

Exploring Definitional, Spatial, and Temporal Issues

Associated with the Creative Class

And Related Variations in Creative Centers

by

Anthony J. De Luca Jr.

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Urban and Environmental Planning

Approved April 2014 by the
Graduate Supervisory Committee:

Elizabeth A. Mack, Chair
Daniel Arreola
Sergio Rey
Emily Talen

ARIZONA STATE UNIVERSITY

May 2014

ABSTRACT

There are many different approaches to the analysis of regional economic growth potential. One of the more recent is the theory of the creative class, and its impact on creative centers. Much of the criticism surrounding this theory is in how the creative class is defined and measured. The goal of this thesis is to explore alternate definitions to better understand how these variations impact the ranking of creative centers as well as their location through space and time. This is important given the proliferation of rankings as a benchmarking tool for economic development efforts. In order to test the sensitivity that the creative class has to definitional changes, a new set of rankings of creative centers are provided based on an alternate definition of creative employment, and compared to Richard Florida's original rankings. Findings show that most cities are not substantially affected by the alternate definitions derived in this study. However, it is found that particular cities do show sensitivity to comparisons made to Florida's definition, with the same cities experiencing greater variations in rank over time.

Keywords: Creative class; creative economy; creative cities; knowledge workers; human capital.

DEDICATION

To my family and friends, whose confidence in me
often surpassed the level of confidence that I had in myself

ACKNOWLEDGEMENTS

First and foremost I would like to express my deepest gratitude to my Thesis Chair, Dr. Elizabeth Mack for her unyielding commitment and dedication to me and this project. If not for her expertise, guidance and support this would not have been possible. Further I would like to thank my committee members Dr. Sergio Rey, Dr. Daniel Arreola, and Dr. Emily Talen for graciously accepting the role of advisor on this project by offering their highly respected academic knowledge and professional guidance that helped make this a piece of work that I can be proud of. I would also like to thank all of my professors at Arizona State University, whom over the last four years inspired me to pursue my education to this level, something I did not previously think I could achieve.

TABLE OF CONTENTS

	Page
LIST OF FIGURES _____	vii
LIST OF TABLES _____	viii
CHAPTER	
1 INTRODUCTION _____	1
2 LITERATURE REVIEW _____	8
Section 2.1 Human Capital _____	8
2.1a Importance of Human Capital _____	10
Section 2.2 Creative Cities _____	13
Section 2.3 Richard Florida’s Creative Class _____	14
Section 2.4 Proponents of the Creative Class _____	17
Section 2.5 Critiques of the Creative Class _____	19
2.5a Social Equity _____	19
2.5b Connection to Economic Growth _____	20
2.5c Measurement _____	22
2.5d Definition _____	23
3 DATA _____	26
Section 3.1 Occupational Data _____	26
Section 3.2 Employment data _____	26
Section 3.3 Population Data _____	27
Section 3.4 MSA Boundary Delineations _____	28
Section 3.5 Derived Data _____	28

CHAPTER	Page
Section 3.6 Definitions to be Derived _____	29
4 METHODOLOGY _____	31
Section 4.1 Alternate Definition of Creative Employment _____	31
Section 4.2 Data Processing _____	33
Section 4.3 Rankings _____	34
Section 4.4 Correlation _____	34
4.4a Spearman's Rho _____	35
4.4b Kendall's Tau _____	36
5 RESULTS _____	38
Section 5.1 Sensitivity of Creative Centers by Definition _____	39
Section 5.2 Per Capita Evaluations _____	41
5.2a Per Capita Population _____	42
5.2b Per Capita Labor Force _____	43
5.2c Per Capita Population Florida's and Thesis Definition ____	45
5.2d Per Capita Labor Force Florida's and Thesis Definition _	46
Section 5.3 Evaluation of Creative Employment Over Time _____	47
5.3a Evaluation of Creative Employment 2000 and 2005 ____	48
5.3b Evaluation of Creative Employment 2005 and 2010 ____	49
6 DISCUSSION/CONCLUSION _____	51
REFERENCES _____	56
APPENDIX	
A. Standard Occupational Classification (SOC) major groups _____	64
B. North American Industry Classification (NAICS) codes _____	86

APPENDIX	Page
C. List of MSAs ranked by all measures _____	89
D. Raw data values by each measure ranked by year _____	93
E. Spearman's Rho correlation coefficients for rankings that were compared ____	100
F. Kendall's Tau correlation coefficients for rankings that were compared _____	102

LIST OF FIGURES

FIGURE	Page
1. Map of the difference in rankings between Florida’s original definition and the thesis derived definition. _____	41
2. Map of the difference in rankings between Florida’s original definition of the percentage of creative employment, and the thesis derived definition of per capita total population. _____	43
3. Map of the difference in rankings between Florida’s original definition of the percentage of creative employment, and the thesis derived definition of per capita labor force. _____	45
4. Map of the difference in rank between 2000 and 2005. _____	49
5. Map of the difference in rank between 2005 and 2010. _____	50

LIST OF TABLES

TABLE	Page
1. Measures by which MSAs were ranked and compared _____	30
2. SOC major groups, core creative industries, and NAICS codes _____	33
3. Explanation of Rho and Tau values _____	37

CHAPTER 1

INTRODUCTION

There are many different approaches to the analysis of regional economic growth potential. A more recent explanation for why regions grow at different rates is the theory of the creative class. Richard Florida, in his book *“The Rise of the Creative Class”* describes creative centers as having an abundance of high technology industries, a highly educated labor force, and a society that values creativity, individuality, difference, and merit as the backbone to economic success (Florida, 2002). Florida theorizes that these are now the attracting forces for industry location, which is in contrast to Alfred Weber’s industrial location theory in which industry location is market or resource driven (Weber, 1929). This theory reverses the traditional logic that people follow jobs and suggests that jobs follow creative people. Creative class theory is based on the attraction of human capital by focusing first and foremost on providing a sense of place to its members. This in turn becomes the attracting force for industry (Florida, 2002). For cities and regions the dilemma then becomes how to provide the right environment that will attract and retain these “creative” individuals.

Since the theory of the Creative Class was published, it has become popular in the evaluation and ranking of creative centers. From a practical standpoint these types of rankings are increasingly being used by economic development professionals as a mechanism to market cities (Florida, 2002; Donegan et al., 2008; Blakeley & Green Leigh, 2010). For example, Forbes frequently publishes rankings of places based on a variety of criteria including “Best Places for Businesses and Careers” (Badenhausen, 2013).

City rankings may also be used as a benchmarking and strategic planning tool in order to identify regional strengths and weaknesses and to determine where focus needs to be placed. A strategic planning approach to economic development may also try to identify a region as a center for a specific industry (Blakeley & Green Leigh, 2010), for example Charlotte as a center for finance, San Diego as a leader in pharmaceuticals, and biotechnology in Boston (Blakeley & Green Leigh, 2010). Again, city rankings by various measures can be seen as a way to validate some of these efforts; a high ranking on a list of finance centers for Charlotte might be an example. These rankings are not without issue however. Studies have illustrated that the methodology underlying rankings construction is a driver behind the eventual rankings produced (Chapple et al., 2004). This has important implications for regional benchmarking, which has become so critical to fostering regional competitiveness (Huggins, 2010). Efforts to benchmark regions are becoming increasingly important in an intensively competitive global economy.

Florida (2002) has hypothesized that the presence of highly creative people and related creative industries are a modern day component to globally competitive cities. However, there are many different ways people might quantify the presence of creative people. Florida offers one way to define this group that has become a controversial point in theory and in practice. It is hypothesized in this thesis that the way we quantify creativity may impact the rankings of places. This thesis looks at one alternate way to define the creative class in order to evaluate the sensitivity of rankings to definition.

The main characteristic of a member of the creative class is that creative class individual's work with their minds "to create meaningful new forms" (Florida, 2012 p.38), where a higher level of education is required; as opposed to working class who

work in professions that are more physical in nature (Florida, 2012). It is interesting and important to note that Florida is not suggesting that only those who have advanced degrees can determine the creative class. More generally he notes that the occupations typically held by members of the creative class require higher levels of human capital, which is often a combination of education and level of acquired skills (Lucas, 1988; Florida, 2012). Studies have shown that cities with high levels of human capital have more robust economies (Lucas, 1988; Shapiro, 2003; Hoyman & Faricy, 2009).

Therefore, in his study Richard Florida strives to make a connection between the creative class and human capital in order to justify his argument that the creative class is an important component to economic growth.

There are several critiques of the creative class ranging from its promotion of gentrification and income inequality (Peck, 2005), to its fuzzy causal logic (Markusen, 2006). Gentrification is an issue that can create major problems, where redevelopment of an inner city neighborhood to attract a creative class presence leads to inflated rents and home prices, displacing many current residents thus destroying the diversity that is desired by the creative class. Given these arguments, it is not surprising that areas with a high concentration of creative class members are often the areas where the greatest economic inequality exists (Peck, 2005; Scott, 2006).

Other criticisms of creative class initiatives include the fact that there is little empirical evidence to support the idea that they will result in economic vitality in the U.S. (Donegan et al., 2008). Implementation of policies and distribution of funds without a full understanding of what can be expected can cause more harm than good, emphasizing that serious evaluation and comparison to traditional development theories

is needed (Donegan et al., 2008). There are also organizations such as the conservative Manhattan Institute that see the creative class ideals as anti-business development, and an attack on suburban life and family values (Peck, 2005).

A related concern about creative class theory is its dubious link between creative class presence and economic growth (Comunian et al., 2010). In the results of their study Comunian et al (2010) state that even though many “bohemians” such as artist, dancers, musicians, and actors, combine human capital (by having degrees) with the artistic expression apparent in the creative class, they earn comparatively lower salaries in the job market, due to the fact that they are not always employed in their desired “creative” occupation and must take lower end service work to support themselves. Thus, although these people are involved in creative activities, they are excluded from Florida’s definition because their paid occupation is recorded as their primary occupation (Markusen, 2006). The problem is in determining where they fit in to the creative class and whether there are jobs to support them. And further, whether or not they are contributing to the economic growth of a city as members of the creative class as Florida has suggested (Comunian et al., 2010). Aside from its promotion of gentrification, income inequality, and its dubious impact on economic growth, another critique of the creative class is how it is defined.

Ann Markusen states that Florida has defined an entire class of people who have a common interest, which is hardly possible to measure, and that it is defined only by high levels of higher education (Markusen, 2006). Also, Florida’s use of Standard Occupational Classification (SOC) major groups to identify creative occupations is too broad a method that results in the inclusion of a wide variety of occupations (Markusen,

2006). Because of this, his definition does not properly characterize the truly “creative” aspects of creative industries (Markusen, 2006). Further, Florida’s use of Metropolitan Statistical Areas as areas of study is problematic as MSAs do not remain constant over time and there is no standardized delineation that can be applied to all metro areas in the United States.

To better understand how varied definitions of the creative class impact the location and ranking of creative centers through space and time, employment based definitions of creative centers will be derived from the 2000 occupationally based creative class definitions provided by Florida (2002),¹ and the location and ranking of metropolitan statistical areas (in terms of creative class presence) examined. The information obtained for the analysis will be used in order to answer the following questions:

1. Are creative center locations sensitive to how the creative class is defined?
2. Does the location of creative centers change over time?

The first step in the analysis will be to derive an employment based definition of the creative class. Focusing on Florida’s super-creative core, an alternate list of “creative” occupations will be derived from the 2-digit North American Industry Classification System (NAICS) codes as outlined by the Bureau of Labor Statistics (BLS) that are most closely aligned with the SOC major groups used by Florida (Florida, 2002). Preliminary matching determined that the industries within the following 2-digit NAICS codes: (51) Information; (54) Professional and technical services; and (71) Arts, entertainment, and recreation best encapsulate the occupations that fall within Florida’s SOC codes.

¹ To further aide in this determination a list of fifteen core creative industries provided by John Howkins in his book *“The Creative Economy: How People Make Money from Ideas”* was also used as a reference.

Second, the county level data obtained for each year of the analysis (2000, 2005, and 2010) will be aggregated to the 2000 metropolitan statistical area (MSA) boundaries obtained from the National Historic Geographic Information System (NHGIS) to produce rankings of metropolitan areas in terms of their creative class presence. This is to control for the fact that MSA boundaries change over time and may artificially inflate or deflate creative class presence over time.

After determining which industries coincide with the occupationally oriented super-creative core and aggregating these data to the 2000 metropolitan statistical area boundaries, three definitions of creative class presence will be examined:

- The definition of creative employment that is most closely aligned with Florida's thesis.
- A per capita measure of creative employment in each MSA that is most closely aligned with Florida's thesis.
- A per capita measure of creative employment in each MSA that is based on an alternate definition of creative employment that will be developed by the author.

To answer question one, the 2000 rankings of creative metropolitan areas from Florida (2002) will be compared with the rankings produced from the three alternate definitions highlighted above. This comparison of rankings will highlight the extent that rankings of metropolitan areas are sensitive to changes in how the creative class is defined. To answer question two, rankings of metropolitan area creative class presence from 2000, 2005, and 2010 will be compared to evaluate the volatility in rankings over time. It will also highlight if the relative volatility in rankings is more pronounced for some definitions of the creative class as opposed to others.

The results of this study show that creative center locations are not particularly sensitive to how the creative class is defined. Also it is shown that creative center locations are robust over time. The goal of this thesis is to explore how varied definitions of the creative class impact the rankings of creative places through space and time. This information is important to planning practitioners who may look to rankings of cities as a guide in the development of marketing strategies that will promote regional attractiveness to businesses and people.

This thesis is set up in the following way. Presented in section 2 is a more in depth discussion of the concept of human capital, creative cities, Florida's creative class theory, its proponents and critiques. Section 3 describes the data and its use in this analysis. In section 4, an explanation of the methodology used in this analysis including the formulation of the alternate definition of creative industries, data collection, the use of a GIS, the measures used to determine correlation between the comparative rankings that will be developed, and the process by which those rankings have been derived. Section 5 will be a presentation of the results, followed by section 6, which is a discussion of the issues and challenges encountered in the analysis that may or may not have affected the results. And finally, a conclusion of the overall effectiveness of this research and its significance to the planning profession, suggested areas for further research, and final thoughts.

CHAPTER 2

LITERATURE REVIEW

Local governments as well as business leaders and professionals working with city planners are tasked with finding the most effective way to boost the economic development capacity of their regions. Increasingly, human capital has become an important area of focus in the determination of those strategies (Storper & Scott, 2008; Pang, 2009; Marrocu & Paci, 2012). This has become integral to the competitiveness of the global economy since the shift from traditional manufacturing to technology intensive jobs, where knowledge and ideas have replaced the physical power of the workforce (Howkins, 2001; Florida, 2002; Christopherson, 2004; Pratt, 2008; Atkinson & Easthope, 2009; McGuigan, 2009; Brown, 2010; Scott, 2010; Comunian et al., 2011;). Creative class theory is related to this emphasis on human capital. This theory suggests that highly creative people are attractive forces for businesses and a vital component to economic growth. It also suggests that the economic vitality of places is linked to their ability to retain and attract these individuals. Creative class theory is not without controversy however. Many scholars raise questions about the theory in terms of its promotion of gentrification and social inequality (Zukin, 1987; Peck, 2005; Markusen, 2006; Donegan et al., 2008; Waitt & Gibson 2009), as well as the notion that the creative class has a direct connection to economic growth (Peck, 2005; Markusen, 2006; Donegan et al., 2008; Hoyman & Faricy, 2009; Lorenzen & Andersen, 2009; Comunian et al., 2010; Kratke, 2010).

2.1 Human Capital

Human capital is comprised of the educational attainment, skill, and competency level of the available labor force (Becker, 1962). Unlike physical capital which includes machinery, buildings, and land which can be owned by a firm or government, human capital consists of a person's knowledge, acquired skills, and level of experience that is retained by the individual (Pang, 2008; Pratt, 2008). Therefore, human capital describes the people who have obtained academic degrees through formal education, as well as those who may not have a degree but have many years of on the job training and experience (Lucas, 1988). This is important to note because formal education, and on the job training are equally important when it comes to defining human capital (Lucas, 1988). It suggests that a young person with a degree and someone with professional experience but no formal education can possess similar levels of human capital (Lucas, 1988). There are instances where experience can outweigh a degree however. For instance, in jobs where skill develops over time, productivity increases with on the job experience. This skill level is something that would be lacking from someone who has just completed a degree and has not yet entered the workforce (Marrocu & Paci, 2012). In light of this important aspect of human capital, recent efforts to measure human capital place emphasis on skills in order to evaluate individual capabilities based on other components than education alone (Marrocu & Paci, 2012).

A related, but difficult component of human capital to measure is creativity (Howkins, 2001; Throsby, 2001; Scott, 2010). This is particularly important to creative class theory, which will be discussed later on in this section, which partitions the workforce into occupations that require relatively more or less creativity. An underlying assumption about human capital is that it involves creativity and vice versa (Markusen,

2006; Markusen, et al. 2008). While this may be true to some extent, the relationship between human capital and creativity is difficult to determine because creativity is difficult to measure (Howkins, 2001). A distinction must first be made between the nature of creativity that is either personal, and creativity as an activity that generates a marketable product. It is easier to quantify human capital in terms of education and skill level of the existing labor force, but much more difficult to quantify the creative aspect, and nearly impossible to place a value on either (Howkins, 2001).

2.1a Importance of Human Capital

Despite these measurement difficulties, human capital has become the driving force of the global economy (Barro, 2001; Vorley et al., 2008; Bille, 2010). It is widely believed that places with an educated, idea driven labor force are more competitive than locales with lower levels of human capital (Lucas, 1988; Barro, 2001; Shapiro, 2006; Hoyman & Faricy, 2009). Studies show that places with a larger presence of institutions of higher learning also have a higher percentage of workers in human capital intense jobs (Barro, 2001; Abel & Deitz, 2011). Therefore, a regional focus on improving educational attainment and skill level will result in the ability to supply a larger stock of human capital to the knowledge intensive industries that have emerged over the last three decades (Martin & Sunley, 1998). It is also hypothesized that places with a higher concentration of creative people are more competitive in today's informational economy (Florida, 2002; Florida, 2012).

