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Gentrification and the Artistic Dividend: The Role of the Arts in Neighborhood Change

Problem, Research Strategy, and Findings: There is a conflict between recent creative placemaking policies intended to promote positive neighborhood development through the arts and the fact that the arts have long been cited as contributing to gentrification and the displacement of lower-income residents. Unfortunately, we do not have data to demonstrate wide-spread evidence of either outcome. We address the dearth of comprehensive research and inform neighborhood planning efforts by statistically testing how two different groups of arts activities— the fine arts and commercial arts industries— are associated with conditions indicative of revitalization and gentrification in 100 US metros with a population over 500,000. We find that the different arts activities are associated with different types and levels of neighborhood change. Commercial arts industries show the strongest association with gentrification in rapidly changing areas while the fine arts are associated with stable, slow growth neighborhoods.

Takeaway for Practice: This research can help planners to more effectively incorporate the arts into neighborhood planning efforts and to anticipate the potential for different outcomes in their arts development strategies including gentrification-related displacement.

Keywords: arts, cultural industries, gentrification, neighborhood planning, revitalization

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Introduction

The arts are widely credited with sparking neighborhood change resulting in both positive and negative outcomes. Traditionally, the arts and artists have been seen as contributing to gentrification and the displacement of lower-income residents from central city neighborhoods (Ley, 2003; Zukin, 1982). However, more recent literature argues that, first, art-based gentrification is limited to a handful of places and, second, that the arts are more likely associated with neighborhood revitalization that benefits existing residents (Markusen and Gadwa, 2010; Stern & Seifert, 2010). In fact, what we know about the impact of the arts on communities is based primarily on case study research, which makes generalization difficult. Moreover, much of the research does not explain how the presence of different types of arts activities may result in different outcomes.

How the arts relate to neighborhood change has become a particularly important question because governments now routinely support the arts explicitly to spur development in targeted areas. For example, the National Endowment for the Arts, the public-private partnership ArtPlace, and other foundations and state and local governments have recently committed significant funding toward "creative placemaking," a strategic attempt at place-based arts-led revitalization (Coletta, 2012; Markusen and Gadwa, 2010; Nicodemus, 2013).

We address the dearth of comprehensive research and inform neighborhood planning efforts by statistically testing how two different types of arts activities— the fine arts and commercial arts industries— are associated with conditions indicative of urban revitalization and gentrification in 100 US metros with a population over 500,000. First, we summarize literature on the relationship of the arts to gentrification and neighborhood revitalization. Next, we provide an overview of the study's data and methods. The following sections discuss the findings and

implications for planning practitioners and scholars.

Our findings show that the arts are not inextricably linked to either gentrification or revitalization. Moreover, the fine arts and commercial arts exhibit different relationships to the type and pace of neighborhood change. While fine arts activities are more likely associated with our measure of revitalization, commercial arts industries are strongly associated with gentrification. Further, while the fine arts tend to be located in stable, slow growth neighborhoods, commercial arts industries are associated with rapidly changing areas. This research can help planners to more effectively incorporate the arts into neighborhood planning efforts and anticipate the potential for different outcomes in their arts development strategies including gentrification-related displacement.

The Relationship between the Arts and Neighborhood Change

A sizable literature has established that the arts can play a key role in reshaping conditions in downtown areas and urban neighborhoods. However, there is debate over the type of neighborhood change most closely associated with the arts. On the one hand, a long line of research has documented the role of the arts in gentrification-- a process of reinvestment in depressed central city areas marked by a demographic shift toward higher educated, more affluent, and often white residents along with rising rents (Deutsche & Ryan, 1984; Ley, 1986; 2003; Mathews, 2010; Zukin, 1982). Some argue that gentrification is a potential vehicle to bring improvements to disadvantaged neighborhoods such as higher property values, lower crime rates, and enhanced neighborhood amenities and services (Brown-Saracino, 2010; Freeman & Braconi, 2004; Papachristos, Smith, Scherer, & Fugiero 2011). Far more numerous, however, are those that critique gentrification for causing the displacement and outmigration of long-time residents and small businesses that are not able to remain in the neighborhood to enjoy

reinvestment (Bridge, Butler & Lees, 2011; Doucet, 2014; Newman & Wyly, 2006; Slater, 2009; Smith, 1979; Zukin, 1982, 2010). On the other hand, some claim that the arts can spur neighborhood revitalization without gentrification-- positive, place-based change that does not result in a demographic shift and population turnover and, therefore, benefits existing residents (Grodach, 2011a; Markusen & Gadwa, 2010; Stern and Seifert, 2010).

