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Which Indicators Explain Metropolitan Economic Performance Best? Traditional or Creative Class

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Which Indicators Explain Metropolitan Economic Performance Best?

Traditional or Creative Class

Mary Donegan, Joshua Drucker, Harvey Goldstein, Nichola Lowe, and Emil Malizia

Problem: As Richard Florida's writings about the creative class garnered attention across the globe, planners and local government officials responded by enacting policies to attract and retain creative workers, often favoring spending for amenity and lifestyle attractions over more established economic development approaches. It is not clear, however, if the presence of these workers drives regional growth and development as effectively as more traditionally accepted place-based and institutional factors.

Purpose: In this article we explore the relationships between the presence of the creative class and regional economic performance, contrasting measures of regional creative capacity with traditional competitiveness factors.

Methods: We examine how Florida's creative class measures correlate with each other and with common indicators of economic performance for U.S. metropolitan areas. We also estimate multivariate regression models to compare the influence of Florida's measures to those of more traditional indicators of economic competitiveness on metropolitan job growth, income growth, and job instability.

Results and conclusions: We find that differences in Florida's measures of creativity are not generally associated with differences in metropolitan economic performance. Indicators of human capital and industry composition perform as well or better than talent, tolerance, and technology in explaining metropolitan job and income growth and job instability.

Takeaway for practice: Since we find measures derived from Florida's creative class hypotheses to be no more associated with positive economic outcomes than traditional competitiveness measures, we do not advocate replacing traditional economic development strategies with those based primarily on attracting the creative class. Programs supporting education, business creation, and industrial diversity are more likely to be effective tools for promoting economic well-being.

Keywords: economic development, creative class, human capital, regional competitiveness

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Since 2002, Richard Florida's writings about the creative class have attracted the attention of policymakers, urban planners, and developers throughout the United States and in other parts of the world. Public officials and city boosters have been convinced by Florida's writings and public lectures that the presence of creative people and, more specifically, highly educated professionals, scientists, computer programmers, designers, and artists, now drives metropolitan growth and competitiveness. Many planners have thus come to believe that improving the quality of life of young, educated professionals will stimulate economic development as well as result from it.

Florida says that for cities to attract and retain these creative types, it is no longer sufficient that local employers offer high-paying, steady jobs. Rather, competitive places must cater to the needs and desires of this subset of the working population (some 30% by Florida's estimates) by supporting the

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creation of hip eateries and cafes, music and performance venues, unique shops, and eclectic, culturally diverse entertainment districts. In cities from Denver to Providence to Durham, public officials, urban planners, and real estate developers have embraced this logic and have begun to transform gritty downtowns and inner-city neighborhoods into vibrant centers of urban life. In the process, they have developed mixed-used projects incorporating street-level retailing and improved public infrastructure, and converted old industrial and commercial spaces into high-end, high-style, and, in many cases, high-priced downtown residences.

The main assumption underlying this approach is that creative workers seek creative outlets in all aspects of their lives and therefore migrate to cities that actively support their preferred lifestyles. The economic benefits from attracting this small subset of the working population are expected to spill over to the larger community through new business creation, more globally competitive industries, and more and possibly better local jobs. The creative class is thus said to fuel economic growth through the attraction of talent-seeking employers.

If this creative class story of development is correct, urban planners should promote economic competitiveness by making cities more attractive to the creative class. Florida does not necessarily advocate a wholesale abandonment of traditional economic development policies, and has, for example, stated that large-scale K–12 education reform is critical (Florida, 2003). However his argument has convinced some planners to ignore traditional economic development ideas. As a result, policies to shape the built environment and facilitate urban redevelopment have themselves become popular tools for promoting economic development, rather than just being viewed as complements to more traditional approaches.

Yet, in their rush to attract and retain what is believed to be highly mobile talent, city officials have glossed over what we call a *traditional* set of variables for explaining differences in regions' economic growth: educational attainment, total population size, industrial mix, and measures of entrepreneurship. Relationships obviously exist between some of these variables and the numbers of workers in creative occupations, since many creative occupations are technology oriented and require university degrees or professional qualifications. Yet the factors traditionally used to explain and predict economic growth receive little media or policy attention. By featuring the lifestyle preferences of the creative class, and especially its fondness for culturally diverse and tolerant urban landscapes, Florida's ideas, indicated with measures of *creativity* or the *creative class*, are often contrasted with well-established ideas in economic development that emphasize investments in knowledge infrastructure,[1] and industrial diversification. Yet no one has demonstrated that attracting the creative class drives regional growth and development more effectively than improving indicators of more traditional factors like those listed above.

This article explores and evaluates Florida's arguments, contrasting the roles traditional and creative class indicators play in driving economic development in U.S. metropolitan areas. Our goal is not to dismiss the creative class argument, but rather to bring wider attention to its more traditional and less publicized tenets. Our concern, which others share (Blakely, 2005), is that, although Florida's creative class notion is incorporated into many development plans across the country, we have little empirical evidence that his arguments are grounded in economic reality.[2] As a result, we fear that policies based on a narrow interpretation of Florida's creative class concept may not live up to some policymakers' positive expectations, and may actually do harm by misallocating scarce public resources. Although Florida continues to extend and refine his ideas, we focus primarily on his books *The Rise of the Creative Class* (2002) and *Cities and the Creative Class* (2004a), because these have had the most influence on urban planning and policy. It is important that research evaluate these ideas critically and compare them to traditional development theories.

To do this, we first describe how the concept of creativity fits into theories of economic development, and how evidence has accumulated about the importance of creativity in regional development processes. We then analyze Florida's creative class argument by examining correlations, metropolitan rankings, and a series of regression models predicting economic performance that compare traditional indicators of metropolitan competitiveness to Florida's original creativity measures. Although not without its limitations, our research uses analytical tools absent in Florida's work to date.

The Literature on Creativity and Regional Economic Development

An extensive literature relates creativity and regional economic development. Identifying the factors that lead to creative regions began with Alfred Marshall's (1910) classic work on industrial districts. His work spawned a large literature describing and measuring how information and know-how flows among spatially proximate firms within the same industry, stimulating creativity and increasing adaptability to changing market and production condi-

tions. The French "milieu" theorists of the late 1980s and early 1990s (e.g., Andersson, 1985; Camagni, 1991; Maillat, 1995) developed a separate but related line of research investigating the ecological and institutional attributes of innovation-rich regions, such as the preponderance of small- and medium-sized firms, a supportive entrepreneurial climate, and robust informal inter-firm networks. Another approach focuses on the role of amenities and cultural factors in explaining regional economic growth. For example, Glaeser, Kolko, and Saiz (2001) found higher numbers of restaurants and theaters per capita to be linked to higher urban growth rates, and higher crime rates and poorer schools to be linked to lower rates of growth. The arts have been found to support local quality of life, build social capital, and encourage tourism, though the relative impact of arts funding versus other development strategies is not clear (e.g., Markusen, Schrock, & Cameron, 2004; Sterngold, 2004). Nevertheless, planners have become interested in how to design effective arts- and culture-based economic development strategies for cities and even rural areas (Evans, 2005; Fleming, 2005).

