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**The Long-Term Employment Impacts of Gentrification in the 1990s**

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In the ongoing debate over the social benefits and costs of gentrification, one of the key questions left largely unaddressed by the empirical literature is the degree to which gentrification impacts local labor markets. This paper begins by exploring the nature of employment change in one archetypical gentrifying neighborhood—Chicago’s Wicker Park—to motivate the central hypothesis that gentrification is associated with industrial restructuring. Next, a detailed analysis is presented on the long-term employment changes in neighborhoods that have experienced gentrification during the 1990s across a sample of 20 large central cities. Specifically, this paper uses Freeman’s (2005) definition to define tracts that experienced gentrification and compares employment outcomes in such tracts and those within a ¼ mile buffer to comparable nongentrified tracts. This analysis shows that employment grew slightly faster in gentrifying neighborhoods than other portions of the central city. However, jobs in restaurants and retail services tended to replace those lost in goods-producing industries. This process of industrial restructuring occurred at a faster rate in gentrifying areas. Thus gentrification can be considered a contributory and catalytic factor in accelerating the shift away from manufacturing with urban labor markets.

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Keywords: Gentrification, Urban Labor Markets, Industrial Displacement, Central City Economic Restructuring

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## 1. Introduction

In the ongoing debate over the social benefits and costs of gentrification, one of the key questions left largely unaddressed by the empirical literature is the degree to which gentrification impacts local labor markets. Proponents of gentrification stress the fact that new residential investment leads to increased property taxes for local government, reduced crime rates, revitalized streets, improvement in physical infrastructure, and the preservation of historic properties. There is also an argument that the in-migration of middle and upper-class residents to urban areas close to the central business districts has environmental benefits by reducing sprawl and promoting in-fill development. However, critics of gentrification highlight the social costs of neighborhood change and point out that displacement of low and moderate income households exacerbates affordable housing problems, destroys long-standing social ties, and can lead to a re-segregation of urban housing markets. While there is anecdotal evidence and some limited empirical research that suggests that gentrification may increase the number of retail jobs available in transitioning neighborhoods, others suggest that gentrification may harm businesses that serve low-income populations (i.e. mom and pop stores) and displace manufacturing industries that provide well-paying jobs to local residents (Curran, 2004; Mir & Sanchez, 2009). Ultimately, there has been no comprehensive examination of the impact of income-based neighborhood change on the net number of local jobs available, or on the nature of the economic shifts that have occurred. Specifically, what type of jobs are created/destroyed in gentrifying neighborhoods, who ends up holding these jobs, and what is the overall resulting level of job quality?

This paper is also motivated by a theoretical deficit on the links between local land-use changes and broader economic restructuring. Specifically, scholarship on the root causes of

gentrification typically assert that gentrification is driven by *a priori* economic changes that have led to a polarization of the labor market (see Ley, 1996) and the concentration of highly skilled workers in downtowns. Conversely, research on industrial restructuring from a variety of fields (e.g. Bluestone & Harrison, 1982; Massey, 1998; Moretti, 2012) tend to give little or no causal weight to local land-use changes and neighborhood-level phenomena such as gentrification. This paper demonstrates that gentrification, rather than being a simple byproduct of industrial shifts, plays a catalytic role in restructuring itself by speeding up the transition between goods producing and service industries in urban areas.

This paper addresses these gaps by conducting a detailed examination of long-term employment changes in neighborhoods that have experienced gentrification during the 1990s. We do this using a longitudinal dataset of employment change, summarized at the census tract level, for a sample of 20 large U.S central cities from 1990-2008. We use Freeman's (2005) multifaceted definition of gentrification to identify tracts that experienced gentrification and then test the whether gentrifying neighborhoods grew faster in terms of employment and new establishment growth, than similar, non-gentrified tracts outside the central business district (CBD). We also explore the nature of employment change in gentrifying neighborhoods by industry and discuss the impacts on job quality for low-skilled workers. Overall, employment grew faster in gentrifying neighborhoods than other portions of the central city. However, we find that jobs in restaurants and retail services tended to replace those lost in goods producing industries. These industrial shifts were more pronounced in gentrifying than non-gentrifying neighborhoods.

The remainder of this paper is organized as follows. Section 2 reviews the previous empirical literature on defining gentrification and measuring its impacts on the urban

environment. Section 3 presents two empirical case studies of labor market changes in one archetypical gentrified neighborhood—Chicago’s Wicker Park—which helps motivate the broader research questions. Section 4 presents the methodology for selecting candidate neighborhoods and appropriate control samples and introduces the regression model used to test the main hypotheses. Section 5 presents the results of the analysis. The final section concludes and discusses both the theoretical and policy implications of our analysis.

## **2. Literature Review**

The phenomenon of gentrification has been one of the most well-studied and debated processes of urban change over the past three decades. Since the term first appeared in the social sciences (Glass, 1964), gentrification has referred to a process of neighborhood-based class changes that involve an influx of middle and upper class residents into urban areas that once housed low-income or working class populations. Although the term was coined in London in the 1960s, gentrification took hold in the United States during the late 1970s and accelerated in the 1980s, as portions of inner-city neighborhoods in older cities on the East Coast and in the industrial Midwest experienced significant re-investment and an upgrading of their housing stocks. While some urban policy makers directly encouraged the return of capital and middle class residents from the suburbs, gentrification quickly became a highly contested and controversial process. New York City was, perhaps, the most visible example of the gentrification debates during the late 1980s and early 1990s, which even featured violent clashes in Tompkins Square Park on the Lower East Side (Smith, 1996). The public debate spilled over into academia where scholars from a variety of perspectives viewed gentrification either in a

critical, and at times pejorative light (see Smith, 1996), or as an unexpected, yet ephemeral reversal of urban decay (Berry, 1985).

Regardless of perspective, most scholars viewed gentrification as caused by macro-level economic and social changes in the late 20<sup>th</sup> century. Neil Smith's classic "rent-gap" thesis tied gentrification to changes in flows of financial capital and long-term cycles of disinvestment and reinvestment that generated opportunities for economic rents on the part of developers and real estate interests. Other scholars link gentrification to broader industrial restructuring processes that occurred in the 1980s and 1990s that resulted in a shift from manufacturing towards service sector work in the U.S. Specifically, the structural changes that coincide with the deindustrialization of factory work tend to strengthen the economic role of downtown areas—especially in large cities—as the command centers of a globalizing economy (Sassen, 2002). As a result, central business districts attracted thousands of jobs in professional services, finance, and corporate headquarters, driving up demand for highly-skilled white collar workers. According to some economists, these industrial shifts generated demand for high-quality housing near downtown, thus causing gentrification (Berry, 1985). Sociologists, such as Ley (1996) also linked gentrification to changes in the consumption preferences this "new middle class" which favored urban living over the suburban dream of previous generation. These preference shifts also drive gentrification by increasing demand for urban entertainment and consumption spaces for the new high-income residents (Lloyd & Clark, 2001; Zukin, 1982) Although many scholars, including Smith (1996), include a causal role for local agents such as mayors, planners, and policy elites, in gentrification, the drivers of gentrification are still tied to macro-level phenomena. Wyly and Hammel (1999) summarize these shifts as "class transformation...rooted in long-term changes in the distribution of wealth, income, and educational opportunity, as well

as a more complex division of labor” (Wyly & Hammel, 1999). Thus, in these foundational works, gentrification is viewed as a consequence of economic restructuring rather than playing a role in accelerating these changes.