Studies have shown that cities with high levels of human capital have more robust economies (Lucas, 1988; Shapiro, 2006; Hoyman & Faricy, 2009). Thus, cities with an abundance of knowledgeable skilled workers will experience a more productive,

competitive, growing economy than cities with a less educated workforce (Lucas, 1988; Howkins, 2001; Hoyman & Faricy, 2009; Hatcher et al., 2011; Stolarick & Currid, 2013). This is due to the fact that the new knowledge economy has largely replaced traditional labor intensive jobs with more favorable innovative, creative, and knowledge intensive careers that require higher levels of education and skill (Pang, 2008; Florida, 2002; Scott, 2006). These knowledge workers as they have become known, also play a positive role in entrepreneurship and innovative ventures (Lucas, 1988; Pang, 2008; Florida & Mellander, 2010; Marrocu & Paci, 2012), which are considered to be leading indicators of economic growth (Florida, 2002; Currid, 2006; Florida & Mellander, 2010). There is also evidence that knowledge intensive industries are more resilient in times of economic crisis (Stolarick & Currid, 2013). For example, research shows that unemployment levels were lower during the recession of 2008 in cities with a more highly educated workforce (Stolarick & Currid, 2013).

With this shift in skill requirements, there has been an increased effort by local governments to promote programs that will develop the educated and skilled labor necessary in order to fill these positions (Kitchens, 2008; Marti-Costa, 2011). These, investments in human capital can take several forms. First, local government officials, business leaders, and economic development planners can broaden their investment through the support of education and training programs (Becker, 1962; Kitchens; 2008). One such program is the “Kalamazoo Promise”. This tremendously successful program conceived in 2005, is fully funded by donations from the local business community and promises to provide 65-100 percent of the tuition to Michigan state colleges and universities for Kalamazoo public school graduates (Kitchens, 2008). Second, people can

make investments in their own education and training, with the expectation that they will see a return on that investment through an increase of potential earnings over time (Becker, 1962). Third, firms make investments in human capital by way of hiring programs and training programs with the expectation that these initial costs will be offset by increased productivity and profits over time (Becker, 1962).

It is believed that by making these investments three important positive externalities will come about. First, cities with a human capital rich labor force become competitive as places that will attract industries looking for qualified workers to satisfy their employment needs (Howkins, 2001). In the new economy, firms and businesses require workers to possess the necessary education and skills that will increase their productivity and growth, and will seek locations where they can find qualified labor. Policies and programs that target human capital as a deliberate growth strategy will offer cities the benefit of a well prepared workforce, thus providing an attractive location for firms and businesses (Florida, 2002).

Second, in addition to serving as an attractive locational force, human capital produces knowledge spillovers. Knowledge spillovers involve the exchange of information, ideas and skills between people that occur through formal and informal interactions (Comunian et al., 2010). These spillovers are believed to increase the productivity of the workforce (Jacobs, 1969; Lucas, 1988; Rauch, 1991; Martin & Sunley, 1998; Shapiro, 2003; Abel et al., 2012; Florida, 2012). It is further suggested that places with higher densities of firms and people will see an increase in this spillover effect leading to even higher levels of human capital and greater productivity by increased levels of human interaction (Jacobs, 1961; Lucas, 1988; Abel et al., 2012).

Third is the notion that people with higher levels of education and experience are likely able to find jobs where they will make more money and more disposable income (Currid, 2009; Brown & Scott, 2012). This increases overall personal spending on housing, clothing, food, luxury items, entertainment and recreational amenities, leading to a larger tax base for the city (Currid, 2009; Brown & Scott, 2012). As this occurs, cities are able to put money back into the community in the way of increased spending on education and training strategies that will foster continued growth in human capital. This will also allow for the improvement of public infrastructure, housing development, commercial development projects, and amenity development which will add value as an attractive location for both people and firms.

2.2 Creative Cities

Creativity in cities as an impetus for growth is not a function of the recent information age (Scott, 1997; Hall, 1998). Cities from 5th century Athens, and 15th century Florence, to 19th and 20th century Vienna, Paris, and Berlin have been widely studied and were considered to be the most advanced cities in their respective heydays, and remain so today (Hall, 1998). These cities and others offer people the opportunity to gather, communicate and think in unity, often as anti-establishment groups in opposition to societal norms of the day; such as feudalism, and now capitalism (Hall, 1998).

Creative cities are attractive to creative people who are believed to be more mobile and more likely to migrate to other locations (Brown, 2010; Pang, 2008; Pratt, 2011). This is because creative activity is largely contractual or project based and thus, job opportunities are easier to find in creative cities (Flew, 2010; Christopherson, 2006; Pang, 2008). In addition to dense labor markets, creative cities also offer a wealth of

amenities for people, including: restaurants, museums, coffee shops, hotels and tourism (Lloyd & Clark, 2001). These amenities become attractive forces in terms of location choices (Florida, 2002; Lloyd & Clark, 2001; Rausch & Negrey, 2006).

In *The City as an Entertainment Machine*, the reference to the city as a ‘machine’ is indicative of the functions and interactions between people and their personal location choices (Lloyd & Clark, 2001). The city thus functions as a place that offers adequate entertainment and recreational choices in the way of amenities, to residents and tourists. A city where one can work and play is a requirement for members of the creative class (Florida, 2002). This suggests that people follow jobs that are located in areas where there are sufficient amenities to satisfy their needs and desires (Scott, 1999; Storper & Scott, 2008). However, this attractive force of amenities operates on a particular segment of the population (educated and creative individuals) (Storper & Scott, 2008). It is hypothesized that this linkage exists because these creative individuals earn higher wages and therefore have an increased ability to consume these amenities (Shapiro, 2006).

2.3 Richard Florida’s Creative Class

Richard Florida has put a label on the amenity seeking human capital endowed group that drive the prosperity of regional economies today. Since the publication of the 2002 book *The Rise of the Creative Class and How it’s Transforming Work, Leisure, Community and Everyday Life*, much has been made of his theory that a group of people, which he refers to as the creative class, would be a driver of economic growth in the decades to come (Florida, 2002; 2003; 2012). In his book, Florida also explains that the creative class is distributed unevenly in a geographic sense, and poses some explanations

as to the uneven distribution of this increasingly important segment of the population (Florida, 2002; 2003).

Creative class individuals are attracted to and are more likely to remain in places that satisfy their desired atmosphere for culture, entertainment, and interaction with like-minded individuals (Florida, 2002; Landry, 2008; Kirchberg, 2013). It is the presence of these people that becomes the attraction for creative industries to locate in places where they will find the knowledgeable, skilled workers they need (Florida, 2002; 2012). Being more mobile than the working class, creative class members are also more willing to relocate to places that will satisfy their desires for entertainment and recreation (Florida, 2002; Kirchberg & Kagan, 2013). This produces the notion that jobs will follow people as opposed to people following jobs (Landry, 2008; Florida, 2002; Florida, 2012; Storper & Scott, 2009).

The key difference between the working class and the creative class is that creative class individual's work with their minds (Florida, 2012; McGuigan, 2009). This requires a higher level of education, and is thus a distinguishing characteristic from the working class who work in professions that are typically more physical (Florida, 2002; Florida, 2012).

Given the amount of creativity involved in particular aspects of creative work, there are distinctions to be made within creative occupations. Florida divides creative people into two main groups: the super-creative core, and creative professionals. The super-creative core includes those individuals involved with creating a product for sale and consumption, the conceptualization of a new process or theorem that may be transferred to other industries or ideas, or the creation of a piece of art or musical

composition (Florida, 2002; Florida, 2012). This group includes scientists and engineers, university professors, artists, entertainers, actors, musicians, designers, and think-tank researchers.

Creative professionals differ from the super-creative core because they work in industries that require higher levels of education, but not necessarily higher levels of creativity (Florida, 2002). While these creative professionals seek creative solutions to problems, and may occasionally come up with a new process or product that proves highly beneficial, it is not necessarily the main focus of their job (Florida, 2002; Florida, 2012). This comparatively routine aspect of the work creative professionals do is thus distinct from the work of more creatively oriented occupations in the super creative core. Examples of creative professional occupations include: financial analysts, lawyers, physicians and surgeons, and chief executives (Florida, 2002; Florida, 2012).

Given the likely importance of creative people to regional prosperity, a goal of Florida's work is to identify cities with a higher concentration of these people. In order to make these distinctions, he has constructed a creativity index in order to summarize the relative level of key characteristics of regions that are conducive to attracting members of the creative class (Florida, 2002; 2002b). This index is actually a composite of several indices that measure the percentage of creative jobs, high technology, innovation, talent and diversity² (Florida, 2002; 2002b). Florida then applies this index to metropolitan statistical areas of the United States for the purposes of deriving rankings based on their relative level of creativity. These rankings thus become the subject of great optimism for

² The diversity index is a composite of three additional indices: gay, bohemian, and foreign born populations.

some cities, and less for others, while generating a great deal of criticism and debate amongst scholars as to their relevance.

2.4 Proponents of the Creative Class

As mentioned previously, studies of early cities have noted a link between creative activity and prosperous economies. Despite this relatively historic concept, development strategies centered on the cultivation and attraction of creative people are a relatively novel concept in economic development practice (Scott, 1997; Phillips, 2004; Rantisi et al., 2006; Donegan et al., 2008; Atkinson & Easthope, 2009; Currid, 2009; Pratt, 2010; Hatcher, 2011; Vivant, 2013). These strategies place focus on the attraction of artists and creative individuals as agents of economic growth with the hope of attracting firms in need of creative talent (Kay, 2000; Atkinson & Easthope, 2009; Currid, 2009; Hatcher, 2011; Pratt 2011). One example of this is in the City of Covington, Kentucky, where incentives are offered to artists to re-locate to the city's arts district (Hatcher, 2011). Scholars in the fields of urban planning, regional economics, and real estate development however are often at odds when it comes to Florida's creative class theory.

Proponents of the theory offer three main arguments as to its validity. First, is that it focuses on the attraction and retention of a diverse population (Currid, 2009; Stolarick & Currid, 2013). This diversity, which is highly regarded by creative class individuals, is something that is necessary for a vibrant community (Jacobs, 1961; Florida, 2002; 2002c; Bille, 2010). For instance, much of the diversity in the creative class comes from artists,

intellectuals, and bohemians or Bobos³ (Brooks, 2000; Florida, 2002c; 2012). Diverse populations play a role in economic development because it is believed that bohemians, gay and foreign born populations in addition to other marginalized groups are often underrepresented in the formation of traditional economic strategies, policies and programs. These segments of the population are potentially important economic development catalysts because of the non-traditional ways in which they make their livings. These non-traditional work roles often involve a tremendous amount of innovation and entrepreneurial activity (Florida & Mellander, 2010).

Second, is the belief that the creative class, which is a group of people with higher levels of human capital, will result in more competitive regional economies because high levels of human capital attract new firms and experience lower levels of unemployment during times of economic hardship (Howkins, 2001; Kitchens, 2008; Hatcher, et al., 2011). This is believed to be the result of the contention that creative class members are typically more entrepreneurial and innovative (Lucas, 1988; Pang, 2008; Florida & Mellander, 2010; Marrocu & Paci, 2012), both of which have been shown to promote economic growth (Florida, 2002; Currid, 2006; Florida & Mellander, 2010).

Third, as the demand for artistic and creative labor rises (Menger, 2001; Comunian et al., 2011) gentrification occurs, resulting in increased real estate values especially in warehouse districts and blighted neighborhoods of cities where artists tend to locate (Zukin, 1987; Cameron & Coaffee, 2005; Currid, 2009; Kitchens, 2008; Hatcher, et al., 2011). It is suggested that the creative class prefer to live as close to these creative enclaves as possible, resulting in the proliferation of new high-end development

³ Bobos are described as people who mix the protestant work ethic of the bourgeois societies of the early 20th century, with the bohemian ideals and values of the educated, morally conscious, anti-establishment youth that came to the fore in the 1960s.

such as warehouse loft conversions, and boutique style shops and restaurants (Florida, 2002; 2002c; Grodach & Loukaitou-Sideris, 2007). The rise of the cost of living in these areas is described by Florida and Mellander (2010) as an “*aesthetic-amenity premium*” (p. 168), and is something that is willingly paid by members of the creative class.

2.5 Critiques of the Creative Class

There are many opinions offered in support of creative class theory as discussed above. In contrast, there are several people that are suspect of its relevance, especially as a tool to be used in the promotion of growth. The following sections discuss four main critiques of the creative class ranging from issues of social equity (Peck, 2005), its dubious connection with economic growth, difficulties with defining and measuring the creative characteristics of cities, as well as the definition and measurement of the creative class itself (Markusen, 2006).

2.5a Social Equity

Prior work has found a correlation between gentrification and the rise in professional, technical, and creative jobs (Zukin, 1987). This correlation is hypothesized to proliferate the social inequality seen in most creative cities (Zukin, 1987; Waitt & Gibson 2009). Florida agrees that a high creative class presence will likely promote gentrification as they place high value on trendy cafes, shops and boutiques, high end apartments, and loft-style living (Cameron & Coaffee, 2005; Florida, 2012). While rising real estate values are considered to move economies in the right direction, critics argue that gentrification of inner city neighborhoods exacerbates social inequality through the displacement of the working class who can no longer afford the resulting high rents and home prices (Ley, 2003; Donegan et al., 2008). Thus, gentrification has the potential to

destroy the diversity that is desired by the creative class (Zukin, 1987; Peck, 2005; Waitt & Gibson, 2009). Hence there is a need to balance the attraction of moderate-to-high income residents that desire new high-end development, with fair housing opportunities for those of low-to-moderate income levels (Howell, 2005).

Further, contrary to the notion that creative class members have higher incomes, there is often a large disparity of income levels among them. This is due to the fact that many creative workers are forced to take lower paying service jobs due to the unavailability of the high paying creative careers that they desire (Florida, 2002; Grodach & Loukaitou-Sideris, 2007; Throsby & Zednik, 2011). Florida notes that although this may be true, many creative class members are in this position temporarily and will transition from the service class to the creative class eventually (Florida, 2002). This includes many of the bohemians mentioned and creates the notion that they may be in a class struggle *within* the creative class, as they are being displaced by fellow members (Kratke, 2010). In regard to local governments adopting strategies to increase or promote arts and cultural amenities in order to attract the creative class, care must be taken as these types of developments and businesses can become too dominant and exclusionary (Okano & Samson, 2010).

2.5b Connection to Economic Growth

In addition to the inequalities that may result from gentrification and disparate income levels related to the creative class, there is not enough evidence linking this group to positive economic growth (Reese & Sands, 2008; Hoyman & Faricy, 2009). A correlation has been found linking the presence of the creative class and economic growth in European cities (Lorenzen & Andersen, 2009; Kratke, 2010) but, there is little

empirical evidence to support the idea that their presence will result in economic growth in the U.S. (Donegan et al., 2008; Comunian et al., 2010; Kratke, 2010). While it has been determined that human capital does correlate highly with growth such a determination has yet to be made in relation to the creative class (Hoyman & Faricy, 2009).

Furthermore, statistical correlation does not necessarily equate to a causal relationship (Kratke, 2010). Studies have shown that the location of science and technology industries has a positive correlation with the presence of a creative, educated, skilled labor force (Kratke, 2010). It is difficult to say which came first. General measurements of economic growth that are considered to be more reliable indicators of regional prosperity such as job growth and population trends (Malanga, 2004) also reveal interesting results in the context of creative city rankings. If job growth is considered, the top creative city on Florida's index, San Francisco, expanded jobs at only one quarter the rate of the U.S. Economy between 1983 and 2003 (Malanga, 2004). Many of the lowest ranking cities in terms of creativity such as Las Vegas and Memphis experienced job growth well above the national average for the same time period (Malanga, 2004). This suggests that creative class presence is not necessarily correlated with traditional indicators of economic growth.

In the application of population measures and migration patterns to indicate where people choose to live, it has been determined that the top creative centers such as New York, and San Francisco, do not perform very well (Malanga, 2004). In fact, five of the top ten cities on Florida's creativity index lost substantial amounts of people due to extremely their high tax rates and high cost of living (Malanga, 2004). Further, many

large cities are experiencing an increase of out-migration of the more educated high wage earners, and in-migration of foreign born populations and other lower wage earners (Malanga, 2004). Conversely, areas such as Las Vegas, Memphis, and Tampa, which are among the least creative cities, experienced substantial gains in population (Malanga, 2004).

2.5c Measurement

Creative class theory faces some of its toughest critics when it comes to how the creative class is measured. Florida offers his creativity index as a way to measure the presence of creative people but many of his indices consist of concepts that are difficult to quantify with existing data. For example Florida contends that one of the main characteristics of creative cities is a tolerant society (Florida, 2002; Hoyman & Faricy, 2009; Reese & Sands, 2008; Reese et al., 2010). It is problematic to define tolerance however, let alone determine which variables best characterize tolerant places (Reese & Sands, 2008; Wilson & Keil, 2008; Hoyman & Faricy, 2009; Reese et al., 2010). While it is logical to assume that creative people tend to lead unconventional lifestyles and would thus be more accepting of differences among people, the linkage between tolerance and the creative class is somewhat arguable (Reese et al., 2010).

It has also been suggested that the diversity that Florida outlines in his theory has not been fully explored from a quantitative or a qualitative perspective. This is a critical issue to explore in cities with large populations of immigrants, gays, and minorities where there is often racial tension and bigotry (Kratke, 2010). Aside from these issues, which are difficult to quantify, there is the issue of scale. In many diverse cities racial minorities, immigrants, and gay people are segregated into homogenous

enclaves within neighborhoods (Kratke, 2010). When viewed with aggregate data however these micro scale segregation issues disappear and the city can seem quite diverse (Hoyman & Faricy, 2009).

2.5d Definition

Aside from its promotion of gentrification, income inequality, its dubious impact on economic growth and measurement issues, perhaps the most complicated and therefore suspect aspect of the creative class is in its definition of creative industries, which returns us to the focus of this thesis. Employment classified as creative varies greatly among studies, and has a major effect on determining the level of creative employment within a particular region (Markusen et al., 2008). Defining creative workers is difficult due to the dynamic nature of industrial classification systems, and the fact that many people in these professions seem to make up careers as they go by way of freelance or contractual jobs (Christopherson, 2004; Scott, 2006; Scott, 2010; Pratt & Hutton, 2013). Another problematic aspect is that all of the Standard Occupational Classification (SOC) occupational groups used by Florida as well as the NAICS definitions of creative employment which are organized by government agencies, such as the U.S. Census and Bureau of Labor Statistics mix work activities which involve distinctly different levels of creative activity (BLS, 2013; 2013b; U.S. Census, 2013b).

