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Development and Quality of Life in Cities

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Abstract

Articulating the goals of economic development and defining quality of life has drawn the attention of influential thinkers from Socrates to Sen. Attempts to quantify and compare economies as they pertain to these concepts have largely focused on the macroeconomy. In this study, the Metropolitan Development Index is created to measure development and quality of life in large, urban areas in the United States. The researchers then test the sensitivity of city rankings to the data used in constructing the index. These tests indicate that the index is a substantive conception of development and quality of life. Additionally, the index is positively correlated with both economic prosperity and an individual's desire to reside in areas that offer higher levels of development and quality of life.

Keywords

economic development, quality of life, index, metropolitan statistical areas

Articulating the goals of economic development and defining quality of life has drawn the attention of influential thinkers throughout time. In Plato's (2002) *Crito*, Socrates challenges his interlocutor with the assertion that "the most important thing is not life, but the good life" (p. 48b). Socrates wants the ends and means of life to be considered. The tremendous increases in income and wealth following the Industrial Revolution have not been sufficient to dispel considerations of the good life from economics, nor answer the "why" of economic activity. Keynes (1963) echoed Socrates's challenge: "Our problem is to work out a social organization which shall be efficient as possible without offending our notions of a satisfactory way of life" (p. 321). To this day, determining the appropriate way to gauge economic growth and development remains an active area of study.

Contemporary conceptions of well-being and development have been profoundly influenced by the work of Amartya Sen and Martha Nussbaum. Sen (1985, 1999, 2005) and Nussbaum (2000, 2003, 2006) are integral to the formalization of the capabilities (or human development) approach. The capabilities approach asserts that economic development is about more than increasing incomes. Rather, development should be about increasing individuals' freedoms to realize human functionings. By conceptualizing the goals of development in a holistic manner, a robust picture of the quality of life within an economy is obtained. The capabilities approach inspired the creation of the United Nations' *Human Development Index* (HDI). The HDI's goal is to convey that "development is much more than growth" (Klugman, Rodríguez, & Choi, 2011, p. 249). The HDI's popularity, both among academics and policy makers, is attributable to its straightforward methodology and holistic interpretation of development and quality of life.

The HDI is widely used to compare development across nations but it does not speak to differences within a nation. These subnational differences can be quite substantial. Ignoring regional differences is problematic for the Tiebout-inspired (1956) individual who is able to "vote with their feet" and seek out better opportunities within their nation. In this study, we develop the *Metropolitan Development Index* (MDI) to speak to subnational differences. The MDI measures quality of life and development in populous urban areas in the United States while recognizing their existence within the same macroeconomy and national political system. The MDI is calculated for the 50 metropolitan statistical areas (MSAs) with the largest populations. These areas are chosen because they offer a tremendous amount of market and nonmarket benefits to their residents (Albouy, 2008, 2009; Glaeser, Kolko, & Saiz, 2001). Also, they are responsible for a tremendous amount of economic activity; well over half of national gross domestic product (GDP) in a given year.

The MDI comprises three dimensions or subindexes: economy, environment, and community. Each dimension represents a fundamental aspect of development. The economic index accounts for labor market conditions. Pollution,

climate, and nonmarket amenities are measured in the environment index. "Environment" is applied to include both the natural world as well as humanity's use of space. The community index captures elements of social and human capital as well as physical health and safety. Based on the tests applied in this study (presented in Part 2: Results and Analysis), we conclude that the MDI is a substantive conception of development. Additionally, the MDI is positively correlated with economic prosperity and individuals' desires to reside in areas that offer higher levels of quality of life.

Our study contributes to the literature on regionally focused quality of life indexes. Since the early 1970s, this literature has proceeded along two paths. The first is inspired by Rosen's (1974) hedonic framework. This framework has been extended and coupled with econometric techniques to derive implicit prices and relative weights for quality of life indexes (see, e.g., Blomquist, Berger, & Hoehn, 1988; Roback, 1982; Rosen, 1979). Over time, studies in this literature have applied increasingly rigorous statistical methodologies to more extensive and elaborate data sets (Albouy, 2008). Despite this high level of rigor, the approach Rosen inspired is not without its weaknesses. These include, but are not limited to, the assumption of markets clearing, selection bias, and endogenous regressors (Gyourko, Kahn, & Tracy, 1999; Lambiri, Biagi, & Royuela, 2007).

The second approach within the literature is for the researcher to choose the indicators for the index. This flexibility allows for nuanced indexes to be created while circumventing some of the aforementioned limitations of econometrically based approaches. The popular press has increasingly made use of this approach. Examples of this trend include *Bloomberg Businessweek.com*'s America's 50 Best Cities, *Forbes*' Livable Cities, and The Economist Intelligence Unit's livability rankings. As Lambiri et al. (2007) emphasize, the approach of selecting indicators is not without limitations; the potential for indicators to be chosen and weighted on a subjective basis is a real concern. Erickcek (2012) advises researchers to strike a balance between the quality and quantity of indicators to allow results to be reliable and tractable.

In general, indexes from the popular press do not overcome the concerns of Lambiri et al. (2007) and Erickcek (2012). Typically, their methodology is not presented and proprietary data are often used. Given the motivations of these outlets, this is understandable, but it is problematic for those wanting to thoroughly understand the implications of the research.

Acknowledging the strengths and weaknesses of each approach, we chose to follow the indicators rather than econometrically based methodology in the creation of the MDI. Because the goals of development and conceptions of quality of life are continuously evolving, it is important to have metrics capable of responding to these changes. The indicators approach allows the MDI to be easily modified in the future. It will also be possible to track the MDI over time to gain insights into changes in development and quality of life in U.S. cities. Because the MDI contains a minimal but robust set of indicators, the influence of the data applied on results is readily ascertained. Slaper, Hart, Hall, and Thompson's (2011) index of innovation and Stansel's (2013) economic freedom index are two notable, recent examples with similar approaches. The reader interested in a more thorough presentation of regional quality of life indexes is directed to Lambiri et al. (2007).

The literatures the MDI draws on and data used as indicators are discussed in Part 1: Defining and Measuring the Metropolitan Development Index. In Part 2: Results and Analysis, rankings of MSAs and statistical tests of the index are presented. Correlation coefficient between the MDI and standard measures of economic activity, such as income, output, and population growth, are also included in this section. The study ends with a brief conclusion.

