

**IS THE CREATIVE CLASS ATTRACTED TO TOLERANT NEIGHBORHOODS?  
EVIDENCE FROM CHICAGO, BOSTON AND SAN DIEGO OVER 2000-2009**

**Abstract**

This research investigates the validity of one central creative-class claims at the sub-metropolitan level. Based on Richard Florida's discussion of the location choices of the creative-class and other scholars' study of the economic impacts of place-attractiveness, I hypothesized that this class is more attracted to tolerant neighborhoods than to traditional amenities, and used a spatial cross-regressive model to test it. The regression result rebuts this hypothesis and found that the creative class did not exhibit distinctive preference for amenity. I also found that immigration, which is one component of tolerance, actually drives away the creative class.

**Key words:** creative-class, human capital, amenity, spatial cross-regressive model

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## Introduction

This paper examines the validity of one of creative-class theory's central claims, that creative members are drawn to tolerant places, at the intra-city level, and finds it doesn't hold.

The creative-class theory was proposed by Richard Florida in 2002 and has two major themes: 1. A creative-class has become the primary economic agent to urban and regional growth especially high-tech growth, and attracting this class should top the agenda of local decision-makers; 2. Place-attractiveness, including physical urban amenities and intangible atmospheres, is central to the locational choices of the creative-class and is independent of employment status of the individual.

This theory received both substantial popularity and significant controversy, but both its proponents and opponents have only looked at the Metropolitan Statistical Area (MSA) level taking the city as a whole. This paper introduces the intra-city level into the debate and shows that although creative members might be drawn to tolerant cities, they are indifferent towards, or even stay away from tolerant neighborhoods in deciding residence *within* the city.

The method used to reach this finding is spatial cross-regressive model added with temporal comparison. The standard investigated unit is a census tract in Chicago, Boston or San Diego, and the investigation is whether the tolerance level of that census tract in 2000 impacts its creative-class level in 2009 when other conditions are controlled.

This paper is organized as follows. Chapter two outlines three describes the spatial

and temporal dimension of this study and the hypothesis tested. Chapter four explains the design of a spatial cross-regressive model and the relevant variables. Chapter five presents regression results and findings. Chapter six is conclusion and policy implication of the findings.

## **Literature Review and research hypothesis**

### **Human-capital development theory**

Traditional urban economic development theories claimed that cities became successful because they lower the costs to do business because of traits such as proximity to transportation routes or abundance in natural resources. Over the past few decades, however, more and more evidence had been found to support that the key to regional growth is not monetary capital but human capital - cities became successful because highly educated, productive workers live there. Cities need to first attract intelligent people, then the industries that employ them will follow.

The human capital development theory traces back to Jane Jacobs, who noted the city's role as incubator of new ideas and innovation (Jacobs 1961). Lucas and Romer used models to show that the regions with greater stock of human capital have higher output growth rate (Lucas Jr 1988) (Romer 1991); Rauch's work about SMSAs of the USA revealed the importance of public education investment: a SMSA's total factor productivity is raised by 2.8% through an additional year of education beyond the average level, and the social return is about 1.7 times the private return to schooling (Rauch 1993). Glaeser showed that cities with greater stock of human capital grew faster on the basis of productivity advantage rather than place attractiveness. He also found that cities rich in human capital are more capable of adapting to economic shocks (E. L. Glaeser and Saiz 2003) (E. L. Glaeser 2003).

## **Amenity-based urban growth**

Stock of human capital generates urban growth, but there emerges another question of what will attract people to cities in the first place. Traditional views believe that employment opportunities dominate people's residential choices, but studies show that people want more from the places they live. Lloyd and Clark found that amenities, or place attractiveness, have gained greater impact on workers' locational choices and "workers in the elite sectors of the postindustrial city make 'quality of life' demands and ... increasingly act like tourists in their own city." (Lloyd and Clark 2001). Moreover, Adamson, Clark and Partridge empirically showed that amenity exerts greater impact on skilled workers than on other workers. (Adamson, Clark, and Partridge 2004)

Some scholars studied whether city's role as production centers is gradually being replaced by its role as consumption center. They used historical data to show that over the past few decades cities became successful increasingly upon the basis of consumption and amenity. (Ed Glaeser, Kolko, and Saiz 2000)(Carlinio and Saiz 2008). Although other empirical research re-confirmed that productivity advantage is still the primary reason for cities' successes (E. L. Glaeser and Saiz 2003), the effect of place-attractiveness on urban growth remains a widely explored subject by urban scholars.

## **Main arguments of the Creative-Class Theory and its influence**

The creative-class theory has borrowed and refined the central ideas of human capital theory and amenity-based development theory. Brought forth in 2002 by Richard Florida, this theory has two core arguments: 1. Members of a creative class have become the most important factor to urban and regional development; 2. Cities that are abundant in amenities, especially certain types, are more likely to experience growth because they are attractive to the creative class (page 223, Florida 2002). The two arguments are explained in detail in the following sections.