Markusen further disagrees with Florida's definition of creative occupations because they are comprised of individuals with degrees⁴ and common interests (Markusen et al., 2008), such as being involved in the same types of recreational activities, or those with similar moral values. Also, Florida's use of SOC major groups to

⁴ Florida notes that in the United States, 72.2 percent of people with college degrees are members of the creative class, but only 59.3 percent of creative class members have college degrees (Florida, 2012; Stolarick & Currid, 2013).

identify creative occupations is too broad a method that results in the inclusion of a wide variety of occupations that would not traditionally fall into the creative category (Markusen, 2006). For example, placing an elementary school teacher, a neighborhood artist, a statistician, and a medical scientist within the same class of workers is problematic for a concise definition (Howell, 2005).

Because of this, his definition does not properly characterize the truly ‘creative’ aspects of creative industries (Markusen, 2006). Even the development of the North American Industry Code System (NAICS) definitions used in this thesis makes identification and differentiation of creative industries difficult. The more detailed categories of industries provided by various government agencies do not always offer definitive classifications. Thus, there is no way to determine with any certainty that a particular occupation belongs to a particular category based on statistics alone (Scott, 1996).

A classic example of these types of issues is in reference to the creative people classified as ‘bohemians’. These individuals are artists, dancers, musicians, and actors. While this group often combines human capital with the artistic expression apparent in the creative class, they may not be primarily employed in their desired creative occupations (Comunian et al., 2010). Thus, these people are involved in creative activities, but are excluded from Florida’s definition because their paid occupation is recorded as their primary occupation (Markusen, 2006). Further, due to the way in which these categories are constructed, it is impossible to include or remove a particular occupation or industry employment from a more general category, such as in the category of education, where medical and law professors are lumped together with arts and

technology professors (Markusen et al., 2008). Additionally, the boundaries of what constitutes creative activity in relation to the economy are often made up by research that steers toward a particular political agenda (Markusen et al., 2008). It is clear that there is little agreement among critics of creative class theory. However, as the producers and consumers of creativity (Pratt, 2008), the role of the creative class and the concepts of creative activity have become the focus among many in city government (Malanga, 2004; Grodach, 2013).

Difficult to quantify and define, creativity is a subjective concept that is open to interpretation. Many of the conflicting arguments discussed above focus on only certain aspects of the creative class. As discussed, creative class theory combines several components including; percent of creative employment, presence of high-technology industries, education level, artistic activity, cultural heritage, and social attitudes under one umbrella, which leads to its ambiguity. It would be unfair to discount the entire concept based on its dubious link to just one aspect of the overall theory. Given the myriad issues associated with defining the creative class, as highlighted above, the remainder of this thesis will evaluate the relative dynamism of creative centers, as it relates to various definitions of the creative class.

CHAPTER 3

DATA

The first step in this analysis was to derive an employment based definition of the creative class, as opposed to the occupational based definition used by Florida. In order to accomplish this, a careful examination of all of the Standard Occupational Classification (SOC) major groups used in his study was performed. These occupational data were then compared to the employment based North American Industry Classification System (NAICS) employment data from the U.S. Department of Commerce: Bureau of Economic Analysis (BEA). Based on this comparison, an alternate list of creative employment was derived from the 2-digit NAICS codes that are most closely aligned with the SOC major groups used by Florida.

3.1 Occupational Data

Occupational based data at the MSA level for the year 2000 is used for comparison purposes in this analysis and has been retrieved directly from Florida's original work (Florida, 2002). Florida's use of occupational data has become a major target of criticism as mentioned earlier, due to the fact that it counts employment by occupation rather than overall employment in a particular industry (Markusen, 2006). This is important because occupational data counts all employed persons in a specific occupation, while employment data by industry considers the total amount of employment within a particular industry. This considers economic activity, which is an important component to determining which sectors of employment to include in terms of creative activity (BLS, 2013b).

3.2 Employment Data

Using employment data by NAICS codes offers an evaluation of creative activity by industry and is one alternate way to define creative employment. These data will include all people employed in a particular industry, as opposed to counting people by their occupational title. To further explain, occupational data would count all people whose occupations are reported as “artist” for example, while employment data by industry will include all people who are paid employees in an arts related industry. This does not constitute a narrower method to the definition of creative employment, but simply a different approach.

County employment data by NAICS industry were obtained from the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce, and are reported by establishment or place of work (BEA, 2013). Whereas the total number of people in the labor force was obtained from the Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) program and is reported by household or place of residence (BLS, 2013c). These data were necessary in order to perform the calculations for the percentage of creative employment in each county as well as a per capita labor force measure. In order to analyze the temporal component of this study, all employment data were collected for the years 2000, 2005, and 2010.

3.3 Population Data

Another integral component to this study is a look at per capita measures as they relate to creative employment, the overall population and the eligible labor force. As metropolitan area populations vary greatly, determining a per capita measure of creative employment is important to evaluate. Here, a consensus can be reached as to whether or not there are enough creative jobs to go around, which could affect a regions placement

among the ranks of creative centers. Total population data were retrieved from the U.S. Census population estimates for the counties in each of the MSAs being studied, also for the years 2000, 2005, and 2010 (U.S. Census, 2013c).

3.4 MSA Boundary Delineations

All of the county level data (BEA, 2013b) obtained for each year of the analysis (2000, 2005, and 2010) were aggregated to 2000 metropolitan statistical area (MSA) boundaries obtained from the National Historic Geographic Information System (NHGIS, 2013) to produce rankings of metropolitan areas in terms of their creative class presence. 2000 MSA boundaries are used to be consistent with Florida's original study and to control for the fact that MSA boundaries change over time and may artificially inflate or deflate creative class presence.

3.5 Derived Data

Once all of the data were collected, tables were constructed for each year of this study as well as for Florida's original work for comparative purposes. Each table provides the values for the following variables in each MSA in each year of the analysis:

- The percentage of creative employment
- The total employment
- The total creative employment
- The total eligible labor force
- The total population
- A per capita population measure
- A per capita labor force measure

It is with these measures that alternate definitions can be derived.

3.6 Definitions to be derived

After determining which industries coincide with the occupationally oriented SOC groups and aggregating these data to the 2000 metropolitan statistical area boundaries, creative class presence was evaluated based on three alternate definitions:

1. The definition of creative employment that is most closely aligned with Florida's thesis.
2. A per capita definition of creative employment in each MSA that is most closely aligned with Florida's thesis.
3. A per capita definition of creative employment in each MSA that is based on an alternate definition of creative employment that will be developed by the author.

It is with these definitions that rankings were computed and compared. Table 1 shows all measures by which MSAs were ranked and the measures that were compared to determine differences in rankings.

Table 1: All measures by which MSAs were ranked that were compared to determine differences in rankings.

Measures to be Compared		Thesis								
		Percent: 2000	Percent: 2005	Percent: 2010	Labor force: 2000	Labor force: 2005	Labor force: 2010	Population: 2000	Population: 2005	Population: 2010
Florida	Percent: Florida	X			X			X		
	Labor force: Florida				X					
	Population: Florida							X		
Thesis	**Percent: 2000		X	X	X			X		
	Percent: 2005			X		X			X	
	Percent: 2010						X			X
	**Labor force: 2000					X	X	X		
	Labor force: 2005						X		X	
	Labor force: 2010									X
	**Population: 2000								X	X
	Population: 2005									X
	Population: 2010									

**Percent = Percentage of creative employment

**Labor force = Per capita labor – number of creative jobs per 1000 people in the eligible labor force

**Population = Per capita population – number of creative jobs per 1000 people in the general population

CHAPTER 4

METHODOLOGY

The above mentioned measures and subsequent rankings of MSAs were evaluated and compared in order to answer the two questions posed in the introduction of this work. To answer question one; Are creative center locations sensitive to how the creative class is defined? The rankings from the year 2000 of creative metropolitan areas from Florida (2002) will be compared with the rankings produced from the three alternate definitions highlighted in section 3.6 *Definitions to be derived* above. These comparisons will determine to what extent the rankings of metropolitan areas are sensitive to changes in how the creative class is defined. To answer question two; Does the location of creative centers change over time? Rankings of metropolitan area creative class presence in terms of the percentage of creative employment, the per capita labor and per capita population measures from 2000, 2005, and 2010 using only the alternate definitions will be compared to evaluate the volatility in rankings over the ten year period. It will also highlight if the relative volatility in rankings is more pronounced for one definitions of the creative class as opposed to another, i.e. percentage of creative employment, or per capita measures.

4.1 Alternate definition of creative employment

As mentioned, the first step in the analysis will be to derive an employment based definition of creative employment. Based on the NAICS sector definitions of industries used by the BLS in the year 2000, a comparison was made to the SOC major groups used in Florida's study. An alternate list of "creative" occupations was derived from 2-digit North American Industry Classification System (NAICS) employment data that

encompass the SOC major groups used by Florida (Florida, 2002). Mapping the occupation classifications to the employment classifications resulted in determining that the industries within the following 2-digit NAICS codes: (51) Information; (54) Professional and technical services; and (71) Arts, entertainment, and recreation (BLS, 2013; 2013b) best encapsulate the occupations that fall within Florida's SOC codes. Also used to aid in this determination was a list of the fifteen core creative industries described by John Howkins in his book *The Creative Economy: How People Make Money from Ideas*.

The final NAICS codes used in this study were finally determined by cross referencing Florida's SOC groups that included the industries on Howkins's list, then by determining which NAICS codes encompassed both. Table 2 shows the occupations and industries that were evaluated in this process, with an expanded list of SOC occupations, and NAICS industries used in this analysis available in Appendices A and B respectively.

Table 2: List of SOC major groups used by Florida, Howkins’s list of core creative industries, and corresponding NAICS codes

Florida’s Super-Creative Core by SOC Major Groups	Howkins’s List of Core Creative Industries	2-Digit NAICS Codes
15-Computer and Mathematical Occupations	R & D	51-Information
17-Architecture and Engineering Occupations	Publishing	54-Professional and Technical Services
19-Life, Physical, and Social Science Occupations	Software	71-Arts, Entertainment, and Recreation
25-Education, Training and Library Occupations ⁵	Television and Radio	
27-Arts, Design, Entertainment, Sports, and Media Occupations	Design	
Creative Occupations ⁶	Music	
11-Management Occupations	Film	
13-Business and Financial Operations Occupations	Toys and Games	
23-Legal Occupations	Advertising	
29-Healthcare Practitioner and Technical Occupations	Architecture	
41-Sales and Related Occupations	Performing Arts	
	Crafts	
	Video Games	
	Fashion	
	Art	

(Florida, 2002; Howkins, 2001; BEA, 2013; BLS, 2013)

4.2 Data processing

The tables referred to in section 3.5 *Derived Data*, were brought into ESRI’s ArcMap, a geographic information system (GIS), to make possible the pairing down of the vast number of records of employment that were collected. This resulted in the retention of the three 2-digit NAICS codes being evaluated: (51) Information; (54)

⁵ It was decided that since this employment sector is prevalent in all of the 49 MSAs studied and would offer no significant differentiation to creative employment, it would not be included in the industry definition.

⁶ Largely removed from the industry based definition.

Professional and technical services; and (71) Arts, entertainment, and recreation for each county.

These data were then joined to a U.S. County boundary shapefile obtained from the U.S. Census to provide the spatial component for the analysis. Next, utilizing the MSA boundary shapefile from the year 2000, a selection by location of all counties that fall within MSA's was determined. These were then spatially joined to the MSA's in order to obtain a summation of all of the relevant measures, by county per MSA. The forty-nine MSA's with population of one million or more were then determined and sorted. This result is the final product from which the rankings were derived. Maps were then created to offer a visual representation of resulting ranks and possible trends and spatial patterns. These maps will be further described in the next section.

4.3 Rankings

Getting to the core of this thesis; that being how these cities rank using the alternate definitions developed here, in comparison to Florida's definition of creative industries, it is now possible to determine how robust creative industries are; given the alternate definition, as well as how they fare over time. Once the forty-nine MSA's were ranked according to; percentage of creative class employment, a per capita labor force, and a per capita population for the three years in question, comparisons were then evaluated.

4.4 Correlation

In order to determine the strength, direction of the correlation (positive or negative), and significance of the compared rankings, Spearman's Rho (ρ) and Kendall's Tau (τ) rank-order correlations as well as the corresponding level of significance were

computed using R statistical programming language. Appendices E and F contain tables that display the calculated values for both (ρ) and (τ) respectively.

4.4a Spearman's Rho

Spearman's rank-order correlation or Spearman's Rho (ρ) is a non-parametric measure of the correlation between two ranked sets of ordinal data (Colwell & Gillett, 1982). Similar to Pearson's product moment correlation coefficient which is used when a linear relationship exists between variables, Spearman's is used when a monotonic relationship exists; one in which as one variable increases the other increases, or as one variable increases the other decreases (Nešlehová, 2007; Laerd Statistics, 2013). Sets of rankings are set side by side with set (A) ordered numerically (from 1 to n), and set (B) ordered in whatever happened to be the rank of that set, as long as they both correspond to the same variable being ranked. A difference between each rank is then calculated and squared. The squared differences are then summed and placed into the formula (1) below (Laerd Statistics, 2013). There are two methods to derive a Spearman's coefficient; one that deals with tied rankings; and one that does not⁷. When there are no ties within the ranked data, Spearman's Rho is given by the following formula (Kendall, 1938; Nešlehová, 2007; Laerd Statistics, 2013).

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)} \quad (1)$$

Where:

d^2 = the difference between each rank squared.

n = number of observations.

⁷ Data values were expanded to four-significant digits for percentages of creative employment and two-significant digits for per capita measures in order to avoid tied ranks.

The resulting(ρ) will be $-1 \leq \rho \leq 1$, where values closer to (1) determine a strong positive correlation, and values closer to (-1) determine a strong negative correlation. Values between -0.5 and 0.5 are considered weakly correlated positively or negatively depending on its position above or below zero. A value equal to zero determines no correlation at all. The expectation here is that if a variable ranks high in one dataset, it will rank high in the other, but of course this isn't always the case.

4.4b Kendall's Tau

Kendall's Tau is an alternative to Spearman's Rho, also a non-parametric measure. Kendall's Tau (τ) differs in that it measures the difference between concordant pairs and discordant pairs of observations, divided by the total possible pairs and is given by formula (2) below (Kendall, 1938; Denuit & Lambert, 2005; Abdi, 2007; Nešlehová, 2007).

$$\tau = \frac{\text{number of concordant pairs} - \text{number of discordant pairs}}{n(n - 1)/2} \quad (2)$$

Where n = number of observations

For a concise description on how to determine concordance and discordance for all possible pairs see pages 81-85 of the M.G. Kendall article "A New Measure of Rank Correlation" (Kendall, 1938). As with Spearman's Rho, the resulting(τ) will be $-1 \leq \rho \leq 1$, see Table 3 for explanation of resulting coefficients.

Table 3: Explanation of resulting Rho and Tau values in rank comparisons

ρ / τ Value	Correlation Conclusion
-1	Perfect negative
Between -1 and -0.5	Strong negative
Between -0.5 and 0	Weak negative
0	No correlation
Between 0 and 0.5	Weak positive
Between 0.5 and 1	Strong positive
1	Perfect positive

Spearman's Rho and Kendall's Tau are simple measures that are used to determine the correlation between two sets of ranked ordinal data. This does not however determine a causal relationship between the two datasets, only an evaluation of the similarity that may or may not exist between sets. Although there is discussion among scholars as to which is the more robust measure; it appears that one does not necessarily offer an advantage over the other (Colwell & Gillett, 1982). Further, Spearman's relates to the proportion of variability between sets of ranked data, and Kendall's represents the difference between the probability that the ranked sets are in the same order or not (Unesco, 1999). While Spearman's Rho generally results in slightly larger coefficients than Kendall's Tau, (Colwell & Gillett, 1982; Unesco, 1999), only Kendall's Tau (Appendix F) will be reported in the following results of this analysis in order to maintain a conservative approach.

CHAPTER 5

RESULTS

To understand whether the definition of the creative class impacts the location of creative centers, MSAs were ranked according to several different measures of the creative class including: percentage of creative employment, per capita population and per capita labor force measures. Based on these rankings the results discussed in this section were derived from making the following comparisons:

- Rankings associated with Florida's original definition and the definition of the creative class derived in this thesis.
- Rankings associated with Florida's original definition and per capita measures derived from the definition of the creative class derived in this thesis.
- Rankings associated with per capita measures derived from Florida's original definition and per capita measures derived from the definition of the creative class derived in this thesis

These comparisons were then examined to determine which cities exhibited the most variation among the ranks, and to answer the questions put forth at the beginning of this paper:

- Are creative center locations sensitive to how the creative class is defined?
- Does the location of creative centers change over time?

The results of these comparisons show that the majority of MSAs experienced little to no movement in rankings (see Appendix C for a full list of rankings). However, certain cities did experience substantial changes in rankings associated with creative class presence as a result of altering the definition of creative employment. These cities include those that

experienced the greatest decreases in rank such as Hartford, Rochester, and Houston, and those that consistently increased in rank; Tampa, Orlando, and West Palm Beach⁸. The results also show that creative center locations are robust over time. This was done through the examination of rankings of creative centers by percentage of creative employment, per capita population and per capita labor force measures using the thesis definition for the years 2000, 2005, and 2010. The table in Appendix C shows that there is little variation among the rankings of MSAs associated with these measures.

These findings are important because many organizations formulate rankings of cities based on a variety of criteria. Forbes magazine for example publishes myriad rankings of cities for this reason. These rankings include: the fastest growing cities, the best job markets, the best places to retire, and the safest cities to name a few (Forbes, 2014). These types of rankings are important because economic development practitioners use these rankings as a way to market cities to perspective businesses and residents (Florida, 2012).

5.1 Sensitivity of Creative Centers by Definition

The first step in the analysis of rankings derived from varied definitions of the creative class was to analyze the rankings for the year 2000 to determine their sensitivity to definitional changes when comparing the thesis derived measures to those based on Florida's original definition. Overall, the rankings are robust to definition. Thirteen MSAs saw little to no movement (no more than two positions in either direction) between the two ranks. These cities include Washington D.C., San Francisco, Boston, Seattle, and Chicago to name a few. This rank comparison resulted in a $(\tau) = 0.48$, which is

⁸ For the remainder of this paper the use of the word city(ies) or reference to the primary city in the MSA by name will refer to the entire MSA in question.

considered a significant weak positive correlation⁹. The table in Appendix F provides the Kendall's Tau correlation coefficients for all compared rankings in this study.