Empirical work on the impact of gentrification has largely mirrored the debate in the popular discourse and can be broadly organized around two distinct questions: does gentrification actually result in the displacement of the poor? And, does gentrification result in positive or negative net fiscal benefits for cities? Not surprisingly there is also wide variation in the way scholars define gentrification in order to study it in a quantitative manner. Since gentrification implicitly refers to both changes in the social class as well as financial investment, most efforts to define gentrification are multifaceted. For example, in his quantitative assessment of London, Atkinson (2000) combined cross-sectional and longitudinal census data to define gentrification and track displacement. Gentrification was identified through the proxy measure of professionalization which was measured as an above average increase in the proportion of professionals and managers within a ward. Atkinson concludes that gentrification was present in London between 1981 and 1991 and that it was associated with above-average levels of losses of groups associated with displacement.

In one of the earliest studies on displacement impacts, Marcuse (1985) uses administrative data from the City of New York to estimate the total displacement in New York City resulting from gentrification. He finds that between 10,000 and 40,000 people are displaced in the city annually due to gentrification. He also shows that as gentrification increases, the movement of highly-educated residents increases, followed by sharp increases in rent.

However, the finding that gentrification *causes* the displacement of lower income households has been challenged recently by several studies that use control groups of non-gentrified neighborhoods that were similar to gentrified areas to begin with. For example, Vigdor (2002) compares the mobility rates of poor and less-educated households in gentrifying and non-gentrifying areas in Boston and finds no evidence to suggest that low-status households are more likely to move out of units in revitalizing areas. Rather, less educated households in gentrified areas are found to be significantly more likely to remain in their housing unit than are households elsewhere in the metro area. In a study of New York, Freeman and Braconi (2004) analyze the migration decisions of low-income and low-educated renters in a set of gentrified neighborhoods, identified subjectively based on the authors' local knowledge. They find that low-income and low-education residents are more likely to remain in gentrified neighborhoods. Using a more formal and quantitative selection method based on five threshold criteria that measure the influx of highly educated residents, previous disinvestment and subsequent increases in property values to identify gentrified census tracts, Freeman (2005) also finds no significant evidence of displacement in the face of gentrification in New York. A recent paper by McKinnish et. al. (2010) uses administrative access census files from 1990 and 2000 to provide more detailed analysis of the demographics of in-movers and out-movers in gentrifying neighborhoods and finds that gentrification is not associated with significant displacement. This paper uses a simplified definition of gentrification that includes census tracts that are low-income in 1990 and experienced rapid increases in median family income.

On the question of the overall costs and benefits of gentrification to cities, one of the earliest studies is by Lang (1986), who attempted to measure the net fiscal impact of gentrification in the city of Philadelphia. Using an ad-hoc definition of gentrification, his

analysis showed that gentrification produced increased revenues relative to similar non-gentrified areas and that these revenues are not erased by higher demands for capital improvements by new middle class residents. Using a comprehensive, mixed methods definition process that involved interviews with local experts, windshield surveys, and analysis of census data in eight cities Wyly and Hammel (1999) showed that mortgage lending was significantly higher in gentrified neighborhoods and argued that rather than being a demographic anomaly of the 1980s, gentrification was part of a broader shift of capital back to portions of the inner-city in the 1990s.

Although there has been little empirical evidence on the employment impacts of gentrification, several scholars have argued that gentrification is theoretically linked to improved job prospects for central city residents. Vigdor (2002) argues that “as a centralizing force, gentrification could potentially improve labor market outcomes for central city residents by offsetting spatial mismatch” and that “residential gentrification might cause a reallocation of jobs in personal service industries and retail trade towards central cities.” (Vigdor, 2002, 145). Freeman (2005) also uses the claim of improved employment prospects as one reason why lower-income households choose to remain in gentrifying neighborhoods. Thus, there is a clear prediction in the literature that gentrification is likely to increase net job opportunities at the neighborhood scale. However, this claim is countered by a parallel literature on industrial displacement (Giloth & Betancur, 1988; Rast, 1999) that suggests that property speculation sparked by residential renewal threatens the viability of local manufacturing and warehousing companies that provide job opportunities for blue collar workers.

One of the few studies that directly examines the links between gentrification and the displacement of small-scale manufacturing in gentrifying neighborhoods is Curran’s (2004) case study of Williamsburg in Brooklyn, NY. Curran uses data from the NY State Department of

Labor and finds that although Williamsburg has experienced some growth in retail, FIRE, and service industries, the number of manufacturing and wholesale trade jobs and firms decreased from 1992 to 2002. Although, by looking at a single case without comparison to a control, it is difficult to conclude that the decline of industrial jobs would not have occurred anyway, and that the service jobs brought by gentrification simply help fill a void in the local labor market. Sullivan and Shaw (2011) look closely at the compositional changes in the retail sector in response to gentrification. Specifically, they show that gentrification in Portland led to significant alteration of the retail landscape with businesses initially catering to African Americans closing and being replaced by new, hip or bohemian stores catering mostly to whites. Lastly, Mir and Sanchez (2009) show that small enterprises that are seen as environmentally insensitive or threatening to quality of life are more likely to be inspected by city regulators and are more likely to close in gentrifying neighborhoods of Chicago, compared to other neighborhoods. This study suggests that certain types of businesses may be threatened by the NIMBYism of new, upper income residents of gentrified neighborhoods.

Ultimately, the question of how gentrification alters urban labor markets remains unsettled. First, while theory predicts that the new investment flows that coincide with gentrification should produce new business activity, we do not know whether this growth comes at the expense of a preexisting employment base. Second, while previous research suggests that gentrification changes the composition of local jobs—away from blue-collar positions towards local service-based occupations—there is no comprehensive study thus far to measure the impact of gentrification on industrial restructuring. This paper seeks to answer both of these questions. Before proceeding with the analysis, the following section provides a descriptive analysis of employment shifts in one neighborhood.