Substantial case study research demonstrates that individual artists, artistic businesses, and art spaces (e.g. galleries, theaters, and music venues) collectively function as a "colonizing arm" that helps to create the initial conditions that spark gentrification (Cameron & Coaffee, 2005; Deutsche & Ryan, 1984; Ley, 2003; Lloyd, 2010; Mathews, 2010; Zukin, 1982). As Zukin (1982) explained decades ago through the concept of an "artistic mode of production," gentrification is accomplished through the artists' symbolic appropriation of space, which is in turn seized by investors to attract capital reinvestment in the built environment. In other words, artists indirectly set the stage for change through their cultural capital (Ley, 2003). Using their sweat equity, artists aesthetically revalue place by transforming dilapidated, impoverished and often ethnically segregated areas into a "neo-bohemia" filled with art studios, galleries, bars, coffee shops, and restaurants (Lloyd, 2010; Silver & Clark, 2013; Zukin, 2010). In this way, the general presence of artists paves the way for future property reinvestment by real estate developers and higher income members of the creative class, by renovating places mainstream culture considers blighted into attractive destinations.

Over time, the arts have come to play a more direct role in gentrification as an instrument of urban policy and planning as well (Cameron & Coafee, 2005; Grodach & Silver, 2013). Local governments have provided substantial funding for the opening and expansion of flagship museums, theaters, and performing arts complexes and planned new arts districts hoping that

they will catalyze future development in downtowns and central city neighborhoods (Birch et al., 2013; Grodach, 2010; Johnson, 2009; Strom, 2002). Public investments in cultural facilities have expanded significantly since the late 1990's following the highly publicized success of the Guggenheim Museum Bilbao, which is credited with transforming the Spanish city into a global destination (Evans, 2003; Grodach, 2011b). Additionally, as many case studies show, city officials inspired by Richard Florida's *Rise of the Creative Class* (2002) have invested in smaller-scale arts themed areas as amenities to attract skilled labor and engender neighborhood redevelopment (Catungal, Leslie, & Hii, 2009; Grodach, 2012, 2013; Johnson, 2009; Ponzini & Rossi, 2012). As a corollary, nonprofit arts institutions and organizations now join with coalitions of city officials, property developers, and businesses to promote downtown development (Grodach, 2012; Ashley, 2014; Strom, 2002).

Cities not only invest in museums and the performing arts, but also concentrate on commercial arts industries-- film, music, and design-based sectors-- in their local economic development planning programs. Abundant research demonstrates that arts industries have a high propensity to cluster in urban areas to take advantage of and capitalize on concentrations of specialized labor and services along with related industries in media, finance, and high technology (Currid & Williams, 2010; Grodach, Currid, Foster, & Murdoch, 2014; Scott, 2006). Although less common than investing in nonprofit arts activities, urban growth coalitions also target arts industries to generate redevelopment. Toronto, for example, has invested heavily in new film studios and design industries to stimulate development in their central city areas while Austin, TX invests in their music industry as a component of new downtown building projects (Catungal, Leslie, & Hii, 2009; Grodach, 2012, 2013; also see Hutton, 2009).

Arts-led gentrification, both as an instrument of urban policy and through individual

actions, has brought positive changes to many urban areas. For example, museums and performing arts institutions can serve as urban anchors that have a significant impact on center city redevelopment by attracting property development, jobs, and new services (Birch et al., 2013). Similarly, following Richard Florida (2002), cities have constructed new arts amenities to spur local economic growth and increase real estate values through the attraction of upwardly mobile professionals.

However, others argue that by attracting a largely white, educated, professional population to engender urban redevelopment, arts-based gentrification ultimately has negative results. Despite the many place-based improvements, incorporating arts venues into urban redevelopment schemes has created privatized bubbles that primarily serve tourists and the upwardly mobile creative class while excluding some residents and even artists themselves (Eisinger 2000; Grodach, 2008; Peck, 2005; Shaw & Sulivan, 2011). At the same time, the influx and concentration of artistic businesses and arts industry workers in particular areas can bid rents upward and produce waves of displacement as former tenants are forced to move elsewhere (Cameron & Coaffee, 2005; Catungal, Leslie, & Hii, 2009; Grodach, 2012, 2013).