Appendix C displays all of the rankings derived in this study¹⁰. The first column of the table in Appendix C "Percent" under Florida 2000 Rank provides the rankings of all forty-nine MSAs by his definition in rank order. The remaining rankings in the table are sorted according to his original rankings. The cities that ranked high per Florida's definition, generally ranked high based on the thesis definition. For example by referring to the first two "Percent" columns in the table, it is shown that San Francisco ranked fifth according to the Florida definition and second per the definition of the creative class derived in this study. Washington D.C. ranked first on both lists. Five cities experienced substantial drops in rank between the two measures. These include the rustbelt cities of Hartford, Rochester, and Indianapolis as well as the southern cities of Houston and Jacksonville all dropping more than fifteen positions. The four cities that experienced the greatest increases in rank include the Sunbelt cities of Las Vegas, Tampa, West Palm Beach, and Orlando.

The map in Figure 1 displays the change in rank position as a result of this comparison. For this and all following maps, MSAs that experienced lower ranks are represented in shades of brown and MSAs that increased in rank are represented in shades of green. The MSAs represented in the neutral color experienced little to no movement among the rankings.

⁹ The resulting p-values for all measures in this study were significant at the 1% level.

¹⁰ Appendix D presents the rankings using the raw data for each measure.

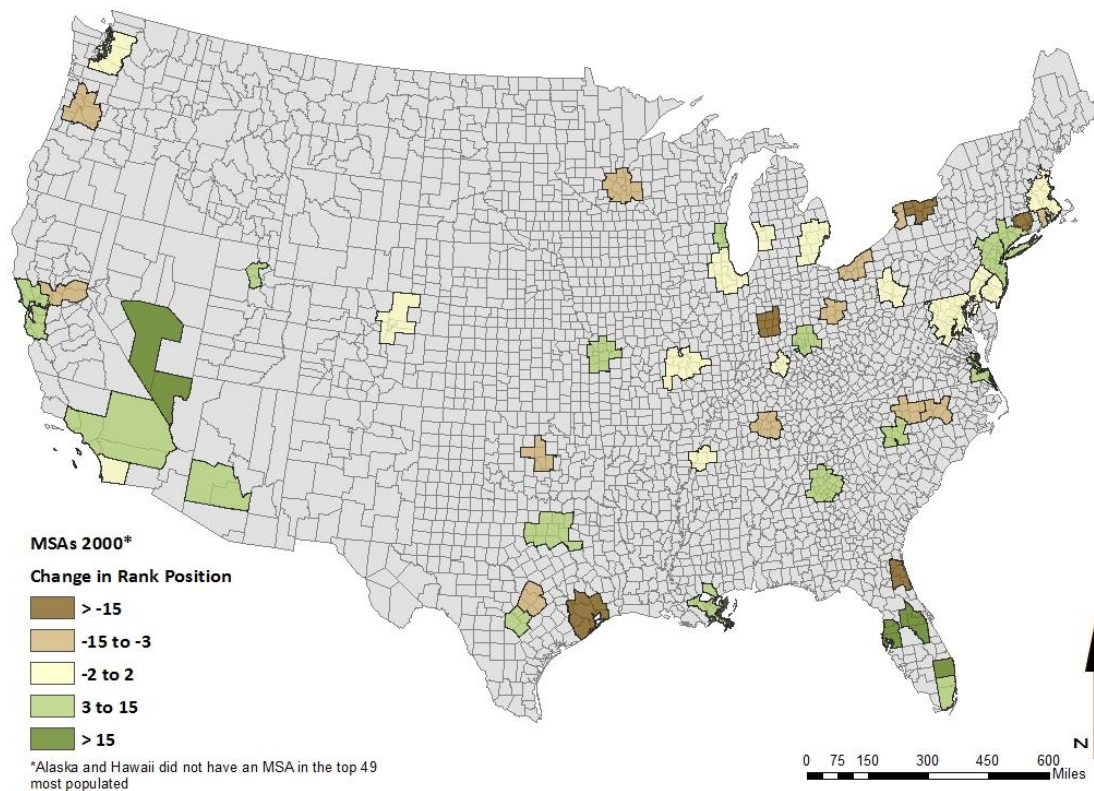


Figure 1: Map representing the difference in rankings between Florida’s original definition and the thesis derived definition in terms of the percentage of creative employment.

5.2 Per Capita Evaluations

After examining the sensitivity of rankings to varied definitions of the creative class, an examination of rankings sensitivity based on per capita derived measures was evaluated next. A per capita evaluation is important because Florida’s original rankings use total occupational employment as the measure of creative class presence. This means that large places will rank higher as result of size rather than a “true” overrepresentation of the creative class. Given this issue, rankings based on Florida’s original definition were compared to a per capita measure of the definition derived in this thesis. Two per capita measures were computed: Per capita population, and per capita labor force. These

measures will determine the availability of jobs in relation to the total population of the MSA, as well as to its eligible labor force.

5.2a Per Capita Population

When the thesis derived per capita population measure is compared to Florida's original definition, a correlation coefficient of $\tau = .50$, a relatively positive and significant relationship is the result. Approximately one-third of the MSAs showed sensitivity to definition by this measure by increasing or decreasing more than ten positions between the ranks. These rankings may be found in Appendix C under the columns labeled Florida 2000 Rank "Percent" and Thesis 2000 Rank "Population". Comparing the two columns shows that Washington D.C. held on to the number one position, while Boston went from number three per Florida's rank to number five according to the per capita measure derived in this thesis.. Five cities in the top ten experienced few variations, while five fell in rank considerably, including the cities of Austin going from fourth according to Florida, to seventeenth per the thesis definition, and Minneapolis going from number six to number nineteen by the same measures respectively.

The cities that decreased the most in rank (more than twenty positions) were again Rochester, and Houston dropping twenty-four, and twenty-five positions respectively. Figure 2 is a map representing the difference in rankings by this comparison. Representative of the pattern in figure 1, the cities that experienced the greatest increase in rank were primarily in Florida, with West Palm Beach, and Orlando gaining twenty and thirty-four positions respectively. The cities that showed little to no movement among the two lists are again Washington D.C., New York, San Francisco, Chicago, and San Diego among others.

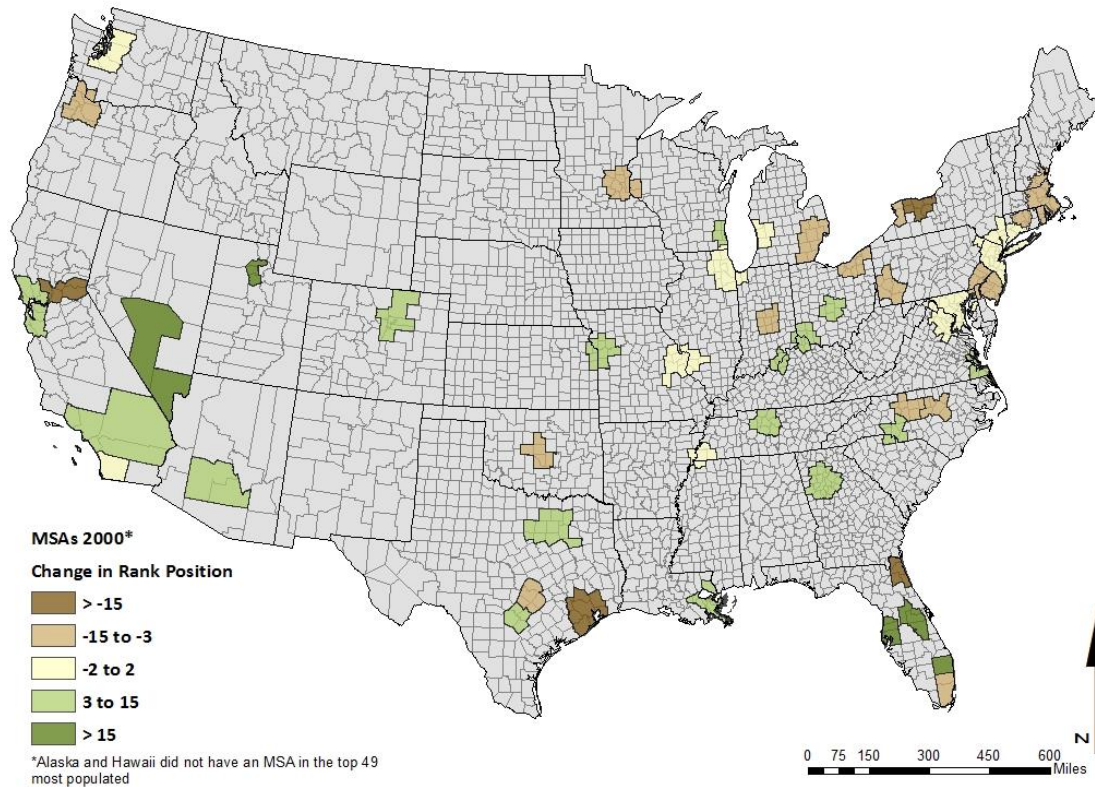


Figure 2: Map representing the difference in rankings between Florida’s original definition of the percentage of creative employment, and the thesis derived definition of per capita total population.

5.2b Per Capita Labor Force

Although rankings of creative centers that account for the size of the underlying population are a potential improvement over non-population adjusted measures, a per capita measure alone does not properly represent the labor force within metropolitan areas. This is particularly important if the metropolitan area in question has large proportions of very young or very old people which are of non-working age. Given this issue, a per capita labor force measure is used to assess the number of creative jobs per the total eligible labor force; those individuals between the ages of 16 and 64. This per

capita evaluation measures the amount of creative jobs per one thousand people in the eligible labor force for each MSA.

The per capita labor force measure derived from the thesis definition was compared to Florida's original definition. Ranking associated with these measures may be found in Appendix C under the headings; Florida 2000 Rank "Percent" and Thesis 200 Rank "Labor". A comparison of these rankings via Kendall's tau suggests these two measures are positively correlated ($\tau=0.45$). This correlation reflects little change in the rankings of metropolitan areas. This consistency in rankings was most evident in metropolitan areas with the largest populations of working age such as Washington, D.C., New York, Chicago, and San Francisco. Interestingly, two cities in Florida exhibited large fluctuations in rankings depending upon the measure used. Both Orlando and Tampa experienced large increases in rankings. Orlando jumped from a ranking of thirty-eight to three when using Florida's definition and the thesis definition respectively. Tampa increased in rank from thirty-one to number nine. Decreasing considerably were Rochester going from number seventeen to forty-one, and Houston from tenth to thirty-third position by the same measures respectively.

Figure 3 is a map of the difference in rank resulting from this comparison. There are noticeable similarities between this map and the previous maps, especially among the cities that experienced the largest gains and losses in position. Just as in the comparison with per capita population, the cities that decreased the most by this comparison were Rochester, Houston, Sacramento, and Jacksonville.

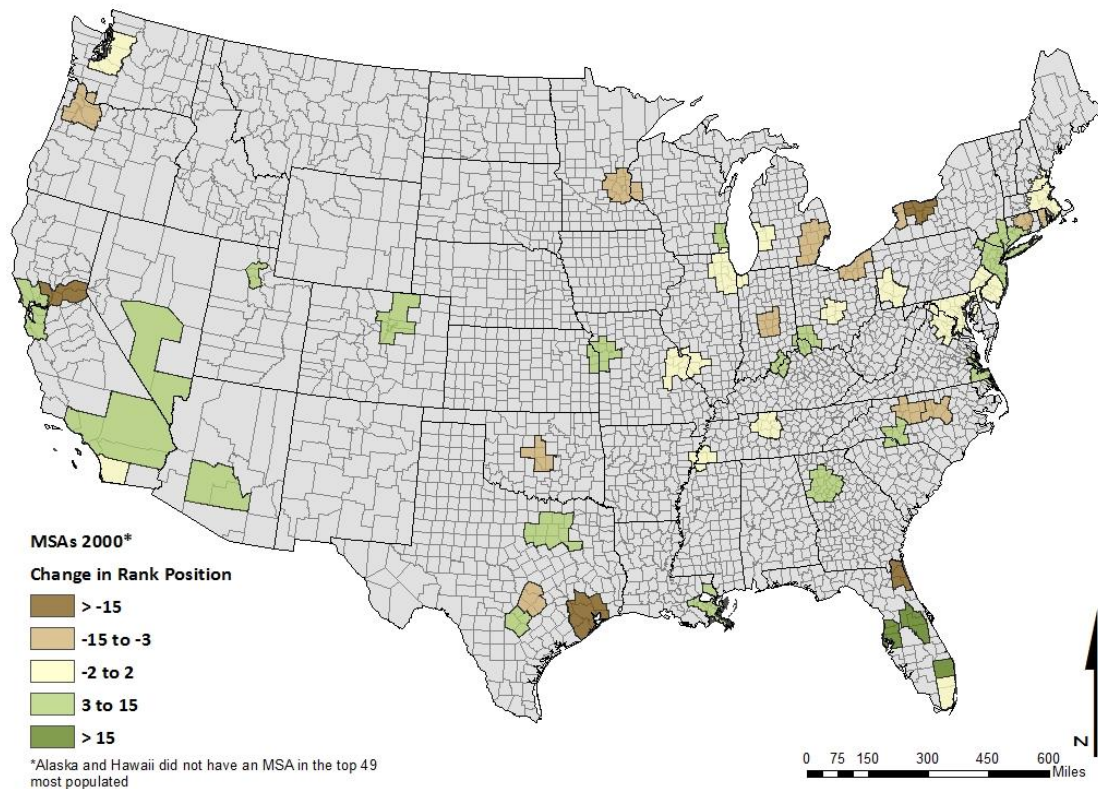


Figure 3: Map representing the difference in rankings between Florida’s original definition of the percentage of creative employment, and the thesis derived definition of per capita labor force.

5.2c Per Capita Population between Florida’s and Thesis Definitions

Comparisons were also made between the per capita population calculated from Florida’s original data, and the per capita population derived from the thesis definition. These comparisons are important to consider because they are more similar to one another than population adjusted and non-population adjusted measures. The rankings associated with these measures may be found in Appendix C under the columns labeled Florida 2000 Rank “Population” and Thesis 2000 Rank “Population”

Interestingly, there was quite a bit of variation among rankings between these two measures, which is reflected in a significant, but weak positive correlation of 0.36. This weak positive correlation reflects the fact that thirty-eight percent of metro areas

experienced a change in ranking of five positions or less while thirty-five percent of metropolitan areas experienced variations of ten or more positions in their rankings. Boston experienced the largest increase in ranking and moved from thirty-seventh position per Florida's definition to sixth per the thesis definition. Other notable increases were seen in the case of New York going from forty-one to thirteen, and Los Angeles from number forty-six to fifteen by the same measures respectively. Large decreases in rank were seen in Hartford, Rochester, and Minneapolis dropping more than fifteen positions each.

5.2d Per Capita Labor Force between Florida's and Thesis Definitions

The per capita labor force measure by the thesis definition is also compared to the computed per capita labor force measure per Florida, which again was derived from his original data. About fifty percent of the MSAs experienced variations of more than ten positions by this comparison resulting in a significant weak correlation coefficient of $\tau = 0.28$, the lowest among all measures in this study. Interestingly, a noticeable trend is that the cities that varied the most by this measure were the same cities that experienced the largest variations by the per capita population measure.

This rank comparison can be seen in Appendix C, via the columns labeled Florida 2000 Rank "Labor" and Thesis 2000 Rank "Labor". This Appendix highlights that some city's rankings varied by thirty or more positions. Notable examples of such cities include Boston and Rochester; Boston's rank rose from forty-second place to number five, and Rochester's rank dropped from eleventh place to forty-first place.

5.3 Evaluation of Creative Employment over Time

To evaluate whether creative centers change over time, rankings were computed for three different points in time; 2000, 2005 and 2010 for three measures of creative class presence; the percentage of creative employment, per capita population and per capita labor force. For the purposes of this analysis only the thesis derived definition of creative employment is used for comparative purposes. This helps to determine if a particular metropolitan area has a more robust creative base of employment over the years in question. It is expected that some cities will fare better than others as there have been economic events over this time span that would have had an adverse effect on the economy, not the least of which is the Great Recession of 2008.

By comparing the thesis-based rank of all three measures for all three years, it becomes evident that rankings are robust over time, irrespective of the measure used for the time comparison. Because of this robustness, only the percentage of creative employment rankings will be discussed in depth. This comparison resulted in a significant strong positive correlation of $\tau = 0.66$. This speaks to the resiliency and stability of creative centers over time. Returning to the table in Appendix C, the rankings of MSAs by all measures between the years 2000, 2005 and 2010 are provided for comparison.

Washington D.C. remained in the number one position, while San Francisco remained at number two for all three years by this measure. Charlotte, Tampa, and San Antonio experienced the most variation among this measure between 2000 and 2010, each dropping in rank fourteen positions, while Providence and Norfolk increased by fifteen and thirteen positions respectively. Overall, metropolitan areas experienced very

little movement in rankings between 2000 and 2010. Only seven metropolitan areas experienced variations in rankings of ten positions or more.

5.3a Evaluation of Creative Employment between 2000 and 2005

A closer look at the 5-year period between 2000 and 2005 is now presented. More than half of the MSAs experienced higher rankings in 2005, but only by a few positions. By focusing on the columns labeled Thesis 2000 Rank “Percent”, and Thesis 2005 Rank “Percent” comparisons can be observed. The correlation coefficient for this comparison resulted in a significant strong positive $\tau = .64$. This reflects the fact that twenty metropolitan areas experienced little to no change in rank while only nine metropolitan areas experienced variations in rank of more than ten positions.

Metropolitan areas that experienced this amount of variation include Las Vegas, Hartford, and Charlotte, which decreased in rank and Providence and Detroit, which increased in rank. The most notable drop was experienced by Charlotte, going from number twenty to number forty-four in rank. Providence experienced a notable rise in rank from forty-fifth in 2000 to twenty-third in 2005, as did Detroit rising from twenty-first in 2000 to eighth place in 2005. Figure 4 represents the difference in rankings mapped between 2000 and 2005 in terms of the percentage of creative employment.