The economic theories of endogenous growth (Lucas, 1988; Romer, 1990) and the "new economic geography" (Krugman, 1991) have emphasized the importance of human capital in explaining differential growth and productivity across cities and regions. Skilled and highly educated people have the ability to generate and absorb knowledge that leads to greater productivity. Firms located in cities and regions with high levels of human capital become more competitive on average, in turn drawing more skilled labor to the region. Knowledge accumulation is enhanced further when skilled people engage in face-to-face interactions, producing spillovers for local producers.

In exploring the structural elements that encourage learning and innovation within creative cities such as Los Angeles, Scott (2005) underscored the importance of building the local production system simultaneously with attracting and training its labor force. By contrast, Florida's advocates would concentrate on creative individuals to influence a city's economic development outcomes, believing jobs follow people rather than people follow jobs, as was the assumption during the debate over federal urban policy in the 1970s (Hansen, 1975; Thompson, 1965). Yet the current consensus, developed in the academic literature over the last several decades, is that causation is bi-directional between human capital and regional economic development (for reviews see, e.g., Freeman, 2001; Mathur & Song, 1995; Partridge & Rickman, 2003). Indeed, endogenous growth theory embodies this two-way relationship, and there is strong empirical evidence that cities and regions with more educated residents grow faster than those with smaller stocks of human capital (Mathur, 1999). Given that the human capital vested in skilled and/or educated workers clearly overlaps somewhat with creativity, we consider below whether the concept of creativity adds meaningfully to the human capital explanation of regional economic growth by comparing the predictive performance of Florida's measures with that of more traditional indicators of regional competitiveness.

Florida's argument, that cities and regions that have attracted creative workers subsequently perform better than other cities and regions, has been critically reviewed in a number of popular journals and web sites (e.g., Bass, 2004; DeWolf, 2005; Durack, 2002; Nathan, 2005), but systematic empirical examination has been extremely limited.

The few formal tests of Florida's argument conducted to date focus on outcomes that cannot be influenced directly or immediately by policy, such as population growth or gross product, and have yielded conflicting results. U.S. regions whose creative workforces grew strongly in the 1990s experienced relatively weak job growth once differences in regional occupational mixes are taken into account (Gabe, 2006). Studying metropolitan population growth rates from 1990 to 2000, Childs (2004) discovered Florida's Bohemian index to be positively related to population growth, while his gay index was insignificant, and the size of the creative class was negatively related, likely due to high collinearity with a traditional human capital measure. On the other hand, Marlet and van Woerkens (2004) found the share of workers in the creative class to be a better predictor of employment growth in the 50 largest Dutch cities than the share of population holding at least a bachelor's degree, although the Bohemian index was significant only due to the singular case of Amsterdam.

Glaeser's (2004) exploratory analysis of whether Florida's variables are better predictors of U.S. metropolitan population growth than human capital found education (the share of adults with at least a bachelor's degree) to be a positive, significant, and substantively important influence on growth, whereas the size of the creative class was negative and not significant. In models including the education variable, Florida's gay, Bohemian, and technology indices were all insignificant. Glaeser concluded that whether people are skilled matters to urban economic well being, not whether they are diverse or Bohemian.

In contrast, a recent study by McGranahan and Wojan (2007) reported that employment in the creative class was positively associated with county-level employment growth in the United States. The relationship held with the inclusion of a control variable measuring the proportion of young adults with college degrees, and became stronger

with a recast definition of the creative class that the authors argued removes some occupations that require relatively little creativity. The work provides direct support for Florida's creative class ideas, though the results may be specific to the particular choices of independent variables and geographic units of analysis. A related article using the same creative class definition found that arts employment leads to economic dynamism as indicated by net new jobs, migration, and growth of the creative class, in both metropolitan and nonurban U.S. counties (Wojan, Lambert, & McGranahan, 2007).

Finally, the work of Rausch and Negrey (2006) presents an interesting complement to the analysis contained in this article. Rausch and Negrey found that the percentage of workers employed in creative occupations was positively correlated with the level of gross metropolitan product (GMP) for U.S. metropolitan areas, but had a significantly negative influence on GMP growth over time. The creative class percentage was insignificant, however, in all models that also included an educational attainment measure, demonstrating the overlap between Florida's measures of the creative class and traditional human capital measures. (The significance levels of Florida's technology, Bohemian, gay, and melting-pot indices varied across models depending on the particular form of the dependent variable.) We build on this idea of overlap, believing that many of Florida's measures succeed because they are based on established concepts whose explanatory power is well known, but that are not getting the attention they deserve.

We compare the usefulness of Florida's creative class argument to that of more traditional economic development theory using five of Florida's own indicators, and four more traditional measures. We use data spanning the years 1986 to 2004 to capture the period that provides the context for many of Florida's observations. After first examining associations among factors and a set of metropolitan rankings, we present a series of regression models that juxtapose traditional indicators of metropolitan competitiveness and Florida's original measures, along with control variables, to predict economic performance. All of the variables in these models, many of which are also referenced in our discussion below, are defined in Table 1. Table 2 provides descriptive statistics for the same measures.

Correlations and Metropolitan Rankings

Florida explains metropolitan competitiveness with lifestyle choices and ethnic and cultural diversity rather than traditional production-related factors, arguing that the most attractive and competitive places will be well endowed with talent, tolerance, and technology. He claims that only cities with these "3 Ts" will attract and retain the creative class he views as a prerequisite for sustained economic growth. We begin our analysis by asking whether the 3 Ts are correlated, as Florida's contentions would require, and whether measures of each are stable over time.

Florida measures talent using the creative class indices for 1998 and 2004[3] and the Bohemian index for 1990 only. He measures tolerance with the melting pot indices and the gay indices for 1990 and 2000. He measures technology with the tech-pole indices for 1990 and 2000. Table 3 displays the pairwise correlations among all of the variables with correlations for Florida's variables shaded. Correlations among all of the creativity variables are positive as expected, suggesting that the measures are mutually reinforcing. These positive correlations are not extremely high, however, indicating that none of the measures is redundant. The high positive correlations between 1990 and 2000 observations for the same measures indicate that the gay, melting pot, and tech-pole indices for metropolitan areas remained relatively stable over this 10-year period. The 0.77 correlation between the creative class indices in 1998 and 2004 may be somewhat lower because it is broader than the other component indices.

We were able to assemble all measures in Table 1 for only 263 of the 316 Metropolitan Statistical Areas (MSAs) that existed for the years specified because we were missing observations, primarily for the Bohemian index and in MSAs with fewer than 150,000 people in 1990. We divided these 263 metropolitan areas into those with populations of 500,000 or more in 1990 (87 metropolitan areas) and those with populations below 500,000 in 1990 (176 metropolitan areas). Since Florida devotes more attention to the largest metropolitan areas, we examined them separately, but also considered how well his ideas apply to smaller places.

Table 4 shows the group of large MSAs rank-ordered by the creative class index. It is clear that high rankings go to national and regional centers, cities with corporate headquarters and advanced business services, and places known for high technology, while older manufacturing cities, distribution centers, tourism areas, and places with less population tend to rank toward the bottom of this group.