### **3. Gentrification, Industrial Change and Labor Markets: An Empirical Vignette from Chicago's Wicker Park**

To provide context for the empirical analysis that follows, this section highlights the employment shifts that occurred in one archetypical gentrified neighborhood; Chicago's Wicker Park. The neighborhood change that occurred in Wicker Park and the broader West Town community area since the 1980s is one of the most high-profile and well-studied examples of gentrification in the city, if not the country (Betancur, 2002; Voorhees, 2001). The following extended quote from the *Chicago Reader* encapsulates the public discourse around gentrification and sets the stage for the descriptive analysis that follows:

Welcome to Wicker Park, one of the few racially, ethnically, and economically integrated communities in Chicago. In Wicker Park, bounded roughly by North Avenue and Divison between Ashland and Western, the fundamentals of get-it-while-you-can free-market capitalism are clashing head on with appeals for fairness and restraint. The issue is familiar: as the well-to-do, attracted by the area's lovely Victorian mansions and its proximity to downtown, move in, property costs rise, forcing working-class residents to move out. With a shortage of decent and affordable housing in the city (and virtually none in the suburbs), they have few places to go. Ben Joravsky, *Chicago Reader* July 28<sup>th</sup>, 1988.

Given its geographic proximity to downtown Chicago and extensive transit connections, Wicker Park experienced rapidly escalating real-estate values during the 1990s and an influx of new, higher income residents (Voorhees, 2002). Specifically, the average home purchase price rose from \$139,074 in 1990 to \$336,471 in 2000, or 142 percent.<sup>1</sup> However, the neighborhood is also home to two industrial corridors along the Chicago river and along Kinzie Street, which hold a significant, if dwindling number of manufacturing companies. Portions of these surrounding industrial areas are officially designated by the City as Planned Manufacturing

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<sup>1</sup> Values are adjusted for inflation in 2000 dollars. Source: Voorhees Center, 2001. P.20.

Districts (PMDs) which makes individual rezoning requests (i.e. “spot rezoning”) difficult in order to protect industrial properties from residential encroachment.

During the period of residential gentrification, Wicker Park also experienced a change in the nature of its local commercial districts, especially along Milwaukee Avenue and near the intersection of Milwaukee, North and Damon Avenues. During the 1990s and 2000s this intersection was home to a changing array of high-end restaurants and trendy bars, and continues to draw customers from throughout the city. Today, there are 28 restaurants reviewed by the Zagat international restaurant survey within 5 blocks of this intersection.

To explore the nature of employment change in Wicker Park, Figure 1 depicts the net change in employment by broad industry classification in the census tracts that make up the wider Wicker Park area and which meet the gentrification criteria used in this paper (see section 4).

[FIGURE 1 ABOUT HERE]

As Figure 1 indicates, between 1990 and 2008 there was a net positive increase of 1,443 jobs located in Wicker Park. This positive trend is impressive given the overall decline in the share of Chicago’s employment in neighborhoods outside the so-called “super-Loop” area. Yet, this increase masks pronounced industrial shifts. Specifically, the area that comprises Wicker Park’s gentrified census tracts (and includes those within a ¼ mile buffer zone) lost over 7,800 manufacturing jobs during this period. These jobs were replaced by over 5,100 jobs in local services, and approximately 1,000 jobs each in the restaurant and FIRE sectors respectively. Although there is a net positive gain in employment, these industrial shifts have a pronounced effect on the wage distribution of locally available jobs. Specifically, jobs in manufacturing paid

\$1,120 per week on average in the Cook County, IL in 2011, compared to \$366 per week in restaurants.<sup>2</sup>

While this descriptive vignette is illustrative of the nature of industrial changes within gentrifying neighborhoods, it does not address the direct relationship between gentrification and local labor markets. Specifically, one could view the local jobs generated by increased consumption levels and spending activity that accompany gentrification as an unrelated “bonus” which helps fill the void created by deindustrialization. This view takes the decline of goods producing sectors as essentially “exogenous” to the neighborhood scale and induced by factors such as globalization and technological change. Alternatively, the speculative real estate processes sparked by gentrification could directly or indirectly displace viable manufacturing companies that are either forced to move as industrial property owners seek to capitalize on conversion to residential or retail uses, or find it profitable to cease operations and sell their land. This is precisely the process documented by the literature on industrial displacement (Betancur, 2002; Giloth & Betancur, 1988).

This explanatory dilemma forms the motivation for the main research questions in this paper. First, is gentrification associated, on net, with an increase in employment? Second, is the shift from manufacturing and related blue collar industry sectors to residentiary sectors such as restaurants, retail and local services occurring faster in neighborhoods that experience gentrification than in non-gentrifying neighborhoods.

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<sup>2</sup> Source: Quarterly Census of Employment and Wages (QCEW) program at the U.S. Bureau of Labor Statistics. Figures are average weekly wages per worker across the manufacturing super-sector (1031) and the Food Service and Drinking Places (NAICS 722) sector for 2011.

## **4. Methodology**

To answer these research questions, this paper proposes a cross sectional, quantitative analysis that compares long-term employment changes at the neighborhood scale. Unlike most previous empirical studies on gentrification, this paper does not focus on changes in a single case city and instead relies on data from a sample of 20 large cities that are representative of all regions in the US. This section first describes the methodology used to identify gentrification at the census tract level and then explains the key data sources and sample selection techniques. Finally, this section presents a simple ordinary least squares (OLS) regression model for estimating the impact of gentrification and highlights the steps taken to narrow the analysis down to a comparable control sample.

### **4.1 Defining Gentrification**

The first step in our empirical analysis of the impact of gentrification on employment in urban labor markets is to develop a consistent definition of gentrification. As indicated in the literature above, gentrification means different things to different observers. For simplicity and consistency, this paper adopts a quantitative definition that is well established in the literature. Specifically, the one developed by Lance Freeman (2005). Since we are interested in employment impacts over the long run, emphasis is placed on neighborhoods that fully transitioned between 1990 and 2000. In this paper, neighborhoods will be defined as census.

Census tracts that gentrified between 1990 and 2000 were identified using census data from those years.<sup>3</sup> Although census tract boundaries may not perfectly align with the boundaries of a gentrifying neighborhood, scholars typically use census tracts to analyze neighborhood change due to the availability of data (see Knotts, 2006; Ellen and Turner, 1997). To be included in the analysis, census tracts needed to meet five criteria specified by Freeman in 2005. The first three criteria limit the analysis to census tracts with the potential to be gentrified between 1990 and 2000:

1. The census tract must be located in the central city at the beginning of the intercensal period.
2. Relatively low-income households must populate census tract at the beginning of the intercensal period (i.e. tract median income in 1990 must be less than the median income in their respective metropolitan area).
3. The census tract must have experienced disinvestment at the beginning of the intercensal period (i.e. the proportion of the housing stock built in the census tract between 1970 and 1990 must be lower than the proportion of the housing stock built between 1970 and 1990 in the metropolitan area).