### **Creative class to economic development**

The economic development mechanism of the creative class theory is similar to that of human capital development theory:

*“...human creativity has replaced raw materials, physical labor and even flows of capital as the primary generator of economic value.”* (Florida, in Lang and Danielsen, 2005, page 218)

*“essentially my theory says that regional economic growth is driven by the location choices of creative people – the holders of creative capital...”* (page 223, Florida 2002)

However, Richard Florida claimed that he had proposed a different theory because he specified creative people as a key type of human capital (page 223, Florida 2002). His

definition of creative people is based on occupation, and there are two groups in the creative class: 1. *Super-creative core*, including scientists, engineers, university professors, poets, novelists, artists, entertainers, actors, designers, and architects etc. These are the people who “work as producing new forms or designs that are readily transferable and widely useful”; 2. *Creative professionals*, such as physicians, lawyers and managers who “engage in creative problem solving, drawing on complex bodies of knowledge to solve specific problems.” (page 69, Florida 2002)

To summarize, Richard Florida claims that his theory is different from, even an improvement of, human capital theory. In later section of this paper we will see that this point is questioned by other scholars.

### **Lifestyle Amenities attract the creative class**

Richard Florida distinguished his theory from the amenity-growth academia by claiming that traditional elements of place-attractiveness, including sports stadiums, freeways, urban malls, themes parks are not attractive to the creative class, and what the creative class actually values in locations are: (page 218, Florida 2002)

**Thick labor market.** Creative people are not simply looking for a company providing a long-term job, but a region with many employment opportunities.

**Lifestyle.** This means those places offering a variety of “scenes” – music scene, art scene, technology scene, outdoor sports scene and so on. Dynamic nightlife is an important component of the lifestyle the creative class is looking for.

**Social interaction.** The creative class values “third places”, where people find less formal acquaintances and “hang out simply for the pleasures of good company and lively conversation.” (Oldenburg 1989). In chapter three, the intrinsic meaning and components of creative-class type of social interaction are discussed more systematically.

**Diversity/tolerance.** This is the most important factor in the creative class’s locational choices (Florida 2004), indicating places that are open to outsiders and are known for diversity of thought and open-mindedness. Diversity and tolerance in the creative-class theory both indicate low barrier for entry and weak social ties. “...*weak ties are critical to the creative environment of a city or region because they allow for rapid entry of new people and rapid absorption of new ideas and are thus critical to the creative process.*”(page 277, Florida 2002). Like *social interaction*, *diversity/tolerance* is more thoroughly discussed in chapter three of this paper.

**Authenticity.** These are places that have “real buildings, real people, real history”, in contrast to chain stores, chain restaurants and nightclubs”(page 228). The existence of an unique “music scene” is highlighted.

**Identity** – in an era when where people live and what they do have become main elements of their identities, the creative class is claimed to prefer places where they can “actively establish their own identity in places, and also to contribute to actively building places that reflect and validate that identity.”

Preference for places with traits above indicates that the creative class is more

attracted to organic and indigenous street-level culture than to big-ticket amenities, such as art museums, symphony orchestras, opera companies and ballet companies (page 182, Florida 2002). Which specific facilities could serve such amenity needs?

Richard Florida answers:

*“The culture is “street-level” because it tends to cluster along certain streets lined with a multitude of small venues. These may include coffee shops, restaurants and bars, some of which offer performance or exhibits along with the food and drink; art galleries; book stores and other stores; small to mid-sized theatres for films or live performance or both; and various hybrid spaces – like a bookstore/tearoom/little theatre or gallery/studio/live music space – often in storefronts or old building converted from other purposes. The scene may spill out onto the sidewalks, with dining tables, musicians, vendors, panhandlers, performers and plenty of passerby at all hours of the day and night.”* (page 183, Florida 2002)

To summarize, Richard Florida asserts that certain types of amenities, both intangible and tangible, are more important than traditional amenities valued by average people in the creative class’s location choices.

### **Influence of the creative class theory**

The creative-class theory received significant public policy resonance. Evans’s 2009

article wrote about the sprouting of the creative-class policy programs and the great influence of it:

*“Within a year or so, the Mayor of London’s Creative London commission and new agency (Creative London, 2004) had been replicated by a roll-call of Creative New York, Creative Amsterdam, Creative Berlin, Creative Baltimore, Creative Sheffield, Design Singapore, Design London and Creative Toronto, to name a few.”(Evans 2009)*

Despite the creative-class theory’s popularity among policy makers, it is widely dismissed in the academia. The next section summarizes the major points of the debate over the creative-class theory.

## **Debate over the Creative-Class Theory**

To begin with, the creative-class theory is criticized by some political science scholars as in general weak analysis, micro-sociology and political speculation because Richard Florida overly used his personal points of view and life experiences in the book(Peck 2005):

*“It is this shared awakening of an incipient Creative-Class consciousness that Florida sets out both to chronicle and to enable, typically adopting a second-person mode of*

*communication, while weaving often excruciating details of his own biography, lifestyle and consumption habits into a new-age narrative of individual freedom, economic destiny and slowly-dawning social responsibility. Not infrequently, these less-than analytical musings descend into self-indulgent forms of amateur microsociology and crass celebrations of hipster embourgeoisement.”(Peck 2005)*

Secondly, the creative-class theory is criticized as a fuzzy concept conflating distinctive groups of people. Scholars revealed that different components of the creative class have different preferences to amenities and urban environments, therefore public efforts aiming to enhance the city’s general place-attractiveness are likely to be useless (Houston et al. 2008)(Markusen 2006)(Reese and Sands 2008).