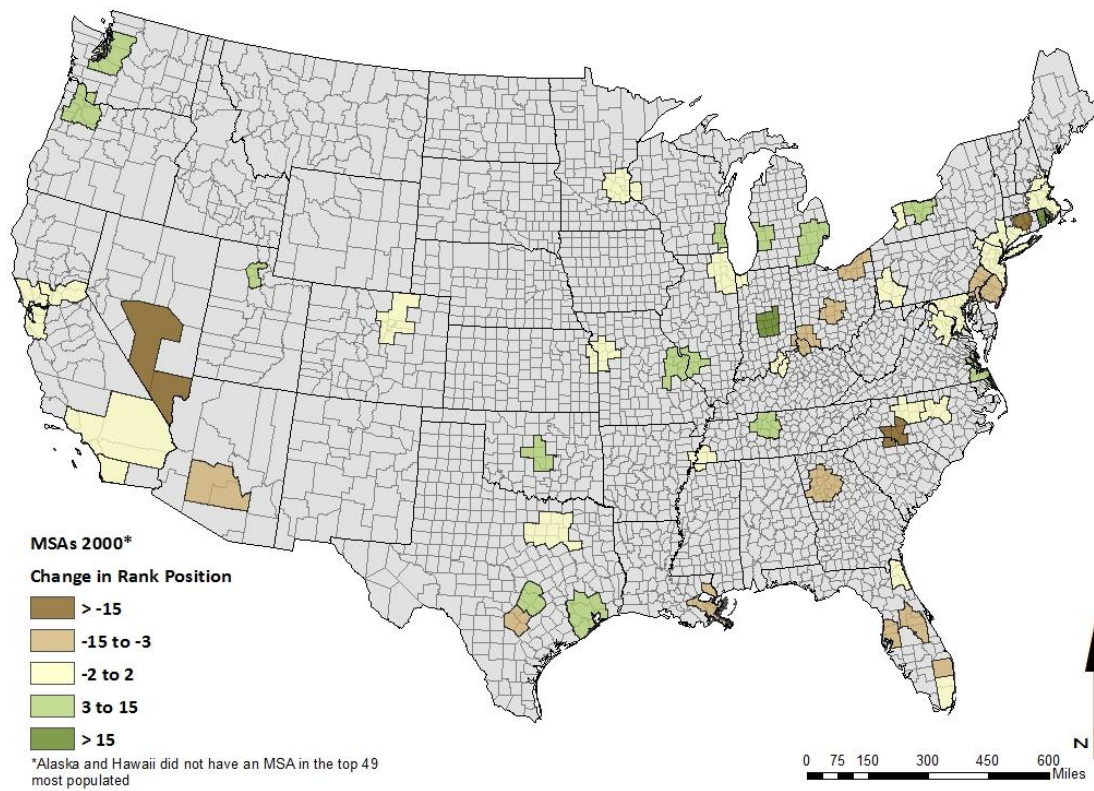


Figure 4: Map representing the difference in rank between 2000 and 2005 in terms of the percentage of creative employment.

5.3b Evaluation of Creative Employment between 2005 and 2010

Similar to the results for the 2000 and 2005 comparison, there was little variation in the rankings of creative centers between 2005 and 2010. In Appendix C, the difference in rankings between 2005 and 2010 is provided. By viewing the “Percent” column for Thesis Ranks 2005 and 2010 all MSAs can be compared. Here it can be observed that there is much similarity between the rankings, signifying a robustness of creative industries through economic hardship, most notably the recession of 2008.

In fact, this comparison resulted in a significant and strong positive correlation of 0.78. Most of the MSAs (almost two-thirds) stayed either the same or had increased in rank over the five-year period. The only metropolitan area that experienced a significant

variation in ranking was Portland; its ranking changed by over sixteen positions. The map in Figure 5 below displays the difference in rank over the five year period between 2005 and 2010.

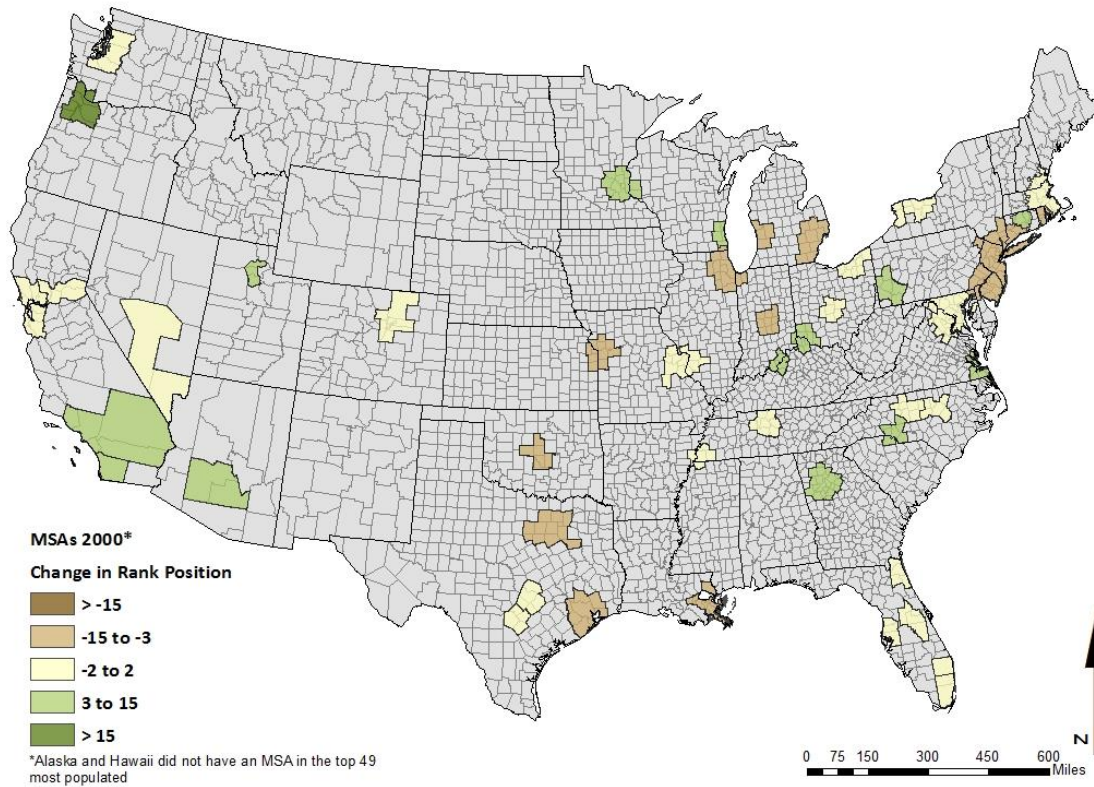


Figure 5: Map representing the difference in rank between 2005 and 2010 in terms of the percentage of creative employment.

CHAPTER 6

DISCUSSION/CONCLUSION

Given the proliferation of rankings as a benchmarking tool for economic development efforts, the purpose of this research was to explore variations in metropolitan area rankings associated with varied approaches to defining creative class presence. This is important because there are many different ways to quantify creative activity depending on the source and availability of relevant data. Richard Florida offers one way to come up with a definition, this thesis offers another. As creative class theory has become a widely accepted principle in economic development, city leaders and economic development practitioners are focusing on policies and programs that surround creative activity, with the hopes of promoting economic growth. Thus, it is important to be aware of any limitations and controversies surrounding the creative class, particularly in how it is measured and defined.

Creative class members are believed to possess high levels of human capital, and are thus better prepared to fill the types of jobs that have been created by the emerging knowledge economy. As human capital has become the driver of economic growth, places with a greater presence of creative class members become more attractive to businesses and firms; the theory suggests that jobs will follow people as opposed to people following jobs. As a result of this emphasis, city officials look to rankings based on a variety of measures to market their cities. Given the importance of city rankings, it is believed that a higher rank as a creative center offers the opportunity to develop marketing strategies that will help to attract creative people, and creative jobs with greater success (Florida, 2002; Phillips, 2004; Currid, 2009).

The type of strategies that would foster the attraction and agglomeration of creative people and industries have something to do with placemaking, which focuses on regional assets and potential (Blakely & Green Leigh, 2010). As a component of strategic planning, which was popularized in the latter half of the 20th century, officials look to available regional opportunities and focus on specific development goals that will offer attractive public spaces and activities to residents and tourists alike (Blakely & Green Leigh, 2010). Something highly regarded by the creative class.

Historically however, creativity in many cities developed organically due to high concentrations of like-minded individuals, as well as the cultural characteristics, and folk traditions of its people. Memphis is a prime example of this phenomenon. The people of this city, which was largely segregated by race and class in the 1940s - 50s managed to fuse the traditional musical rhythms and themes of African culture with those of Appalachia, which originated in Scotland, Ireland and England. The sound came to be known as rock and roll, blues, and country, which turned Memphis into a global center for popular music (Hall, 1998). This also resulted in technological advances in radio broadcasting further distinguishing Memphis as a creative center (Hall, 1998). However, in later decades many of the music and radio pioneers left Memphis for greater opportunities in Chicago, and New York taking their creativity with them (Hall, 1998). If planners and local officials had recognized this movement as an available opportunity to develop strategies that encourage economic as well as social goals of the community, Memphis may have been more sustainable in terms of creativity over time.

In order to evaluate the variability between Florida's original rankings and the rankings developed in this study, comparisons were made based on the alternate

definitions of creative employment derived in this thesis. These comparisons are the basis on which the research questions could be answered. Are creative center locations sensitive to how the creative class is defined? And, does the location of creative centers change over time?

Overall, the results show that creative centers are substantially insensitive to the definition of creative employment. The cities that decreased in rank the most by the thesis definition were largely Rustbelt cities such as Hartford, Rochester, and Indianapolis. These are places where there may be more people working in the business and financial sectors, or those Florida has defined as “creative professionals” which were largely removed from the thesis derived definition. This would result in less overall creative employment as defined in this thesis, suggesting larger decreases in the rankings. The cities that exhibited sensitivity in the way of increases in rankings were largely the Sunbelt cities of Tampa, Orlando, and Las Vegas where jobs in entertainment and tourism are more abundant.

Further, results show that creative centers are robust over time. The MSA rankings show very little variation over the ten year period between 2000 and 2010, with the rankings of many of the larger metropolitan areas including, Washington D.C., San Francisco, and Philadelphia remaining virtually unchanged. This type of information can be important as it suggests that whether a city ranks high or low in terms of creative activity they are resilient in times of economic downturns.

These results are important because non per capita adjusted measures showed little variation. This means that larger cities will have more creative employment due to their size, and are seen to remain highly ranked as creative centers over time regardless of

definitional variations if they are not adjusted on a per capita basis. This suggests there are agglomerative benefits to creative activity, which has been discussed in prior studies (Scott, 1997; Currid, 2007). The largest variations among the rankings were seen in the per capita measures which suggests that when adjusted to the eligible labor force or total population creative class presence may or may not be as prevalent, which may result in higher or lower rankings.

One limitation of this study that is important to note is that the employment data retrieved from the BEA is reported as employment by place of work, while the total labor force is reported by place of residence. Initially this was thought to create a significant problem as these data were collected at the county level, and the total labor force by place of residence may include people who work outside a specific county. Upon further evaluation however, it was decided that the problem was not substantial because all county level data were aggregated to the MSA boundaries which are largely determined by commuting patterns. This means that variations in labor force numbers and employment related to commuting patterns are largely irrelevant due to the way MSAs are defined.

A second limitation to this study is the lack of resolution about the location of creative centers within metropolitan areas. Thus, a second extension to this study would be an evaluation of the creative class at the county level. A study of this nature would make possible the identification of spatial patterns in terms of clustering or dispersion of creative activity within MSAs. Spatial autocorrelation between the county that holds the primary city of an MSA, and its surrounding counties could also be examined. Further as the linkage between the creative class and economic growth has not been made, an

empirical study in this area would help to definitively prove or disprove the impact that the creative class has on the regional economy.

Conclusion

Richard Florida's creative class theory remains a controversial aspect of economic development theory and practice to this day. The nature of this controversy is wide-ranging and includes objections to his definition of creative industries and employment, while others question the validity of his argument that creative class members share a common world view. Given these sources of controversy, the purpose of this thesis was not to agree or disagree with Florida's theory of the creative class, but to offer an alternate definition of the creative class for the purpose of evaluating the sensitivity of rankings to definitional changes. The results of this analysis highlighted little variation in rankings to definitional and temporal changes.

It has been shown that both human capital and creativity play an increasingly important role in the decisions made by city leaders and economic development practitioners. We know how to define human capital, but the definition of creativity and its connection to human capital is much more difficult to determine. This study shows that while it is important to be aware of the challenges and limitations that can exist when attempting to identify the creative class for the purposes of marketing cities and developing economic growth strategies, the overall definition is robust through space and time.

REFERENCES

- Abel, J.R., & Deitz, R. (2012). Do colleges and universities increase their region's human capital? *Journal of Economic Geography*, 12(3), 667-691.
- Abel, J. R., Dey, I., & Gabe, T. M. (2012). Productivity and the density of human capital. *Journal of Regional Science*, 52(4), 562-586. doi:10.1111/j.1467-9787.2011.00742.x
- Abdi, H. (2007). The Kendall rank correlation coefficient. *Encyclopedia of Measurement and Statistics*. Sage, Thousand Oaks, CA, 508-510.
- Atkinson, R., & Easthope, H. (2009). The consequences of the creative class: The pursuit of creativity strategies in Australia's cities. *International Journal of Urban & Regional Research*, 33(1), 64-79. doi:10.1111/j.1468-2427.2009.00837.x
- Badenhausen, K. (2013). *The Best Places for Business and Careers*. Forbes. Retrieved 23 April 2014 from, <http://www.forbes.com/best-places-for-business/>
- Barro, R. J. (2001). Human capital and growth. *The American Economic Review*, 91(2, Papers and Proceedings of the Hundred Thirteenth Annual Meeting of the American Economic Association), 12-17.
- BEA. (2013). U.S. Department of Commerce: Bureau of Economic Analysis. *Tables CA-4, CA25N*. Retrieved 18 Sept. 2013 from, <http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=4#reqid=70&step=24&isuri=1&7023=0&7001=44&7090=70&7022=4>
- Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70(5, Part 2: Investment in Human Beings), 9-49.
- Bille, T. (2010). Cool, funky and creative? The creative class and preferences for leisure and culture. *International Journal of Cultural Policy*, 16(4), 466-496. doi: 10.1080/10286630903302741
- Blakely, E.J. & Green Leigh, N. (2010). *Planning Local Economic Development: Theory and Practice (4th Ed.)* Thousand Oaks, CA: Sage publications
- BLS. (2013). U.S. Department of Labor: Bureau of Labor Statistics. *Standard Occupational Classification*. Retrieved 25 Sept. 2013 from, http://www.bls.gov/soc/2000/soc_majo.htm.
- BLS. (2013b). U.S. Department of Labor: Bureau of Labor Statistics. *Industries by Supersector and NAICS codes*. Retrieved 25 Sept. 2013 from, http://www.bls.gov/iag/tgs/iag_index_naics.htm.

- BLS. (2013c). U.S. Department of Labor: Bureau of Labor Statistics. *Local Area Unemployment Statistics*. Retrieved 25 Sept. 2013 from, <http://www.bls.gov/lau/>
- Brooks, D. (2000). *Bobos in paradise: The new upper class and how they got there*. Simon and Schuster.
- Brown, M. G. (2010). The owl, the city and the creative class. *Planning Theory & Practice*, 11(1), 117-127. doi:10.1080/14649350903538004
- Brown, W. M., & Scott, D. M. (2012). Human capital location choice: accounting for amenities and thick labor markets. *Journal of Regional Science*, 52(5), 787-808.
- Cameron, S., & Coaffee, J. (2005). Art, gentrification and regeneration--from artist as pioneer to public arts. *European Journal of Housing Policy*, 5(1), 39-58. doi:<http://www.tandf.co.uk/journals/titles/14616718.asp>
- Chapple, K., Markusen, A., Schrock, G., Yamamoto, D., & Yu, P. (2004). Gauging metropolitan "high-tech" and "I-tech" activity. *Economic Development Quarterly*, 18(1), 10-29.
- Christopherson, S. (2004). The divergent worlds of new media: How policy shapes work in the creative economy. *Review of Policy Research*, 21(4), 543-558. doi:10.1111/j.1541-1338.2004.00093.x
- Colwell, D. J., & Gillett, J. R. (1982). Spearman versus Kendall. *The Mathematical Gazette*, 66(438), 307-309.
- Comunian, R., Faggian, A., & Jewell, S. (2011). Winning and losing in the creative industries: An analysis of creative graduates' career opportunities across creative disciplines. *Cultural Trends*, 20(3), 291-308. doi:10.1080/09548963.2011.589710
- Comunian, R., Faggian, A., & Qian, C. L. (2010). Unrewarded careers in the creative class: The strange case of bohemian graduates. *Papers in Regional Science*, 89(2), 389-410. doi:10.1111/j.1435-5957.2010.00281.x
- Currid, E. E. (2006). New York as a global creative hub: A competitive analysis of four theories on world cities. *Economic Development Quarterly*, 20(4), 330-350.
- Currid, E. (2007). How art and culture happen in New York: Implications for urban economic development. *Journal of the American Planning Association*, 73(4), 454-467.
- Currid, E. E. (2009). Bohemia as subculture; "bohemia" as industry: Art, culture, and economic development. *Journal of Planning Literature*, 23(4), 368-382.