In addition, tracts must meet two additional criteria to be considered gentrified over the intercensal period:

4. The percentage increase in educational attainment within the census tract over the intercensal period must be greater than the percentage increase in educational attainment within the metropolitan area in which the census tract is located.
5. The real housing value of a neighborhood must increase during the intercensal period.

Although gentrification is often associated with an influx of relatively high-income residents, educational attainment, rather than household income, was used as an indicator for several

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<sup>3</sup> Specifically, we used census data extracted from the Neighborhood Change Database (NCBD) created by Geolytics Inc. which presents summary data in a consistent geography that corresponds to the 2000 Census tract definitions.

reasons. Educational attainment is more stable than income as it is not as prone to fluctuation. In addition, it captures the in-migration of young artists and professionals who may not be well-paid but are often on the early wave of gentrification, and ensures that gentrification is fueled by outsiders and not by increased income of incumbent residents. Figure 2 below highlights the 245 census tracts in Chicago which meet the gentrified criteria.

[FIGURE 2 ABOUT HERE]

In addition to these tracts, we also created a second “treatment” definition which includes all tracts which meet Freeman’s criteria as well as those census tracts that are immediately adjacent to those tracts (i.e. within a  $\frac{1}{4}$  mile distance buffer). This is done to “catch” the adjacent commercial and industrial spaces that could potentially serve this population or serve as employment locations for local workers, but which have a limited population and therefore do not meet our census-based criteria.

Since there are many alternative methods of defining gentrification used in the empirical literature, we conduct additional robustness checks by modifying the way we operationalize gentrification. Following (Guerrieri, Hartley, & Hurst, 2013) we use two simplified definitions of gentrification that focus only on housing prices and housing price appreciation. The first uses each census tract’s distance from those tracts in the top quartile of housing price (i.e. high value neighborhoods) as the key independent variable. We also regress our measures of employment change on the direct rate of housing price appreciation within each tract.

## **4.2 Dataset Construction and Sample Selection**

Beyond the data from the decennial US Censuses used to identify gentrified tracts, the primary data source used to measure changes in employment at the census tract level is the National Establishment Timeseries (NETS) database. NETS is a privately produced database which is based on 19 annual snapshots from the Dun and Bradstreet (D&B) business listing service from 1990 to 2008. Although employer reporting is not strictly mandatory—as is the case with the Quarterly Census of Employment and Wages (QCEW) which is derived from unemployment insurance filings—the NETS is considered to be a near census of business establishments in the US. The NETS contains detailed information on employment, sales, primary industry, and birth and death year at the establishment level. While some observers are concerned with the measurement of employment levels at establishments, employment figures at an aggregate level are consistent with trends observed in publically available sources and long-term employment changes are also consistent (see Neumark, et al., 2005). (Neumark, Zhang, & Wall, 2005)

Critical for the purposes of this paper, each NETS record also contains detailed geographic information for each establishment's current or final location and a detailed inventory of all establishment moves. To generate accurate census tract-level counts of employment in each year, each record was geocoded based on its listed latitude and longitude and associated with a unique census tract for each year that the establishment operated in that location.<sup>4</sup>

Our resulting dataset includes total employment by census tract from 1990 through 2008 as well as employment figures for seven broad industrial sectors that comprise the majority of all

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<sup>4</sup> A subset of NETS records that moved one or more times during the 1990-2008 period were also geocoded based on their origin latitude and longitude information on the move table of the NETS. The process of geocoding movers was repeated up to six times to uniquely identify the place-year combination of each record. Through this process, for example, the employment count calculated for a given tract in 1998 only includes establishments that were located there and operating in 1998, even if some businesses subsequently moved.

jobs and which are hypothesized to be related to gentrification. These sectors include blue-collar sectors such as construction, manufacturing, and wholesale and several relatively low-paying industries centered on local consumption including retail, restaurants and local services.<sup>5</sup> Lastly the finance, insurance, and real estate (FIRE) sector was included to capture changes in the local employment base that may require higher skilled workers and or rely on the “new” workforce brought in by gentrification. However, this last category is somewhat ambiguous as it could include new office branches or startups of finance companies which are exporting their services, or it could also reflect increased employment in the retail banking sector and new real estate brokers offices whose market is the gentrifiers themselves.

The sample for the analysis that follows includes all census tracts located in the central city (i.e. not including suburbs) of 20 large cities in the U.S. While the sample universe was limited to the availability of NETS data accessible to the authors, the set of cities is broadly representative in terms of regional geography and location within high or slow growth regions. Table 1 presents the list of cities in the sample and the number of census tracts that meet the gentrification criteria.

[TABLE 1 ABOUT HERE]

Specifically, this list includes several large cities which have long been the focus of the gentrification literature (e.g. New York City, Chicago, and Philadelphia) as well as smaller cities in the Midwest and Northeast, such as Cleveland and Pittsburg which have suffered from declining populations at a regional scale. This list also includes several cases from California

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<sup>5</sup> The service sector includes all two digit SIC codes from 70 through 89, and includes such sectors as hotels (70), personal services (e.g. barber shops) (72), business services (73), auto repair (75), other repair industries (76), motion pictures (78), amusement and recreation (79), health (80), legal (81), educational (82), and social services (83), as well as museums (84), membership organizations (86) and engineering (87).

and the Southwest where there has been less discussion of gentrification such as Albuquerque and San Antonio. Finally, this list contains cases that are representative of rapidly growing cities in the South (e.g. Dallas, Raleigh, and Nashville) which may have a smaller set of neighborhoods with older homes which could potentially gentrify. Note that this list was not picked in an ad hoc manner. Instead, the list of central cities was limited to all cities with a population of at least 200,000 in 2000 from the sample of NETS data available to the authors.<sup>6</sup>

### 4.3 Identification strategy

To analyze the association between gentrification and employment, we calculated the net employment change over two time-periods. The first of which is 1990-2000, which we call the *contemporaneous* period as it corresponds to the period over which gentrification occurred based on our selection criteria using changes in demographic and housing variables from the US Census. We also calculate the net change for each industry sector for the full period for which we have employment data, 1990-2008, which is termed the *long-run* impacts. Equation 1 below lists the main OLS regression specification used to analyze the association between gentrification and employment at the census tract level.

$$[1] \quad \Delta EMP_{ij} = \beta_1 GENT_{ij} + \gamma_j + \varepsilon_{ij}$$

The dependent variable  $\Delta EMP_{ij}$  captures the net change in employment for each census tract (i) in each city (j). The key variable of interest  $GENT_{ij}$  is a dummy variable that is coded as one for

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<sup>6</sup> Specifically, the universe of available NETS data included the states of California and North Carolina and a selected set of 29 large urban counties.

each tract that meets the gentrification criteria described above. It is subscripted with  $j$  as the definitions change for each city since some selection criteria are relative to the observed changes in the city's respective metropolitan area. Finally,  $\gamma_j$  is a city-specific fixed effect for each city  $j$  in the sample. The fixed effect is included so that the association between gentrification and employment, are driven only by variation within each city. In this way, the sample is not pooled such that comparisons are made between employment shifts in a tract in Raleigh compared to a tract in Chicago. Thus, the control groups of non-gentrified tracts (i.e. those where  $GENT_{ij}$  is coded zero) are only those tracts within the same city. In other words,  $\beta_1$ , the coefficient of interest which measures the employment change associated with gentrification, is based on comparing gentrified tracts in Chicago to non-gentrified tracts in Chicago and gentrified tracts in New York to non-gentrified tracts in New York, and so on.