Alternatively, another stream of research concentrates more specifically on the arts as assets in neighborhood revitalization without gentrification (Grodach, 2011a; Jackson, Kabwasa-Green, & Herranz, 2006; Markusen & Gadwa, 2010; Stern & Seifert, 2010). Ann Markusen has been one of the most active researchers to conceptualize and document the development contribution of the arts (Markusen & Schrock, 2006; Markusen & Gadwa, 2010). Her work stresses the importance of an “artistic dividend”-- the value added to local and regional economies through artistic work. Beyond attracting a creative class workforce, artists and art groups may generate economic gain through export of their work, by supplying skills that

improve the productivity of nonartistic industries, or by attracting visitors to specific neighborhoods. Because artistic networks tend to be concentrated and rooted in place, these benefits can spill-over into the immediate area leading to neighborhood improvements.

While much of this work recognizes that these benefits can create conditions for gentrification, but also they argue that most places do not experience the high levels of property appreciation and demand for central city space that drives the gentrification process (Ryberg, 2012; Stern and Seifert, 2010). For example, in their study of Philadelphia, Stern and Seifert (2010) found that neighborhoods with higher levels of neighborhood arts activity were more likely than others to experience factors they considered to be indicators of revitalization such as increased population density, higher housing values, employment growth, and declining poverty rates. Further, they and others show that places which are home to a diversity of arts offerings, including lower income neighborhoods, remained stable rather than experiencing a dramatic upscaling (Grams & Warr, 2003; Stern & Seifert, 2007). Supporting this research, case studies provide evidence that community art spaces often work with neighborhood groups to foster change without noticeably high levels of neighborhood turnover (Grodach, 2011a; Markusen & Johnson, 2004; Stern & Seifert, 2007). Silver and Miller (2013) find a strong association between neighborhoods with an artistic presence and rising local wages and median incomes while Noonan (2013) finds that cultural districts have a modest but positive effect on property values, employment, and income without clear evidence of gentrification.

In sum, while some consider an artistic presence as a catalyst for change that largely benefits elites and results in the displacement of established residents and businesses, others claim that the arts can spur neighborhood revitalization to their benefit. Both streams of literature, however, suffer from two problems. First, the literature is highly contextual. There are

many rich case studies of neighborhoods and some that focus on how the arts influence neighborhood change in particular cities. However, with few exceptions (Silver & Miller, 2013; Noonan, 2013), researchers have not identified the generalized patterns of how the arts are associated with neighborhood change. Second, much of the literature on the arts and gentrification does not concentrate specifically on how different types of arts activity relate to urban change. Studies tend to focus either on a single type of arts activity (e.g. a museum or the music sector) or, more common, broadly consider an artistic presence. The fact is that "the arts" encompass a very diverse set of activities. Similarly, artists work in a wide range of fields from film, design, and other commercial industries to nonprofit dance companies, symphonies, museums, and art schools. A more nuanced understanding of the relationships that different types of arts activities have with gentrification and revitalization will help planners and policy-makers to more effectively incorporate the arts into their redevelopment programs.

Analytic Strategy: Modeling the Relationship of the Arts to Neighborhood Change

To determine how the arts are associated with neighborhood change we study the relationships between arts industries and a set of variables commonly discussed in the literature as indicative of gentrification and neighborhood revitalization over the decade of the 2000s. We focus on 100 US metropolitan statistical areas (MSA) with a population of 500,000 or more in 2010. A more detailed description of the study data and methodology are in the appendix.

All data are gathered at the zip code level, which we treat as a proxy for the neighborhood. We study neighborhoods within 10 miles of any central business district (CBD) in each metro. Our decision to use a 10 mile radius is based on the fact that the vast majority of the literature concentrates on gentrification in neighborhoods located in more established, built-out areas around the CBD. However, we recognize that regions have varied histories, phases, and

character of development. Indeed, researchers are beginning to analyze inner-ring suburbs as sites of gentrification (Charles, 2011). As such, limiting the sample to zip codes immediately surrounding a CBD may exclude important areas from the analysis. Therefore, the 10 mile radius is meant to capture potential sites of gentrification in the varying geographies of US MSAs.