Thirdly, the constituents and the proxy of the creative class used in the book are questioned. The creative class is composed of occupation groups predominately representing high-tech sectors, but the classification of contemporary American occupations relies heavily upon formal education requirement of each occupation. In other words, the creative class theory as a matter of fact captures only the impacts of higher education on regional development, and the purported importance of creativity reflects only the economic contribution of human capital(Markusen 2006). This argument is supported by empirical studies: in 2004 Glaeser showed that when the metric of human capital, average educational attainment, enters the regression model to explain high-tech growth the creative-class metrics lose significance(E. Glaeser

2004). Other scholars compared creativity metrics with traditional regional growth factors in multivariate regression models, and discovered that the metrics of human capital and industry composition generally perform better than Florida's 3-T (Talent, Tolerance, and Technology) creativity measurement in explaining metropolitan job, income growth and job instability (Donegan et al. 2008).

The creative class theory is also questioned from another angle besides being called masked human capital theory. Some scholars argued that creativity is a much broader concept than education and occupation, and innovation comes from not only creative class but also workers outside this class:

*“People at all levels of education exercise considerable inventiveness. Home-care workers figure out ingenious ways of dealing with testy and disabled clients. People schooled on the streets can orchestrate brilliant petty crimes. Repair people and technicians find remarkable ways of fixing machines and improving their design. Some occupations with extensive educational requirements place people in extremely routine jobs - accounting, editing, and technical work in the law and sciences. Studies of emerging occupations often find no relationship between educational level and innovativeness - this was true of computer software in the late 1970s and early 1980s, for instance (Hall et al, 1983). It is simply incorrect, and indeed dangerous, to label people in large lumpy occupational groupings such as managers and professional workers as creative, and others - all production and service workers, for instance - as not creative.”* (Markusen 2006)(Hall et al. 1983)

Fourthly, one central claim of the creative-class theory, that urban amenities dominate the creative class's locational choices, is believed to be partially correct at best. Houston, Findlay, Harrison and Mason did a case study of creative-class in Scotland(Houston et al. 2008), and found that employment opportunities “predominantly shape the selections of migrant destinations”(Houston et al. 2008). They believed place-attractiveness is not a major factor independent of employment conditions in the migration of most economically active agents. However, they also admitted that “it is possible that, for some movers at least, the destination is selected first with employment being found or created after arrival(Houston et al. 2008)”. For example, place-attractiveness is important to people moving from employment to self-employment in mid-career. Similar finding about the importance of place-attractiveness to self-employed artists appeared in Ann Markusen's 2006 paper(Markusen 2006). In addition, this Scottish study of the creative-class shows that place-attractiveness exerts influence at the intermediate geographical level. Although long-range migration of talent is dominated by employment opportunities, skilled people are indeed sensitive to urban amenities in determining *exactly* where to live after they accept job offers.

Last but not least, the element of geography is urged to be added into the creative-class debate. Richard Florida was questioned when he ignored the spatial distribution of people's jobs and residence inside cities by primarily analyzing and comparing metropolitan areas(Chapple in Lang and Danielsen 2005, page 207), while

evidence shows that at the sub-metropolitan level the super-creative core – scientists, engineers, business managers etc – might actually prefer suburban areas lacking those amenities credited by Richard Florida, like in Atlanta (Sawicki, in Lang and Danielsen 2005, page 217). Other than scholars' observation, however, there is a lack of empirical examination of the validity of the creative-class theory at the sub-metropolitan level. This research aims to fill in this gap.

## **Research hypothesis**

Tolerance is highlighted in the creative-class theory as central to a city's economic future, and this concept has three components: tolerance towards same-sex marriage, presence of artists and embracing of immigration. Therefore, my research hypothesis is that given every other kind of urban amenity equal, the creative class tends to live in tolerant neighborhoods, namely those neighborhoods with higher percentages of same-sex households, artists and foreign-born immigrants. What's worth noting is that only the residential pattern of the creative class is studied and their working places are not explored in this research.

It is necessary to point out that this article aims only to explore the impacts of a new geographic unit on the theory. Therefore the metrics used by Richard Florida in his original work, such as the measurement of a neighborhood's tolerance, will be maintained despite the associated controversy. As a result, this study will not validate

or invalidate the theory as a whole, but brings in a new topic into the current creative-class discussion.

## **Spatial and temporal dimensions of the research**

Census tract is used as the sub-metropolitan geographic unit in this study, because census tract boundaries often align with major streets or political boundaries and are generally suitable as neighborhood equivalent (Allaire in American Planning Association, 1960). Therefore, census tracts are ideal to study how the creative class chooses residential neighborhoods.

