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Danielle Massey

*University of Northern Iowa*

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## Gentrification in Polk County, Iowa

Danielle Massey\*

**ABSTRACT.** This paper measures the extent of gentrification in Polk County, Iowa from 2000 to 2016. It also looks at the factors that may have contributed to that gentrification. Five of the 77 census tracts in Polk County show high levels of gentrification. Seven other tracts show moderate levels. I find that factors positively correlated with gentrification in Polk County include proximity to an historic district, proximity to a park or open space, and the percentage of total housing units that receive Low-Income Housing tax credits. Thus, the paper provides support for demand-side theories of gentrification.

### I. Introduction

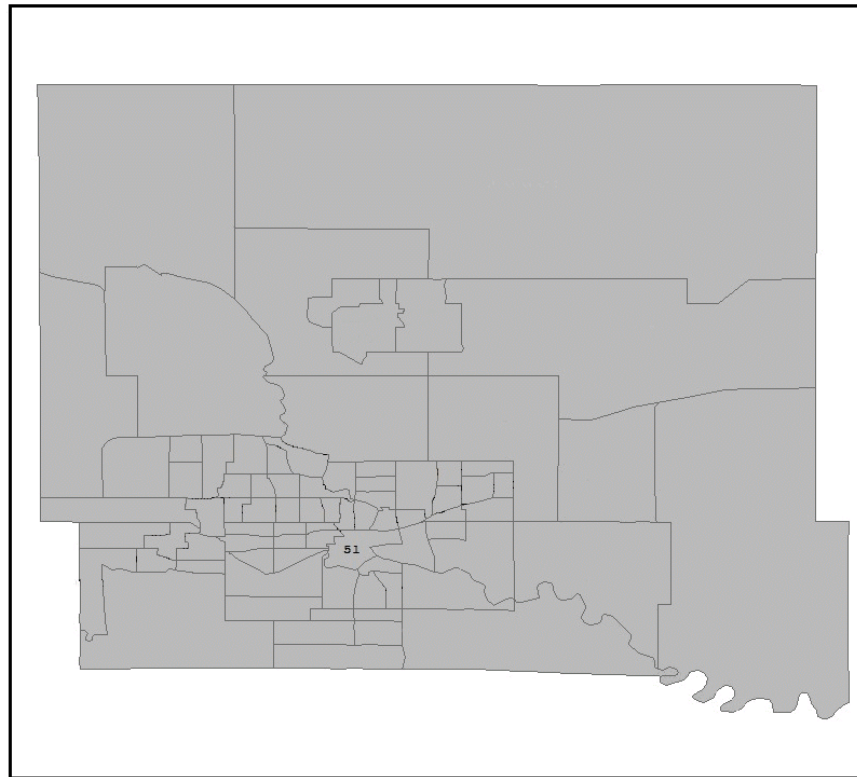
Lyla Dozier moved into the Sherman Hill District of Des Moines, Iowa in Polk County in 2000. The median housing value for Sherman Hill was around \$37,500 at the time. Dozier described herself as a pioneering house flipper. She and neighbors with similar stories moved into the area to restore historic homes that had become decrepit (Rood 2017). The housing values in this neighborhood have increased 544% between 2000 and 2016. In other words, the median housing value increased to \$241,300, not adjusted for inflation.

Sherman Hill lies within Polk County Tract 51. Tracts are subdivisions of counties the United States Census Bureau uses to analyze populations in a small geographic area akin to a neighborhood. Below is the 2000 Census Tract Outline Map for Polk County. Within Tract 51 are the neighborhoods of Sherman Hill, East Village, and downtown Des Moines. According to the Greater Des Moines Partnership's webpage "Recent Development Projects," the area benefited from increased restaurant and bar options, new public parks, and a new \$117 million events arena, all built since the year 2000. On the surface, this development in Tract 51 is what many scholars would refer to as gentrification. If this is the picture in Tract 51, what is occurring in the rest of Polk County?

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\*I would like to extend a sincere thank you to Clifton Foy for his assistance crafting maps displayed throughout this paper.