Table 5 lists the highest and lowest rank-ordered creative class indices among the 176 metropolitan areas with fewer than 500,000 people. (The rank-ordering of all metropolitan areas is provided in the Appendix.) Among these smaller MSAs, the places ranking highest on the creative class measure include university cities and state capitals. The lowest-ranked places tend to be relatively

Table 1. Descriptions and sources of model variables.

Category	Variable concept	Symbol	Description	Data source[a]
Indicators of traditional economic development inputs	Educated adults	COLL90	Percentage of population aged 25 and older with a college degree, 1990	Census
	Manufacturing sector	MFGE86	Percentage of earnings from manufacturing (by place of work), 1986	BEA
	Business sector	BUSE86	Percentage of earnings from business services (by place of work), 1986	BEA
	Proprietorships	PRPE86	Percentage of earnings from proprietorships, 1986	BEA
Indicators of creativity inputs	Creative class	CC98 CC04	Percentage of MSA workforce in super-creative core[b] and creative professional occupations,[c] 1998 and 2004	BLS
	Tech-pole	TECH90 TECH00	The multiplicative combination of: the MSA's high-tech industrial output as a percentage of total US high-tech industrial output; and the MSA's location quotient of high-tech industrial output, 1990 and 2000	Milken Institute
	Bohemian index	BOHO90	Location quotient for artistically creative people in MSA, 1990[d]	BLS
	Melting pot index	MELT90 MELT00	Percentage of foreign-born people in MSA, 1990 and 2000	Census
	Gay index	GAY90 GAY00	Location quotient for males who identify as gay, 1990 and 2000	Census
Control variables	Population	POP90	Population of the MSA in 1990, in millions	Census
	Number of MSAs	NMSA30	Inclusive number of MSAs within 30 miles of target MSA	Census
	West	WEST	MSA in Census West region (AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA)	Census
	South	SOUTH	MSA in Census South region (AR, AL, DE, DC, FL, GA, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV, WY)	Census
	Midwest	MIDWEST	MSA in Census Midwest region (IA, IL, IN, KS, KY, OH, MI, MN, MO, ND, NE, SD, WI)	Census
Measures of economic performance (dependent variables)	Job change	JOBS9403	Percentage of change in number of jobs in an MSA, 1994 to 2003	BEA
	Income change	PCPI9403	Percentage of change in real per capita personal income in an MSA, 1994 to 2003	BEA
	Job instability	JOBSINS	Root mean square error (variance measure) from the jobs regression line	BEA

Notes

a. BLS = Bureau of Labor Statistics; Census = U.S. Census Bureau; BEA = Bureau of Economic Analysis.

b. According to Florida (2002), the super-creative core is defined as: computer and mathematical occupations; architecture and engineering occupations; life, physical, and social science occupations; education, training, and library occupations; and arts, design, entertainment, sports, and media occupations.

c. According to Florida (2002), creative professionals are defined as those in: management occupations; business and financial operations occupations; legal occupations; healthcare practitioners and technical occupations; and high-end sales and sales management.

d. According to Florida (2002), artistically creative people are defined as: authors, designers, musicians, composers, actors, directors, painters, sculptors, artist printmakers, photographers, dancers, artists, and performers.

Table 2. Descriptive statistics for model variables.

Category	Variable concept	Symbol	Mean	Median	Standard deviation	Range
Indicators of traditional economic development inputs	Educated adults	COLL90	0.19	0.19	0.06	0.07–0.42
	Manufacturing sector	MFGE86	0.22	0.21	0.12	0.03–0.57
	Business sector	BUSE86	0.04	0.03	0.02	0.00–0.15
	Proprietorships	PRPE86	0.09	0.09	0.03	0.03–0.17
Indicators of creativity inputs	Creative class	CC98	0.27	0.27	0.05	0.15–0.41
		CC04	0.28	0.28	0.05	0.15–0.43
	Tech-pole	TECH90	0.50	0.04	1.70	0.00–20.17
		TECH00	0.58	0.03	2.18	0.00–29.96
	Bohemian index	BOHO90	0.92	0.88	0.37	0.23–2.90
	Melting pot index	MELT90	0.05	0.03	0.06	0.00–0.45
		MELT00	0.08	0.05	0.08	0.00–0.51
	Gay index	GAY90	0.68	0.48	0.73	0.00–8.75
		GAY00	0.84	0.76	0.34	0.25–3.51
Control variables	Population	POP90	0.71	0.32	1.15	0.07–8.88
	Number of MSAs	NMSA30	1.16	1.00	0.45	1.00–4.00
	West	WEST				
	South	SOUTH				
	Midwest	MIDWEST				
Measures of economic performance	Job change	JOBS9403	14.79	13.67	9.95	(4.01)–58.59
	Income change	PCPI9403	15.07	13.33	10.15	(7.06)–39.89
	Job instability	JOBSINS	8008.46	3002.98	13440.53	301.15–89093.65

smaller, more geographically isolated places with economies depending on tourism or military facilities.

Based on these rank orderings, cities with more creative class workers in 1998 appear to be more livable places than lower ranked cities. Such rankings may give Florida's argument intuitive appeal. Yet comparing places at one point in time is no substitute for the analysis below that examines change over time.

Comparing How Traditional and Creative Class Measures Relate to Economic Performance

Florida's most provocative hypothesis is that after cities add key creative workers they will experience economic gains. When the creative class moves to places offering attractive lifestyle choices, employers are expected to follow. These attractive places should become more competitive and experience better economic outcomes. In this section we will discuss how well models containing traditional and creativity variables predict economic performance.

We do not have the time series data required to test the temporal ordering in the hypothesis that the creative class will lead to enterprise growth. However, we can analyze the direct influence of talent, tolerance, and technology on subsequent metropolitan economic performance with cross-sectional data by attempting to explain measures of performance change between 1994 and 2003 with traditional and creativity measures for 1986 or 1990. Unfortunately, Florida's earliest observations on the creative class are from 1998. Nevertheless, since the creative

Table 3. Pairwise correlations among model variables.