Part 1: Defining and Measuring the Metropolitan Development Index

The MDI's representation of quality of life and development is inspired by the capabilities approach. Because the capabilities approach is an interdisciplinary paradigm, there are novel challenges in applying it. It will be helpful to the reader if some of these challenges are addressed prior to presenting the MDI. For the interested reader, Robeyns (2005) offers a thorough discussion of these issues. The first challenge is with regard to semantics. Disciplines may apply key terms from the approach in subtly different ways. We follow Robyen's definition of capabilities as freedoms and functionings as the outcomes resulting from the exercising of capabilities.

The second challenge to consider is with regard to focusing attention on capabilities or functionings. Sen (1999) argues the aim of development should be to expand freedom. Nussbaum (2003) echoes Sen's argument with her list of Central Human Capabilities. Skidelsky and Skidelsky (2012) assert that Sen and Nussbaum's focus on capabilities, rather than outcomes, is misguided in the context of high-income nations. Rather, one should consider the amount obtained of certain "basic goods" (defined by Skidelsky and Skidelsky). For example, Skidelsky and Skidelsky argue it is not sufficient to have the capability to be healthy; one should be healthy. Skidelsky and Skidelsky's basic goods are health, security, respect, personality, harmony with nature, friendship, and leisure.

Exacerbating the tension between these two views is that in practice, data often blur the lines between capabilities and functionings. For example, a higher rate of unemployment represents a decrease in the opportunity to work but also the number of those working. It represents a decline in both capabilities and functionings. In creating the MDI, we attempt to merge the insights of Skidelsky and Skidelsky

(2012) with those of the capabilities approach. The MDI accounts for both capabilities and functionings.

In the following section, the dimensions of development accounted for in the MDI and indicators chosen to represent them are presented. A complete definition of each data series used can be found in the appendix (Table A1). Every attempt was made to be consistent with the time period measured by the data; unless noted otherwise data are for 2012. Following the discussion of the data, the calculations used to quantify the MDI are presented.

Economy

The economic dimension of the MDI captures important aspects of an MSA's labor market. In many respects, the labor market serves as the foundation for the city's economy. We identify three indicators to capture labor market dynamics: access to employment, relative purchasing power, and income inequality.

Access to Employment. Higher rates of unemployment cause numerous problems in an economy. In the private sector, consumer demand falls as unemployment increases. Higher unemployment also strains government's finances by way of increased safety net spending and decreased tax revenues. Employment is also an important aspect of quality of life; Dolan, Peasgood, and White (2008) discuss the extensive amount of studies in the subjective well-being literature that find unemployment decreases one's reported level of happiness. Access to employment is measured with the U.S. Bureau of Labor Statistics' annual unemployment rate.

Relative Purchasing Power. The monetary returns to employment are another important outcome of the labor market. Standard economic theory asserts that an increase in one's real income results in a higher level of utility, both across time and space. Ceteris paribus, one would prefer to reside in an area that offers a higher income. The U.S. Bureau of Economic Analysis' real personal income (in chained 2008 dollars) serves as the indicator for relative purchasing power. In addition to controlling for national inflation, the Bureau of Economic Analysis adjusts income in a MSA in light of whether various goods and services are more or less expensive than in other cities.

Income Inequality. In recent years, the distribution of wealth and income has become an issue of great public interest. President Obama identified growing income and wealth inequality as "the defining challenge of our time" (The White House, Office of the Press Secretary, 2013) and Piketty's *Capital in the Twenty-First Century* was a bestseller. Higher levels of income inequality have been found to have a detrimental impact on the psychological, physiological, and economic well-being of disadvantaged individuals (see, e.g., Galbraith, 2012; Marmot, 2004; Oishi, Kesebir, & Diener, 2011; Stiglitz, 2012).

The adverse consequences of growing inequality are not limited to individuals at the bottom of the income distribution. Wilkinson and Pickett (2009) argue that income inequality is correlated with a number of social ills. Eberts, Erickcek, and Kleinhenz (2006) find evidence that increases in income inequality lowers growth in regional economies. Glaeser, Resseger, and Tobio (2008) confirm this finding in cities and find a negative relationship between income inequality and crime rates, reported well-being, and both population and income growth. We apply an intra-MSA Gini coefficient calculated by the U.S. Census Bureau as our measure of income inequality.

Environment

The environment dimension accounts for the ways in which one's surroundings affects their quality of life. "Environment" is applied to encompass both the natural world and humanity's use of space. This dimension stands at the intersection of many of Nussbaum's (2003) central capabilities (e.g., bodily health and other species). Skidelsky and Skidelsky (2012) also highlight the importance of physical surroundings with their basic goods of health and harmony with nature. Economists often evaluate the use and nonuse value of the environment in their research. Five indicators are used to capture this dimension: local air quality, walkability, open space, climate, and environmental degradation.

Local Air Quality. Increased amounts of air pollution are associated with numerous adverse health consequences such as increased risk for heart disease and respiratory ailments. Local air quality is a measure of the propensity for the adverse health outcomes associated with air pollution. We measure the capability of an individual to access clean air using data from the American Lung Association's annual *State of the Air* report. The data measures the number of high particle pollution days in a metropolitan area using grading based on the U.S. Environmental Protection Agency's national ambient air quality standard for Particulate $Matter_{2.5}$ of 12 $\mu g/m^3$. The greater the amount of high particle pollution, the lower the MSA's air quality.

Walkability. Property values are often said to be a function of three things: "location, location, location." A vast literature supports the wisdom of this adage. Proximity to schools, parks, and cultural amenities has all been found to positively affect real estate values. Malpezzi (2002) offers an extensive review of hedonic studies that estimate the monetary value of location in property markets. To account for the findings of this literature, we include each MSA's "walk score" for 2014. Walkscore.com calculates an area's walk score based on the ease of being able to walk to amenities such as restaurants and libraries. Though this measure is just beginning to be

included in quantitative studies, it is consistently found to have a positive relationship with real estate values (see, e.g., Kok & Jennen, 2012; Pivo & Fisher, 2011; Rauterkus & Miller, 2011). Krause and Bitter (2012) predict that it will become widely adopted in the real estate valuation literature in the near future.

Open Space. McConnell and Walls (2005) review over 60 studies outlining the various economic and noneconomic benefits of open space to a community. These benefits range from ecosystem services to recreation value. Open space is measured as the public park acreage per 10,000 individuals in 2013. Data are obtained from the Trust for Public Land's annual *City Park Facts* (2013) report. Initially, the authors were concerned that open space and walkability may be highly correlated. This is not the case; $r = -0.318$. Given that walk score includes destinations such as restaurants and schools, this negative correlation is not surprising. A more thorough set of statistical tests is applied to the MDI and its indicators in Part 2.