2000 Census tract Data for Polk County, Iowa



By Clifton Foy 3/28/2018  
Data source: Tigerline shapefiles

There is conflicting literature on whether gentrification is overall beneficial or detrimental. While some authors emphasize the economic net benefit to an area (Hill 2005, 6), others are concerned about the displacement of the poor residents due to the increased cost of living (Wyly and Hammel 1998, 304). The following analysis will not determine whether gentrification is beneficial or detrimental. Instead, I aim to quantify it and perform a regression to determine which characteristics of a tract are positively correlated with gentrification. Regardless of which lens an individual views gentrification, he or she should be interested in what variables influence gentrification.

Thus, my research question is two-part: (a) which areas of Polk County, if any, have undergone gentrification between 2000 and 2016? and (b) which 2000 characteristics of the tracts influenced its degree of gentrification by 2016?

## **II. Literature Review**

### **A. Definition of Gentrification**

Before proceeding, it is necessary to define gentrification. It is often defined as wealthier individuals moving into a low-income urban district. This results in increases in property values and cultural change. Descriptions of gentrification involve a combination of interdependent processes of social and economic change (Wyly and Hammel 1998, 303). Often, individuals view gentrification negatively as the “displacement of poor communities by rich outsiders” (Grant 2003). Additionally, it is widely accepted that gentrification does not occur on the level of individual buildings or even streets. Instead, it occurs throughout neighborhoods and urban districts, showing a distinct trend of development (Diappi and Bolchi 2008). Chapple defined gentrification as:

... a process of neighborhood change that encompasses economic change in the form of increases in both real estate investment and household income, as well as demographic change in the form of increases in education attainment (2009, 2).

I will use Chapple’s definition in my analysis. Defining gentrification as Chapple did allows for statistical analysis of the topic.

Gentrification occurs in waves. The first visible wave has traditionally been driven by childless couples, artists, entrepreneurs, and the college educated, all in their mid-twenties to late thirties (Ley, 2003). This is considered the typical demographic of potential gentrifiers.

### **B. Demand Side Gentrification**

Theories explaining gentrification fall under two categories, demand side and supply side. Under demand side theories, gentrification can be explained through consumption patterns of consumers based on their perceived quality of location. Gentrifiers desire a space with social,

historical, or cultural meaning that contribute to the “significance of place” (Phe & Wakely 2000). Factors that have been previously related to increasing significance of place are discussed in the following paragraphs.

Proximity to parks or open space, historical districts, and universities increase significance of place. Such facilities and institutions are likely to have positive externalities. Historical districts have been positively correlated with gentrification in multiple studies (Ley, 2003; Galster Peacock 1986; Heidkamp and Lucas 2006). These districts have a rich history and beautiful architecture. Universities are attractive due to “accessibility of cultural opportunities offered at such institutions” (Galster Peacock 1986, 325). Additionally, green space provided by parks and open space have health and recreational benefits (Heidkamp and Lucas 2006). As a result, they are positively associated with gentrification.

Proximity to public housing facilities is seen as detrimental to the quality of location. Polk County Housing Trust Fund (2012) found most of these negative perceptions were a result of prejudice and discrimination (4). The assumption that such facilities would be poorly maintained and unattractive is specifically discouraging to gentrifiers. Gentrification aims to develop and beautify neighborhoods, and this would be a perceived barrier.

Communities with a high concentration of family households decrease the significance of place. As a result, non-family neighbors are attractive because they are similar to the potential gentrifiers, according to the argument set forth by Ley (2003). These neighbors then become potential friends and contribute to the young and energetic culture gentrifiers seek. Additionally, Galster and Peacock (1986) found families are less likely to move. This limits opportunities for potential gentrifiers to move into the area.

### C. Supply Side Gentrification

Neil Smith (1979) is the most prominent proponent of supply side gentrification through his rent gap theory. Smith proposed that it is capital, not people, that is the force behind gentrification. He sets forth a consistent pattern that emerges within neighborhoods that are susceptible to gentrification. It is as follows:

1. In the early years of a city, employment is near a city’s center. As a result, the majority of people live towards the city center to be near

their place of employment. Thus, property values in this area are increasing.