- Denuit, M., & Lambert, P. (2005). Constraints on concordance measures in bivariate discrete data. *Journal of Multivariate Analysis*, 93(1), 40-57.
doi:http://dx.doi.org.ezproxy1.lib.asu.edu/10.1016/j.jmva.2004.01.004
- Donegan, M., Drucker, J., Goldstein, H., Lowe, N., & Malizia, E. (2008). Which indicators explain metropolitan economic performance best? Traditional or creative class. *Journal of the American Planning Association*, 74(2), 180-195.
doi:10.1080/01944360801944948
- Flew, T. (2010). Toward a cultural economic geography of creative industries and urban development: Introduction to the special issue on creative industries and urban development. *Information Society*, 26(2), 85-91. doi:10.1080/01972240903562704
- Florida, R. (2002). *The rise of the creative class: and how it's transforming work, leisure, community and everyday life*. New York: Basic Books.
- Florida, R. (2002b). Bohemia and economic geography. *Journal of Economic Geography*, 2(1), 55-71.
- Florida, R. (2002c). The rise of the creative class. *Washington Monthly*, 34(5), 15.
- Florida, R. (2003). Cities and the creative class. *City & Community*, 2(1), 3-19.
- Florida, R., & Mellander, C. (2010). There goes the metro: How and why bohemians, artists and gays affect regional housing values. *Journal of Economic Geography*, 10(2), 167-188.
- Florida, R. (2012). *Rise of the creative class revisited*. New York: Basic Books.
- Grodach, C. (2013). *Cultural economy planning in creative cities: Discourse and practice* doi:10.1111/j.1468-2427.2012.01165.x
- Grodach, C., & Loukaitou-Sideris, A. (2007). Cultural development strategies and urban revitalization. *International Journal of Cultural Policy*, 13(4), 349-370.
doi:10.1080/10286630701683235
- Hall, P. (1998). *Cities in civilization*. New York: Pantheon Books.
- Hatcher, W., Oyer, M., & Gallardo, R. (2011). The creative class and economic development as practiced in the rural U.S. south: An exploratory survey of economic development professionals. *Review of Regional Studies*, 41(2), 139-159.
- Howell, O. (2005). The "Creative class" and the gentrifying city. *Journal of Architectural Education*, 59(2), 32-42. doi:10.1111/j.1531-314X.2005.00014.x
- Howkins, J. (2001). *The creative economy: how people make money from ideas*. New

- York: Allen Lane, Penguin Press, p. 116.
- Hoyman, M. M., Faricy, C. (2008). It takes a village: A test of the creative class, social capital, and human capital theories. *Urban Affairs Review (Thousand Oaks, Calif.)*, 44(3), 311-333.
- Huggins, R. (2010). Regional competitive intelligence: benchmarking and policy-making. *Regional Studies*, 44(5), 639-658.
- Jacobs, J. (1961). *The death and life of great American cities* (Vintage Books Ed.). New York, NY: Random House.
- Kay, A. (2000). Art and community development: The role the arts have in regenerating communities. *Community Development Journal*, 35(4), 414-424.
doi:10.1093/cdj/35.4.414
- Kendall, M. G. (1938). A new measure of rank correlation. *Biometrika*, 30(1/2), 81.
- Kirchberg, V., Kagan, S. (2013). The roles of artists in the emergence of creative sustainable cities: Theoretical clues and empirical illustrations. *City, Culture and Society*, 4(3), 137-152.
- Kitchens, R. (2008). Community capitalism: Going back to basics to revitalize cities. *National Civic Review*, 97(2), 38-44. doi:10.1002/ncr.213
- Kratke, S. (2010). 'Creative cities' and the rise of the dealer class: A critique of Richard Florida's approach to urban theory. *International Journal of Urban & Regional Research*, 34(4), 835-853. doi:10.1111/j.1468-2427.2010.00939.x
- Laerd Statistics, (2013). *Spearman's rank order correlation*. Retrieved 25 Sept. 2013 from, <https://statistics.laerd.com/statistical-guides/spearmans-rank-order-correlation-statistical-guide.php>
- Landry, C., & MyiLibrary. (2008). *The creative city* (2nd ed.). New Stroud, UK: Comedia.
- Ley, D. D. (2003). Artists, aestheticisation and the field of gentrification. *Urban Studies (Edinburgh, Scotland)*, 40(12), 2527-2544.
- Lloyd, R., & Clark, T. N. (2001). The city as an entertainment machine. *Critical perspectives on urban redevelopment*, 6(3), 357-78.
- Lorenzen, M., & Andersen, K. V. (2009). Centrality and creativity: Does Richard Florida's creative class offer new insights into urban hierarchy? *Economic Geography*, 85(4), 363-390.

- Lucas Jr, R. E. (1988). On the mechanics of economic development. *Journal of monetary economics*, 22(1), 3-42.
- Malanga, S. (2004). The curse of the creative class. *City Journal*, Winter. Retrieved 27 Dec. 2013 from, http://www.city-journal.org/html/14_1_the_curse.html
- Malanga, S. (2004). The Curse of the Creative Class, Richard Florida's theories are all the rage worldwide. Trouble is, they're plain wrong. *City Journal*, 14(1), 36-45.
- Markusen, A. (2006). Urban development and the politics of a creative class: evidence from a study of artists. *Environment and Planning A*, 38, 1921-1940. doi: 10.1068/a38179.
- Markusen, A., Wassall, G.H., DeNatale, D. & Cohen, R. (2008). Defining the creative economy: Industry and occupational approaches. *Economic Development Quarterly*, 22(1), 24-45.
- Marrocu, E., & Paci, R. (2012). Education or Creativity: what matters most for economic performance?. *Economic Geography*, 88(4), 369-401.
- Marti-Costa, M. M. (2012). The knowledge city against urban creativity? artists' workshops and urban regeneration in Barcelona. *European Urban and Regional Studies*, 19(1), 92-108.
- Martin, R., & Sunley, P. (1998). Slow Convergence? The New Endogenous Growth Theory and Regional Development. *Economic geography*, 74(3), 201-227.
- McGuigan, J. (2009). Doing a Florida thing: The creative class thesis and cultural policy. *International Journal of Cultural Policy*, 15(3), 291-300. doi:10.1080/10286630902763281.
- Menger, P. P. M. (2001). Artists as workers: Theoretical and methodological challenges. *Poetics (Amsterdam)*, 28(4), 241-254.
- NHGIS (2013). National Historic Geographic Information System. *Data Finder*. Retrieved 15 June 2013 from, <https://data2.nhgis.org/main>
- Nešlehová, J. (2007). On rank correlation measures for non-continuous random variables. *Journal of Multivariate Analysis*, 98(3), 544-567. doi:<http://dx.doi.org/ezproxy1.lib.asu.edu/10.1016/j.jmva.2005.11.007>
- Okano, H., & Samson, D. (2010). Cultural urban branding and creative cities: A theoretical framework for promoting creativity in the public spaces. *Cities*, 27, S10-S15.
- Pang, L. (2009). The labor factor in the creative economy. *Social Text*, 27(2), 55-76. doi:10.1215/01642472-2008-022

- Peck, J. (2005). Struggling with the creative class. *International Journal of Urban & Regional Research*, 29(4), 740-770. doi:10.1111/j.1468-2427.2005.00620.x
- Phillips, R. (2004). Artful business: Using the arts for community economic development. *Community Development Journal*, 39(2), 112-122. doi:10.1093/cdj/39.2.112
- Pratt, A. C. (2008). Creative cities: The cultural industries and the creative class. *Geografiska Annaler Series B: Human Geography*, 90(2), 107-117. doi:10.1111/j.1468-0467.2008.00281.x
- Pratt, A. C. (2010). Creative cities: Tensions within and between social, cultural and economic development. *City, Culture and Society*, 1(1), 13; 13-20; 20.
- Pratt, A. C. (2011). The cultural contradictions of the creative city. *City, Culture and Society*, 2(3), 123; 123-130; 130.
- Pratt, A. C., & Hutton, T. A. (2013). Reconceptualising the relationship between the creative economy and the city: Learning from the financial crisis. *Cities*, 33, 86-95. doi:10.1016/j.cities.2012.05.008
- Rantisi N M, Leslie D, Christopherson S, 2006, "Placing the creative economy: scale, politics, and the material" *Environment and Planning A* 38(10) 1789 – 1797
- Rauch, J. E. (1991). Productivity gains from geographic concentration of human capital: Evidence from the cities. *Journal of Urban Economics* 34: 380-400.
- Rausch, S., & Negrey, C. (2006). Does the creative engine run? A consideration of the effect of creative class on economic strength and growth. *Journal of Urban Affairs*, 28(5), 473-489. doi:10.1111/j.1467-9906.2006.00310.x
- Reese, L. L. A. (2008). Creative class and economic prosperity: Old nostrums, better packaging? *Economic Development Quarterly*, 22(1), 3-7.
- Reese, L. A., Faist, J. M., & Sands, G. (2010). Measuring the creative class: Do we know it when we see it? *Journal of Urban Affairs*, 32(3), 345-366. doi:10.1111/j.1467-9906.2010.00496.x
- Scott, A. J. (1997). The cultural economy of cities. *International Journal of Urban and Regional Research*, 21(2), 323-339.
- Scott, A. J. (1999). The cultural economy: geography and the creative field. *Media, Culture & Society*, 21(6), 807-817.
- Scott, A. J. (2006). Creative cities: Conceptual issues and policy questions. *Journal of Urban Affairs*, 28(1), 1-17.

- Scott, A. J. (2010). Cultural economy and the creative field of the city. *Geografiska Annaler Series B: Human Geography*, 92(2), 115-130. doi:10.1111/j.1468-0467.2010.00337.x
- Shapiro, J. (2003). Smart cities: Explaining the relationship between city growth and human capital. *Harvard University*,
- Shapiro, J. M. (2006). Smart cities: Quality of life, productivity, and the growth effects of human capital. *The Review of Economics and Statistics*, 88(2), 324-335.
- Stolarick, K. & Currid, E (2013). Creativity and the crisis: The impact of creative workers on regional unemployment. *Cities*, 33, 5-14.
- Storper, M. M., Scott, A. J. (2008). Rethinking human capital, creativity and urban growth. *Journal of Economic Geography*, 9(2), 147-167.
- Throsby, D. D. (2001). Defining the artistic workforce: The Australian experience. *Poetics (Amsterdam)*, 28(4), 255-271.
- Throsby, D., & Zednik, A. (2011). Multiple job-holding and artistic careers: Some empirical evidence. *Cultural Trends*, 20(1), 9-24. doi:10.1080/09548963.2011.540809
- Unesco. (1999). *Non parametric measures of bi-variate relationships*. Guide to advanced data analysis using idams software (Ch. 4). Retrieved 19 Nov. 2013 from, http://www.unesco.org/webworld/idams/advguide/Chapt4_2.htm
- U.S. Census Bureau. (2013). United States Census Bureau. *County Business Patterns*. Retrieved 15 June 2013, from <http://www.census.gov/eos/www/naics/>
- U.S. Census Bureau. (2013b). United States Census Bureau. *Introduction to NAICS*. Retrieved 15 June 2013, from <http://www.census.gov/eos/www/naics/>
- U.S. Census Bureau. (2013c). United States Census Bureau. *American Factfinder, Table P001*. Retrieved 25 Sept. 2013, from <http://factfinder2.census.gov>
- Vivant, E. E. (2013). Creatives in the city: Urban contradictions of the creative city. *City, Culture and Society*, 4(2), 57-63.
- Vorley, T., Mould, O., & Smith, H. L. (2008). Introduction to geographical economies of creativity, enterprise and the creative industries. *Geografiska Annaler Series B: Human Geography*, 90(2), 101-106. doi:10.1111/j.1468-0467.2008.00280.x
- Waite, G., & Gibson, C. (2009). Creative small cities: Rethinking the creative economy in place. *Urban Studies*, 46(5-6), 1223-1246.

Weber, A. (1929). *Alfred Weber's Theory of the Location of Industries*. (Carl J. Friedrich, Trans.) Chicago. The University of Chicago Press. (Original Published, 1909).

Wilson, D., & Keil, R. (2008). The real creative class. *Social & Cultural Geography*, 9(8), 841-847. doi:10.1080/14649360802441473

Zukin, S. S. (1987). Gentrification: Culture and capital in the urban core. *Annual Review of Sociology*, 13(1), 129-147.

APPENDIX A

STANDARD OCCUPATIONAL CLASSIFICATION (SOC) MAJOR GROUPS

Super-Creative Core

15-0000 Computer and Mathematical Occupations

15-1000 Computer Specialists

15-1010 Computer and Information Scientists, Research

15-1020 Computer Programmers

15-1030 Computer Software Engineers

15-1031 Computer Software Engineers, Applications

15-1032 Computer Software Engineers, Systems Software

15-1040 Computer Support Specialists

15-1050 Computer Systems Analysts

15-1060 Database Administrators

15-1070 Network and Computer Systems Administrators

15-1080 Network Systems and Data Communications Analysts

15-1090 Miscellaneous Computer Specialists

15-1099 Computer Specialists, All Other

15-2000 Mathematical Science Occupations

15-2010 Actuaries

15-2020 Mathematicians

15-2030 Operations Research Analysts

15-2040 Statisticians

15-2090 Miscellaneous Mathematical Science Occupations

15-2091 Mathematical Technicians

15-2099 Mathematical Science Occupations, All Other

17-0000 Architecture and Engineering Occupations

17-1000 Architects, Surveyors, and Cartographers

17-1010 Architects, Except Naval

17-1012 Landscape Architects

17-1020 Surveyors, Cartographers, and Photogrammetrists

17-1021 Cartographers and Photogrammetrists

17-1022 Surveyors

17-2000 Engineers

17-2010 Aerospace Engineers

17-2020 Agricultural Engineers

17-2030 Biomedical Engineers

17-2040 Chemical Engineers

17-2050 Civil Engineers

17-2060 Computer Hardware Engineers

17-2070 Electrical and Electronics Engineers

17-2071 Electrical Engineers

17-2072 Electronics Engineers, Except Computer

17-2080 Environmental Engineers

17-2110 Industrial Engineers, Including Health and Safety

17-2111 Health and Safety Engineers, Except Mining Safety Engineers and Inspectors

17-2112 Industrial Engineers

17-2120 Marine Engineers and Naval Architects

17-2130 Materials Engineers

17-2140 Mechanical Engineers

17-2150 Mining and Geological Engineers, Including Mining Safety Engineers

17-2160 Nuclear Engineers

17-2170 Petroleum Engineers

17-2190 Miscellaneous Engineers

17-2199 Engineers, All Other

17-3000 Drafters, Engineering, and Mapping Technicians

17-3010 Drafters

17-3011 Architectural and Civil Drafters

17-3012 Electrical and Electronics Drafters

17-3013 Mechanical Drafters

17-3019 Drafters, All Other

17-3020 Engineering Technicians, Except Drafters

17-3021 Aerospace Engineering and Operations Technicians

17-3022 Civil Engineering Technicians

17-3023 Electrical and Electronic Engineering Technicians

17-3024 Electro-Mechanical Technicians

17-3025 Environmental Engineering Technicians

17-3026 Industrial Engineering Technicians

17-3027 Mechanical Engineering Technicians

17-3029 Engineering Technicians, Except Drafters, All Other

17-3030 Surveying and Mapping Technicians

19-0000 Life, Physical, and Social Science Occupations

19-1000 Life Scientists

- 19-1010 Agricultural and Food Scientists
- 19-1011 Animal Scientists
- 19-1012 Food Scientists and Technologists
- 19-1013 Soil and Plant Scientists
- 19-1020 Biological Scientists
- 19-1021 Biochemists and Biophysicists
- 19-1022 Microbiologists
- 19-1023 Zoologists and Wildlife Biologists
- 19-1029 Biological Scientists, All Other
- 19-1030 Conservation Scientists and Foresters
- 19-1031 Conservation Scientists
- 19-1032 Foresters
- 19-1040 Medical Scientists
- 19-1041 Epidemiologists
- 19-1042 Medical Scientists, Except Epidemiologists
- 19-1090 Miscellaneous Life Scientists
- 19-1099 Life Scientists, All Other

19-2000 Physical Scientists

- 19-2010 Astronomers and Physicists
- 19-2020 Atmospheric and Space Scientists
- 19-2030 Chemists and Materials Scientists
- 19-2040 Environmental Scientists and Geoscientists