Climate. Although individuals are partial to different weather, a well-established literature finds a general preference for milder climates. Graves (1976, 1980) and Graves and Linneman (1979) find that as incomes increase, so does the willingness to pay to reside in temperate areas. Contemporary studies support these conclusions; a location's climate remains an important contributor to the migration decision (see, e.g., Partridge, 2010; Partridge, Rickman, Olfert, & Ali, 2012). Heating degree days (HDD) and cooling degree days (CDD) are used to evaluate the comfort of a locality's weather. HDD and CDD are calculated as the number of degrees between a day's average temperature and the baseline temperature of 65 °F. . For example, if the average temperature were 75 °F, CDD would be equal to 10. If it were 45 °F, HDD would be equal to 20. Higher scores for climate indicate a less mild climate.

Environmental Degradation. One of the unfortunate side effects of economic activity is pollution. A city's growth path can have a profound impact on its natural environment. Cities that rely on manufacturing are likely to be more polluted than those with more benign industries such as informational technology. The chosen measure of environmental degradation is the number of Superfund sites reported by the U.S. Environmental Protection Agency for 2014. Gamper-Rabindran, Mastromonaco, and Timmins (2011) find a general, but not universal, pattern of property values increasing when these sites are cleaned. The increase in values does not occur in cities such as Boston and Los Angeles. This suggests that the impacts of these sites may be persistent over time.

Community

Since the early 1990s, the impact of social networks on economic growth and development has received increasing amounts of attention. Putnam's (1993, 2000) work on social capital has heavily influenced this literature. Because of its interdisciplinary appeal and the diversity of data used in studies of it, "social capital" has a fluid definition. The World Bank (n.d.) defines it as "the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions" (para. 1). This definition is useful in that it encompasses the many ways in which the concept has been applied. In addition to Putnam's work, numerous studies have found an economic benefit at both the regional and macro level to improvements in social capital (see, e.g., Helliwell & Putnam, 1995; Iyer, Kitson, & Toh, 2005; Knack & Keefer, 1997). The community dimension captures elements of social capital and important demographics. Five indicators are selected for this dimension: access to religious community, racial diversity, education, safety, and physical well-being.

Access to Religious Community. Religious communities work to foster ties among individuals that result in positive feedback effects in other areas of the community (Putnam, 2000). The prevalence of religion and religious communities are a manifestation of social capital. Adherents to a religion hold many common norms and interact in self-created institutions. As such, the interconnectedness of communities—for which religious groups serve as an indicator—functions as a potential predictor of economic success. At the individual level, studies by Dolan et al. (2008) and Ferriss (2002) find that religiosity contributes positively to subjective life satisfaction. We measure access to religious community by the number of religious congregations (236 religious groups are accounted for) per 10,000 individuals in a given metropolitan area in 2010. Data are from the *U.S. Congregational Membership—Metro Reports.*

Racial Diversity. The relationship between racial or ethnic diversity and economic outcomes remains an open line of inquiry. Two opposing hypotheses have emerged in the literature studying this relationship. One hypothesis asserts that diversity contributes to innovation and subsequently economic growth through the sharing of new ideas and perspectives. The second hypothesis maintains that diversity hampers economic growth. Different groups often distrust one another creating a challenge for the formation of public policy. As a result, important public goods such as education and infrastructure are underfunded limiting an economy's long-run growth prospects.

Empirical estimates of the impact diversity has on economic outcomes are sensitive to context and whether ethnic or racial diversity is considered (see, e.g., Alesina & Ferrara, 2004; Putnam, 2007). This suggests that both of the aforementioned hypotheses may both be accurate. Sparber (2009) finds a positive relationship between racial diversity and productivity in urban areas in the United States. Eberts et al.

(2006) find that urban assimilation and racial inclusion (a measure of both ethnic and racial diversity) positively contribute to economic growth in cities. Putnam (2007) argues that the future of nations, such as the United States, that are experiencing increases in diversity will be shaped by their response to this phenomenon. A successful response entails leveraging the positive ways that diversity promotes growth while minimizing its negative aspects. In light of Putnam's argument and the findings of Sparber (2009) and Eberts et al. (2006), racial diversity is included in the MDI as a positive contributor to development. Given the inconclusive literature on the subject, the sensitivity of results to this indicator is presented in Part 2.

Racial diversity is measured using a racial fractionalization (RF) index based on Easterly and Levine's (1997) ethnolinguistic fractionalization index. RF is defined as

$$RF = 1 - \sum s_i^2,$$

where s_i is the share of race i over the MSA's population. The U.S. Census Bureau's categories of Asian, Black, Hispanic, Other, and White are applied.

Safety. Living one's life free from the threat of violence is a primary human right. Violent acts not only negatively affect the individual on which they are perpetrated but also the community. Glaeser and Gottlieb (2006) identify decreases in crime as an important contributor to the resurgence of cities in the United States. Although the benefits of public safety are self-evident, securing it remains one of the key challenges facing urban areas around the world (Glaeser & Joshi-Ghani, 2014). The measure of safety applied is the U.S. Federal Bureau of Investigation's occurrence of violent crimes per 10,000 individuals.

Physical Well-Being. One's physical health dramatically influences their quality of life. Whereas genetics and personal decisions influence physical well-being, so do external factors. Social networks and neighborhood characteristics have been found to affect an individual's health (see, e.g., Bilger & Carrieri, 2013; Katz, Kling, & Liebman, 2001; Smith & Christakis, 2008). Physical well-being examines how well a metropolitan area fosters the opportunity to be of good health. The Gallup-Healthways *Well-Being Index* is used to measure physical well-being. Metropolitan areas are ranked based on results of subjective life satisfaction surveys assessing numerous dimensions of physical health, including sick days, disease burden, obesity, chronic health problems, colds, flu, and headaches.

Education. The final indicator in the MDI is a measure of human capital. The economic benefits of education are far reaching. Education has been found to be positively related to social capital formation, economic growth in cities, and subjective well-being (Gottlieb & Fogarty, 2003; Iyer et al., 2005; Kahneman & Krueger, 2006). Globalization and the structural shifts occurring in the U.S. macroeconomy that have increased the importance of higher education show no signs of waning. Those with some amount of higher education experienced smaller increases and lower absolute rates of unemployment during the past recession (U.S. Bureau of Labor Statistics, 2014). Occupations that require a bachelor's degree or higher are predicted to grow faster and provide higher income than those that do not in the near future (Carnevale, Smith, & Strohl, 2013; U.S. Bureau of Labor Statistics, 2013). Education is measured with percentage of the population with a bachelor's degree or higher.