The dependent variables in the study, gentrification and revitalization, are based on a set of ten variables previously employed in the literature (Freeman, 2005; Ley, 1986; Sands and Reese, 2012). These include the growth rate in average household income, proportion of the employed population, proportion of the population not in poverty, the proportion of households not receiving public assistance, the proportion of the population 25 years of age and older with a bachelor's degree or higher, the proportion of the White population, residents in management occupations, mean housing value, and population density. We also include the proportion of homeowners that moved to the neighborhood in 2005 or later.

Gentrification and revitalization are complex processes that vary with the local context. Therefore, we do not attempt to subjectively assign the variables to specific categories. Rather, we conduct a principal component factor analysis to statistically identify groups of related variables indicative of neighborhood change. This approach attempts to deal with the challenge of operationalizing the terms revitalization and gentrification and allows for the possibility that gentrification and revitalization may exhibit some similar or overlapping features. In other words, we anticipate that the factor analysis will produce categories that reflect urban revitalization, as well as indications of potential displacement.

The factor analysis produced three factors that capture different dimensions of neighborhood revitalization and gentrification discussed in the literature. We label these factors Neighborhood Revitalization, Neighborhood Upscaling, and Neighborhood Build-out (see Table

A1 in the appendix for factor analysis results). The primary variables that contribute to the Neighborhood Revitalization factor are growth in income, employment rates, housing values, and the proportion of residents not living in poverty. This factor incorporates indicators of neighborhood improvement without clear warning signs of displacement and most closely reflects the findings of Stern and Seifert (2010) in their study of the arts and revitalization.

The other factors, which we label as gentrification factors, consist of variables denoting neighborhood improvement alongside signs of neighborhood instability. Neighborhood Upscaling describes places where there is a growing rate of employed residents and a declining proportion of residents on public assistance along with a growing White population, highly educated residents, and residents in management occupations. Neighborhood Build-out represents neighborhoods that are becoming denser, have an increasing proportion of new homeowners, and contain an increasing proportion of residents in management and those with high levels of income and education.

In short, the Neighborhood Revitalization factor is distinct from the other two because there are no entry signs of a gentrifying population (namely an educated, white professional population) while the other factors include these. However, given the available data, our factors cannot directly capture an important component of gentrification-- the displacement of existing, lower-income residents and their replacement by upwardly mobile professionals. What we study are variables indicative of *potential* displacement. Our study, therefore, is a better reflection of change in the status of places than changes in specific populations. To be clear, we are not able to directly identify in and outflows of residents to account for displacement, which is a limitation we hope will be addressed in future work. What we can study are factors indicative of these concepts and determine statistically how the arts are related to each of these factors.

The independent variables are two different sets of arts industries that represent the fine arts and commercial arts sectors. The commercial arts consists of people employed in film, music, and design industries. The fine arts consists of employment in sectors that tend to be a blend of for profit and nonprofit visual and performing arts and museums, art galleries, and fine arts schools (see Table A2). All industries are classified by the North American Industrial Classification System (NAICS) in the zip code business pattern (ZBP) dataset provided by the US Census Bureau. Our arts industry measures come from the year 2000 data file.

There are arguments both for and against the use of industry data to study the arts. Those who focus on artistic occupations point to two weaknesses of studying industries (Markusen et al., 2008). First, industry data does not include self-employed workers, which is an important portion of the arts workforce. Second, arts industry employment data include those who do not work in the arts so the data are not an actual count of artists. We agree with this assessment, but argue that any artistic production involves more than the artists themselves and that the nonartistic staff that contribute to an artistic business are a necessary component for the arts to flourish (Becker, 1982). The ideal approach would be to look at arts industries and occupations simultaneously, however, industry data is the only consistent source of data on employment in the arts across all US metros over an extended period of time at the micro level. Moreover, the NAICS dataset captures both the fine and commercial arts discussed in the literature (e.g. museums, performing arts centers, art galleries and film and design industries) as well as independent artists (NAICS 711510). Admittedly, the latter is not an ideal representation of individual artists given that they infrequently support themselves with their artwork alone (and, as a result, many are not counted in occupational data as well). The NAICS data do capture artists indirectly through their employment in arts industries. For these reasons, we feel the data

adequately models different forms of artistic presence and hope to improve representation as better data becomes available.