	COLL90	MFGE86	BUSE86	PRPE86	CC98	CC04	TECH90	TECH00	BOHO90	MELT90	MELT00	GAY90	GAY00	POP90	NMSA30	WEST	SOUTH	MID-WEST	JOBS 9403	PCPI 9403	JOBSINS
COLL90	1.00																				
MFGE86	−0.27	1.00																			
BUSE86	0.56	−0.18	1.00																		
PRPE86	−0.06	−0.31	−0.03	1.00																	
CC98	0.62	−0.15	0.52	−0.18	1.00																
CC04	0.70	−0.13	0.51	−0.25	0.77	1.00															
TECH90	0.32	0.05	0.35	−0.11	0.36	0.38	1.00														
TECH00	0.32	0.04	0.36	−0.09	0.36	0.39	0.93	1.00													
BOHO90	0.63	−0.09	0.50	−0.06	0.43	0.50	0.33	0.29	1.00												
MELT90	0.20	−0.29	0.33	0.11	0.19	0.12	0.38	0.32	0.24	1.00											
MELT00	0.25	−0.30	0.38	0.12	0.22	0.16	0.41	0.38	0.28	0.98	1.00										
GAY90	0.51	−0.23	0.39	0.08	0.40	0.41	0.26	0.27	0.59	0.45	0.46	1.00									
GAY00	0.52	−0.32	0.40	0.08	0.40	0.39	0.23	0.25	0.60	0.51	0.54	0.89	1.00								
POP90	0.25	−0.08	0.34	−0.08	0.39	0.33	0.57	0.42	0.40	0.43	0.43	0.33	0.35	1.00							
NMSA30	0.04	0.18	0.20	−0.10	0.05	0.01	0.11	0.11	0.05	0.23	0.24	0.03	0.02	0.01	1.00						
WEST	0.16	−0.32	0.16	0.31	0.03	0.10	0.13	0.18	0.19	0.37	0.40	0.31	0.34	0.03	−0.03	1.00					
SOUTH	−0.16	−0.22	−0.08	−0.02	−0.04	−0.11	−0.10	−0.08	−0.17	−0.10	−0.08	−0.13	0.00	−0.07	−0.21	−0.38	1.00				
MIDWEST	−0.02	0.38	−0.14	−0.23	−0.09	−0.05	−0.07	−0.08	−0.01	−0.27	−0.29	−0.16	−0.32	−0.06	0.06	−0.30	−0.48	1.00			
JOBS9403	0.18	−0.47	0.19	0.29	0.09	0.06	0.00	0.02	0.10	0.28	0.35	0.13	0.25	0.05	−0.09	0.26	0.24	−0.29	1.00		
PCPI9403	0.28	−0.31	0.07	−0.12	0.19	0.23	0.11	0.10	0.10	−0.06	−0.07	0.10	0.07	0.08	−0.05	−0.17	0.22	0.01	0.10	1.00	
JOBSINS	0.34	−0.01	0.38	−0.06	0.42	0.43	0.54	0.61	0.37	0.24	0.31	0.40	0.38	0.64	−0.03	0.08	−0.01	−0.03	0.12	0.10	1.00

Table 4. MSAs with populations greater than 500,000 in 1990, ranked by creative class percentage, 1998.

MSA	Rank	MSA	Rank	MSA	Rank
Washington, DC–MD–VA–WV	1	Birmingham, AL	31	Tucson, AZ	61
San Jose, CA	2	Baton Rouge, LA	32	Norfolk–Virginia Beach–Newport News, VA–NC	62
Raleigh–Durham–Chapel Hill, NC	3	New Bedford, MA	33	Bergen–Passaic, NJ	63
Austin–San Marcos, TX	4	Jacksonville, FL	34	Miami, FL	64
San Francisco, CA	5	Pittsburgh, PA	35	Orlando, FL	65
Middlesex–Somerset–Hunterdon, NJ	6	Portland–Vancouver, OR–WA	36	Cincinnati, OH–KY–IN	66
Boston, MA–NH	7	Richmond–Petersburg, VA	37	Bakersfield, CA	67
Seattle–Bellevue–Everett, WA	8	St. Louis, MO–IL	38	Providence–Fall River–Warwick, RI–MA	68
Minneapolis–St. Paul, MN–WI	9	Dayton–Springfield, OH	39	New Orleans, LA	69
New York, NY	10	Cleveland–Lorain–Elyria, OH	40	West Palm Beach–Boca Raton, FL	70
Albany–Schenectady–Troy, NY	11	Harrisburg–Lebanon–Carlisle, PA	41	Akron, OH	71
Philadelphia, PA–NJ	12	Syracuse, NY	42	Greensboro–Winston-Salem–High Point, NC	72
Hartford, CT	13	Charleston–North Charleston, SC	43	Toledo, OH	73
Baltimore, MD	14	Springfield, MA	44	El Paso, TX	74
Houston, TX	15	Nassau–Suffolk, NY	45	Fort Worth–Arlington, TX	75
Chicago, IL	16	Indianapolis, IN	46	Salt Lake City–Ogden, UT	76
Denver, CO	17	Charlotte–Gastonia–Rock Hill, NC–SC	47	Knoxville, TN	77
Los Angeles–Long Beach, CA	18	Monmouth–Ocean, NJ	48	Louisville, KY–IN	78
Kansas City, MO–KS	19	Columbus, OH	49	Riverside–San Bernardino, CA	79
Albuquerque, NM	20	Oklahoma City, OK	50	Fresno, CA	80
San Diego, CA	21	Tampa–St. Petersburg–Clearwater, FL	51	Tacoma, WA	81
Atlanta, GA	22	Nashville, TN	52	Memphis, TN–AR–MS	82
Sacramento, CA	23	Jersey City, NJ	53	Scranton–Wilkes–Barre–Hazleton, PA	83
Newark, NJ	24	Buffalo–Niagara Falls, NY	54	Greenville–Spartanburg–Anderson, SC	84
Rochester, NY	25	San Antonio, TX	55	Grand Rapids–Muskegon–Holland, MI	85
Detroit, MI	26	Allentown–Bethlehem–Easton, PA	56	Youngstown–Warren, OH	86
Oakland, CA	27	Tulsa, OK	57	Gary, IN	87
Dallas, TX	28	Fort Lauderdale, FL	58		
Omaha, NE–IA	29	Phoenix–Mesa, AZ	59		
Little Rock–North Little Rock, AR	30	Milwaukee–Waukesha, WI	60		

class measure remained relatively stable between 1998 and 2004, we feel the 1998 creative class index is a reasonable proxy for talent in earlier years.

We aim to predict economic performance for the period between 1994 and 2003 because it covers approximately one complete national business cycle, with national unemployment rates roughly similar in 1994 and 2003. We measure economic performance using the percentage change in jobs, percentage change in per capita personal income, and the instability of jobs between 1994 and 2003 (all defined in Table 1). Job growth is a policy-relevant quantitative indicator of economic growth, income growth reflects the overall increase in economic well being, and most people agree that minimizing job instability is an important policy goal.[4] While these indicators do not capture all of the outcomes of interest to planners, developers, and policymakers, they do represent factors often cited as regional economic development objectives.

As Table 3 showed, most of the pairwise correlations between job growth, income growth, and job instability are close to 0.1, indicating that they measure very different outcomes. Table 3 also showed that correlations between the 1998 creative class index and job and income growth are only 0.09 and 0.19, respectively, indicating they are not correlated. However, the 1998 creative class index increases with job instability as the pairwise correlation between these two variables is 0.42.

Although these are not shown, we also calculated correlations between creativity variables and economic performance indicators separately for metropolitan areas with populations above and below 500,000, respectively. While these correlations were generally very weak, they

Table 5. Top and bottom 25 MSAs with populations under 500,000 in 1990, ranked by creative class percentage, 1998.