Since the impact of gentrification is measured by a difference-in-differences (DD) approach, it is important that we carefully consider how we define the control sample, or those non-gentrified tracts that enter into the analysis. For the analysis presented here we exclude all tracts in each city's central business district (CBD), as these areas are not traditionally residential and have a much larger employment base that is markedly different in structure from the typical neighborhood economy. Also, we argue that the competitive dynamics which effect employment changes in downtown areas are fundamentally different from non-CBD areas of the city. Thus our control sample consists of those non-gentrified tracts outside of downtown. Also, it is possible that including high-income or other stable neighborhoods in the analysis would not be a "fair" comparison since these areas may have a relative advantage in attracting new businesses given that they started out with greater local spending power. Thus, we repeat all estimates using a restricted sample of control tracts made up of those that were in the bottom 40 percent of the

household income distribution in 1990. This restricted sample represents neighborhoods that could potentially have gentrified over the 1990s, but failed to meet all five criteria.

## 5. Findings

The impact of gentrification on overall neighborhood-level employment opportunities is mixed, but appears in the long-run to be slightly positive. However, this analysis finds strong and consistent evidence that gentrification leads to a faster transition between manufacturing and local consumption and entertainment related sectors, particularly restaurants and local services. This indicates that gentrification—which is commonly understood to be resulting from exogenous industrial changes that skew incomes—contributes to the process of industrial change itself.

[TABLE 2 ABOUT HERE]

### *Contemporaneous Effects*

Table 2 contains the results of the analysis on net employment change for the contemporaneous period (1990-2000) overall and for each of the seven industry sectors analyzed here. Each cell contains an estimate of  $\beta_1$  and represents a unique regression. The impact of gentrification in this period on overall employment is negligible with some estimates slightly negative and none significant at conventional levels. Specifically, in the most basic models (column 1), the impact on overall jobs per census tract is -2.95 jobs, yet there is wide variation in the impact given the size of the standard error. However, the impact on manufacturing industries is much larger (-28.6) and significant at the 10% level. This means that, on average, a

gentrified census tract loses approximately 30 manufacturing jobs as the neighborhood experiences gentrification. These jobs are replaced somewhat by a significant increase in restaurant jobs (10.1) and a large, but statistically insignificant change in the local service sector. Interestingly, the impact on retail jobs is negative and significant. This could be an indication that despite the increase in purchasing power ushered in by gentrification, pre-existing retail businesses may also close as either their clientele moves away or their goods are not in demand by new residents. Furthermore, the retail businesses that close in the face of gentrification may be more labor intensive than newer retailers. This is consistent with anecdotal evidence of the loss of neighborhood-based department stores such as those along Chicago's Milwaukee Avenue or San Francisco's Mission Street. Alternatively, as older retail businesses close, their space may be used instead for restaurants or other service businesses (e.g. yoga studios or dog bakeries).

When we compare gentrified tracts to only those tracts that were in the bottom of the household income distribution in 1990 (column 2), the impacts are similar overall with slightly higher variances. Interestingly, the magnitude of the impacts on restaurants (15.5 and significant) and services increases, indicating that including higher income neighborhoods masks some of the growth in local consumptive activities that accompanies gentrification. Columns 3 and 4 contain a parallel analysis for the altered gentrification treatment variable which is expanded to include tracts within a quarter mile of each gentrified tract. In these specifications, the job losses in manufacturing are more pronounced, with estimates of (-33 and -44 respectively). This is suggestive of an industrial displacement effect as property values rise in neighborhoods that border gentrified residential areas.

Overall, the period during which gentrification occurs appears to be one of transition with little net impact on total jobs. However, the strong negative findings on manufacturing suggest that gentrification leads to important industrial shifts at the neighborhood scale. To remind, the negative coefficient indicates that employment fell faster in gentrifying census tracts than in other non-CBD neighborhoods within the same city. If the loss of jobs in goods producing sectors were simply an exogenous trend that had little to do with gentrification, then all areas of the city should be equally impacted and the coefficient would be zero. On the positive side, gentrification does seem to be associated with the growth of restaurant employment, which is indicative of an increase in local consumption spurred by new residents with higher levels of disposable income.

#### *Long-run impacts*

The long-run influence of gentrification on the structure of local employment opportunities are more pronounced than the contemporaneous effects. As indicated in Table 3, the magnitude of employment shifts is generally larger. In terms of overall impact, when we compare gentrified tracts to only those control tracts which begin the period with lower levels of household income, there appears to be a positive and statistically significant impact of approximately 100 jobs per tract. The manufacturing job losses that were detected during the 1990s continued with coefficients ranging from -33 to -50 and significant in all but one specification. When we broaden the analysis to include tracts that buffer gentrified zones (columns 3 and 4), we also now see losses in the wholesale sector of approximately 20 jobs per tract. Thus, the losses of so-called “blue-collar” jobs appear to be more pronounced in neighborhoods that experienced gentrification in the 1990s.

[TABLE 3 ABOUT HERE]

### *Robustness Checks*

To test whether our findings are robust to how we define gentrification, we conducted an additional analysis that uses an alternative, less restrictive definition of gentrification. This definition relies simply on the distance to highly valued residential neighborhoods. Table 4 presents the results of estimating two alternative specifications for both changes in employment and changes in the number of establishments. Columns 1 and 3 present estimates of the following specification,

$$[2] \quad \Delta Y_{ij} = \beta_2 Dist_{ij} + \gamma_j + \varepsilon_{ij}$$

Where  $\Delta Y_{ij}$  represents the change in either employment (column 1) or number of establishments (column 3) in census tract  $i$  located in city  $j$ ,  $Dist_{ij}$  is the log of the distance in miles to the nearest census tract that was in the top quartile of median home prices in the MSA in which the city is located, and  $\gamma_j$  and  $\varepsilon_{ij}$  are defined as above. This specification is motivated Guerrieri et. al. (2013) who find that it is the low home price neighborhoods that are closest in distance to the highest price neighborhoods that tend to gentrify in response to a positive housing demand shock at the city or MSA-level. In this specification, if gentrification is associated with an increase in employment, then the estimate of  $\beta_2$  should be negative, indicating that employment changes are greater in low home price census tracts that are closest to the high home price neighborhoods (those in the top quartile of the home price distribution in 1990). Note that this definition is also consistent with Smith's (1996) concept of the "rent gap" which he argues is one of the key financial drivers of gentrification.