Calculating the MDI

In quantifying the MDI, we follow much of the HDI's methodology as outlined by Klugman et al. (2011). An indicator that increases the quality of life:

$$Value_i = \frac{Observation_i - Minimum}{Maximum - Minimum},$$

one that diminishes it:

$$Value_i = \frac{Maximum - Observation_i}{Maximum - Minimum},$$

where $i = 1, \ldots, 13$ and references an indicator, maximum and minimum are observations from the sample. These calculations normalize the indicators resulting in $Value_i$ having a range between 0 and 1. Thus, an MSA's score for a particular indicator is its performance relative to other cities; higher score corresponds to a better outcome. Each dimension is the arithmetic mean of $Value_i$ across the data within it:

$$\text{Economy} = 1/3 * \begin{pmatrix} \text{Unemp. Rate} + \\ \text{Real Personal Income} + \\ \text{Income Inequality} \end{pmatrix}$$

$$\begin{aligned} \text{Environment} = {} & 1/5 * (\text{Air Quality} + \\ & \text{Walkability} + \text{Open Space} + \\ & \text{Climate} + \text{Enviro. Degradation}) \end{aligned}$$

$$\text{Community} = 1/5 * \begin{pmatrix} \text{Religion} + \\ \text{Diversity} + \text{Safety} + \\ \text{Physical Health} + \text{Education} \end{pmatrix}.$$

Finally, the MDI is the arithmetic mean of the dimensions:

$$\text{MDI} = 1/3 * (\text{Econ} + \text{Enviro} + \text{Comm}).$$

Scores closer to 1 indicate higher quality of life and development.

Prior to presenting the results, it is beneficial to acknowledge a limitation of our methodology. When calculating an arithmetic mean each observation is given the same weight. In the context of the MDI, each indicator within a dimension contributes equally to the score for the dimension. Also, each dimension has the same weight when the final MDI is calculated. Whereas we would not argue that each indicator is universally valued by individuals or contributes equally to development, we assert that the MDI is a baseline conception of development. Improvement in any indicator is an improvement. To apply differential weights to the indicators, one must choose a criterion, such as economic growth, to guide the process. This is problematic, in the context of this study, for two reasons. First, it directly conflicts with the *raison d'être* of the capability approach; that development is a multifaceted endeavor. Second, applying a criterion to determine how much more important one indicator is over another (e.g., unemployment vs. walkability) is beyond the scope of the study.

Results are presented in the next section. The potential redundancy of indicators and robustness of our findings to their inclusion is also explored. Part 2: Results and Analysis concludes with a discussion of the MDI's relationship with a selection of standard measures of economic activity.

Part 2: Results and Analysis

The MDI scores for the top 10 and bottom 10 MSAs are presented in Table 1. A complete list of the 50 MSAs considered can be found in the appendix (Table A2). It is interesting that in the top and bottom 10, there are multiple pairs of MSAs within 100 miles of one another: San Jose–Sunnyvale–Santa Clara and San Francisco–Oakland–Fremont (ranked first and second, respectively) are 50 miles apart); Richmond and Virginia Beach–Norfolk–Newport News (eighth and ninth), 100 miles; and Los Angeles–Long Beach–Santa Ana and Riverside–San Bernardino–Ontario (41st and 50th), 60 miles. The other six cities in the top 10 are spread across the nation. Metropolitan areas in the bottom 10, with the exceptions of Providence–Fall River–Warwick and those mentioned, are located either in the Great Lakes or Southern region of the country. Regional and state-level economies certainly influence a city's score, but the relationship does not appear to be deterministic.

A MSA's final score on the MDI is not necessarily indicative of its performance on the various dimensions. For example, San Francisco–Oakland–Fremont is ranked second overall, although its economy is ranked 27th. The same is true at the bottom of the rankings; Atlanta–Sandy Springs–Marietta ranks 46th overall but fifth in community. The tremendous variation in rankings across the subindexes prompts an examination of each dimension in isolation. First, we consider the economic index. See Table 2 for a list of the top and bottom 10. There is more regional variation in the top scores of the economic dimension than the aggregated MDI. The highest ranked economies are found across the United States. These MSAs represent urban economies offering a superior combination of job availability, higher relative purchasing power, and a more equal distribution of income.

Table 1. Top 10 and Bottom 10 Metropolitan Development Index (MDI) Scores.

Metropolitan statistical area	MDI	Rank
San Jose–Sunnyvale–Santa Clara	0.701	1
San Francisco–Oakland–Fremont	0.696	2
Washington–Arlington–Alexandria	0.681	3
Seattle–Tacoma–Bellevue	0.662	4
Minneapolis–St. Paul–Bloomington	0.645	5
Austin–Round Rock–San Marcos	0.645	6
Raleigh–Cary	0.642	7
Richmond, VA	0.641	8
Virginia Beach–Norfolk–Newport News	0.635	9
Denver–Aurora–Broomfield	0.633	10
Los Angeles–Long Beach–Santa Ana	0.488	41
Buffalo–Niagara Falls	0.479	42
Providence–Fall River–Warwick	0.474	43
Louisville–Jefferson County	0.469	44
Cleveland–Elyria–Mentor	0.465	45
Atlanta–Sandy Springs–Marietta	0.462	46
Memphis, TN	0.458	47
Las Vegas–Paradise	0.434	48
Detroit–Warren–Livonia	0.400	49
Riverside–San Bernardino–Ontario	0.361	50

Many of the poorest performing economies saw tremendous fluctuations in home prices over the Great Recession (Federal Reserve Bank of New York, n.d.). MSAs in the bottom 10 are disproportionately in states eligible for the Hardest Hit Fund, part of the Troubled Asset Relief Program. The Hardest Hit Fund was established in 2010 to use federal funds to speed up adjustments in local housing markets. To be eligible for the $7.6 billion in this fund, states must have high unemployment and have experienced dramatic declines in home prices (U.S. Department of Treasury, 2012).

Cities in coastal areas do well in the environment index. See Table 3 for the top and bottom 10. Phoenix–Mesa–Glendale is the only MSA in the top 10 that is in a landlocked state. These cities have less environmental degradation and better air quality, are more walkable, have milder climates, and contain more open space per capita than their counterparts. Simply put, they are more pleasant places to be. Cities in the Midwest and Great Lakes regions make up the majority of those at the bottom of the rankings.

Table 4 presents the top and bottom performers on the community dimension. What is striking about the community index is the number of cities that score poorly on it and the

Table 2. Top 10 and Bottom 10 Economy Scores.