2. Due to the rising costs of homes near their place of work, people accept longer commutes and move to the periphery of the city.
3. Property values are now in a cone-like pattern, where the highest values are in the city center and they slowly decrease as one moves further away.
4. This pattern changes at one point. Properties near the city center begin to dramatically decay and decrease substantially in value. Smith is not specific on what causes this shift. However, it is hypothesized that it may be due to aging properties becoming less desirable. Or, it may be due to a shift in where jobs are located.
5. Similar to how lower prices brought people to the periphery, now they bring residents to the city center. The trend is “returning from the suburbs.” Due to high demand in properties in the city center or urban areas, this final step is where the gentrification occurs (Smith 1979, 538-9).

Gentrification is sparked by the low “actual values” but high “potential values” of properties in the urban areas of step 5. The theory’s namesake is in regard to the gap between these values. Investors view this gap as an economic opportunity. They invest in these properties, which brings wealthier residents to the area.

Previous studies have accounted for supply-side factors by considering real estate and property variables. Some examples used in previous studies are percent of properties that are renter occupied and median gross rent (Chapple 2009, Diappi and Bolchi 2008). A high concentration of rental properties and low rent provide room for development under this theory. Lees, Slater, and Wyly (2008) added the concentration of vacant properties for the same reason (96). The concentration of multi-unit buildings projects has also been included as a variable, because less investment is necessary for the redevelopment of multiple dwellings (Chapple 2009). Although there are other variables that fall under this theory, these are the most prominent.

### **III. Data, Variables, and Methodology**

I am interested in the gentrification trends occurring in Polk County. To measure this, I used tract level data provided by the Census. In 2000, Polk

County had 79 tracts. Although tracts are relatively permanent, some tracts in Polk County were divided into smaller tracts after the 2000 Census. To compare across years, I manually combined these tracts by taking the weighted average of their variables in 2016.

The first step in calculating my dependent variable is to eliminate all tracts not eligible for gentrification. According to the definition of gentrification, gentrification can only occur in tracts with low- to moderate-levels of household income (Chapple, 2009). This means those households living within the tract must have a median annual income less than Polk County's median annual income for all households. To determine if an area was of low- to moderate-income levels, I calculated Polk County's median income for all households. If a tract's median income was 80% of the county's or lower, it was included in my data set. This reduced my data set from 79 to 43 tracts that could have potentially undergone gentrification.

The second step to calculate my dependent variable is to measure the extent of gentrification that occurred in each of the 43 tracts eligible for gentrification. Using the definition of gentrification provided by Chapple (2009), there are three components to my dependent variable to measure the extent of gentrification within a tract:

- (a) Median income of households
- (b) Median housing value
- (c) Percentage of residents with a Bachelor's degree or higher

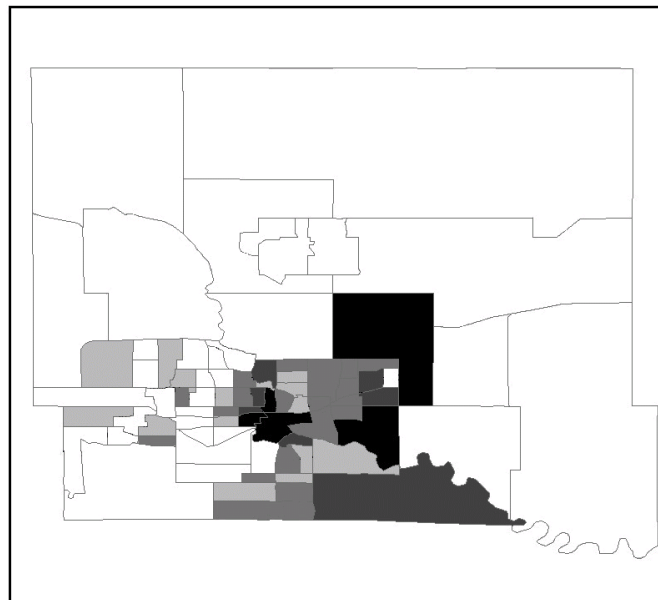
I used the 2000 Census and 2016 American Community survey to measure each of the three components for the dependent variable in the 43 tracts. For each component, I found the year 2000 value for all individual tracts. I repeated this with 2016 data and calculated the percentage change from 2000 to 2016. If the percentage change for that tract was above the percentage change for Polk County as a whole, the tract indicated gentrification in that component of the dependent variable. If a tract indicated trends for none of the components of the dependent variable, it received a score of zero. If it only met one of the three, it received a one. And so on. This formed my dependent variable of a self-calculated ordinal scale 0-3. Zero is the lowest indication of gentrification occurring in that tract and three is the highest.