[TABLE 4 ABOUT HERE]

Columns 2 and 4 present estimates of the following specification,

$$[3] \quad \Delta Y_{ij} = \beta_3 HPGrowth_{ij} + \gamma_j + \varepsilon_{ij}$$

Where  $HPGrowth_{ij}$  is the growth rate of median home prices in census tract  $i$  in city  $j$  from 1990 to 2000, and all other variables are defined as they were before. This specification provides a more direct test of whether employment growth is associated with home price growth at the census tract level. One potential drawback to this specification is that purely industrial or commercial census tracts will be omitted from this sample since there will be no median home price observations for these tracts. For this reason, this specification is not likely to be as good a measure of the degree to which gentrification is associated with employment changes in manufacturing, and possibly in construction and wholesale employment as these industries are more likely to be located in non-residential tracts.

The results shown in the first row of Table 4 indicate that there is no statistically significant relationship between changes in total tract-level employment and distance to the nearest high-price neighborhood (column 1), there is a relationship between changes in the total number of establishments and distance to the nearest high-price neighborhood (column 3). The coefficient in column 3 implies that roughly doubling distance to the nearest high price neighborhood (say from 1 to 2 miles) is associated with a reduction in the change in the number of establishments from 1990 to 2000 by about 1.5, on average. Columns 2 and 4 show that there is not a statistically significant relationship between tract-level median home price growth and changes in employment or the number of establishments from 1990 to 2000. The remaining seven rows of the table use changes in employment or the number of establishments for the broad industry classifications that we used in prior specifications. Most of the coefficients of

interest are not statistically distinguishable from zero. The exceptions are for wholesale, retail, restaurants, and services. Our proxies for gentrification (distance to nearest high-price neighborhood and home price growth) are associated with a reduction in wholesale employment growth, but the relationship is only statistically significant at the 10% level. Changes in retail establishments are also positively associated with median home price growth, but only at the 10% level. Changes in restaurant employment and the number of restaurant establishments tend to be greater as distance to the nearest high-price neighborhood decreases. The coefficients imply that halving distance from 2 to 1 miles to the nearest high-price neighborhood is associated with a change in restaurant employment of about 7 more employees and about one quarter more restaurants per census tract. The number of restaurants is also positively associated with home price growth. The coefficient implies that a 10% increase in tract-level median home prices is associated with about 1.5 more restaurants per tract. The number of service establishments is also positively associated with gentrification. Halving the distance to the nearest high-price neighborhood is associated with about 1.2 more service establishments per tract.

Overall, these alternative specifications confirm the general direction of the finding using our preferred, multi-factor definition of gentrification (i.e. Freeman's (2005)). Gentrification is positively associated with growth in the restaurant, retail and service sectors, while there is limited evidence of a faster decline in blue collar employment and establishments, especially for wholesalers. While, the broad direction of the findings are confirmed, it is important to note that many coefficients are insignificant compared to the main specification. This is understandable, as these single-factor definitions would naturally result in higher variance. For example, the distance from a high-priced neighborhood will capture nearby tracts in all directions. However, the actual pattern of gentrification from nearby high-income neighborhoods is likely to occur in

only one direction.<sup>7</sup> In addition price appreciation alone may be capturing increases in non-gentrified areas that come from a very low base point.

## 6. Conclusion

In this paper we show that gentrification is associated with a mild positive impact on the overall number of jobs in affected neighborhoods. Yet, compared to previous empirical studies, this paper indicates that gentrification directly contributes to the industrial shifts in urban labor markets—from goods producing/handling jobs to service sector positions—that are most often understood as macro-structural changes. Specifically, our analysis of the impact of gentrification at the census tract level among a sample of 20 large central cities, we find evidence that manufacturing jobs and wholesale establishments declined faster in gentrifying areas compared to non-gentrifying areas in the same city. We also find that industries that serve neighborhood demand—primarily restaurants and services—expanded faster. Our results are not sensitive to the choice of control tracts—including either all tracts or only other low-income tracts in 1990—and are relatively robust to changes in how gentrification is defined (multifactor versus distance).

To interpret these findings it is important to consider the potential causal mechanisms at work. While our research design does not explicitly reveal these pathways, some discussion is warranted to guide future empirical research and theoretical development. First, a plausible explanation for the finding that manufacturing job losses are accelerated in gentrified neighborhoods lies in the literature on industrial displacement. Specifically, the land price speculation that accompanies gentrification may result in the displacement of viable (or marginally viable) manufacturing firms as building owners evict industrial tenants in order to sell their properties for an alternative use, namely residential or commercial

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<sup>7</sup>There are many factors that would prevent price appreciation from occurring in an even spatial pattern. For instance, there may be agglomeration effects among real estate investors, or the presence of unobservable policy barriers such as the presence of public housing developments that cannot be redeveloped without public-sector commitments.

conversion. While some affected manufacturing companies may be experiencing declining demand for reasons unrelated to gentrification, the added pressure to convert may accelerate the decision to sell, move or close a firm. On the opposite side, the concomitant increase in jobs in restaurants and local services is likely related to the presence of elevated disposable income brought by new upper-income residents.

In terms of theoretical interpretations, this analysis can also lead to a reinterpretation of the impact of gentrification on the broader economic function of urban neighborhoods. Specifically, one might view urban space as a key input to the production processes of a variety of firms. Urban space is itself a composite good comprised of various attributes such as *access* to infrastructure, labor pools, and markets. Gentrification essentially changes the nature and the price of urban space as an input. As a result, these changes are likely to have differential effects across industries, as different industries have different technical requirements for urban space as an input.

The key policy implications that follow from these findings are that gentrification may significantly impact the quality of available jobs in certain urban neighborhoods. Specifically, the accelerated decline of manufacturing sectors leads to the loss of relatively higher paying positions for low and moderately trained workers. The positions that replace these traditional “blue collar” jobs tend to either pay lower wages (e.g. restaurant jobs) or may require significant retraining or additional education. Thus policy makers should incorporate potential restructuring effects into urban economic strategies which either encourage or discourage gentrification.

It is also important to note here some limitations of this study. First, while our findings clearly suggest that gentrification plays a catalytic role in restructuring the demand side of urban labor markets, they do not indicate that gentrification is the sole *cause* of the observed industrial shifts. We cannot therefore conclude that manufacturing jobs would not have otherwise been lost without the process of gentrification.