Alongside the arts variables we employ a range of social, economic, and housing variables taken from the 2000 Census as well as per capita employment in consumer amenities (e.g. bars, coffee shops, markets, and restaurants), drawn from the ZBP, to control for potential differences in neighborhood context. In this way, we can determine the extent to which the arts are related to neighborhood change independent of differences in the status of a neighborhood at the beginning of the study period in terms of variables like average income, level of education, or average age of residents, all of which may have an influence on revitalization and gentrification (see Table A3 for a complete list of variables).

To estimate the relationship of the arts industries to gentrification and revitalization we specify linear regression models using the neighborhood revitalization, neighborhood upscaling, and neighborhood build-out factors as dependent variables. We first run the regression model on the entire data set to get a sense of the relationships of the arts to neighborhood change overall. Next, because neighborhoods that experience different levels of change may have varying associations with arts activity, we employ quintile regression. This approach divides our dependent variable into five levels of change from the 20% of neighborhoods exhibiting slowest rate of change to the 20% with the highest rate of change. This is in contrast to other studies of gentrification, which define neighborhoods as either gentrifying or not gentrifying irrespective of the pace of change (Freeman & Braconi, 2004; Ley, 1986; Newman & Wiley, 2006). We feel that this approach better models the potential revitalization and gentrification scenarios and enables us to determine how the arts are associated with different levels of change. This approach is also useful in situations where the data is skewed as we find in studies of

gentrification.

The Fine Arts and Commercial Arts Are Associated with Different Types of Neighborhoods

We first examine the relationship of the fine arts and commercial arts to the three types of neighborhoods overall-- revitalizing neighborhoods and the two representations of gentrification, neighborhood upscaling and neighborhood build-out. Our results indicate that the arts are not a homogenous group. Rather, different arts activities exhibit distinct relationships to different types of neighborhood change.

Both groups of arts industries hold up as important variables under specific conditions (see Table A4 for regression results). The commercial arts have a significant association with both of the gentrification factors, but show no relationship to neighborhood revitalization. Conversely, the fine arts have a positive association with neighborhood revitalization, but correlate negatively with gentrifying neighborhoods. These findings lend support to claims of the power of the arts to revitalize central city neighborhoods, but also clarify their role in gentrification processes, revealing a link between the commercial arts industries and gentrification, but not with the fine arts.

The commercial arts exhibit by far the strongest association with the gentrification factor, neighborhood build-out, defined by neighborhoods that are becoming denser, experiencing rising homeownership rates, and contain an increasing proportion of upwardly mobile residents. Looking at the control variables, it makes sense that this form of gentrification is associated with neighborhoods that have a positive association with Whites, a young adult population, low rates of public assistance, and the presence of amenities at the start of the study period. Further, this form of gentrification is negatively related to areas where an employed and highly educated population already exists. We may infer from these results that, prior to the study period,

gentrification processes have likely been under way to some extent and that commercial arts are not only attracted to such neighborhoods, but also may be associated with their gentrification.

Commercial arts industries also display positive but weaker associations with the other gentrification factor, neighborhood upscaling. In this case, neighborhoods experience increasing employment, an influx of educated residents, Whites, and a declining proportion of residents on public assistance. These neighborhoods reflect considerably different associations with the control variables. This form of gentrification is strongly associated with neighborhoods that begin the study period with major challenges in that the proportion of employed residents and those not on public assistance show a strong negative relationship as does, to a lesser extent, the average rent variable. They do begin the study period with mixed indicators of gentrification through a negative association with amenities and young adults, but a weak positive relationship with median housing values and a White population.

In contrast, fine arts have a weak but positive association with revitalization, characterized by neighborhoods experiencing growing income levels, employment, housing values, and residents living above the poverty line. These neighborhoods resemble the neighborhood upscaling controls at the beginning of the study period with three notable exceptions-- they are marked by the presence of highly educated individuals and fewer people on public assistance, yet lower home values. This mix of educated residents and signs of poverty resembles Stern and Seifert's (2010) "pov-prof" neighborhoods, where they find strong associations with artistic activity. In sum, the different types of arts activity maintain separate relationships to revitalizing and gentrifying neighborhoods and emanate from different initial neighborhood conditions.