MSA	Rank	MSA	Rank	MSA	Rank
Boulder–Longmont, CO	1	Pensacola, FL	18	Fort Smith, AR–OK	160
Bloomington–Normal, IL	2	Lafayette, IN	19	Olympia, WA	161
Gainesville, FL	3	Tallahassee, FL	20	Danville, VA	162
Trenton, NJ	4	Montgomery, AL	21	Medford–Ashland, OR	163
Bryan–College Station, TX	5	Monroe, LA	22	Hickory–Morganton, NC	164
Melbourne–Titusville–Palm Bay, FL	6	Ann Arbor, MI	23	Naples, FL	165
Huntsville, AL	7	Binghamton, NY	24	Bremerton, WA	166
Santa Fe, NM	8	Las Cruces, NM	25	Jacksonville, NC	167
Boise City Idaho	9			Decatur, IL	168
Lansing–East Lansing, MI	10	Grand Forks, ND–MN	152	Lawton, OK	169
Madison, WI	11	Reno, NV	153	Bloomington, IN	170
Jackson, MS	12	Lafayette, LA	154	Lynchburg, VA	171
Springfield, IL	13	Fayetteville–Springdale–Rogers, AR	155	Lubbock, TX	172
Portland, ME	14	Panama City, FL	156	Elkhart–Goshen, IN	173
Des Moines, IA	15	Lakeland–Winter Haven, FL	157	Ocala, FL	174
Columbia, SC	16	Salinas, CA	158	Yuma, AZ	175
Brazoria, TX	17	Sheboygan, WI	159	Houma, LA	176

were higher for larger metropolitan areas. This result is consistent with the big-city orientation of Florida's thinking. Florida usually speaks about a select group of large cities, not about all metropolitan areas. Unfortunately, advocates have applied his ideas without regard to city size, including to hamlets in isolated regions (e.g., see Blakely's [2005] comments). The lower correlations for smaller metropolitan areas suggest that applying Florida's arguments to smaller cities may be inappropriate.

Is it fair to expect strong correlations between the five creative class measures and these three economic outcome measures? If the presence of the creative class is a necessary prerequisite for economic development, then the answer is yes. These correlation tests suggest that differences in Florida's measures of the creative class for metropolitan areas are not associated with differences among those areas' rates of job or income growth.

Comparing Creativity Measures and Traditional Indicators of Competitiveness

With limited resources at their disposal, it is important for policymakers and practitioners to achieve economic development goals as efficiently as possible. To this end, we next compare the regional economic development contributions of creative class measures with those of more traditional factors. To do this, we pair creativity measures with concepts that have been discussed in the literature since the inception of the regional science field in the 1950s and the seminal works of Perloff, Dunn, Lampard, and Muth (1960) and Thompson (1965).

Comparing the Talent Index to Measures of Human Capital. The idea that a region's occupational profile has important implications for economic performance is not new. Studying the industry mix provides insight into what the local economy makes, but since the 1980s analysts have also studied occupational mix to find out what the local workforce does (see Markusen, 2004; Markusen & Barbour, 2007; Moss-Kantor, 1995; Thompson & Thompson, 1985).

One way to summarize this is with the concept of human capital. As discussed earlier, measures of economic performance will tend to be more positive in U.S. metropolitan areas that have more skilled workforces. We measure educational attainment as the percentage of adults with bachelor's degrees, and find it to be positively and significantly associated with the both the creative class index (0.62) and the Bohemian index (0.63).

The importance of human capital and occupational mix to economic development were recognized long before Florida first made his creative class argument. And, although he has used college-level educational attainment as a measure of talent (Florida, 2002, 2004b, 2005), he does not advocate traditional human capital development focused on improving education and access to education. Instead, the creative class hypothesis advocates workforce attraction.

No Comparison for Tolerance. Using measures of tolerance to understand a region's economic performance,

as the creative class hypothesis does, is original yet consistent with the view from urban sociology that cities are sources of innovation because they are socially open and culturally diverse. We were unable to identify a robust traditional economic development variable for comparison. We decided against urban density, a measure of proximity that we expected to foster communication and to be associated with openness, because we could not generate face-valid density measures for a sufficient number of metropolitan areas. Other researchers who have recently examined the relationship remain divided as to whether or not tolerance truly supports and is supported by economic development (Alesina & La Ferrara, 2005; Fainstein, 2005; Manning-Thomas & Darnton, 2006).

Comparing the Tech-Pole Index to Measures of Industry Mix. Florida's tech-pole measure reflects the presence of high-tech employers in a metropolitan area and is directly comparable to broader measures of industry mix long considered important to understanding regional growth and development. We compare the tech-pole measure to three of these traditional indicators: the portion of a region's total earnings from manufacturing, the portion of earnings from business services, and the portion of earnings from sole proprietorships.

Industry mix plays an important role in several theories of regional economic growth and development. The oldest and most straightforward of these is sector theory (Clark, 1960; Fisher, 1933; Malizia & Feser, 1999). Regions are expected to evolve through stages, first being economically dominated by primary sectors (agriculture), then by secondary sectors (manufacturing), and finally by tertiary sectors (services). The first two of our measures show the extent to which regional economies have transitioned from manufacturing to business services. Our sole proprietorships measure, a proxy for small-business and entrepreneurial activity, should relate indirectly to innovation capacity (Malecki, 1991). Explaining regional development as a function of industry mix and innovation capacity suggests that programs to enhance interindustry linkages, support entrepreneurship, and assist new business creation and existing business expansion in industries enjoying regional comparative advantage are appropriate economic development policies.

The Models

We assembled data to compare these four traditional variables (educational attainment, and shares of earnings from manufacturing, business services, and sole proprietorships) to Florida's five creative class measures to predict three economic outcome measures for metropolitan areas (percentage of change in jobs, percentage of change in per capita personal income, and job instability) using multivariate models. We were interested both in how well they would explain differences in regional economic outcomes and in their implications for designing policies to enhance regional economic competitiveness. As control variables, we also added dummy regional variables, a measure of spatial proximity to other metropolitan regions, and population size in 1990. The dummy variables indicating regional location capture metropolitan similarities due to geography and, to some extent, economic history, or vintage. The proximity variable recognizes the potential influence of spillover effects from adjacent metropolitan regions. Population size is an important control since the metropolitan areas range in population from about 60,000 to almost 9 million. Except for the influence of population size, these controls are not part of Florida's arguments.

It is important to understand that these models are not attempts to explain economic growth or economic performance. Our intention is neither to identify all relevant factors influencing economic outcomes nor to specify the most powerful explanatory models. Rather, these are comparison tests designed to gauge the relative explanatory power (variation explained) and statistical significance of the creative class argument. We regress each dependent variable against both the entire traditional and creative class sets of variables, resulting in six models (shown in Tables 6–8).

The six models explain from 10% to more than 50% of the total variation in the respective dependent variables (as indicated by the adjusted R^2 statistic). We are able to make the desired comparisons because the results are generally consistent. Measures of human capital and sector share usually outperform Florida's measures of talent, tolerance, and technology.

Percentage of Change in Jobs. Model 1 in Table 6 explains job change using traditional factors. The share of earnings in manufacturing in the metropolitan area is the most important explanatory factor in this model, having a strong negative influence on job growth. The importance of manufacturing in 1986 appears to cast a long shadow on subsequent job growth prospects. The percentage of earnings accounted for by sole proprietorships has a positive influence on job growth. The other important contributors are two control variables, location in the South or West.