Three cities, Boston, Chicago and San Diego are studied. They are manually chosen as representative cities respectively from the east, mid-west and west of the US sharing the following characteristics: 1. All three are listed by Florida in the top 20 large cities, namely those with a population over 1 million, with the highest shares of the creative class in their regional workforce. Boston was ranked the 3<sup>rd</sup>, Chicago the 14<sup>th</sup> and San Diego the 15<sup>th</sup> (Florida 2002, page 237); 2. Economies of these three cities feature high-tech growth and technological innovation. Boston is home to a number of world-class universities and is among the most educated cities in the US, residing the industrial region known as Route 128 which parallel Silicon Valley as America's technology innovation centers(Saxenian 1994). It is a hub of biotechnology and has the top life-science technology cluster(Milken Institue 2009). In addition, Boston was ranked by Richard Florida 2<sup>nd</sup> in his "High-Tech" Index and 12<sup>th</sup> in "Innovation" Index(Florida 2002, page 246). San Diego is also among the top 10 biotechnology clusters(Milken Institue 2009), taking up the 14<sup>th</sup> in "High-Tech" index and the 13<sup>th</sup> in "Innovation" Index(Florida 2002). Chicago was rated by Florida as 10<sup>th</sup> in "High-Tech" index but only 56<sup>th</sup> in "Innovation" index(Florida 2002).

However, it is still viewed by other scholars as a high-tech center especially of information technologies – it tops all American cities in terms of absolute employee number in Information Technology sectors (Chapple et al. 2004). To summarize, all three cities have substantial shares of the creative class in their workforce and well-performing high-tech industries. The distribution patterns of the creative-class, in comparison to foreign-born immigrants, in the three cities are shown in Figure 1 to Figure 3.

As for the temporal dimension, this research compares the same set of variables in 2000 and 2009. These two years are selected to capture data changes roughly in one decade, but 2009 instead of 2010 is used because census tract boundaries remained the same throughout 2000-2009 but were revised by American Census Bureau in 2010. The source of 2000 data is the 2000 decennial census, and that of 2009 data is the American Community Survey 2005-2009 5-year estimate.

## **Conceptual Framework, Metrics and Model Design**

Amenity-based urban growth is the conceptual framework of this study. As discussed above, scholars studied the effects of place-attractiveness on urban growth, and Richard Florida specifically placed tolerance above other types of amenities in the locational choices of the creative class. To test whether this claim is true at the sub-metropolitan level, I designed a spatial cross-regressive model to capture the impacts of a neighborhood's tolerance level in 2000 on its creative-class level in 2009. In that model, I included variables corresponding to other types of "traditional" urban amenity besides tolerance to control for influences coming from outside this concept. The following section discusses the major components of urban amenities and their corresponding metrics.

### **Components of Urban Amenity**

#### **Tolerance**

Tolerance has three pillars in Richard Florida's book: tolerance towards same-sex marriage, the presence of artists and the welcoming of foreign born immigrants. They are either reflective of a tolerant environment, or are integral parts of tolerance. According to Richard Florida they all have statistically reliable connections to a city's high-tech and innovative performances as well as population and employment growth (Florida 2002, page 254 to page 266). In this study I use the same set of variables

used by him - *percentages of foreign-born immigrants, same-sex unmarried households and artists*, gathered at the census tract level.

## **Social interaction features**

According to Richard Florida the creative class is searching for places where they can lead an independent lifestyle with weaker ties to other people. (page 277, Florida 2002). Places attractive to the creative class must have lifestyles amenities oriented towards young, single people, besides being tolerant (Page 294 – page 296, Florida 2002). Therefore two variables, the *median age* and the *percentage of unmarried people*, are used to determine if a neighborhood has that kind of lifestyle feature.

## **Four Traditional urban amenities**

Besides the types of urban amenities that are purported to be valued by the creative class, there are other elements of place-attractiveness impacting all people's locational choices. They are labeled traditional urban amenities in this study, in contrast to Richard Florida's lifestyle amenities.

In Edward Glaeser and his partner's influential work *Consumer City* there are four critical urban amenities (Ed Glaeser, Kolko, and Saiz 2000):

The first is the richness in services and consumption opportunities, featured by a greater number of restaurants and performance theatres. The second is aesthetic and physical setting, especially pleasant local weather. The third component is good

public services, meaning better schools and less crime. The fourth is transportation speed and the ease with which residents can move around.

The aggregate effect of the first three traditional urban amenities is measured by two variables – *median home value* and *median per capital income*. This indirect approach is adopted because data of the original proxies (number of restaurants and performance centers, crime rate and rating of schools, weather) are not available at the census tract level, but it is a reasonable inference that these amenities are more likely to concentrate and be consumed by wealthier neighborhoods. The fourth amenity, transportation, encompasses three metrics: the *percentage of workers spending less than 20 minutes to commute*, the *percentage of workers commuting more than 60 minutes* and the *percentage of workers that don't commute but work at home*.

