need for enforcement of diversity laws that limit unfair evictions for people of color. As discussed in the introduction, there are laws that prohibit discrimination based on race/ethnicity (i.e., the Fair Housing Act), but that doesn't mean they are being enforced. Laws are less likely to be enforced without expert legal protection, so public funded legal representation for tenants may be a beneficial addition for this case. As for tenants experiencing hardship (e.g., poverty, unemployment) and/or price increases that make rent costs unattainable, there is little solace for those in cases outside of rent-controlled areas. Affordable and/or stable housing initiatives could assist many tenants in situations, including areas that are being gentrified and where commodification is unreasonably increasing housing value. Additionally, tenants of color, who are already experiencing economic/social hardships, may have compounded residence issues for themselves and their families, if they have them. It seems, based on our results, that policies to help tenants directly with legal assistance, as well as those that better control unreasonable rent price hikes, would be

Table 3
Results for vulnerability negative binomial regression models.

Model	Single parent HH	Food stamp HH	Public assistance HH	Intercept
Vulnerability NB Regression	1.022, p = 0.000	1.016, p = 0.001	1.037, p = 0.015	0.031, p = 0.000
Vulnerability NB Regression with SFE	1.018, p = 0.000	1.012, p = 0.013	1.038, p = 0.009	0.030, p = 0.000

a good place to start to increase housing stability in the U.S.

5. Conclusions

This study supports the need to understand inequitable housing practices from a spatial perspective, such that both governmental policies and advocacy work can target specific neighborhoods where there are issues. It also serves as an empirical pointer toward potential consequences of the injustices derived from the logics of the commodification of housing. Underrepresented minorities, particularly in areas where they are concentrated, may suffer greater harm from eviction, and the clustering of evictions may be exacerbating existing housing insecurity in those areas. Our model results provide evidence that 1) underrepresented minorities may be being unfairly treated in Salt Lake County, and 2) those that are already vulnerable live with more risk of housing insecurity. Given our results, we lean on structural racism framework in an attempt to explain the seeming inequities, at least with minorities. This framework analyzes mechanisms through which race and well-being are perpetuated, specifically via examining the social, economic, political, cultural, geographical, and historical contexts that affect individual and family outcomes for people of color (Lawrence et al., 2010).

These are not novel findings. Desmond (2012) found similar findings in Milwaukee, finding eviction clustered in predominantly African American and poor neighborhoods. The Anti-Eviction Mapping Project (2019) also explores San Francisco's eviction patterns, describing displacement with the zine *(Dis)location: Black Exodus*. The trend is also not isolated to the US. Forced evictions are an international occurrence, worldwide and cross-cultural, creating negative impacts on future developmental and health outcomes for children and families (UN, 2014). From an international perspective, the United Nations High Commission on Human Rights describes forced eviction as a gross violation of human rights. For example, research of the spatial distribution of evictions in Catalan, Spain also found patterns of urban inequalities (Gutiérrez & Delclòs, 2016). In many areas, these racial/ethnic minority and economically strained populations can overlap greatly.

There are many studies looking into the diverse nature of involuntary residential displacement, shaping our understanding of the eviction process on an international scale. For example, in the United States in particular, Desmond (2012) explores eviction in an urban community, and Von Otter et al. (2017) describe the characteristics of individuals evicted in Sweden. Involuntary residential displacement occurs not just from a home structure, but also from pavement dwellings. Rahman (2001) examines the dynamic eviction of economic migrants from squatter settlements in Dhaka, Bangladesh.

In most cases, race/ethnicity may not be directly responsible for eviction. However, societal structures and hierarchies in the U.S. have placed people of color in limited situations with respect to poverty, language barriers, immigration status, etc. These factors can be drivers for landlords to file evictions. Given that these populations are already disadvantaged, a lower level of housing security can keep them from fair opportunities to climb socioeconomic ladders. We cannot ignore the reality that taking the last bit of security that residents have will not lead to positive situations for the residents or society in general. While housing insecurity understandably disrupts the lives of those being displaced, the wider societal effects must also be considered. These can include regional economic strain, increases in crime, and disease spread. For example, research suggests that housing instability has

substantial negative effects on mothers and their children. Specific effects include unavoidable child neglect, unsafe environments for the family, and stress induced maltreatment of the children (Warren & Font, 2015). This can lead to the reproduction of urban poverty by the increase of factors that contribute to it (Desmond, 2012).