Metropolitan statistical area	Economy	Rank
San Jose–Sunnyville–Santa Clara, CA	0.624	1
Boston–Cambridge–Newton, MA	0.606	2
Minneapolis–St. Paul–Bloomington, MN	0.588	3
Seattle–Tacoma–Bellevue, WA	0.558	4
Houston–The Woodlands–Sugar Land, TX	0.553	5
Washington–Arlington–Alexandria, VA	0.540	6
Kansas City, MO	0.525	7
Columbus, OH	0.521	8
St. Louis (MO, IL)	0.521	9
Austin–Round Rock, TX	0.519	10
Virginia Beach–Norfolk–Newport News, VA	0.397	41
San Diego–Carlsbad, CA	0.391	42
Tampa–St. Petersburg–Clearwater, FL	0.388	43
Memphis, TN	0.383	44
Sacramento–Roseville–Arden–Arcade, CA	0.374	45
Orlando–Kissimmee–Sanford, FL	0.361	46
Los Angeles–Long Beach, CA	0.350	47
Las Vegas, NV	0.349	48
Providence–Warwick, RI	0.317	49
Riverside–San Bernadino–Ontario, CA	0.251	50

Table 3. Top 10 and Bottom 10 Environment Scores.

Metropolitan statistical area	Environment	Rank
San Diego–Carlsbad–San Marcos	0.686	1
San Francisco–Oakland–Fremont	0.642	2
Jacksonville, FL	0.639	3
New Orleans–Metairie–Kenner	0.628	4
Portland–Vancouver–Hillsboro	0.617	5
Miami–Fort Lauderdale–Pompano Beach	0.593	6
Seattle–Tacoma–Bellevue	0.588	7
Phoenix–Mesa–Glendale	0.588	8
Houston–Sugar Land–Baytown	0.571	9
San Jose–Sunnyvale–Santa Clara	0.559	10
Columbus, OH	0.397	41
Kansas City	0.393	42
Cincinnati–Middletown	0.379	43
Pittsburgh	0.374	44
Cleveland–Elyria–Mentor	0.373	45
Birmingham–Hoover	0.372	46
Atlanta–Sandy Springs–Marietta	0.354	47
Riverside–San Bernardino–Ontario	0.347	48
Indianapolis–Carmel	0.338	49
Detroit–Warren–Livonia	0.301	50

overall MDI. These MSAs are not compensating for their low community scores in other dimensions. This outcome is not a function of the methodology; other influences are at work. It is possible that relatively low levels of social capital hinder success in other areas of development. This hypothesis fits with the conceptualization of social capital as a factor of production

Table 4. Top 10 and Bottom 10 Community Scores.

Metropolitan statistical area	Community	Rank
Washington–Arlington–Alexandria	0.777	1
San Francisco–Oakland–Fremont	0.775	2
San Jose–Sunnyvale–Santa Clara	0.766	3
Raleigh–Cary	0.726	4
Atlanta-Sandy Springs–Marietta	0.692	5
Dallas–Fort Worth–Arlington	0.673	6
Charlotte–Gastonia–Rock Hill	0.668	7
Denver–Aurora–Broomfield	0.668	8
Salt Lake City	0.652	9
Los Angeles–Long Beach–Santa Ana	0.632	10
Tampa–St. Petersburg–Clearwater	0.425	41
Cleveland–Elyria–Mentor	0.417	42
Cincinnati–Middletown	0.409	43
Riverside–San Bernardino–Ontario	0.406	44
Memphis, TN	0.389	45
Detroit–Warren–Livonia	0.389	46
Providence–Fall River–Warwick	0.368	47
Las Vegas–Paradise	0.360	48
Louisville–Jefferson County	0.339	49
Buffalo–Niagara Falls	0.321	50

or as networks used by communities to improve themselves. Interestingly, highly ranked communities do not necessarily do well on the aggregate MDI (e.g., Atlanta–Sandy Springs–Marietta and Los Angeles–Long Beach–Santa Ana). It appears that a strong community is needed for a higher level of development and quality of life, but it is not sufficient.

Redundancy of Indicators and Dimensions

Correlation coefficients are calculated to determine if the chosen indicators are redundant. Of the 78 pairwise combinations, the estimated correlation coefficient is greater than 0.5 for only three: health and education, $r = 0.707$; diversity and climate, $r = 0.655$; and education and income, $r = 0.662$. Neither the signs nor the magnitudes of these estimates are surprising. These results suggest that the choice of indicators is not overly redundant.

Among the three dimensions, the largest correlation is between environment and community, $r = 0.348$ (see Table 5). Although we hesitate to make a strong claim based on this finding, it appears that some of the benefits of interconnected communities are manifesting themselves in the environment subindex. Only one of the indicators within the environmental dimension, climate, can be considered exogenous to a community's preferences. Communities exercise their preferences for environmental amenities and quality through a number of channels such as advocacy, elections, regulations, and so on. Farzin and Bond (2006) found evidence for these phenomena at the national level in their analysis of democracy and the environmental Kuznets curve.

Table 5. Correlation Coefficients Between the Metropolitan Development Index (MDI) and its Dimensions.

	MDI	Economy	Environment	Community
MDI	1	0.655	0.586	0.731
Economy		1	−0.003	0.131
Environment			1	0.348
Community				1

A criticism of the HDI is its high correlation with its data. The range of the correlation between the 2009 HDI and its dimensions was 0.87 to 0.95 (Klugman et al., 2011). As noted earlier, because we follow much of the HDI, this issue is relevant to the MDI as well. The MDI is found to be most correlated with the indicators of real personal income, unemployment, education, and physical well-being: r = 0.561, 0.632, 0.733, and 0.623, respectively. It is interesting that these indicators are closely related to the HDI's dimensions of a long and healthy life, knowledge, and a decent standard of living. The correlation between the MDI and economy, community, and environment are 0.655, 0.731, and 0.586, respectively (see Table 5). The relatively lower correlation found between the MDI and its indicators and dimensions suggest that it outperforms the HDI in this regard. Klugman et al. (2011) respond to critics of the HDI asserting that it is more informative to consider the relationship between an index and its data over time rather than in a particular year. When the HDI is analyzed in this manner, Klugman et al. (2011) find that the correlations all but disappears. We leverage this insight when we analyze the relationship between the MDI and various economic outcomes.

Robustness of Rankings

To determine the robustness of rankings to the indicators, we remove particular series from the MDI and then recalculate it. Racial diversity, access to religious community, and income inequality are excluded in turn because of their potentially tenuous relationship with development. Table 6 lists the recalculated rankings.