The Fine Arts and Commercial Arts Are Associated with Different Levels of Neighborhood

Change

Here, we turn to examining the relationships between the arts and the different neighborhood types based on the level of change. We break the level of change into five increments, or quintiles, organized from slowest to fastest. We continue to see that the two arts groups exhibit opposing associations with revitalization and gentrification at all five levels of change where the variables are statistically significant (see Tables A5-7 and Figure A1 for regression results). Results for the areas with the highest rate of change (81-100%) in each of the gentrification models (neighborhood upscaling and neighborhood build-out) are by far the most robust and are stronger than the model in the preceding section. Further, with the exception of the slowest growth areas (0-20%), the other levels of neighborhood change possess virtually no relationship to each of the neighborhood types. Therefore, much of what we capture in the model above actually may be a reflection of neighborhoods undergoing the most significant change over the study period and, to a lesser extent, those that have undergone very little change.

The fine arts retain their negative association to rapidly gentrifying neighborhoods (Tables A6 & 7), but in contrast to the full regression model, also exhibit a negative relationship to areas with the highest rates of neighborhood revitalization (Table A5). Rather, their modest association with this measure of neighborhood change occurs only in neighborhoods where revitalization processes are at their slowest. These neighborhoods are defined by a Hispanic population, educated residents, above average population density, White residents, and above average rent and tend to have fewer young adults and amenities, lower housing values, and a smaller foreign-born population.

For the commercial arts industries, the associations with the gentrification factors are strongest and significant in the areas experiencing the highest levels of change (Tables A6 & A7;

Fig. A1). Further, in contrast to the model in the preceding section, the commercial arts also display a strong link to the revitalization factor in high growth areas. In fact, the commercial arts maintain a strong relationship to high growth neighborhoods across all three neighborhood change factors. The link with neighborhood upscaling dramatically increases from the full model and there is a notable increase in the relationship with neighborhood build-out as well. With one exception (61-80% quintile in neighborhood build-out), there is no positive association between the commercial arts and slower levels of gentrification. The commercial arts industries also show a strong negative relationship where the fine arts have a positive relationship-- namely in slow growth revitalization neighborhoods (Fig. A1).

All high growth neighborhoods where the commercial arts are common are defined by low levels of employment and low levels of highly educated residents at the start of the study period. Neighborhoods with the most pronounced levels of neighborhood upscaling, however, do show some signs of gentrification. These neighborhoods contain amenities, an above average White population, and above average housing values, but also high levels of public assistance, low rent, and above average vacancy rates indicating further room for development. Mixed signs of gentrification similarly define neighborhoods exhibiting high rates of build-out. In addition to a strong association with commercial arts industries and the negative associations with employment and high education, these neighborhoods exhibit reasonably strong associations with amenities, housing values, White and foreign-born populations, young adults, and larger households, but also lower rent, public assistance, and vacant units. In other words, commercial arts industries are associated with areas with incipient gentrification, which rapidly develop over the study period.

Conclusions

This study tests the relationship of the fine arts and commercial arts industries to conditions indicative of neighborhood revitalization and gentrification in 100 US metros with a population over 500,000. Our research provides two important findings that inform the debate over how the arts are associated with neighborhood change. First, fine arts and commercial arts industries exhibit different associations with the types of neighborhood change. The fine arts, such as performing arts companies, museums, and arts schools are more likely associated with our measure of revitalizing neighborhoods. In contrast, the commercial arts, which include film, music, and design-based industries, are aligned with our measures of gentrification. Second, the arts vary in their relationship with the level of change that occurs in a neighborhood. The fine arts are found in slow growth neighborhoods that are experiencing gradual revitalization and not in gentrifying neighborhoods. Conversely, the commercial arts are strongly linked to neighborhoods experiencing the highest levels of change, particularly in rapidly gentrifying areas.

These findings extend the arts and neighborhood change literature and provide important knowledge for planners interested in incorporating the arts into their revitalization programs and engaging in "creative placemaking." For one, our work complements the case study research by statistically testing competing theories of the relationship between the arts and neighborhood change, suggesting generalizable patterns across many metros. We clarify that the arts are not uniformly implicated in either gentrification or revitalization processes. Rather, the commercial arts and fine arts show distinct associations to different types and levels of neighborhood change.

Extending from these findings, the results do not support claims that large cultural institutions and arts districts attract major development or the creative class because we did not find evidence that our group of fine arts activities are associated with gentrification and rapid

growth areas (Birch et al., 2013; Florida, 2002). We do not doubt that flagship arts and creative class strategies have remade some urban districts, but this is more likely the exception than the rule. Indeed, the results seem to validate studies which argue that museums and art centers are development catalysts only in rare instances (Grodach, 2010). Conversely, our work supports those case studies that find commercial arts industries spur gentrification (Catungal, Leslie, & Hii, 2009; Grodach, 2012; Hutton, 2009). Finally, the results provide some support, albeit weak, for the arts-based revitalization argument (Markusen & Gadwa, 2010; Stern and Seifert, 2010).