19-2041 Environmental Scientists and Specialists, Including Health

19-2042 Geoscientists, Except Hydrologists and Geographers

19-2043 Hydrologists

19-2090 Miscellaneous Physical Scientists

19-2099 Physical Scientists, All Other

19-3000 Social Scientists and Related Workers

19-3010 Economists

19-3020 Market and Survey Researchers

19-3021 Market Research Analysts

19-3022 Survey Researchers

19-3030 Psychologists

19-3031 Clinical, Counseling, and School Psychologists

19-3032 Industrial-Organizational Psychologists

19-3039 Psychologists, All Other

19-3040 Sociologists

19-3050 Urban and Regional Planners

19-3090 Miscellaneous Social Scientists and Related Workers

19-3091 Anthropologists and Archeologists

19-3092 Geographers

19-3093 Historians

19-3094 Political Scientists

19-3099 Social Scientists and Related Workers, All Other

19-4000 Life, Physical, and Social Science Technicians

19-4010 Agricultural and Food Science Technicians

19-4020 Biological Technicians

19-4030 Chemical Technicians

19-4040 Geological and Petroleum Technicians

19-4050 Nuclear Technicians

19-4060 Social Science Research Assistants

19-4090 Miscellaneous Life, Physical, and Social Science Technicians

19-4091 Environmental Science and Protection Technicians, Including Health

19-4092 Forensic Science Technicians

19-4093 Forest and Conservation Technicians

19-4099 Life, Physical, and Social Science Technicians, All Other

25-0000 Education, Training, and Library Occupations

25-1000 Postsecondary Teachers

25-1010 Business Teachers, Postsecondary

25-1020 Math and Computer Teachers, Postsecondary

25-1021 Computer Science Teachers, Postsecondary

25-1022 Mathematical Science Teachers, Postsecondary

25-1030 Engineering and Architecture Teachers, Postsecondary

25-1031 Architecture Teachers, Postsecondary

25-1032 Engineering Teachers, Postsecondary

25-1040 Life Sciences Teachers, Postsecondary

25-1041 Agricultural Sciences Teachers, Postsecondary

25-1042 Biological Science Teachers, Postsecondary

25-1043 Forestry and Conservation Science Teachers, Postsecondary

25-1050 Physical Sciences Teachers, Postsecondary

25-1051 Atmospheric, Earth, Marine, and Space Sciences Teachers,
Postsecondary

25-1052 Chemistry Teachers, Postsecondary

25-1053 Environmental Science Teachers, Postsecondary

25-1054 Physics Teachers, Postsecondary

25-1060 Social Sciences Teachers, Postsecondary

25-1061 Anthropology and Archeology Teachers, Postsecondary

25-1062 Area, Ethnic, and Cultural Studies Teachers, Postsecondary

25-1063 Economics Teachers, Postsecondary

25-1064 Geography Teachers, Postsecondary

25-1065 Political Science Teachers, Postsecondary

25-1066 Psychology Teachers, Postsecondary

25-1067 Sociology Teachers, Postsecondary

25-1069 Social Sciences Teachers, Postsecondary, All Other

25-1070 Health Teachers, Postsecondary

25-1071 Health Specialties Teachers, Postsecondary

25-1072 Nursing Instructors and Teachers, Postsecondary

25-1080 Education and Library Science Teachers, Postsecondary

25-1081 Education Teachers, Postsecondary

25-1082 Library Science Teachers, Postsecondary

25-1110 Law, Criminal Justice, and Social Work Teachers, Postsecondary

25-1111 Criminal Justice and Law Enforcement Teachers, Postsecondary

25-1112 Law Teachers, Postsecondary

25-1113 Social Work Teachers, Postsecondary

25-1120 Arts, Communications, and Humanities Teachers, Postsecondary

25-1121 Art, Drama, and Music Teachers, Postsecondary

25-1122 Communications Teachers, Postsecondary

25-1123 English Language and Literature Teachers, Postsecondary

25-1124 Foreign Language and Literature Teachers, Postsecondary

25-1125 History Teachers, Postsecondary

25-1126 Philosophy and Religion Teachers, Postsecondary

25-1190 Miscellaneous Postsecondary Teachers

25-1191 Graduate Teaching Assistants

25-1192 Home Economics Teachers, Postsecondary

25-1193 Recreation and Fitness Studies Teachers, Postsecondary

25-1194 Vocational Education Teachers, Postsecondary

25-1199 Postsecondary Teachers, All Other

25-2000 Primary, Secondary, and Special Education School Teachers

25-2010 Preschool and Kindergarten Teachers

25-2011 Preschool Teachers, Except Special Education

25-2012 Kindergarten Teachers, Except Special Education

25-2020 Elementary and Middle School Teachers

25-2021 Elementary School Teachers, Except Special Education

25-2022 Middle School Teachers, Except Special and Vocational Education

25-2023 Vocational Education Teachers, Middle School

- 25-2030 Secondary School Teachers
- 25-2031 Secondary School Teachers, Except Special and Vocational Education
- 25-2032 Vocational Education Teachers, Secondary School
- 25-2040 Special Education Teachers
- 25-2041 Special Education Teachers, Preschool, Kindergarten, and Elementary School
- 25-2042 Special Education Teachers, Middle School
- 25-2043 Special Education Teachers, Secondary School
- 25-3000 Other Teachers and Instructors*
 - 25-3010 Adult Literacy, Remedial Education, and GED Teachers and Instructors
 - 25-3020 Self-Enrichment Education Teachers
 - 25-3090 Miscellaneous Teachers and Instructors
 - 25-3099 Teachers and Instructors, All Other
- 25-4000 Librarians, Curators, and Archivists*
 - 25-4010 Archivists, Curators, and Museum Technicians
 - 25-4020 Librarians
 - 25-4030 Library Technicians
- 25-9000 Other Education, Training, and Library Occupations*
 - 25-9010 Audio-Visual Collections Specialists
 - 25-9020 Farm and Home Management Advisors
 - 25-9030 Instructional Coordinators
 - 25-9040 Teacher Assistants
 - 25-9090 Miscellaneous Education, Training, and Library Workers
 - 25-9099 Education, Training, and Library Workers, All Other

27-0000 Arts, Design, Entertainment, Sports, and Media Occupations

27-1000 Art and Design Workers

27-1010 Artists and Related Workers

27-1011 Art Directors

27-1012 Craft Artists

27-1013 Fine Artists, Including Painters, Sculptors, and Illustrators

27-1014 Multi-Media Artists and Animators

27-1019 Artists and Related Workers, All Other

27-1020 Designers

27-1021 Commercial and Industrial Designers

27-1022 Fashion Designers

27-1023 Floral Designers

27-1024 Graphic Designers

27-1025 Interior Designers

27-1026 Merchandise Displayers and Window Trimmers

27-1027 Set and Exhibit Designers

27-1029 Designers, All Other

27-2000 Entertainers and Performers, Sports and Related Workers

27-2010 Actors, Producers, and Directors

27-2020 Athletes, Coaches, Umpires, and Related Workers

27-2021 Athletes and Sports Competitors

27-2022 Coaches and Scouts

27-2023 Umpires, Referees, and Other Sports Officials

- 27-2030 Dancers and Choreographers
- 27-2040 Musicians, Singers, and Related Workers
- 27-2041 Music Directors and Composers
- 27-2042 Musicians and Singers
- 27-2090 Miscellaneous Entertainers and Performers, Sports and Related Workers
- 27-2099 Entertainers and Performers, Sports and Related Workers, All Other
- 27-3000 Media and Communication Workers*
 - 27-3010 Announcers
 - 27-3011 Radio and Television Announcers
 - 27-3012 Public Address System and Other Announcers
 - 27-3020 News Analysts, Reporters and Correspondents
 - 27-3021 Broadcast News Analysts
 - 27-3022 Reporters and Correspondents
 - 27-3030 Public Relations Specialists
 - 27-3040 Writers and Editors
 - 27-3041 Editors
 - 27-3042 Technical Writers
 - 27-3043 Writers and Authors
 - 27-3090 Miscellaneous Media and Communication Workers
 - 27-3091 Interpreters and Translators
 - 27-3099 Media and Communication Workers, All Other
- 27-4000 Media and Communication Equipment Workers*
 - 27-4010 Broadcast and Sound Engineering Technicians and Radio Operators

27-4011 Audio and Video Equipment Technicians
27-4012 Broadcast Technicians
27-4013 Radio Operators
27-4014 Sound Engineering Technicians
27-4020 Photographers
27-4030 Television, Video, and Motion Picture Camera Operators and Editors
27-4031 Camera Operators, Television, Video, and Motion Picture
27-4032 Film and Video Editors
27-4090 Miscellaneous Media and Communication Equipment Workers
27-4099 Media and Communication Equipment Workers, All Other

Creative Professionals

11-0000 Management Occupations

11-1000 Top Executives
11-1010 Chief Executives
11-1020 General and Operations Managers
11-1030 Legislators
11-2000 Advertising, Marketing, Promotions, Public Relations, and Sales Managers
11-2010 Advertising and Promotions Managers
11-2020 Marketing and Sales Managers
11-2030 Public Relations Managers
11-3000 Operations Specialties Managers
11-3010 Administrative Services Managers
11-3020 Computer and Information Systems Managers

11-3030 Financial Managers
11-3040 Human Resources Managers
11-3041 Compensation and Benefits Managers
11-3042 Training and Development Managers
11-3049 Human Resources Managers, All Other
11-3050 Industrial Production Managers
11-3060 Purchasing Managers
11-3070 Transportation, Storage, and Distribution Managers

11-9000 Other Management Occupations

11-9010 Agricultural Managers
11-9011 Farm, Ranch, and Other Agricultural Managers
11-9012 Farmers and Ranchers
11-9020 Construction Managers
11-9030 Education Administrators
11-9031 Education Administrators, Preschool and Child Care Center/Program
11-9032 Education Administrators, Elementary and Secondary School
11-9033 Education Administrators, Postsecondary
11-9039 Education Administrators, All Other
11-9040 Engineering Managers
11-9050 Food Service Managers
11-9060 Funeral Directors
11-9070 Gaming Managers
11-9080 Lodging Managers

11-9110 Medical and Health Services Managers
11-9120 Natural Sciences Managers
11-9130 Postmasters and Mail Superintendents
11-9140 Property, Real Estate, and Community Association Managers
11-9150 Social and Community Service Managers
11-9190 Miscellaneous Managers
11-9199 Managers, All Other

13-0000 Business and Financial Operations Occupations

13-1000 Business Operations Specialists

13-1010 Agents and Business Managers of Artists, Performers, and Athletes
13-1020 Buyers and Purchasing Agents
13-1021 Purchasing Agents and Buyers, Farm Products
13-1022 Wholesale and Retail Buyers, Except Farm Products
13-1023 Purchasing Agents, Except Wholesale, Retail, and Farm Products
13-1030 Claims Adjusters, Appraisers, Examiners, and Investigators
13-1031 Claims Adjusters, Examiners, and Investigators
13-1032 Insurance Appraisers, Auto Damage
13-1040 Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation
13-1050 Cost Estimators
13-1060 Emergency Management Specialists
13-1070 Human Resources, Training, and Labor Relations Specialists
13-1071 Employment, Recruitment, and Placement Specialists

13-1072 Compensation, Benefits, and Job Analysis Specialists
13-1073 Training and Development Specialists
13-1079 Human Resources, Training, and Labor Relations Specialists, All Other
13-1080 Logisticians
13-1110 Management Analysts
13-1120 Meeting and Convention Planners
13-1190 Miscellaneous Business Operations Specialists
13-1199 Business Operations Specialists, All Other

13-2000 Financial Specialists

13-2010 Accountants and Auditors
13-2020 Appraisers and Assessors of Real Estate
13-2030 Budget Analysts
13-2040 Credit Analysts
13-2050 Financial Analysts and Advisors
13-2051 Financial Analysts
13-2052 Personal Financial Advisors
13-2053 Insurance Underwriters
13-2060 Financial Examiners
13-2070 Loan Counselors and Officers
13-2071 Loan Counselors
13-2072 Loan Officers
13-2080 Tax Examiners, Collectors, Preparers, and Revenue Agents
13-2081 Tax Examiners, Collectors, and Revenue Agents

13-2082 Tax Preparers

13-2090 Miscellaneous Financial Specialists

13-2099 Financial Specialists, All Other

23-0000 Legal Occupations

23-1000 Lawyers, Judges, and Related Workers

23-1010 Lawyers

23-1020 Judges, Magistrates, and Other Judicial Workers

23-1021 Administrative Law Judges, Adjudicators, and Hearing Officers

23-1022 Arbitrators, Mediators, and Conciliators

23-1023 Judges, Magistrate Judges, and Magistrates

23-2000 Legal Support Workers

23-2010 Paralegals and Legal Assistants

23-2090 Miscellaneous Legal Support Workers

23-2091 Court Reporters

23-2092 Law Clerks

23-2093 Title Examiners, Abstractors, and Searchers

23-2099 Legal Support Workers, All Other

29-0000 Healthcare Practitioners and Technical Occupations

29-1000 Health Diagnosing and Treating Practitioners

29-1010 Chiropractors

29-1011 Chiropractors

29-1020 Dentists

29-1021 Dentists, General

29-1022 Oral and Maxillofacial Surgeons

29-1023 Orthodontists

29-1024 Prosthodontists

29-1029 Dentists, All Other Specialists

29-1030 Dietitians and Nutritionists

29-1040 Optometrists

29-1041 Optometrists

29-1050 Pharmacists

29-1060 Physicians and Surgeons

29-1061 Anesthesiologists

29-1062 Family and General Practitioners

29-1063 Internists, General

29-1064 Obstetricians and Gynecologists

29-1065 Pediatricians, General

29-1066 Psychiatrists

29-1067 Surgeons

29-1069 Physicians and Surgeons, All Other

29-1070 Physician Assistants

29-1080 Podiatrists

29-1081 Podiatrists

29-1110 Registered Nurses

29-1120 Therapists

29-1121 Audiologists

- 29-1122 Occupational Therapists
- 29-1123 Physical Therapists
- 29-1124 Radiation Therapists
- 29-1125 Recreational Therapists
- 29-1126 Respiratory Therapists
- 29-1127 Speech-Language Pathologists
- 29-1129 Therapists, All Other
- 29-1130 Veterinarians
- 29-1190 Miscellaneous Health Diagnosing and Treating Practitioners
- 29-1199 Health Diagnosing and Treating Practitioners, All Other
- 29-2000 Health Technologists and Technicians*
 - 29-2010 Clinical Laboratory Technologists and Technicians
 - 29-2011 Medical and Clinical Laboratory Technologists
 - 29-2012 Medical and Clinical Laboratory Technicians
 - 29-2020 Dental Hygienists
 - 29-2030 Diagnostic Related Technologists and Technicians
 - 29-2031 Cardiovascular Technologists and Technicians
 - 29-2032 Diagnostic Medical Sonographers
 - 29-2033 Nuclear Medicine Technologists
 - 29-2034 Radiologic Technologists and Technicians
 - 29-2040 Emergency Medical Technicians and Paramedics
 - 29-2050 Health Diagnosing and Treating Practitioner Support Technicians
 - 29-2051 Dietetic Technicians

- 29-2052 Pharmacy Technicians
- 29-2053 Psychiatric Technicians
- 29-2054 Respiratory Therapy Technicians
- 29-2055 Surgical Technologists
- 29-2056 Veterinary Technologists and Technicians
- 29-2060 Licensed Practical and Licensed Vocational Nurses
- 29-2070 Medical Records and Health Information Technicians
- 29-2080 Opticians, Dispensing
- 29-2090 Miscellaneous Health Technologists and Technicians
- 29-2091 Orthotists and Prosthetists
- 29-2099 Health Technologists and Technicians, All Other
- 29-9000 Other Healthcare Practitioners and Technical Occupations*
 - 29-9010 Occupational Health and Safety Specialists and Technicians
 - 29-9090 Miscellaneous Health Practitioners and Technical Workers
 - 29-9091 Athletic Trainers
 - 29-9099 Healthcare Practitioners and Technical Workers, All Other
- 41-0000 Sales and Related Occupations**
 - 41-1000 Supervisors, Sales Workers*
 - 41-1010 First-Line Supervisors/Managers, Sales Workers
 - 41-1011 First-Line Supervisors/Managers of Retail Sales Workers
 - 41-1012 First-Line Supervisors/Managers of Non-Retail Sales Workers
 - 41-2000 Retail Sales Workers*
 - 41-2010 Cashiers

41-2012 Gaming Change Persons and Booth Cashiers

41-2020 Counter and Rental Clerks and Parts Salespersons

41-2021 Counter and Rental Clerks

41-2022 Parts Salespersons

41-2030 Retail Salespersons

41-3000 Sales Representatives, Services

41-3010 Advertising Sales Agents

41-3020 Insurance Sales Agents

41-3030 Securities, Commodities, and Financial Services Sales Agents

41-3040 Travel Agents

41-3090 Miscellaneous Sales Representatives, Services

41-3099 Sales Representatives, Services, All Other

41-4000 Sales Representatives, Wholesale and Manufacturing

41-4010 Sales Representatives, Wholesale and Manufacturing

41-4011 Sales Representatives, Wholesale and Manufacturing, Technical and
Scientific Products

41-4012 Sales Representatives, Wholesale and Manufacturing, Except Technical
and Scientific Products

41-9000 Other Sales and Related Workers

41-9010 Models, Demonstrators, and Product Promoters

41-9011 Demonstrators and Product Promoters

41-9012 Models

41-9020 Real Estate Brokers and Sales Agents

41-9021 Real Estate Brokers

41-9022 Real Estate Sales Agents

41-9030 Sales Engineers

41-9031 Sales Engineers

41-9040 Telemarketers

41-9090 Miscellaneous Sales and Related Workers

41-9091 Door-To-Door Sales Workers, News and Street Vendors, and Related
Workers

41-9099 Sales and Related Workers, All Other

APPENDIX B

NORTH AMERICAN INDUSTRY CODE SYSTEM (NAICS) CODES

51 Information

- 511 Publishing Industries
 - 5111 Newspaper, book, and directory publishers
 - 5112 Software publishers
- 512 Motion picture and sound recording industries
 - 5122 Sound recording industries
- 515 Broadcasting
 - 5151 Radio and television broadcasting¹¹
 - 516 Internet publishing and broadcasting
 - 5161 Internet publishing and broadcasting&¹²
- 517 Telecommunications
 - 5181 ISPs and web search portals¹³
 - 5191 Other information services¹⁴

54 Professional and technical services

- 5411 Legal Services
- 5412 Accounting, Tax Preparation, Bookkeeping, and Payroll Services
- 5413 Architectural, Engineering, and Related Services
- 5414 Specialized Design Services
- 5415 Computer Systems Design and Related Services
- 5416 Management, Scientific, and Technical Consulting Services
- 5417 Scientific Research and Development Services

¹¹ Code changed from NAICS 5131 in 2002

¹² Industry code created in 2002

¹³ Industry code created in 2002

¹⁴ Code changed from NAICS 5141 in 2002

5418 Advertising and Related Services

5419 Other Professional, Scientific, and Technical Services

71 Arts, entertainment, and recreation

7111 Performing Arts Companies

7112 Spectator Sports

7113 Promoters of Performing Arts, Sports, and Similar Events:

7114 Agents and Managers for Artists, Athletes, Entertainers, and Other Public
Figures

7115 Independent Artists, Writers, and Performers

7121 Museums, historical sites, zoos, and parks

7131 Amusement Parks and Arcades

7132 Gambling Industries

7139 Other Amusement and Recreation Industries

APPENDIX C

COMPLETE LIST OF ALL 49 METROPOLITAN STATISTICAL AREAS BY RANK

OF ALL MEASURES

Metropolitan Statistical Area*	Florida 2000 Rank			Thesis 2000 Rank			Thesis 2005 Rank			Thesis 2010 Rank		
	Percent**	Labor**	Population**	Percent	Labor	Population	Percent	Labor	Population	Percent	Labor	Population
Washington--Baltimore, DC--MD--VA--WV	1	2	3	1	1	1	1	2	1	1	1	1
Raleigh--Durham--Chapel Hill, NC	2	1	1	15	12	8	13	12	10	11	9	10
Boston--Worcester--Lawrence, MA--NH--ME--CT	3	42	37	5	5	6	7	6	6	7	6	5
Austin--San Marcos, TX	4	7	4	14	17	11	11	14	11	10	10	9
San Francisco--Oakland--San Jose, CA	5	10	9	2	2	2	2	3	2	2	2	2
Minneapolis--St. Paul, MN--WI	6	4	2	19	19	19	19	17	8	15	12	7
Hartford, CT	7	3	6	28	21	21	45	43	44	37	39	35
Denver--Boulder--Greeley, CO	8	9	5	7	4	3	5	7	3	4	4	4
Seattle--Tacoma--Bremerton, WA	9	5	8	11	10	9	3	4	4	3	3	3
Houston--Galveston--Brazoria, TX	10	16	21	32	33	34	26	30	31	32	28	31
Kansas City, MO--KS	11	6	7	8	7	7	6	5	5	14	11	11
New York--Northern New Jersey--Long Island, NY--NJ--CT--PA	12	37	41	6	9	13	4	8	9	8	7	8
Philadelphia--Wilmington--Atlantic City, PA--NJ--DE--MD	13	14	19	12	15	19	17	20	20	22	22	22
Chicago--Gary--Kenosha, IL--IN--WI	14	17	18	13	14	16	15	18	18	18	17	17
San Diego, CA	15	31	39	16	13	17	14	13	14	9	13	14
Atlanta, GA	16	27	16	4	6	5	10	9	7	6	5	6
Rochester, NY	17	11	14	39	41	42	34	39	36	35	38	37
Sacramento--Yolo, CA	18	45	43	30	34	35	32	41	41	33	43	43
Detroit--Ann Arbor--Flint, MI	19	28	24	21	29	27	8	10	12	16	20	24