### **Skill/creative-class as an amenity**

The Consumer City view ( e.g. Ed Glaeser, Kolko, and Saiz 2000) also claims that skilled neighborhoods are an attractive consumption amenity - people with both higher and lower educational attainments tend to live close to those who received more years of formal schooling. In this study, the percentage of people with bachelor or above degrees in a census tract is included to capture the effect of education as an amenity.

## **Measurement of the creative-class**

The concentration of the creative-class in a neighborhood is also measured by its educational attainment – the percentage of people with bachelor or above degree in 2009 because of two reasons. First population statistics by occupation is not available at the census tract level, and second as discussed above, the creative-class captures essentially the effects by education and loses statistical significance when education variables enter the regression. Therefore, in this study creative-class is approached by educational attainment.

## **Spatial Cross-regressive model**

Spatial cross-regressive model with spatially lagged explanatory variables was discussed in Florax and Folmer ( 1992). They are most appropriate for situations when

*“the proper spatial range of the explanatory variables is the location and its immediate neighbors (but not beyond). In the copycatting example above, this would imply a constraint on the range of neighbors considered in the reference space, for example, only the direct neighbors, but not the neighbors’ neighbors.”* (Anselin 2003)

The specification of a spatial cross-regressive model takes the form where spatially lagged variables are incorporated into the standard regression model as additional

regressors :

$$y = X\beta + WX\gamma + \varepsilon \quad (1)$$

$X$  is a set of explanatory variable and  $WX$  is their spatially lagged version.  $\beta$  and  $\gamma$  are parameters to be estimated and  $\varepsilon$  is residual.

Ordinary Least Square (OLS) method can be used to estimate the unknown parameters of the spatially lagged variables, which share properties with the original regressors and fit the assumption of non-stochastic.

For this study the following model, partially spatial lagged, is designed to capture the effects of urban amenities, especially those related to tolerance, on the concentration of the creative class in one neighborhood. The variables that are spatially lagged are the ones measuring the creative-class level and the tolerance level:

$$C_{ic09} = \theta LagC_{ic00} + \alpha Lagfb_{ic00} + \omega LagG_{ic00} + \sigma LagA_{ic00} + \varphi A_{ic00} + \beta W_{ic00} + \gamma T_{ic00} + \rho S_{ic00} + \mu_{ict} \quad (2)$$

$C_{ic09}$  is the percentage of creative members in census tract  $i$  of city  $c$  in 2009, measured as people with high educational attainments.  $LagC_{ic00}$  is a vector of spatially lagged creative-class 2000.  $Lagfb_{ic00}$  is a vector of spatially lagged percentage of foreign-born immigrants in 2000.  $LagG_{ic00}$  is a vector of spatially lagged percentage of same-sex households in 2000.  $LagA_{ic00}$  is a vector of spatially lagged percentage of artists in 2000.  $A_{ic00}$  is a vector of non-lagged percentage of artists in 2000.  $W_{ic00}$  is a vector of social wealth variables, including median per capita income and median home value, to capture the effectiveness of traditional amenities like public services, consumer goods, physical setting etc.  $T_{ic00}$  is a vector of transportation time, including three variables – percentage of workers commuting less than 20 minutes, percentage of workers commuting more than 60 minutes and percentage of people working at home.  $S_{ic00}$  is a vector of variables capturing social interaction features, including median age and the percentage of people that never married.  $\mu_{ict}$  is residual.

The general form of spatial cross-regressive model has both the original variables and their spatially lagged variants to enter regression, but this model keeps only the latter. This is because of exceptionally highly correlation between the original variables and their variants, shown in table 2 to table 4.

## **Estimation Result**

### **Tolerance-related variables.**

The full table of parameter estimation is table 5. This model fits well with all three cities: the adjusted R square is 49.95 % in Boston, 42.46% in Chicago and 51.87% in San Diego. This indicates that the model has captured the major factors responsible for the creative class's concentration.

Table 1 below summarized the estimate results tolerance-related variables in interest. The spatially lagged percentage of foreign-born immigrants in 2000 of a neighborhood is a significantly negative predictor of its creative class level in 2009 in all three cities, with the coefficients ranging from -0.38 to -0.34 at 99.99% confidence interval.

The spatially lagged percentage of same-sex marriage has no significance in Boston and San Diego, but in Chicago its coefficient is -8.589 with a 95% confidence level.

Artist presence has two variables in the model, one is spatially lagged and the other is not. Boston is not significant in either of the artist presence variable; San Diego is negatively significant for both artist presence variables at 95% confidence interval (coefficient is -1.076 for the non-lagged artist percentage and -3.419 for the spatially lagged one); Chicago presents mixed evidence for artist presence – the coefficient for

the non-lagged artist percentage is 0.6087 at 90% confidence level, but the coefficient is -1.545 for the spatially lagged artist percentage also at 90% confidence level.

Table 1: performance of tolerance variables in three cities

	Boston	Chicago	San Diego
same-sex significant?	no	yes(-)	no
artist significant?	no	yes (?)	Yes(-)
immigrants significant?	Yes(-)	Yes(-)	Yes(-)

The regression results rebut the hypotheses of this study. None of the tolerance-related variables are positive predictors of the creative-class level, and the presence of foreign-born immigrants is actually driving away the creative class members in neighborhoods over the course of 2000 to 2009.