In order to combat the problem of inequities on housing security on a systemic level, attention needs to be paid not only to unequal housing outcomes such as evictions, housing segregation, and disparate home-ownership rates, but also to linked disparities between Whites and people of color in income, employment, education, and the criminal justice system. Such a lens requires excavating the political, economic, and cultural roots of discrimination today.

The evidence offered in this research is not definitive, suggesting that minorities are being unfairly targeted for evictions or threat of eviction in Salt Lake County, UT. Some limitations exist. It is important to note that the records in this dataset represent only those that were filed in 2015. Though it is likely that this pattern continues in Salt Lake County, and many other areas, further research with new data is required to test long-term processes. In addition, no determination is made here on the outcome (i.e., whether or not the residents left the residence). We do not know how many residents are actually evicted, nor do we have access to those data. Also, this research does not include cases in which renters are involuntarily forced out by ways other than the filing of eviction cases. For example, renters can be manipulated by landlords who threaten to convey information of legal status to authorities. The actual number of involuntary displacement victims may be much larger than represented here. It is important to recall that this study models eviction filings rather than evictions themselves. That said, people threatened with eviction likely do not experience housing security.

The correlation is there, but to infer causation much more research is necessary, and it is unlikely that a solid connection can be found with solely quantitative study. Anecdotal evidence does suggest that unfair targeting along racial and ethnic lines is occurring in some cases. Present research we are conducting includes a qualitative look at eviction in Salt Lake County in order to attempt to answer the questions that quantitative research cannot. We have begun interviewing those that have been evicted from their residences to identify specific strategies and interactions that have been used by landlords to unfairly evict residents. While interview responses will still not provide definitive causation, they will bring us much closer to understanding cause and effect, eviction impact, and potential solutions.

5.1. Policy recommendations

Laws do exist to protect tenants from discrimination and harassment during housing-related activities. Specifically, the Fair Housing Act is intended to protect people from housing insecurities that they might suffer, because of their race, color, national origin, religion, sex, familial status, and disability (U.S. Department of Housing and Urban Development, 2020). This includes harassment including threats and retaliation toward tenants over any activities related to the rented property. However, policies such as this can be difficult to enforce. Tenants may not know their rights and likely lack legal counsel, and/or they might be afraid of homelessness resulting from complaints, or retaliation from landlords. In many cases, it may seem easier on the tenant side to find a new place to live, rather than to fight with the landlord when being forced out of a home. Furthermore, those with

increased fears, because of their citizenship status may perceive there to be bigger legal ramifications outweighing the moving process.

We hypothesize that there is discrimination in many eviction cases, and likely unfair practices in the removal of tenants. We recommend that renters should be given more opportunity to defend themselves when it comes to challenging tenant/landlord interactions, and that renter legal assistance (e.g., court interactions, mediation, legal advice) should be more accessible especially to vulnerable populations (e.g., victims of bias, poverty, other forms of social and economic hardship). This aid may come in the form of public funded legal aid and guaranteed right to counsel in housing cases.

Other than legal assistance for tenants in need, which may be the most important and helpful initiative, there are other policies that may help. These include: i) limiting evictions without just cause, ii) rent stabilization laws, iii) laws that prevent eviction based on foreclosure, iv) laws that prohibit discrimination on the basis of income, previous eviction, nuisance ordinances, and homeless status (National Law Center of Homelessness & Poverty, 2018), and v) harsher penalties for landlords that unfairly evict, or threaten to evict, their tenants.

CRedit authorship contribution statement

Richard Medina:Conceptualization, Methodology, Formal analysis, Writing - original draft, Writing - review & editing, Visualization.**Kara Byrne:**Conceptualization, Data curation, Writing - original draft, Writing - review & editing.**Simon Brewer:**Methodology, Software.**Emily A. Nicolosi:**Writing - original draft, Investigation.

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