Metropolitan Statistical Area*	Florida 2000 Rank			Thesis 2000 Rank			Thesis 2005 Rank			Thesis 2010 Rank		
	Percent	Labor	Population	Percent	Labor	Population	Percent	Labor	Population	Percent	Labor	Population
Los Angeles--Riverside--Orange County, CA	20	44	46	10	11	15	9	11	13	5	8	12
Jacksonville, FL	21	38	34	40	40	37	40	35	35	42	42	41
Pittsburgh, PA	22	26	32	22	24	29	21	24	23	17	15	13
Dallas--Fort Worth, TX	23	18	15	17	16	14	16	16	15	24	14	16
St. Louis, MO--IL	24	21	20	23	23	22	20	19	16	19	16	15
Indianapolis, IN	25	12	12	41	37	36	25	26	21	36	33	33
Charlotte--Gastonia--Rock Hill, NC--SC	26	13	10	20	20	18	44	42	40	34	37	38
Columbus, OH	27	15	13	33	26	20	38	33	27	38	34	28
Cleveland--Akron, OH	28	23	22	37	38	38	42	44	45	44	45	42
Oklahoma City, OK	29	29	33	44	42	44	33	28	29	41	30	36
Portland--Salem, OR--WA	30	41	31	42	44	41	36	36	34	20	21	18
Tampa--St. Petersburg--Clearwater, FL	31	24	26	9	8	10	24	23	32	23	25	30
Nashville, TN	32	25	17	38	32	24	29	22	19	31	27	26
Buffalo--Niagara Falls, NY	33	22	29	43	45	45	41	45	46	43	44	44
San Antonio, TX	34	39	45	26	25	31	39	37	39	40	40	40
Phoenix--Mesa, AZ	35	35	35	25	27	26	35	38	37	28	35	39
Norfolk--Virginia Beach--Newport News, VA--NC	36	20	40	24	22	33	18	21	25	12	18	19
Miami--Fort Lauderdale, FL	37	47	47	29	39	40	27	31	33	29	31	29
Orlando, FL	38	32	23	3	3	4	12	15	17	13	24	25
Milwaukee--Racine, WI	39	8	11	36	36	32	30	27	24	26	23	21
Cincinnati--Hamilton, OH--KY--IN	40	30	27	27	28	25	31	32	28	27	29	27
Providence--Fall River--Warwick, RI--MA	41	40	38	45	47	48	23	34	30	30	36	32
New Orleans, LA	42	19	36	34	31	39	37	1	43	47	41	45
West Palm Beach--Boca Raton, FL	43	48	48	18	18	23	22	25	26	21	26	23
Greensboro--Winston-Salem--High Point, NC	44	36	25	48	48	47	49	49	48	48	49	49
Salt Lake City--Ogden, UT	45	34	30	35	30	28	28	29	22	25	19	20
Louisville, KY--IN	46	33	28	46	43	43	46	40	38	39	32	34

Memphis, TN--AR--MS	47	43	44	47	46	46	48	47	47	49	48	48
Grand Rapids--Muskegon--Holland, MI	48	46	42	49	49	49	43	46	42	46	46	46
Las Vegas, NV--AZ	49	49	49	31	35	30	47	48	49	45	47	47
Metropolitan Statistical Area*	Percent**	Labor**	Population**	Percent	Labor	Population	Percent	Labor	Population	Percent	Labor	Population
	Florida 2000 Rank			Thesis 2000 Rank			Thesis 2005 Rank			Thesis 2010 Rank		

*Forty-nine metropolitan statistical areas with populations of one million or more

**Percent = Percentage of creative employment

**Labor = Per capita labor force – number of creative jobs per 1000 people in the eligible labor force

**Population = Per capita population – number of creative jobs per 1000 people in the general population

APPENDIX D

RAW DATA VALUES FOR EACH MEASURE RANKED BY
FLORIDA 2000, THESIS 2000 THESIS 2005, AND THESIS 2010

Metropolitan Statistical Area*	Florida 2000 Rank			Thesis 2000 Rank		
	Percent**	Labor**	Population**	Percent	Labor	Population
Washington--Baltimore, DC--MD--VA--WV	0.3835	361.72	203.89	0.1662	164.64	89.41
Raleigh--Durham--Chapel Hill, NC	0.3822	353.01	194.84	0.0885	111.06	62.60
Boston--Worcester--Lawrence, MA--NH--ME--CT	0.3796	344.33	191.71	0.1073	131.89	71.19
Austin--San Marcos, TX	0.3639	330.03	184.96	0.0898	103.65	61.09
San Francisco--Oakland--San Jose, CA	0.3479	319.95	177.42	0.1208	147.30	81.31
Minneapolis--St. Paul, MN--WI	0.3392	317.47	176.67	0.0832	100.20	59.16
Hartford, CT	0.3338	313.82	173.17	0.0744	95.38	48.94
Denver--Boulder--Greeley, CO	0.3302	313.27	172.77	0.1058	134.38	76.40
Seattle--Tacoma--Bremerton, WA	0.3268	312.03	172.10	0.0940	115.60	62.42
Houston--Galveston--Brazoria, TX	0.3252	311.77	168.82	0.0717	85.06	43.08
Kansas City, MO--KS	0.3245	311.40	168.23	0.1057	129.24	70.50
New York--Northern New Jersey--Long Island, NY--NJ--CT--PA	0.3225	308.38	164.88	0.1060	120.39	58.86
Philadelphia--Wilmington--Atlantic City, PA--NJ--DE--MD	0.3220	307.23	162.63	0.0906	103.74	51.90
Chicago--Gary--Kenosha, IL--IN--WI	0.3217	299.43	160.76	0.0905	103.79	54.30
San Diego, CA	0.3212	297.06	158.06	0.0884	110.36	53.97
Atlanta, GA	0.3204	292.40	156.05	0.1114	130.50	73.32
Rochester, NY	0.3157	289.94	153.37	0.0653	75.25	38.85
Sacramento--Yolo, CA	0.3106	287.65	151.69	0.0730	84.59	42.81
Detroit--Ann Arbor--Flint, MI	0.3104	284.45	149.81	0.0797	88.59	45.68

Metropolitan Statistical Area*	Florida 2000 Rank			Thesis 2000 Rank		
	Percent**	Labor**	Population**	Percent	Labor	Population
Los Angeles--Riverside--Orange County, CA	0.3071	284.43	149.71	0.1008	114.86	55.92
Jacksonville, FL	0.3033	282.91	148.10	0.0639	77.88	40.97
Pittsburgh, PA	0.3029	282.75	146.02	0.0791	92.29	45.32
Dallas--Fort Worth, TX	0.3018	282.70	145.09	0.0864	103.65	56.96
St. Louis, MO--IL	0.3014	281.62	142.31	0.0790	92.32	48.86
Indianapolis, IN	0.2968	278.49	141.72	0.0638	79.81	42.67
Charlotte--Gastonia--Rock Hill, NC--SC	0.2965	278.16	141.05	0.0806	97.99	53.84
Columbus, OH	0.2955	277.75	140.26	0.0713	90.62	49.61
Cleveland--Akron, OH	0.2945	275.96	139.86	0.0674	79.11	40.86
Oklahoma City, OK	0.2943	270.63	139.81	0.0578	73.72	37.14
Portland--Salem, OR--WA	0.2937	269.45	139.59	0.0630	71.31	39.31
Tampa--St. Petersburg--Clearwater, FL	0.2923	268.51	138.72	0.1034	124.16	62.18
Nashville, TN	0.2910	266.54	136.60	0.0656	85.24	46.94
Buffalo--Niagara Falls, NY	0.2888	266.00	136.35	0.0613	68.02	33.64
San Antonio, TX	0.2883	264.73	135.99	0.0750	91.76	43.91
Phoenix--Mesa, AZ	0.2861	264.51	135.40	0.0776	89.77	45.95
Norfolk--Virginia Beach--Newport News, VA--NC	0.2839	261.89	135.28	0.0787	95.08	43.73
Miami--Fort Lauderdale, FL	0.2835	260.58	135.10	0.0734	78.92	39.87
Orlando, FL	0.2804	258.52	132.00	0.1146	136.71	74.41
Milwaukee--Racine, WI	0.2792	258.09	131.30	0.0674	81.48	43.76
Cincinnati--Hamilton, OH--KY--IN	0.2770	254.63	130.83	0.0746	89.05	46.36
Providence--Fall River--Warwick, RI--MA	0.2761	251.63	127.40	0.0573	61.02	31.63
New Orleans, LA	0.2749	250.31	125.99	0.0696	85.32	40.58
West Palm Beach--Boca Raton, FL	0.2746	249.76	123.90	0.0847	100.35	48.06
Greensboro--Winston-Salem--High Point, NC	0.2729	248.98	123.75	0.0492	59.00	31.93
Salt Lake City--Ogden, UT	0.2676	244.86	123.51	0.0681	86.22	45.46
Louisville, KY--IN	0.2647	229.17	121.21	0.0563	71.40	37.54

Memphis, TN--AR--MS	0.2482	224.87	113.61	0.0518	66.71	33.05
Grand Rapids--Muskegon--Holland, MI	0.2432	214.17	102.57	0.0484	56.40	31.01
Las Vegas, NV--AZ	0.1846	174.54	91.46	0.0723	84.13	44.08
Metropolitan Statistical Area*	Percent**	Labor**	Population**	Percent	Labor	Population
	Florida 2000 Rank			Thesis 2000 Rank		

*Forty-nine metropolitan statistical areas with populations of one million or more

**Percent = Percentage of creative employment

**Labor = Per capita labor force – number of creative jobs per 1000 people in the eligible labor force

**Population = Per capita population – number of creative jobs per 1000 people in the general population

Metropolitan Statistical Area*	Thesis 2005 Rank			Thesis 2010 Rank		
	Percent	Labor	Population	Percent	Labor	Population
Washington--Baltimore, DC--MD--VA--WV	0.1559	156.18	84.34	0.1600	156.34	84.16
Raleigh--Durham--Chapel Hill, NC	0.0899	107.92	56.81	0.0885	103.04	52.18
Boston--Worcester--Lawrence, MA--NH--ME--CT	0.0986	118.21	62.65	0.0954	112.30	60.05
Austin--San Marcos, TX	0.0910	103.43	56.53	0.0894	101.07	53.61
San Francisco--Oakland--San Jose, CA	0.1200	143.06	72.30	0.1163	130.53	66.16
Minneapolis--St. Paul, MN--WI	0.0825	100.40	57.97	0.0838	99.78	55.73
Hartford, CT	0.0603	71.59	36.57	0.0653	73.20	38.70
Denver--Boulder--Greeley, CO	0.0995	117.71	66.85	0.0988	115.61	63.33
Seattle--Tacoma--Bremerton, WA	0.1009	119.96	64.52	0.1063	119.36	64.91
Houston--Galveston--Brazoria, TX	0.0747	88.22	43.60	0.0694	81.97	40.16
Kansas City, MO--KS	0.0992	119.76	64.10	0.0843	100.19	52.00
New York--Northern New Jersey--Long Island, NY--NJ--CT--PA	0.1000	115.02	57.29	0.0938	107.48	54.38
Philadelphia--Wilmington--Atlantic City, PA--NJ--DE--MD	0.0843	95.56	48.38	0.0797	88.78	44.85
Chicago--Gary--Kenosha, IL--IN--WI	0.0849	98.75	50.13	0.0829	92.77	47.53
San Diego, CA	0.0898	105.82	53.33	0.0903	98.84	48.72
Atlanta, GA	0.0955	110.84	60.78	0.0984	113.57	57.69
Rochester, NY	0.0709	79.10	40.49	0.0657	73.49	37.21
Sacramento--Yolo, CA	0.0716	76.10	37.41	0.0668	65.86	31.93
Detroit--Ann Arbor--Flint, MI	0.0973	109.58	54.60	0.0835	91.49	43.79

Metropolitan Statistical Area*	Thesis 2005 Rank			Thesis 2010 Rank		
	Percent**	Labor**	Population**	Percent	Labor	Population
Los Angeles--Riverside--Orange County, CA	0.0956	109.53	53.58	0.0987	106.26	52.09
Jacksonville, FL	0.0662	81.81	41.13	0.0584	65.97	33.29
Pittsburgh, PA	0.0795	92.11	46.40	0.0831	94.66	48.96
Dallas--Fort Worth, TX	0.0847	101.25	52.92	0.0789	94.75	47.90
St. Louis, MO--IL	0.0823	96.60	50.52	0.0815	93.90	48.28
Indianapolis, IN	0.0751	90.12	47.62	0.0656	78.45	39.44
Charlotte--Gastonia--Rock Hill, NC--SC	0.0610	72.08	37.41	0.0662	74.51	37.17
Columbus, OH	0.0688	84.68	44.76	0.0647	77.58	40.34
Cleveland--Akron, OH	0.0613	70.29	36.16	0.0565	62.75	32.14
Oklahoma City, OK	0.0714	89.63	44.17	0.0615	80.88	37.38
Portland--Salem, OR--WA	0.0701	81.18	42.75	0.0811	88.91	46.79
Tampa--St. Petersburg--Clearwater, FL	0.0761	92.42	43.46	0.0793	86.70	40.20
Nashville, TN	0.0737	94.88	49.18	0.0699	83.52	42.52
Buffalo--Niagara Falls, NY	0.0641	69.26	35.17	0.0582	63.02	31.91
San Antonio, TX	0.0679	80.63	38.43	0.0619	72.48	34.04
Phoenix--Mesa, AZ	0.0704	80.43	40.27	0.0716	75.10	36.88
Norfolk--Virginia Beach--Newport News, VA--NC	0.0825	95.04	46.21	0.0857	92.71	45.54
Miami--Fort Lauderdale, FL	0.0743	87.73	43.34	0.0716	79.16	40.31
Orlando, FL	0.0908	101.99	50.46	0.0849	86.72	43.22
Milwaukee--Racine, WI	0.0730	89.77	46.34	0.0748	88.00	45.00
Cincinnati--Hamilton, OH--KY--IN	0.0724	85.72	44.57	0.0717	81.23	41.73
Providence--Fall River--Warwick, RI--MA	0.0767	83.57	43.97	0.0708	74.62	39.71
New Orleans, LA	0.0697	340.10	36.65	0.0530	67.57	31.53
West Palm Beach--Boca Raton, FL	0.0787	90.35	46.04	0.0799	86.67	44.69
Greensboro--Winston-Salem--High Point, NC	0.0469	53.53	28.24	0.0433	46.73	23.81
Salt Lake City--Ogden, UT	0.0740	89.50	46.97	0.0760	91.77	45.43
Louisville, KY--IN	0.0598	76.72	38.43	0.0639	79.15	38.89

Memphis, TN--AR--MS	0.0516	67.54	32.43	0.0416	53.63	25.13
Grand Rapids--Muskegon--Holland, MI	0.0611	69.26	37.01	0.0533	59.50	29.62
Las Vegas, NV--AZ	0.0532	58.93	27.56	0.0544	55.09	25.50
Metropolitan Statistical Area*	Percent**	Labor**	Population**	Percent	Labor	Population
	Thesis 2005 Rank			Thesis 2010 Rank		

*Forty-nine metropolitan statistical areas with populations of one million or more

**Percent = Percentage of creative employment

**Labor = Per capita labor force – number of creative jobs per 1000 people in the eligible labor force

**Population = Per capita population – number of creative jobs per 1000 people in the general population

APPENDIX E

SPEARMAN'S RHO CORRELATION COEFFICIENTS FOR RANKINGS THAT
WERE COMPARED BY MEASURE BY YEAR.

Spearman's Rho Coefficients ¹⁵		Thesis								
		Percent: 2000	Percent: 2005	Percent: 2010	Labor force: 2000	Labor force: 2005	Labor force: 2010	Population: 2000	Population: 2005	Population: 2010
Florida	Percent: Florida	0.64*			0.64*			0.67*		
	Labor force: Florida				0.40*					
	Population: Florida							0.51*		
Thesis	**Percent: 2000		0.83*	0.85*	0.98*			0.94*		
	Percent: 2005			0.93*		0.90*			0.94*	
	Percent: 2010						0.95*			0.94*
	**Labor force: 2000					0.78*	0.80*	0.97*		
	Labor force: 2005						0.86*		0.89*	
	Labor force: 2010									0.98*
	**Population: 2000								0.80*	0.79*
	Population: 2005									0.94*
	Population: 2010									

*p-values < 0.001

**Percent = Percentage of creative employment

**Labor force = Per capita labor force – number of creative jobs per 1000 people in the eligible labor force

**Population = Per capita population – number of creative jobs per 1000 people in the general population

¹⁵ Comparisons were not evaluated where there is no data entered.

APPENDIX F

KENDALL'S TAU CORRELATION COEFFICIENTS FOR RANKINGS THAT
WERE COMPARED BY MEASURE BY YEAR.

Kendall's Tau Coefficients ¹⁶		Thesis								
		Percent: 2000	Percent: 2005	Percent: 2010	Labor force: 2000	Labor force: 2005	Labor force: 2010	Population: 2000	Population: 2005	Population: 2010
Florida	Percent: Florida	0.48*			0.46*			0.50*		
	Labor force: Florida				0.27*					
	Population: Florida							0.36*		
Thesis	**Percent: 2000		0.64*	0.66*	0.88*			0.80*		
	Percent: 2005			0.78*		0.81*			0.81*	
	Percent: 2010						0.83*			0.82*
	**Labor force: 2000					0.62*	0.62*	0.86*		
	Labor force: 2005						0.77*		0.82*	
	Labor force: 2010									0.91*
	**Population: 2000								0.63*	0.61*
	Population: 2005									0.81*
	Population: 2010									

*p-values < 0.001

**Percent = Percentage of creative employment

**Labor force = Per capita labor force – number of creative jobs per 1000 people in the eligible labor force

**Population = Per capita population – number of creative jobs per 1000 people in the general population

¹⁶ Comparisons were not evaluated where there is no data entered.