TABLE 1: Distribution of Dependent Variable

Y	Frequency	Percent
0	13	30.2%
1	18	41.9%
2	7	16.3%
3	5	11.6%

All three components of gentrification are weighted the same because Chapple’s definition did not specify that one component was more of an indicator than any other. Below is a map visualizing the extent each tract was affected by gentrification from years 2000 to 2016.

Gentrification by tract for Polk County 2000-2016



By Clifton Foy 3/28/2018  
Data source: Tigerline shapefiles

- Not included in analysis due to median income of tract <80% of median Polk County income
- 0: No gentrification occurred
- 1: low indication of gentrification
- 2: moderate indication of gentrification
- 3: high indication of gentrification



My explanatory variables are a combination of supply side and demand side variables found to be significant in previous studies. Proximity variables and Percent of Low-Income Housing Tax Credit housing units (LIHTC) were calculated manually. Proximity variables are binary variables, 1 if the factor is present within the tract, 0 if not. These variables are parks, historical districts, and universities built prior to 2000. A full list can be found in Appendix A. To calculate the LIHTC variable, I used the Department of Housing and Urban Development data on total housing units within a tract that are LIHTC, and divided that by total housing units in the tract. All other variables were collected from 2000 Census data. This is to answer my second research question: which tract characteristics from the year 2000 predict whether that tract gentrifies by 2016?

TABLE 2–Independent Variables

<b>Factor</b>	<b>Variable Name</b>	<b>Expected Correlation</b>	<b>Demand or Supply Theory</b>	<b>Mean (Standard Deviation)</b>
Presence of park	Park	Positive	Demand side	.14 (.35)
Presence of historical district	Hist	Positive	Demand side	.19 (.39)
Median gross rent	Rent	Negative	Supply side	543.2
Percent vacant housing units	Vacant	Positive	Supply side	11.0
Percent of multi-unit facilities	Multi	Positive	Supply side	30.6
Percent renter occupied	PercRent	Positive	Supply side	38.7
Percent of Low-Income Housing Tax Credit housing units	PLIHTC	Negative	Demand side	2.1 (3.84)
Presence of a university	Univ	Positive	Demand side	.07 (.26)
Percent of nonfamily households	NonFam	Positive	Demand side	39.9 (11.6)

#### IV. Results

I tested for multicollinearity due to the potential of some of my independent variables to be linearly related. This revealed a strong correlation between PercRent and Multi. As a result, I ran two separate regressions.

My dependent variable, degree of Gentrification, is on an ordinal scale 0-3. Thus, I ran an ordered logit regression to test for potential indicators. My first regression only included the variable PercRent. The results of this regression are in the table below.

TABLE 3–Regression 1 Results

Independent Variables	Coef.	Odds Ratio	Robust Std. Err.	VIF
Park	2.08**	8.0358**	0.9638	1.33
Hist	1.84**	6.3261**	0.9368	1.92
Rent	-0.0098	0.9903	0.0061	1.77
Vacant	0.0727	1.0754	0.0576	1.32
Multi	-0.0350	0.9658	0.0234	3.97
LIHTC	0.1458*	1.1570*	0.0792	1.58
Univ	-0.4565	0.6334	1.0018	1.08
NonFam	0.0241	1.0244	0.0553	3.08

\*\*\*Significant at 0.01 level, \*\*significant at 0.05 level, \*significant at 0.10 level