### **Social interaction variables**

The *median age* and the *percentage of unmarried people* are the two variables accounting for the social interaction features of a neighborhood. Neither of them has

significance in Boston and San Diego, and both of them are negatively significant in Chicago – *median age* has a coefficient of  $-5.063e-03$  at 99.9% confidence level and the *percentage of unmarried people's* coefficient is  $-1.049$  at 99.99% confidence level.

### **Variables for traditional amenities**

*Median per capita income* and *median home value* of a neighborhood are variables regarding the impacts by good public service, low crime rate, abundant private services consumption opportunities and aesthetic physical settings. *Percentage of workers commuting less than 20 minutes per day*, *percentage of workers commuting more than 60 minutes per day* and *percentage of workers that work at home* are variables responsible for the impact of transportation accessibility.

In Boston both *median income* and *median home value* are positively significant, and their coefficients are respectively  $5.635e-06$  at 99.99% confidence level and  $2.715e-07$  at 90% confidence level. *Percentage of workers commuting more than 60 minutes per day* has a coefficient of  $0.7816$  at 99.99% confidence level while the *percentage of workers that work at home's* coefficient is  $1.18$  at 99% confidence level. *Percentage of workers commuting less than 20 minutes per day* has no significance in Boston.

In Chicago *median per capita income* has no significance but *median home value* has (coefficient  $6.578e-07$  at 99.99% confidence level). Like in Boston, *percentage of*

*workers commuting less than 20 minutes per day* is not significant but the other two transportation variables are – *percentage of workers commuting more than 60 minutes per day* is 0.3659 at 99% confidence level and *percentage of workers that work at home* is 2.77 at 99.99% confidence level.

In San Diego *median per capita income* has significance (coefficient 8.436e-06 at 99.99% confidence level) but *median home value* has not. *Percentage of workers that work at home* is still significant with coefficient 1.342 at 99.99% confidence level. *Percentage of workers commuting more than 60 minutes per day* lost significance but *percentage of workers commuting less than 20 minutes per day* became negatively significant, -0.2103 at 90% confidence interval.

Estimation results of the variables corresponding to traditional amenities show that these amenity factors are more relevant to the creative class's residence choice at the neighborhood level than Richard Florida's tolerance variables and social interaction variables. In all three cities, at least one of *median home value* and *median per capita income* is positively significant, so as *percentage of workers that work at home*. The evidence for the other two transportation variables is mixed, but apparently creative class is more likely to be drawn towards neighborhoods rich in traditional amenities with the option to work at home.

2000 Skill level is another consistently positive predictor of the 2009 creative class level. In all cities the spatially lagged *percentage of people with bachelor or above degree* is significant at 99.99% confidence level, with coefficients 0.7966, 1.146 and 0.4019 respectively for Boston, Chicago and San Diego.

## **Conclusion**

This research shows that at census tract level there is no evidence the creative class is attracted to neighborhoods residing more gay people and artists, and as a matter of fact this class is driven away by foreign-born immigrants. This study also shows that traditional amenities and skill as an amenity are more relevant to the locational choices of the creative class. Altogether it provides no evidence to such claim that the creative class prefers tolerant neighborhoods and exhibits distinctive amenity consumption patterns.

What's worth noting is that this research only aims to highlight the importance of geography in the debate around the creative-class theory through testing if one of its central claims holds at the neighborhood level. The results of this study did not explore other geographic units, therefore cannot be used to wholly support or rebut this theory. Future research shall test its validity at more geographic scales.

In addition, this study only examined if the creative class are drawn to tolerant neighborhoods in three cities. Future research can expand the list to include more cities, and compare the results in different city groups. For example, Chicago can be compared with other two mega-cities in the US, Los Angeles and New York. The application of the research method developed in this research to more cities will help us better understand the commonality and variation of the locational choices of the creative class, and facilitate the making of more informed local planning policies.