There are several reasons to test the sensitivity of rankings to the inclusion of racial diversity. As previously discussed, the literature on the relationship between diversity and economic development is mixed; there is evidence of diversity promoting and deterring economies from flourishing. Also, Putnam's (2007) argument that societies must leverage the benefits of diversity to be successful in the long run may not hold for cities in the United States. It is possible that internal migration may negate the need to coexist with those different from one's self. As the United States becomes more diverse, homogenous cities may outperform their counterparts.

The second column of Table 6 presents the results when diversity has been excluded from the MDI. San Jose–Sunnyvale–Santa Clara and San Francisco–Oakland–Fremont keep their positions as the top two cities. Pittsburgh gains the most by excluding diversity; it is ranked nine places higher, up to 19th. Houston–Sugar Land–Baytown loses the most spots, dropping from 6th to 20th. What is more telling is that most of the changes in ranking are quite small; cities in at the top and bottom of the rankings tend to remain there. This suggests that rankings are fairly robust to whether racial diversity is included.

The second indicator considered is religious affiliation. Putnam (2000) contends that religion is an important dimension of social capital. Although this may be the case, religious affiliation in the United States has steadily been in decline since the early 1970s (Pew Research Center, 2012). As the Pew Research Center discusses, the decisions of those younger than the age of 30 years are primarily driving this trend. The demographics of this issue suggest that religious affiliation will continue to decline into the near future. As the United States becomes more secular, it is possible that religious affiliation is, or will become, an irrelevant aspect of social capital.

The impact of excluding religious affiliation on rankings is similar to that of removing diversity; there are not large changes in the rankings. See column 5 of Table 6. The top four MSAs keep their spots and many of those at the bottom remain there. This does not suggest that religious affiliation is irrelevant to development or quality of life. In its current state, as a static measure, the MDI is incapable of addressing whether the decline in religious affiliation is problematic over time. Tracking the MDI into the future will allow for this issue to be considered.

The final indicator excluded is income inequality. As discussed earlier, research that finds higher levels of income inequality have negative consequences on individuals, quality of life, and economic growth supports its inclusion. Yet disparities in income and wealth are acknowledged as an inherent, and even necessary, feature of a market-based economy. Markets, and the firms and individuals they represent, value human capital, goods, and services differently. The argument can be made that a distribution of income too egalitarian blunts important incentive structures within the economy. The risks, investments, and effort often required to earn a higher income may no longer be undertaken resulting in declines in economic activity.

Of the indicators removed, income inequality has the largest impact on rankings. Atlanta–Sandy Springs–Marietta, New York–New Jersey–Long Island and New Orleans–Metairie–Kenner all move up at least 10 spots. What is striking about these changes is that they do not dramatically alter the highest ranked cities. Cities ranked in the middle and bottom of the MDI are affected more. For

Table 6. Rankings With Selected Indicators Removed (Sorted by Full Metropolitan Development Index [MDI] Score).

Metropolitan statistical area (MSA)	Diversity excluded	Rank	Change[a]	Religion excluded	Rank	Change	Income inequality excluded	Rank	Change
San Jose–Sunnyvale–Santa Clara	0.684	1	0	0.759	1	0	0.681	3	–2
San Francisco–Oakland–Fremont	0.677	2	0	0.747	2	0	0.730	2	0
Washington–Arlington–Alexandria	0.669	4	−1	0.725	3	0	0.734	1	2
Seattle–Tacoma–Bellevue	0.663	5	−1	0.693	4	0	0.637	6	–2
Minneapolis–St. Paul–Bloomington	0.673	3	2	0.681	6	–1	0.630	9	–4
Austin–Round Rock–San Marcos	0.635	9	−3	0.681	5	1	0.630	8	–2
Raleigh–Cary	0.648	6	1	0.673	8	–1	0.598	14	–7
Richmond, VA	0.638	8	0	0.655	12	–4	0.616	11	–3
Virginia Beach–Norfolk–Newport News	0.625	13	−4	0.656	11	–2	0.599	13	–4
Denver–Aurora–Broomfield	0.640	7	3	0.677	7	3	0.609	12	–2
Oklahoma City	0.626	12	−1	0.629	15	–4	0.637	7	4
San Diego–Carlsbad–San Marcos	0.604	15	−3	0.668	9	3	0.584	18	–6
Boston–Cambridge–Quincy	0.632	10	3	0.656	10	3	0.675	4	9
Houston–Sugar Land–Baytown	0.584	20	−6	0.642	13	1	0.651	5	9
Salt Lake City	0.632	11	4	0.595	20	–5	0.574	21	–6
Baltimore–Towson	0.596	16	0	0.632	14	2	0.586	17	–1
Portland–Vancouver–Hillsboro	0.613	14	3	0.621	16	1	0.552	24	–7
Dallas–Fort Worth–Arlington	0.578	21	−3	0.620	17	1	0.624	10	8
Nashville–Davidson–Murfreesboro–Franklin	0.592	17	2	0.571	25	–6	0.574	20	–1
Phoenix–Mesa–Glendale	0.564	23	−3	0.615	18	2	0.537	27	–7
Kansas City	0.588	18	3	0.582	23	–2	0.559	22	–1
Jacksonville, FL	0.549	24	−2	0.568	26	–4	0.537	26	–4
Hartford–West Hartford–East Hartford	0.568	22	1	0.593	21	2	0.587	16	7
San Antonio–New Braunfels	0.539	29	−5	0.577	24	0	0.531	29	–5
Orlando–Kissimmee–Sanford	0.540	28	−3	0.590	22	3	0.510	36	–11
Miami–Fort Lauderdale–Pompano Beach	0.532	31	−5	0.597	19	7	0.558	23	3
Milwaukee–Waukesha–West Allis	0.541	27	0	0.566	27	0	0.530	30	–3
Pittsburgh	0.586	19	9	0.544	35	–7	0.539	25	3
Charlotte–Gastonia–Rock Hill	0.542	26	3	0.546	33	–4	0.511	34	–5
Columbus, OH	0.548	25	5	0.548	32	–2	0.523	31	–1
New Orleans–Metairie–Kenner	0.511	35	−4	0.552	30	1	0.596	15	16
Philadelphia–Camden–Wilmington	0.521	34	−2	0.553	29	3	0.535	28	4
Sacramento–Arden–Arcade–Roseville	0.495	36	−3	0.552	31	2	0.466	41	–8
St. Louis	0.533	30	4	0.530	37	–3	0.504	37	–3
Indianapolis–Carmel	0.530	32	3	0.529	38	–3	0.486	39	–4
New York–New Jersey–Long Island	0.493	37	−1	0.559	28	8	0.584	19	17
Cincinnati–Middletown	0.527	33	4	0.513	40	–3	0.493	38	–1
Chicago–Joliet–Naperville	0.491	38	0	0.544	34	4	0.517	32	6
Birmingham–Hoover	0.490	39	0	0.453	47	–8	0.512	33	6
Tampa–St. Petersburg–Clearwater	0.484	41	−1	0.515	39	1	0.462	42	–2
Los Angeles–Long Beach–Santa Ana	0.465	44	−3	0.532	36	5	0.473	40	1
Buffalo–Niagara Falls	0.485	40	2	0.485	43	–1	0.436	44	–2
Providence–Fall River–Warwick	0.483	42	1	0.493	42	1	0.426	47	–4
Louisville–Jefferson County	0.476	43	1	0.456	46	–2	0.433	45	–1
Cleveland–Elyria–Mentor	0.464	45	0	0.478	44	1	0.444	43	2
Atlanta–Sandy Springs–Marietta	0.451	46	0	0.495	41	5	0.510	35	11
Memphis, TN	0.431	47	0	0.443	48	–1	0.431	46	1
Las Vegas–Paradise	0.388	49	−1	0.464	45	3	0.355	49	–1
Detroit–Warren–Livonia	0.389	48	1	0.420	49	0	0.355	48	1
Riverside–San Bernardino–Ontario	0.326	50	0	0.386	50	0	0.251	50	0