Lastly, this research has important implications for how scholars in the field of economic development and regional science think about local land use decisions and neighborhood-level land price dynamics. In particular, the fact that two urban economic phenomenon—gentrification and deindustrialization—which have heretofore been studied separately are linked calls for greater collaboration between scholars of land-use and housing markets with economic development scholars.

## Figures and Tables

Figure 1. Employment Change in Wicker Park by Major Industry Sector, 1990-2008.

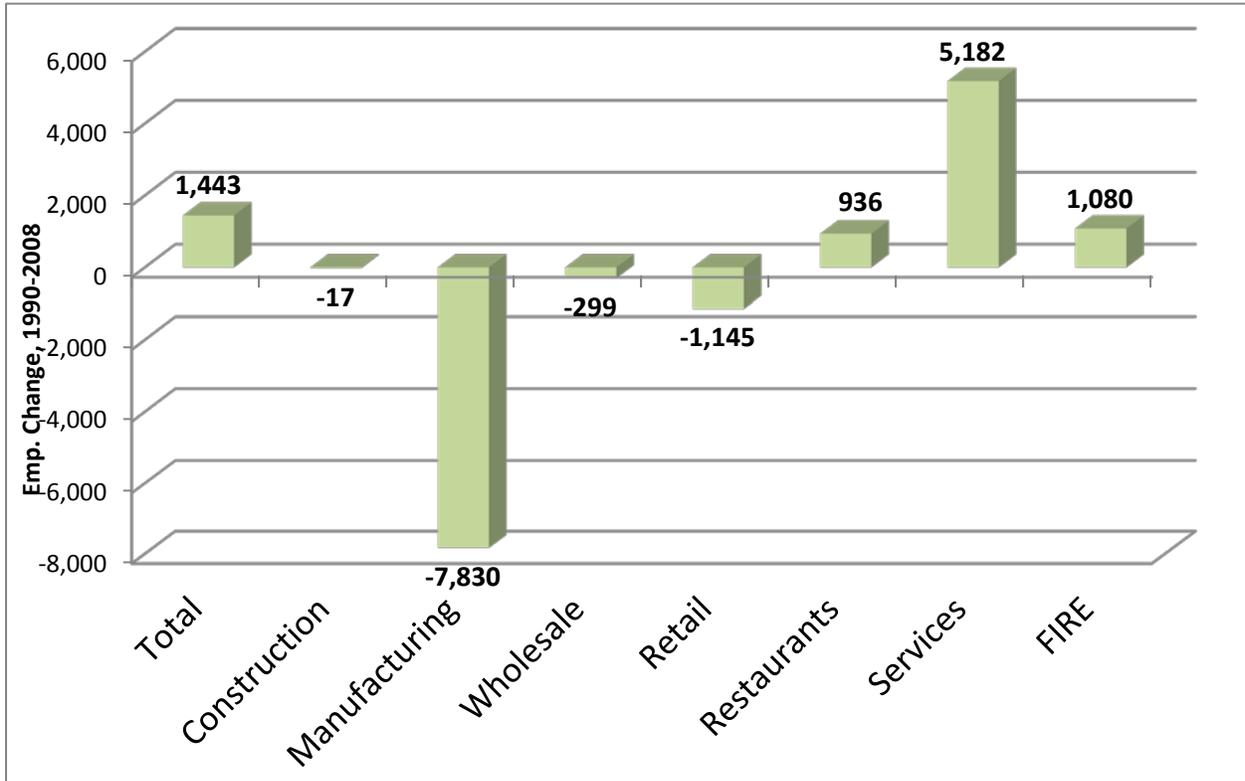
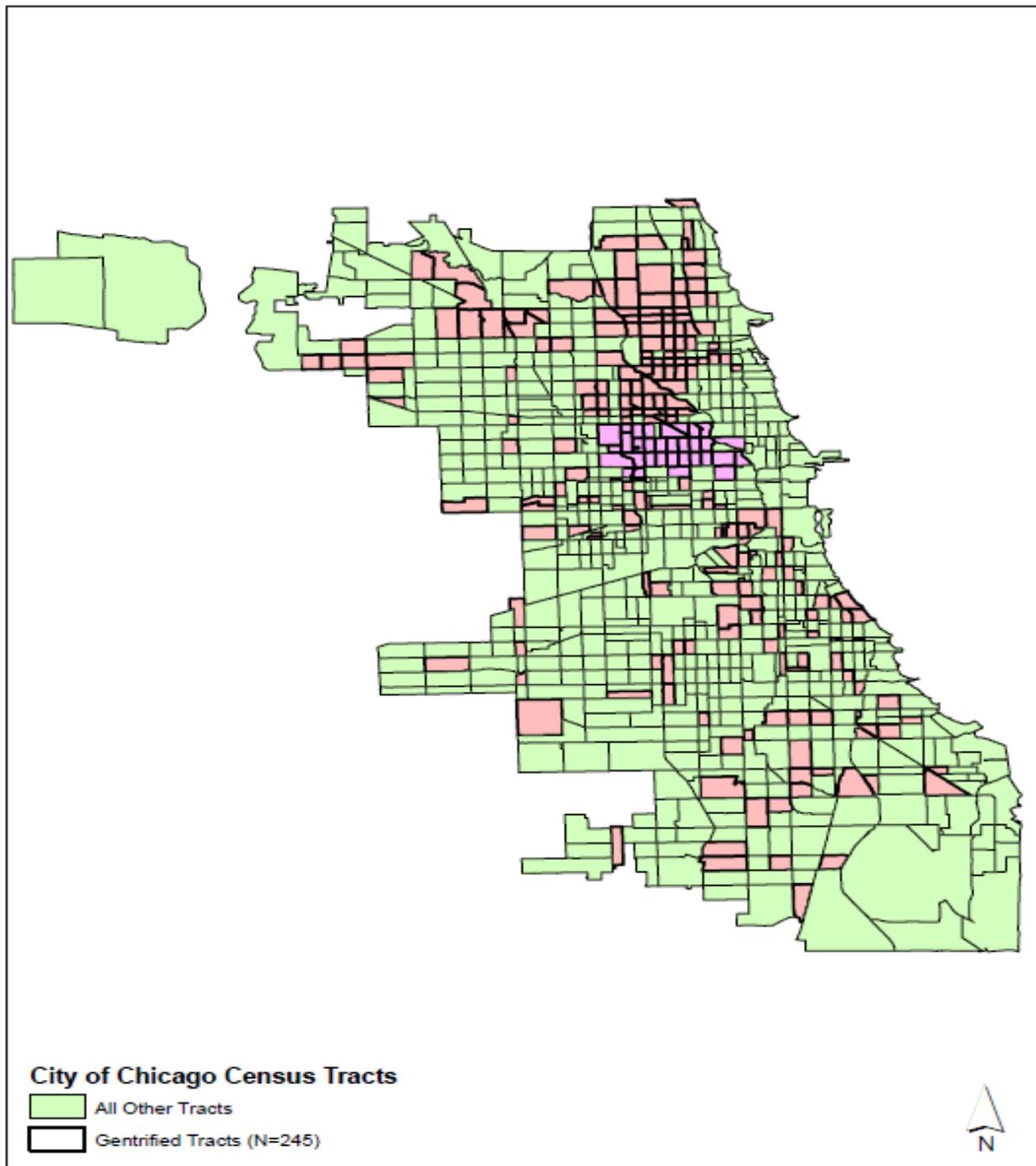