In Model 2, which uses Florida's creativity factors instead of the traditional economic development indicators, the melting pot index has the greatest positive impact on job growth. None of the other creative class measures are important in the job growth model. This is consistent with the finding reported by Gabe (2006) that regions with strong growth in the creative workforce have very weak growth in overall jobs. The tech-pole measure is significant, but negative, indicating that metropolitan areas with

smaller concentrations of economic activity in technology-based sectors grew faster than those with higher concentrations of technology-based industries. Most interestingly, the proportion of regional workforces in creative class occupations (ranging from 14 to 41% for the metropolitan areas studied) had no significant effect on metropolitan job growth, although its sign is positive as expected. We concede that these results may have been affected by our choice to use data on change from 1994 to 2003, since the 2000–2001 downturn greatly reduced employment in the tech sector, which is positively related the size of the creative class.[5]

Percentage of Change in Per Capita Income. The two models predicting income change explain less variation than those predicting other economic performance measures, but the traditional measures in Model 3 are clearly superior to the creative class measures in Model 4 (as shown in Table 7). Among the traditional factors, metropolitan areas with less manufacturing and higher shares of residents with education beyond high school in 1990 experienced significantly more per capita income growth from 1994 to 2003. More earnings from sole proprietorships resulted in lower income growth. The controls for location in the South and Midwest were also significant.

Among the creative class variables, places with higher values for the creative class index in 1998 experienced more per capita income growth in the 1994–2003 period. The same two controls for location were important, but only that for the South was significant.[6]

Job Instability. Florida's measures explain job instability slightly better than the traditional measures. The significant control variables of location in the West, South, and Midwest, and population in 1990 have similar effects in each model. Among traditional measures, a higher share of earnings attributable to manufacturing increases job instability, as we might expect in this period of manufacturing decline. It is less clear why a higher share of workers with college educations or a higher proportion of earnings from business services would increase job instability, though perhaps the rapid expansion of business services nationally has led to unstable job growth at the regional level. Among Florida's variables, higher values for the melting pot index increases job stability, but the tech-pole, gay, and creative class indexes all result in greater job instability.

Table 6. Regression models containing traditional and creative class variables predict percent change in jobs for metropolitan areas, 1994–2003.

	Model 1 Traditional		Model 2 Creative class	
	ß	t	ß	t
COLL90	13.25	1.22		
MFGE86	−22.14	−4.00**		
BUSE86	49.62	1.42		
PRPE86	64.34	2.89**		
CC98			21.94	1.54
TECH90			−0.81	−1.98*
BOHO90			2.63	1.33
MELT90			44.28	3.64**
GAY90			−1.32	−1.26
NMSA30	0.69	−0.56	−1.00	−0.75
WEST	7.69	4.00**	10.20	5.02**
SOUTH	8.40	4.91**	9.62	5.56**
MIDWEST	3.21	1.88	2.51	1.40
POP90	0.16	0.33	−0.03	−0.05
Constant	3.04	0.70	0.46	0.10
N	263		263	
R^2	0.34		0.27	
Adjusted R^2	0.31		0.24	
F	14.13		9.27	

*$p < .05$ **$p < .01$

Table 7. Regression models containing traditional and creative class variables predict percent change in per capita personal income for metropolitan areas, 1994–2003.

	Model 3 Traditional		Model 4 Creative class	
	ß	t	ß	t
COLL90	27.97	4.22**		
MFGE86	−17.91	−5.32**		
BUSE86	−36.68	−1.72		
PRPE86	−27.41	−2.03*		
CC98			19.12	2.12*
TECH90			0.36	1.40
BOHO90			0.28	0.23
MELT90			−9.64	−1.25
GAY90			0.97	1.48
NMSA30	0.60	0.80	0.13	0.15
WEST	−2.19	−1.88	−0.36	−0.28
SOUTH	2.54	2.44*	3.816	3.49**
MIDWEST	2.14	2.06*	2.18	1.92
POP90	0.20	0.67	−0.04	−0.11
Constant	14.25	5.37**	6.03	2.18*
N	263		263	
R^2	0.27		0.13	
Adjusted R^2	0.24		0.10	
F value	10.35		3.86	

*$p < .05$ **$p < .01$

Table 8. Regression models containing traditional and creative class variables predict job instability for metropolitan areas, 1994–2003.

	Model 5 Traditional		Model 6 Creative class	
	ß	t	ß	t
COLL90	41,097	3.29**		
MFGE86	23,008	3.63**		
BUSE86	88,963	2.22*		
PRPE86	20,365	0.80		
CC98			34,125	2.29*
TECH90			2,032	4.75**
BOHO90			−1,757	−0.85
MELT90			−39,838	−3.13**
GAY90			4,346	3.99**
NMSA30	−1,651	−1.16	11	0.01
WEST	7,034	3.20**	5,347	2.52*
SOUTH	7,073	3.61**	5,415	2.99**
MIDWEST	4,567	2.34**	4,776	2.54*
POP90	6,951	12.41**	5,710	8.37**
Constant	−18,465	−3.70**	−10,026	−2.19**
N	263		263	
R^2	0.50		0.54	
Adjusted R^2	0.49		0.53	
F value	28.41		30.03	

*$p < .05$ **$p < .01$

These results offer no compelling conclusions to help local economic developers and policymakers make job growth more stable. Except for the melting pot index, the presence of the creative class leads to greater job instability. The factor most likely to explain instability is economic diversity; economically diverse cities are expected to remain more stable than less diverse cities over the business cycle (Malizia, 1991). Economic diversity was not included in this analysis because it had no clear association with any of Florida's measures.

Alternative Strategies to Strengthen Metropolitan Competitiveness

Ideally, economic development strategies should be grounded in solid empirical research, and policymakers should be able to rely on them to achieve their objectives. Unfortunately, this is not the norm, whether the current fashion is concerned with spawning high-tech firms, growing industry clusters, promoting small business development and entrepreneurship, or more recently, attracting the creative class. The creative class argument is flawed in part because of how it is interpreted on the ground. Although it builds on established concepts in economic development like the tech-pole measure of high-tech industrial development, the creative class argument has gotten policy attention for recommending that areas use urban amenities to attract creative talent. Our analysis shows not all elements of the creative class argument really deserve resources and policy attention, but its less publicized components drawn from traditional theory are among those that do.

We have shown that several creative class measures are not clearly associated with desirable economic outcomes, yet they encourage economic developers and urban planners to cater to the assumed lifestyles of certain current and future residents.[7] In recent years, talent recruitment efforts have become the centerpiece of many local economic development strategies, and core-area redevelopment has become more prominent in urban planning. Our results show that there is little basis for expecting such strategies to succeed. Economic developers should therefore not view strategies based on recruiting the creative class as substitutes for traditional approaches to local economic development, such as investments in education and policy support for entrepreneurship and industrial diversity. We recommend instead, continued support for policies that promote business development and bolster regional innovation systems. Such policies can also be effective in mobilizing and harnessing talent by transforming creative energy into regional economic gain and advantage. Without supports of this kind, communities may be at the mercy of footloose talent, or worse, may not provide sufficient employment and income-generating opportunities to anchor such talent to their regions.