Building off of these findings, we need further research that helps to explain why these patterns occur. Are the fine arts unrelated to gentrifying areas because they cannot afford such neighborhoods or are they displaced in the gentrification process? Or, alternatively, are these arts groups not widely attracted to such areas? Why are the commercial arts sectors attracted to rapidly gentrifying areas and in what ways do they catalyze change there? To what extent are residents actually displaced from gentrifying arts neighborhoods and in what ways do they benefit, if it all?

Planners can and should take account of the consequences of advancing different forms of arts-based development. This includes considering the contexts in which different interventions are likely to be successful or harmful to existing communities. Currently, the most common arts development approach is to invest in flagship cultural facilities and arts themed districts to attract upscale development. However, this study shows that commercial arts industries are more likely to serve as growth catalysts. Further, the results also imply that commercial arts industries are strongly associated with displacement. As a result, if cities turn toward arts industries in their redevelopment programs, they must also pay close attention to the availability of affordable housing and mechanisms that mitigate the displacement of long-time

residents and small businesses. Alternatively, cities should not underestimate the potential stabilizing force of the fine arts, which may in fact be preferable to rapid growth and change in many communities. An understanding of how different arts activities relate to varying neighborhood contexts equips planners with knowledge to develop more informed and targeted arts development strategies.

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Appendix

Defining the Unit of Analysis

To approximate neighborhoods we rely on the zip code as the unit of analysis.[1] While not a perfect means of capturing neighborhoods, zip codes are the most consistent geography at which the Census reports business patterns data at the micro-level and so give us an approximation of neighborhood-level change. We study neighborhoods within a 10 mile radius of the central business district (CBD) in each metro. To define CBD locations, we use the 1980 Census of the Population Master Area Reference File 2 (MARF 2) available from the Inter-university Consortium for Political and Social Research (ICPSR). Although 1980 precedes the study period, we rely on this data because it is the most recent release that contains CBD coordinates. Our sample of 4,266 zip codes contains 100 out of the 101 MSAs with a population of 500,000 or above that existed in 2010.[2] Once we obtained the CBD coordinates, we identified coordinates (internal points) for all 2010 zip codes from the 2010 Zip Code Tabulation Area (ZCTA) Gazetteer file. We then used the vincenty STATA program to calculate the distance between each zip code and each CBD.

Zip code boundaries are not constant through time, but change along with the neighborhoods they represent. To ensure that all data we use approximates the same geographic area over time we adjust all data from 2000 to match 2010 ZCTA geographic boundaries. To do so, we first obtain the tiger/line shape files of 2010 and 2000 ZCTAs from the Census Bureau. Next, we intersect these two files using ArcGIS and weighted 2000 data based on the land area overlap with the 2010 ZCTAs.[3] In instances where more than one 2000 ZCTA overlaps with a single 2010 ZCTA, the sum of the weighted 2000 ZCTA data is calculated and used to approximate the neighborhood captured by the 2010 ZCTA. Finally, cases where data from 2000 is 0 and data from 2010 is non-zero or data from 2010 is 0 and data from 2000 is non-zero are

not included in our final sample. This avoids the occurrence of potentially invalid calculations in the growth variables described below.

Dependent Variables

To measure the dependent variables of neighborhood change (gentrification and neighborhood revitalization) we collected zip code data on a set of ten variables from the 2000 Census and the 2007-2011 American Communities Survey (ACS).[4] Using this data, we conducted a principal component factor analysis with a normalized varimax rotation to identify groups of related variables or factors. This results in the three dimensions of neighborhood change (Table A1).