Note. An increase indicates an improved ranking, a decrease a decline.
[a]Change refers to the new ranking relative to a MSA's ranking via the full MDI.

Table 7. Correlation Between the Metropolitan Development Index (MDI) and Economic Outcomes.

	Per capita income	Per capita income growth	GDP growth	Population growth
MDI	0.648	0.121	0.280	0.492

Note. GDP = gross domestic product. Data are from the U.S. Bureau of Economic Analysis. Per capita income is measured in 2005 dollars and reported for 2012. Growth measures are compound growth rates from 2011 to 2012.

example, Atlanta–Sandy Springs–Marietta's moves up from 46th to 35th.

We conclude from these results that the MDI is a robust conception of development. Excluding diversity, religious affiliation, or income inequality does not dramatically affect the rankings of MSAs at the top of the MDI. The literatures referenced and the rational set forth in this study support the inclusion of the chosen indicators.

MDI and Economic Outcomes

The final analysis conducted with the MDI is to determine its relationship to a selection of standard measures of economic activity: per capita income, per capita income growth, growth of the city's GDP, and population growth (see Table 7 for results). All growth rates are compound annual growth rates from 2011 to 2012, as provided by the U.S. Bureau of Economic Analysis.

Income plays an integral role in nearly every conception of development and quality of life. In a market-based economy, income is the means by which individuals meet their needs and wants and are compensated for their contribution to the economy. Also, income-based metrics are standard gauges of economic performance. The correlation coefficient between the MDI and real per capita income (in 2005 dollars) is 0.648. The reader is reminded that the indicator within the economic dimension is real personal income, which adjusts income in the MSA based on the cost of living relative to other MSAs. The Bureau of Economic Analysis calculates real per capita income based on inflation at the national level. One reason that the estimated correlation is so large is the obvious relationship between these two measures. This result suggests, unsurprisingly, that high-income MSAs have higher levels of development and quality of life.

Because development is a dynamic process, we consider the relationship between the MDI and growth of per capita income and growth of GDP, $r = 0.121$ and 0.280, respectively. Both are lower in absolute value than the correlation with per capita income. Such low estimates suggest that increases in income or aggregate economic activity and the MDI do not occur in tandem. Improvements in development and quality of life, as defined by the MDI, do not appear to be guaranteed outcomes of increasing incomes or economic activity. Again, this is a tentative conclusion; tracking the MDI over time is necessary to substantiate it.

Glaeser, Scheinkman, and Shleifer (1995) make the case for applying population growth to determine whether a city is a more or less attractive place to live. The correlation between the MDI and population growth from 2011 to 2012 is 0.492. Cities that are growing faster are expected to have higher scores on the MDI. (The aforementioned warning of placing too much emphasis on a correlation coefficient still applies.) Because of the observational time frame of the data, this relationship is likely a mix of leading, lagging, and concurrent influences. Migrants are attracted to areas that offer strong economies, pleasing environments, and connected communities. Simultaneously, current citizens are not likely to leave these MSAs.

Conclusion

If one is to take the Socratic imperative of the good life seriously, if—as former Federal Reserve Chairman Bernanke (2012) said—"the ultimate purpose of economics, of course, is to understand and promote the enhancement of well-being" (para. 2), then economists must develop the tools necessary for this undertaking. The MDI is such an attempt. It illustrates the multifaceted nature of development and quality of life. To ensure that the MDI speaks to these concepts in a meaningful way, we have tested for redundancy of indicators, robustness of rankings, and correlation with benchmark measures of economic activity. The simple tests applied in the study suggest that the MDI is a substantive conception of development. We also find that the MDI is positively correlated with economic prosperity and individuals' desires to reside in areas that offer higher levels of development and quality of life.

The work begun here can be extended in many ways. Exploring alternative weighting structures, functional forms, and applying more rigorous statistical tests could be illuminating. Further examining the relationship between social capital and development is another potentially fruitful extension. Finally, tracking the MDI over time would provide important information on changes in development and quality of life. This may shed light on the relationship between income growth and development. Our hope is that the MDI contributes to a deeper understanding of well-being at the regional level and facilitates dialogue among academics, policy makers, practitioners, and the public seeking to promote development and improve quality of life in metropolitan areas.

Appendix

Table A1. Data Sources.

Area 1: Economy

1A: Access to employment

Annual unemployment for year 2012 (Source: U.S. Bureau of Labor Statistics, *Local Area Unemployment Statistics*)

1B: Relative purchasing power

Real personal income for year 2012 in chained 2008 dollars (Source: U.S. Bureau of Economic Analysis, Regional Data, *Real Personal Income and Regional Price Parities*)

1C: Income inequality

Intra-MSA Gini coefficient for year 2012 (Source: U.S. Census Bureau, *American Community Survey*)

Area 2: Environment

2A: Local air quality

High particle pollution days in 2012, grading based on Environmental Protection Agency's determination of the National Ambient Air Quality Standard for $PM_{2.5}$ of 12 $\mu g/m^3$ (Source: American Lung Association, *State of the Air 2013*)

2B: Walkability

Walk score for urban areas in 2014 (Source: WalkScore.com)

2C: Open space

Urban Park Acres for year 2013 (Source: The Trust for Public Land, *2014 City Park Facts*. Supplemented by Providence Parks + Recreation, Hartford Parks, Richmond Department of Parks, Recreation and Community Facilities, and Salt Lake City Parks & Public Lands)