However, we are not arguing that the presence of the creative class in a region is a disadvantage. Planners could use Florida's arguments to lend support to many worthwhile development activities, including downtown revitalization, entertainment district improvement, compact higher-density projects, and promotion of the visual and performing arts. Through these efforts the livability of urban neighborhoods may be enhanced. Some local officials may wish to attract the creative class as an end in itself, particularly in larger urban centers. Planners may be able to attract the attention of policymakers with development strategies aimed at luring the creative class, and follow this with campaigns to increase support for human-capital-based economic development strategies that will assist a broader range of people.

Finally, Florida's indices may provide regions with a starting point for analyzing and harnessing their existing occupational strengths. To be an effective policy tool,

however, analysis of creative class attributes must recognize the variation across creative occupations (Markusen & Barbour, 2007). Florida's decision to lump all creative occupations together obscures important regional skills distinctions, as well as intra-group differences in values and lifestyle choices (Kotkin, 2004; Peck, 2005). As a result, Florida potentially undermines the potential richness of his own argument by jumping to a set of weak policies before ascertaining how creative talent connects to a given place and its economy.

Conclusions

With globalization and the rise of the knowledge economy in the United States, Richard Florida's arguments about the importance of the creative class and tolerance offer fresh insights about regional economies. Our empirical analysis of Florida's creativity measures, however, leads us to conclude that attracting the creative class is no substitute for traditional strategies such as investing in quality education, upgrading the skills of the workforce, creating new businesses, or expanding existing industries. Our results show that the 3 Ts are poor predictors of metropolitan job and income growth. If the primary goal is improving regional competitiveness, we expect traditional strategies to lead to better economic outcomes.

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Notes

1. It should be noted that in his recent writings Florida (2003, 2004b) emphasizes more than in previous work that universities are key institutions for creative class development and "magnets" for immigrant talent. He has recently criticized U.S. policymakers for failing to invest sufficient resources in local university systems and relying instead on "importing" highly educated workers from other regions (2003).

2. Markusen (2006) finds Florida's definition of the creative class problematic because it is not sufficiently distinct to guide either analytical research or policy design.

3. We made an attempt to estimate the creative class measure for 1990 using PUMS data, but were not successful. We then asked Rausch and Negrey (2006), who cited the creative class measure for 1990 in their article, for these data. Upon further review, Rausch and Negrey told us that their measure was actually for 1999, not 1990 as indicated in their article.

4. To measure instability, we first regressed the annual levels of employment from 1994 to 2003 against time for each metropolitan area. Each area's linear regression represents the base trend in jobs over the ten-year time period. We measure instability as deviations from these trends. While we could simply have used the standard deviation instead of this root mean square error, the superiority of the latter can be demonstrated with a simple example. One area does not grow; another area grows at a constant rate. According to the standard deviation measure the stagnant area is more stable than the growing one, while the root mean square error measure indicates that they are equally stable.

5. This point was raised by an anonymous reviewer. To investigate further whether the results of our jobs growth model may be biased against the creative class variables because of the disproportionate decline in the tech sectors in 2000–2001, we measured the correlation between the 2000 tech-pole variables and changes in jobs between 2000 and 2003 across all metropolitan areas in our data set. The estimated correlation coefficient is -0.237 ($p < .01$) which we interpret to indicate that, indeed, the greater the concentration of employment in the high tech sector in a metropolitan area, the smaller the percentage increase in jobs in that area between 2000 and 2003. Although statistically significant, the relationship is not particularly strong, so we drilled deeper by looking at some individual cases. The area with the highest tech-pole score is San Jose, and it also experienced the largest percentage employment decline. The Boulder (CO), Decatur (IL), and San Francisco (CA) metropolitan areas had the second, third, and fourth greatest percentage declines in employment, and all three also had high tech-pole scores, though not in the top 10. But almost all of the other metropolitan areas with among the worst 25 employment declines could be characterized as manufacturing regions, with below average tech-pole scores. We conclude that while the severity of the 2000–2001 recession was spatially uneven and on average disproportionately affected the tech sectors, it appeared that a small number of cases had produced the modest correlation we discovered. However, we do concede the general point that the time period we used does raise questions of external validity, and suggests that relationships between creative class measures and regional economic performance should be studied across different macroeconomic conditions. In particular, it would make sense to examine more recent changes in employment.

6. An anonymous reviewer suggested that Florida's creativity measures could be leading to positive outcomes in the traditional variables, which in turn lead to improved economic performance. If this were the case, our analysis could be overlooking the role of Florida's variables in economic development. We tested this idea by using interaction variables in additional models. Since Florida's earliest observations are for 1990 and our time period begins in 1994, we created interaction variables between Florida's 1990 variables and the percentage of earnings from sole proprietorships in 1993, and the percentage of earnings from manufacturing in 1993. In addition to the control variables, we used these eight interaction variables and the six variables in their original form in models predicting both job and income growth. Only one interaction variable, that interacting the melting pot index in 1990 and percentage of earnings from manufacturing in 1993, was significant in each model. This suggests that the creative class does not have an indirect effect on development, and therefore we have not included these models in this article.

7. Recent analyses, including studies by Richard Florida (2003, 2005), have started to raise concerns about the implications of this for urban and regional inequality. See, for example, Donegan and Lowe (2008) and Peck (2005).

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Appendix

MSAs ranked by creative class percentage, 1998.