Figure 2. Map of Census Tracts that Experienced Gentrification during the 1990s in Chicago



**Table 1. Central Cities in Sample and Number of Census Tracts by Gentrification Status**

<b>Sample Cities</b>	<b># tracts</b>	<b># Gentrified</b>
Albuquerque	111	16
Charlotte	115	16
Chicago	859	245
Cleveland	220	63
Dallas	255	22
Indianapolis	199	18
Los Angeles	837	27
Minneapolis	121	39
Nashville	137	28
New York	2,180	255
Oakland	106	23
Omaha	124	11
Philadelphia	372	28
Pittsburgh	140	38
Raleigh	60	8
Sacramento	93	9
San Antonio	226	8
San Diego	268	15
San Francisco	176	59
San Jose	176	22
<b>Total</b>	<b>7,135</b>	<b>950</b>

**Table 2. Contemporaneous Impact of Gentrification on Employment by Major Industry Sector, 1990-2000**

	(1)	(2)	(3)	(4)
Total	-2.949 (32.745)	11.338 (37.972)	-13.748 (24.418)	2.071 (41.912)
Construction	-3.794 (4.961)	-9.106 (6.029)	2.203 (3.711)	-3.568 (6.684)
Manufacturing	-28.632* (15.893)	-24.467 (16.989)	-33.168*** (11.886)	-44.803** (18.846)
Wholesale	1.238 (7.466)	2.436 (8.692)	-9.737* (5.586)	-7.542 (9.637)
Retail	-19.507** (8.886)	-12.056 (9.823)	-12.39* (6.654)	-4.216 (10.905)
Restaurants	10.079** (4.737)	15.479*** (4.828)	3.711 (3.545)	13.465** (5.355)
Services	19.478 (23.179)	29.359 (28.200)	10.612 (17.301)	2.135 (31.175)
FIRE	-5.375 (11.226)	-3.782 (10.872)	-1.403 (8.391)	-15.414 (12.026)
Low Income Limited Controls <sup>†</sup>		<b>Y</b>		<b>Y</b>
Include tracts 1/4 buffer			<b>Y</b>	<b>Y</b>
	N=(6771 to 6991)	N=(3089 to 3195)	N=(6771 to 6991)	N=(3089 to 3195)

Notes: All Regressions use the net change of employment in each respective industry as the dependent variable. All regressions include city fixed effects, and exclude outlier observations which indicated an employment change (+/-) of 5,000 jobs or more. †Low Income Limited Controls refers to a sample restriction to tracts that were in the bottom 40 percent of the metropolitan median household income in 1990.

**Table 3. Long Term Impact of Gentrification on Employment by Major Industry Sector, 1990-2000**

	(1)	(2)	(3)	(4)
Total	59.693 (38.148)	100.39** (42.724)	3.566 (28.339)	58.277 (47.165)
Construction	-8.217 (6.661)	-12.691 (7.887)	2.536 (4.983)	-0.357 (8.745)
Manufacturing	-32.898* (17.362)	-26.638 (19.676)	-39.414*** (12.986)	-50.367** (21.808)
Wholesale	2.91 (9.478)	1.512 (11.080)	-19.148*** (7.090)	-23.248* (12.275)
Retail	-9.635 (10.959)	5.363 (11.800)	-14.707* (8.201)	-11.77 (13.084)
Restaurants	11.719* (6.245)	16.149** (6.784)	6.399 (4.675)	18.071** (7.523)
Services	75.597*** (26.947)	81.512** (31.782)	24.26 (20.118)	47.188 (35.215)
FIRE	-0.184 (13.305)	-6.027 (13.305)	-13.633 (9.936)	-22.913 (14.713)
Low Income Limited Controls <sup>†</sup>		<b>Y</b>		<b>Y</b>
Include tracts 1/4 buffer			<b>Y</b>	<b>Y</b>
	N=(6702 to 6991)	N=(3054 to 3196)	N=(6702 to 6991)	N=(3054 to 3196)

Notes: All Regressions use the net change of employment in each respective industry as the dependent variable. All regressions include city fixed effects, and exclude outlier observations which indicated an employment change (+/-) of 5,000 jobs or more. †Low Income Limited Controls refers to a sample restriction to tracts that were in the bottom 40 percent of the metropolitan median household income in 1990.

**Table 4. Alternative Specifications: Gentrification on Employment and Number of Establishments by Major Industry Sector, 1990-2000**

Explanatory Variable	Employment		Establishments	
	(1) Distance to High Price Neighborhood	(2) Median Home Price Growth	(3) Distance to High Price Neighborhood	(4) Median Home Price Growth
Total	13.5 (24.4)	39.5 (39.5)	-1.54** (0.73)	1.35 (0.79)
Construction	6.9 (4.5)	1.3 (2.2)	-0.05 (0.04)	0.08 (0.06)
Manufacturing	-4.0 (11.7)	7.7 (11.9)	0.18 (0.15)	0.00 (0.05)
Wholesale	7.8* (4.3)	-2.0* (1.1)	0.07 (0.08)	-0.02 (0.07)
Retail	1.7 (4.7)	0.6 (3.0)	-0.11 (0.11)	0.20* (0.11)
Restaurants	-6.9** (3.2)	1.9 (1.8)	-0.27*** (0.05)	0.15** (0.06)
Services	-4.7 (15.4)	18.8 (21.8)	-1.20** (0.47)	0.67 (0.45)
FIRE	-0.5 (3.6)	5.8 (3.8)	-0.21 (0.13)	0.14 (0.12)
Sample Size (N)	N=3,612	N=3,480	N=3,612	N=3,480

Notes: All Regressions use the net change of employment or number of establishments in each respective industry as the dependent variable. All regressions include city fixed effects, and exclude outlier observations (top and bottom 1% of employment or establishment changes are excluded). All samples include only census tracts in bottom half of median home price distribution in 1990. Standard errors are clustered at the city level.

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