Thus, the odds of becoming highly gentrified ( $y=3$ ) is 8.0358 higher if a tract contains a park compared to a tract without a park, all else equal. Additionally, all else equal, a tract is 6.3261 times more likely to be highly gentrified if it contains a historical district. I had originally predicted that LIHTC would be negative due to stigma surrounding public housing, however it is positive. Because of this result, I investigated the LIHTC program to find a possible explanation for this correlation. The Urban Institute released a report on housing strategies and gentrification. The report indicated that in many cases, LIHTC dollars are used to develop

rental housing where the need is great. This development increases the property values in low-income areas (Levy, Comey, and Padilla, 2006, 8). LIHTC sparks investment and development in an area, which is why according to my data, for a one-unit increase in Percent of Low-Income Housing Tax Credit housing units, the odds of high gentrification ( $y=3$ ) are 1.1570 times greater.

The second regression included percent renter occupied instead of percent of multi-unit facilities. Although there was a slight change in the coefficients, they did not change their direction of correlation and those that were significant in the first regression remained significant. The results of this regression are in the table below. All the variables' new odds ratios can be interpreted the same as previously.

TABLE 4: Regression 2 Results

Independent Variables	Coef.	Odds Ratio	Robust Std. Err.	VIF
Park	1.8667**	6.4670	0.8995	1.37
Hist	1.7263*	5.6203	1.0183	1.90
Rent	-0.0089	0.9911	0.0058	1.79
Vacant	0.0689	1.0713	0.0628	1.33
PercRent	-0.0192	0.9810	0.0247	3.26
LIHTC	0.1172*	1.1243	0.0752	1.52
Univ	-0.4165	0.6593	0.8449	1.08
NonFam	0.0049	0.9951	0.0493	2.36

\*\*\*Significant at 0.1 level, \*\*significant at 0.05 level, \*significant at 0.10 level

## V. Conclusion

Five total tracts in Polk County were highly gentrified ( $y=3$ ), and seven were moderately gentrified, according to my definition of gentrification. After running an ordered logit regression, I found three variables that were significantly correlated to the dependent variable of gentrification. No supply side indicators were significant, but three of the demand side indicators were significant.

Thus, my study can only support the demand side theories to explain the emergence of gentrification in Polk County. Or, in other words, it was the consumption patterns of consumers based on their perceived quality of location that may have induced gentrification in Polk County between 2000 and 2016. More specifically, historical districts, development as a result of Low-Income Housing Tax Credit, and parks/public space grew consumers' significance of place.

Chapple (2009) set forth a method to also forecast future gentrification in an area. My study can be used in the future to forecast Polk County's future gentrification. It would be of interest to see if the variables correlated with gentrification from 2000 to 2016 remain significant and can predict future gentrification in Polk County.

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**Appendix A**

<b>Public County Parks</b>	<b>Tract Number</b>
Union Park	15
Thomas Mitchell Park	107.02
Mally's Weh-Weh-Neh-Kee Park	10
Jester Park	115
Fort Des Moines Park	47.02
Easter Lake Park	108.02
Carney Marsh	105, 102.03
Browns Woods	110.28
Beaver Creek Greenbelt	117.02
Raccoon River	40.01
River Drive Park	67.01
Waterworks Park	41
Yellow Banks Park	108.04
Big Creek Lake	115
Saylorville Lake	114.04, 115
Ewing Park	108.02
<b>Historic Districts (listed with the United States Department of Interior)</b>	<b>Tract Number</b>
Civic Center Historic District	51
Goddard Bungalow Court Historic District	12
Greenwood Park Plats Historic District	29
Ingersoll Place Plat Historic District	51, 27
Kingman Place Historic District	26, 28

**Appendix A (continued)**

<b>Historic Districts (listed with the United States Department of Interior)</b>	<b>Tract Number</b>
Middlesex Plat Historic District	29
Veneman's Bungalow Court Historic District	48
West Ninth Streetcare Line Historic District	50
Woodland Place Historic District	27
Sherman Hill District	51
<b>Universities</b>	<b>Tract Number</b>
Drake University	11
Grandview University	5, 3