# Tables and Figures

Figure 1: 2000 Chicago Distribution of the Creative-Class and Immigrants

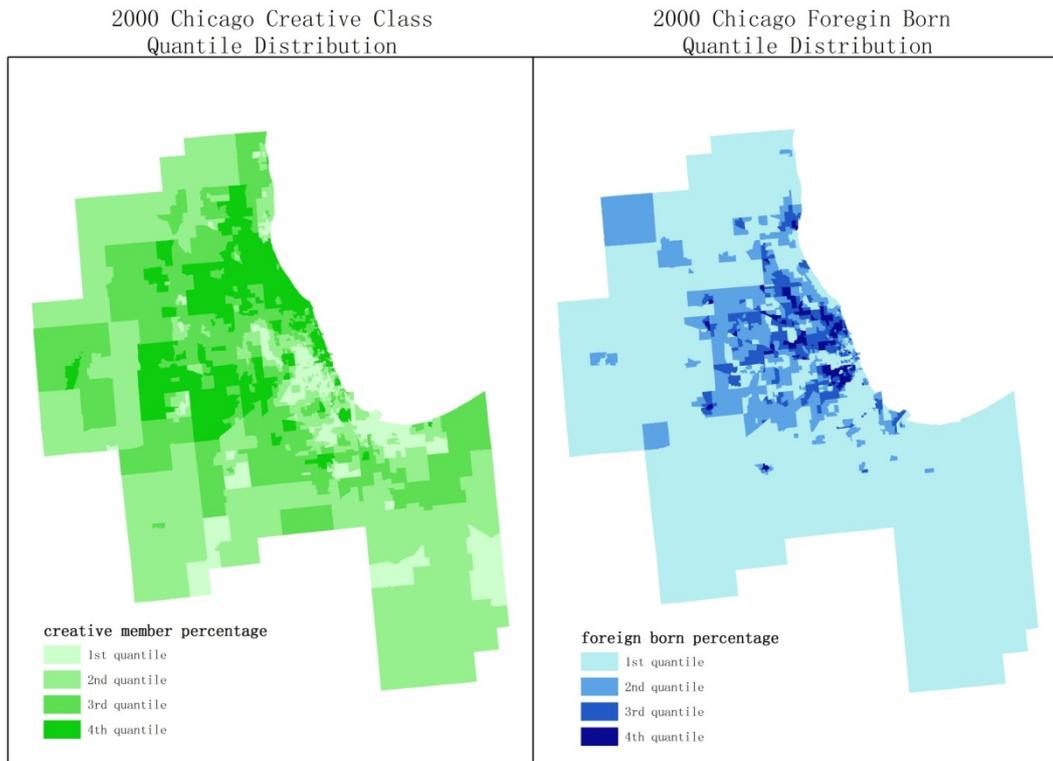


Figure 2: 2000 Boston Distribution of the Creative-Class and Immigrants

2000 Boston Creative Class  
Quantile Distribution

2000 Boston Foreign Born  
Quantile Distribution

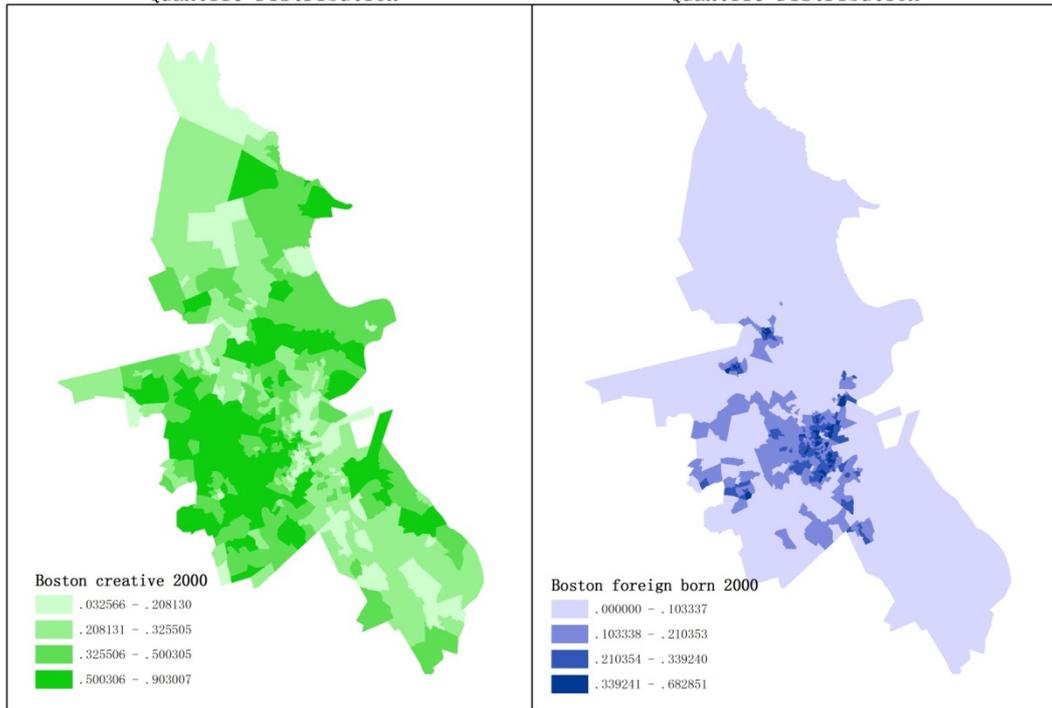


Figure 3: 2000 San Diego Distribution of the Creative-Class and Immigrants

2000 San Diego Creative Class  
Quantile Distribution

2000 San Diego Foreign Born  
Quantile Distribution

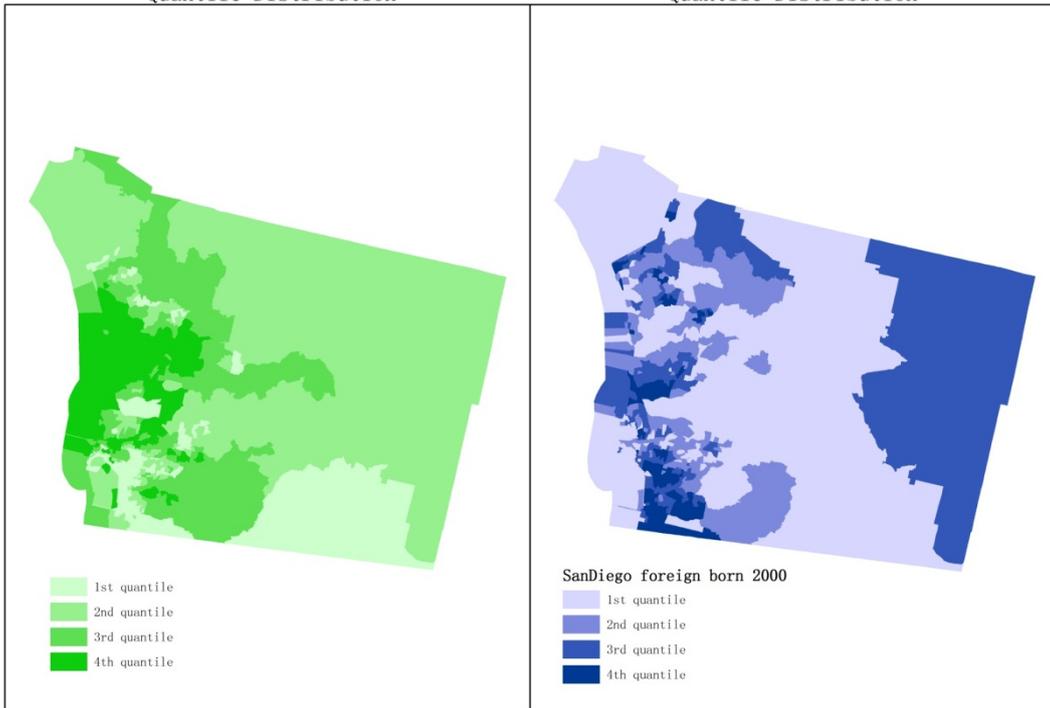


Table 2: correlation of variables in the spatial cross-regressive model for Chicago

Chicago								
	lagsk00	lagfb00	sk00	fb00	samesex00	lagssex00	artist00	lagart00
lagsk00	1.000							
lagfb00	-0.021	1.000						
sk00	0.885	-0.038	1.000					
fb00	-0.043	0.855	-0.059	1.000				
samesex00	0.084	0.243	0.134	0.229	1.000			
lagssex00	0.155	0.355	0.117	0.294	0.582	1.000		
artist00	0.043	-0.033	0.043	-0.031	0.015	0.039	1.000	
lagart00	0.113	-0.053	0.113	-0.039	0.069	0.094	0.189	1.000

Table 3: correlation of variables in the spatial cross-regressive model for Boston

Boston								
	lagsk00	lagfb00	sk00	fb00	samesex00	lagssex00	artist00	lagart00
lagsk00	1.000							
lagfb00	-0.109	1.000						
sk00	0.879	-0.111	1.000					
fb00	-0.120	0.873	-0.059	1.000				
samesex00	0.096	0.315	0.145	0.236	1.000			