TABLE A1 HERE

Independent and Control Variables

We define the independent variables, fine arts and commercial arts, based on prior empirical research as well as theoretical considerations. Each of the independent variables is a composite of arts industry employment per capita because we specifically want to model the concentration of neighborhood employment in the arts. To control for potential differences in neighborhood context, we employ a range of census and industry variables. Table A2 shows the complete list of arts industries in each category and Table A3 shows the list of control variables.[5]

TABLES A2 & 3 HERE

Regression Models

Each regression model takes the form:

$$\mathbf{y} = \mathbf{X}\beta + \mathbf{D}\gamma + \varepsilon$$

where **y** is a vector (n x 1) of observations of the dependent variable (revitalization or the gentrification factors); **X** is a matrix (n x p) of observations of the independent variables (the arts industries groups and control variables); β is a vector (p x 1) of regression coefficients; **D** is a matrix (n x j) of MSA dummy variables taking on a value of 1 when the zip code is nested in the MSA and 0 otherwise; γ is a vector (j x 1) of regression coefficients for each of the MSA dummy variables; and ε is a vector (n x 1) of random error terms. The MSA fixed effects, are not reported in the results, but are rather meant to absorb any contextual effects that may impact results. Our sample includes MSAs in multiple regions of the country that have likely experienced growth and gentrification differently. An example is the massive growth Sunbelt MSAs have experienced in contrast with many metros in the Rustbelt. The MSA fixed effects account for differences in MSA context by controlling for the effect of being in any given MSA in the sample. An f-test of the significance of the MSA fixed effects as a group is provided in all regression output. All results are obtained using ordinary least squares (OLS).

Prior to running regression models, we first examine the relationship of the dependent variables to the arts industries with scatter plots. This gives us a first cut of the relationships we are modeling (excluding controls) and helps to identify any significant outliers that may disproportionately influence results. We are especially concerned with outliers in this analysis because we know from abundant research that gentrifying neighborhoods comprise a small proportion of all neighborhoods in a region and that the arts are highly concentrated. In other

words, we anticipate that both dependent and experimental variables may be unevenly distributed. To address this, we reproduce all scatter plots with and without outliers and examine the differences.[6] In each case, the removal of outliers causes the slope of the fitted line to increase. Moreover, the slope of the fitted line remains statistically significant at the 99% confidence level with the exception of the scatter plot depicting commercial arts and neighborhood upscaling without outliers, which is significant at the 95% confidence level. The evidence suggests that extreme outliers impact results by *reducing* the power of the relationships. Outliers, therefore, are not driving the relationships or causing a relationship to appear when it does not otherwise exist.

We also check for the potential of multicollinearity among our exogenous variables by examining each variable's variance inflation factor (VIF) as well as the VIF overall. Based on this we remove some of our initial control variables (see Table A3). However, the VIFs indicate the effects of these variables are well represented by the other controls in the model. In our final model, none of the exogenous controls have a VIF above 5 and the overall VIF is 2.8.[7]

TABLES A4-7 & FIGURE A1 HERE

[1] The term neighborhood has both social and geographic connotations. We employ the term in this study simply to mean a small geographic area that is larger than a block and exists within a city or region. Like most neighborhood studies and planning efforts, we define the neighborhood based on the available census data geography. However, the reality is that neighborhoods are extremely difficult to accurately define because individual residents often have different perceptions of what constitutes the defining features and geographic boundaries of their neighborhood.

[2] Two issues pertain to the sample. First, we excluded McAllen-Edinburg-Mission, TX MSA from the study due to missing coordinate data for its central business district. Second, given the available data, it is possible that we do not capture arts activity that could have emerged around newer CBDs in our sample. However, given that gentrification tends to occur in older urban areas, we feel that we capture the vast majority of arts activity.

[3] We used two different weights. For absolute numbers (e.g. population), we calculated weights using the formula $w = a_{int} / a_{2000}$, where a_{int} is the land area from the 2000 ZCTA that overlaps with the 2010 ZCTA area and a_{2000} is the total area of the 2000 ZCTA. For ratios (e.g. the percent that walked to work), we calculated weights using the formula $w = a_{int} / a_{2010}$, where a_{int} is the same as above and a_{2010} is the total area of the 2010 ZCTA.

[4] The 2007-2011 ACS data is a collection of data over a five year time period and, therefore, does not capture one point in time. It is, however, the most reliable and best available source of SES data at the micro-level and has been employed by others in time-series analysis.

[5] Unfortunately, given data availability, we were not able to study potentially important variables related to land use and property characteristics though we recognize that they may have an effect on the relationship between arts industries and neighborhood change.

[6] To identify outliers, we calculate the z-score for each variable included in the scatter plot. If a zip code has a z-score of 3 or higher (or -3 or lower) we consider it an outlier.

[7] While we have made an effort to control for a wide range of variables, as in any time series model, changes can occur over the time period that we do not control for that may affect results.