MSA	Rank	MSA	Rank	MSA	Rank
Washington, DC–MD–VA–WV	1	Newark, NJ	41	Charlotte–Gastonia–Rock Hill, NC–SC	81
Boulder–Longmont, CO	2	Rochester, NY	42	Monmouth–Ocean, NJ	82
Bloomington–Normal, IL	3	Pensacola, FL	43	Columbus, OH	83
San Jose, CA	4	Detroit, MI	44	Oklahoma City, OK	84
Gainesville, FL	5	Lafayette, IN	45	Tyler, TX	85
Trenton, NJ	6	Oakland, CA	46	Tampa–St. Petersburg–Clearwater, FL	86
Bryan–College Station, TX	7	Dallas, TX	47	Wilmington, NC	87
Raleigh–Durham–Chapel Hill, NC	8	Tallahassee, FL	48	Nashville, TN	88
Austin–San Marcos, TX	9	Montgomery, AL	49	Richland–Kennewick–Pasco, WA	89
San Francisco, CA	10	Monroe, LA	50	Macon, GA	90
Melbourne–Titusville–Palm Bay, FL	11	Omaha, NE–IA	51	Fayetteville, NC	91
Middlesex–Somerset–Hunterdon, NJ	12	Ann Arbor, MI	52	Jersey City, NJ	92
Huntsville, AL	13	Little Rock–North Little Rock, AR	53	Buffalo–Niagara Falls, NY	93
Santa Fe, NM	14	Binghamton, NY	54	San Antonio, TX	94
Boston, MA–NH	15	Birmingham, AL	55	Great Falls, MT	95
Boise City, ID	16	Baton Rouge, LA	56	Allentown–Bethlehem–Easton, PA	96
Seattle–Bellevue–Everett, WA	17	New Bedford, MA	57	Bismarck, ND	97
Lansing–East Lansing, MI	18	Las Cruces, NM	58	Tulsa, OK	98
Minneapolis–St. Paul, MN–WI	19	Jacksonville, FL	59	Fort Lauderdale, FL	99
New York, NY	20	Charlottesville, VA	60	Eau Claire, WI	100
Albany–Schenectady–Troy, NY	21	Muncie, IN	61	Phoenix–Mesa, AZ	101
Philadelphia, PA–NJ	22	Pittsburgh, PA	62	Santa Cruz–Watsonville, CA	102
Hartford, CT	23	Spokane, WA	63	Asheville, NC	103
Baltimore, MD	24	Portland–Vancouver, OR–WA	64	Milwaukee–Waukesha, WI	104
Houston, TX	25	Richmond–Petersburg, VA	65	Topeka, KS	105
Chicago, IL	26	St. Louis, MO–IL	66	Redding, CA	106
Madison, WI	27	Corpus Christi, TX	67	Tucson, AZ	107
Jackson, MS	28	Dayton–Springfield, OH	68	Norfolk–VA Beach–Newport News, VA–NC	108
Denver, CO	29	Cleveland–Lorain–Elyria, OH	69	Santa Barbara–Santa Maria–Lompoc, CA	109
Los Angeles–Long Beach, CA	30	Colorado Springs, CO	70	Chico–Paradise, CA	110
Springfield, IL	31	Cedar Rapids, IA	71	Huntington–Ashland, WV–KY–OH	111
Kansas City, MO–KS	32	Harrisburg–Lebanon–Carlisle, PA	72	Fort Collins–Loveland, CO	112
Albuquerque, NM	33	Syracuse, NY	73	Duluth–Superior, MN–WI	113
Portland, ME	34	Charleston–North Charleston, SC	74	South Bend, IN	114
San Diego, CA	35	Springfield, MA	75	Bergen–Passaic, NJ	115
Des Moines, IA	36	Lincoln, NE	76	Miami, FL	116
Atlanta, GA	37	Santa Rosa, CA	77	New London–Norwich, CT–RI	117
Sacramento, CA	38	Nassau-Suffolk, NY	78	Orlando, FL	118
Columbia, SC	39	Bangor, ME	79		
Brazoria, TX	40	Indianapolis, IN	80		

Appendix (continued).

MSA	Rank	MSA	Rank	MSA	Rank
Cincinnati, OH–KY–IN	119	Odessa–Midland, TX	166	Bellingham, WA	214
Columbia, MO	120	Biloxi–Gulfport–Pascagoula, MS	167	Sioux Falls, SD	215
Utica-Rome, NY	121	Hamilton–Middletown, OH	168	Anniston, AL	216
Brownsville–Harlingen–San Benito, TX	122	Janesville–Beloit, WI	169	Waterloo–Cedar Falls, IA	217
Bakersfield, CA	123	Riverside–San Bernardino, CA	170	Sioux City, IA–NE	218
Beaumont–Port Arthur, TX	124	Savannah, GA	171	Merced, CA	219
McAllen–Edinburg–Mission, TX	125	Vallejo–Fairfield–Napa, CA	172	Terre Haute, IN	220
Fargo–Moorhead, ND–MN	126	Hagerstown, MD	173	Visalia–Tulare–Porterville, CA	221
Providence–Fall River–Warwick, RI–MA	127	Wichita Falls, TX	174	Pueblo, CO	222
Amarillo, TX	128	Rochester, MN	175	St. Cloud, MN	223
New Orleans, LA	129	Burlington, VT	176	Florence, AL	224
West Palm Beach–Boca Raton, FL	130	Texarkana, TX–Texarkana, AR	177	Lancaster, PA	225
State College, PA	131	Williamsport, PA	178	Clarksville–Hopkinsville, TN–KY	226
Altoona, PA	132	Mansfield, OH	179	Steubenville–Weirton, OH–WV	227
Mobile, AL	133	Flint, MI	180	Jackson, MI	228
Longview–Marshall, TX	134	Pittsfield, MA	181	Salem, OR	229
Akron, OH	135	Fort Wayne, IN	182	Gary, IN	230
Greensboro–Winston-Salem–High Point, NC	136	Champaign-Urbana, IL	183	Greeley, CO	231
Florence, SC	137	Evansville–Henderson, IN–KY	184	York, PA	232
Kenosha, WI	138	Dubuque, IA	185	Joplin, MO	233
Eugene–Springfield, OR	139	Fresno, CA	186	Shreveport–Bossier City, LA	234
Toledo, OH	140	Johnstown, PA	187	Galveston, TX	235
Lexington, KY	141	Davenport–Moline–Rock Island, IA–IL	188	Cumberland, MD–WV	236
El Paso, TX	142	Kalamazoo–Battle Creek, MI	189	Benton Harbor, MI	237
Daytona Beach, FL	143	Tacoma, WA	190	Racine, WI	238
Fort Worth–Arlington, TX	144	Memphis, TN–AR–MS	191	Grand Forks, ND–MN	239
Vineland–Millville–Bridgeton, NJ	145	Appleton–Oshkosh–Neenah, WI	192	Reno, NV	240
Abilene, TX	146	Scranton–Wilkes-Barre–Hazleton, PA	193	Lafayette, LA	241
Billings, MT	147	Rapid City, SD	194	Fayetteville–Springdale–Rogers, AR	242
Salt Lake City–Ogden, UT	148	Lima, OH	195	Panama City, FL	243
Knoxville, TN	149	Killeen–Temple, TX	196	Lakeland–Winter Haven, FL	244
Erie, PA	150	Wausau, WI	197	Salinas, CA	245
Augusta–Aiken, GA–SC	151	Sharon, PA	198	Sheboygan, WI	246
Wichita, KS	152	Greenville–Spartanburg–Anderson, SC	199	Fort Smith, AR–OK	247
Chattanooga, TN–GA	153	Saginaw–Bay City–Midland, MI	200	Olympia, WA	248
Fort Pierce–Port St. Lucie, FL	154	Johnson City–Kingsport-Bristol, TN–VA	201	Danville, VA	249
Peoria–Pekin, IL	155	Decatur, AL	202	Medford–Ashland, OR	250
Tuscaloosa, AL	156	Grand Rapids–Muskegon–Holland, MI	203	Hickory–Morganton, NC	251
Louisville, KY–IN	157	Modesto, CA	204	Naples, FL	252
Fort Myers–Cape Coral, FL	158	Sarasota–Bradenton FL	205	Bremerton, WA	253
Cheyenne, WY	159	Stockton–Lodi, CA	206	Jacksonville, NC	254
Rockford, IL	160	Alexandria, LA	207	Decatur, IL	255
Canton–Massillon, OH	161	Youngstown–Warren, OH	208	Lawton, OK	256
Springfield, MO	162	Yakima, WA	209	Bloomington, IN	257
Yuba City, CA	163	Jamestown, NY	210	Lynchburg, VA	258
Roanoke, VA	164	Reading, PA	211	Lubbock, TX	259
Green Bay, WI	165	Glens Falls, NY	212	Elkhart–Goshen, IN	260
		Waco, TX	213	Ocala, FL	261
				Yuma, AZ	262
				Houma, LA	263