2D: Climate

Number of heating and cooling degree days, calculated annually for year 2012 (Source: U.S. Department of Housing and Urban Development, *Heating Degree Days Database*)

2E: Environmental degradation

Number of Environmental Protection Agency superfund sites for year 2014 (Source: United States Environmental Protection Agency, *Superfund Site Information*)

Area 3: Community

3A: Access to religious community

Congregations per 1,000 individuals for year 2010 (most current available based on decennial survey; Source: The Association of Religion Data Archives, *U.S. Congregational Membership—Metro Reports*)

3B: Racial diversity

Racial fractionalization (calculated based on share of racial demographics as percentage of the total population) of MSA for year 2012 (Source: U.S. Census Bureau, *American Community Survey*)

3C: Safety

Violent crimes per 10,000 individuals for year 2012 (Source: U.S. Federal Bureau of Investigation, *Uniform Crime Reports*)

3D: Physical well-being

Authors' calculations based on Gallup-Healthways ranking of U.S. cities in the category of physical health. Rankings based on subjective life satisfaction surveys and account for sick days, disease burden, obesity, chronic health problems, colds, flu, headaches, for year 2012 (Source: Gallup-Healthways, *Well-Being Index*)

3E: Education

Percentage of total population holding a bachelor's degree or higher for year 2012 (Source: U.S. Census Bureau, *American Community Survey*)

Table A2. Metropolitan Development Index (Sorted by MDI Score).

Metropolitan statistical area	MDI	Rank	Economy	Rank	Environment	Rank	Community	Rank
San Jose–Sunnyvale–Santa Clara	0.701	1	0.779	9	0.559	10	0.766	3
San Francisco–Oakland–Fremont	0.696	2	0.670	27	0.642	2	0.775	2
Washington–Arlington–Alexandria	0.681	3	0.712	20	0.554	13	0.777	1
Seattle–Tacoma–Bellevue	0.662	4	0.794	5	0.588	7	0.604	19
Minneapolis–St. Paul–Bloomington	0.645	5	0.877	1	0.440	32	0.620	13
Austin–Round Rock–San Marcos	0.645	6	0.751	15	0.558	11	0.627	11
Raleigh–Cary	0.642	7	0.732	18	0.469	29	0.726	4

(continued)

Table A2. (continued)

Metropolitan statistical area	MDI	Rank	Economy	Rank	Environment	Rank	Community	Rank
Richmond, VA	0.641	8	0.806	3	0.495	24	0.623	12
Virginia Beach–Norfolk–Newport News	0.635	9	0.780	8	0.531	16	0.594	21
Denver–Aurora–Broomfield	0.633	10	0.737	16	0.492	26	0.668	8
Oklahoma City	0.630	11	0.820	2	0.517	18	0.554	25
San Diego–Carlsbad–San Marcos	0.625	12	0.578	34	0.686	1	0.610	15
Boston–Cambridge–Quincy	0.615	13	0.715	19	0.527	17	0.604	17
Houston–Sugar Land–Baytown	0.612	14	0.662	28	0.571	9	0.604	18
Salt Lake City	0.609	15	0.772	11	0.402	38	0.652	9
Baltimore–Towson	0.606	16	0.791	6	0.471	28	0.558	24
Portland–Vancouver–Hillsboro	0.600	17	0.670	26	0.617	5	0.513	30
Dallas–Fort Worth–Arlington	0.595	18	0.596	33	0.514	19	0.673	6
Nashville–Davidson–Murfreesboro–Franklin	0.585	19	0.770	12	0.494	25	0.490	33
Phoenix–Mesa–Glendale	0.581	20	0.623	30	0.588	8	0.532	27
Kansas City	0.577	21	0.795	4	0.393	41	0.541	26
Jacksonville, FL	0.562	22	0.606	31	0.639	3	0.441	39
Hartford–West Hartford–East Hartford	0.562	23	0.653	29	0.466	30	0.565	23
San Antonio–New Braunfels	0.562	24	0.708	21	0.550	14	0.427	40
Orlando–Kissimmee–Sanford	0.560	25	0.548	40	0.537	15	0.595	20
Miami–Fort Lauderdale–Pompano Beach	0.558	26	0.488	45	0.593	6	0.592	22
Milwaukee–Waukesha–West Allis	0.547	27	0.759	14	0.423	35	0.459	36
Pittsburgh	0.546	28	0.783	7	0.374	43	0.481	34
Charlotte–Gastonia–Rock Hill	0.544	29	0.534	41	0.428	34	0.668	7
Columbus, OH	0.541	30	0.775	10	0.397	40	0.450	37
New Orleans–Metairie–Kenner	0.535	31	0.508	43	0.628	4	0.468	35
Philadelphia–Camden–Wilmington	0.530	32	0.570	37	0.497	23	0.523	28
Sacramento–Arden–Arcade–Roseville	0.522	33	0.560	38	0.504	22	0.504	31
St. Louis	0.520	34	0.761	13	0.300	50	0.500	32
Indianapolis–Carmel	0.519	35	0.698	22	0.338	48	0.522	29
New York–New Jersey–Long Island	0.519	36	0.389	47	0.558	12	0.609	16
Cincinnati–Middletown	0.508	37	0.736	17	0.379	42	0.409	43
Chicago–Joliet–Naperville	0.506	38	0.494	44	0.410	37	0.614	14
Birmingham–Hoover	0.499	39	0.679	24	0.372	45	0.445	38
Tampa–St. Petersburg–Clearwater	0.497	40	0.553	39	0.511	20	0.425	41
Los Angeles–Long Beach–Santa Ana	0.488	41	0.368	48	0.466	31	0.632	10
Buffalo–Niagara Falls	0.479	42	0.688	23	0.428	33	0.321	50
Providence–Fall River–Warwick	0.474	43	0.576	35	0.477	27	0.368	47
Louisville–Jefferson County	0.469	44	0.671	25	0.398	39	0.339	49
Cleveland–Elyria–Mentor	0.465	45	0.605	32	0.373	44	0.417	42
Atlanta–Sandy Springs–Marietta	0.462	46	0.339	49	0.354	46	0.692	5
Memphis, TN	0.458	47	0.570	36	0.416	36	0.389	45
Las Vegas–Paradise	0.434	48	0.437	46	0.505	21	0.360	48
Detroit–Warren–Livonia	0.400	49	0.509	42	0.301	49	0.389	46
Riverside–San Bernardino–Ontario	0.361	50	0.330	50	0.347	47	0.406	44

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