lagssex00	0.151	0.431	0.127	0.380	0.743	1.000		
artist00	0.318	-0.002	0.127	-0.085	0.202	0.206	1.000	
lagart00	0.497	0.002	0.445	0.004	0.252	0.386	0.383	1.000

Table 4: correlation of variables in the spatial cross-regressive model for San Diego

San Diego								
	lagsk00	lagfb00	sk00	fb00	samesex00	lagssex00	artist00	lagart00
lagsk00	1.000							
lagfb00	-0.413	1.000						
sk00	<b>0.891</b>	-0.389	1.000					
fb00	-0.369	<b>0.831</b>	-0.397	1.000				
samesex00	0.023	0.057	0.071	-0.025	1.000			
lagssex00	-0.005	0.088	0.012	0.053	<b>0.814</b>	1.000		
artist00	0.030	-0.231	0.047	-0.208	0.103	0.126	1.000	
lagart00	0.041	-0.417	0.046	-0.372	0.215	0.223	0.258	1.000

Table 5: Estimation result of the spatial cross-regressive model in three cities

	<b>Boston</b>	<b>Chicago</b>	<b>San Diego</b>
median age	-0.002747	-5.063e-03 **	0.001342
single	0.108	-1.049 ***	0.008294
samesex	null	null	null
artist	1.238	0.6087 .	-1.076 *
income	5.635e-06 ***	0.000001711	8.436e-06 ***
housevalue	2.715E-07 .	6.578e-07 ***	2.348E-07
<20min	-0.01296	0.1368	-0.2103 .
>60min	0.7816 ***	0.3659 *	0.0749
work home	1.18 *	2.77 ***	1.342 ***
lagged foreign 00	-0.3441 **	-0.3367 ***	-0.3787 **
lagged creative 00	0.7966 ***	1.146 ***	0.4019 ***
lagssex00	-3.019	-8.589 *	3.007
lagart00	-0.7251	-1.545 .	-3.419 *
adjusted R	0.4995	0.4246	0.5187

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