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Dashboard Indicators for the Northeast Ohio Economy: Prepared for the Fund for Our Economic Future

by Randall Eberts, George Erickcek, and Jack Kleinhenz

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The Fund for Our Economic Future (The Fund) is a multiyear collaborative effort "to encourage and advance a common and highly focused regional economic development agenda that can lead to a long-term economic transformation of the Northeast Ohio (NEO) economy." One of the strategies pursued by the Fund is to create and regularly update Dashboard Indicators for the Northeast Ohio Regional Economy. The Dashboard is intended to provide a framework for understanding the regional economic process and to track the region's economic progress. This report presents the methodology used to construct and design the dashboard.

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Executive Summary

Background and Approach

The Fund for Our Economic Future (The Fund) is a multiyear collaborative effort "to encourage and advance a common and highly focused regional economic development agenda that can lead to a long-term economic transformation of the Northeast Ohio (NEO) economy." Over 80 organizations, including philanthropic foundations, corporate giving programs, chambers of commerce and local governments, have contributed nearly $30 million to the Fund.

The Fund pursues three related strategies:

- making grants to nonprofit organizations that have the potential to make a substantial economic impact on the regional economy
- conducting a public outreach effort, Voices & Choices, which strives to create a shared agenda among the citizens and leaders of Northeast Ohio for revitalizing the regional economy
- creating and regularly updating the Dashboard Indicators for the Northeast Ohio Regional Economy—the subject of this report. The Dashboard is intended to provide a framework for understanding the regional economic process and to track the region's economic progress.

This report presents the methodology used to construct the framework, create the indicators based on this framework, and design the dashboard. The methodology is noteworthy in that it yields indicators that reflect the key features of the underlying process of economic growth in the region. Basing the NEO indicators on such a methodology sets them apart from those created for other regions. Too often, indicators that are interesting and seemingly useful are assembled into a reporting system with the idea that the user can pick and choose. Stakeholders have little way of knowing which indicators track key factors in the region's economic development process. The NEO indicators, on the other hand, are constructed from the viewpoint of "less is more." We include only those indicators that closely relate to regional economic growth and that are critical for understanding and tracking the regional growth process.

Key Findings

Preparation of the Dashboard indicators began with an analysis of 118 metropolitan areas similar in size to those in Northeast Ohio. From that analysis, 40 variables were identified that together provide a comprehensive view of these regional economies. A statistical technique was applied to "distill" a small number of factors from the 40 variables in such a way that the factors still encompassed the information contained in the 40 variables. Another

statistical technique was applied to determine the degree to which each of the factors was related to economic growth. Each was shown to be highly correlated with growth in four areas of economic activity: employment, output, per capita income, and productivity. The eight growth factors identified were:

1. Skilled Workforce
2. Urban Assimilation
3. Racial Inclusion
4. Legacy of Place
5. Income Equality
6. Locational Amenities
7. Business Dynamics
8. Urbanization/Metro Structure.

These eight growth factors were chosen to be the Dashboard indicators. These resulting indicators reflect not only economic factors but also social attributes and physical and cultural amenities. The analysis shows that both economic and noneconomic factors contribute to regional growth.

Our analysis suggests that a skilled workforce is the primary driver of economic growth. Of the eight factors, this factor is the most highly correlated with growth in three of the four areas of economic activity investigated: output, per capita income, and productivity. A skilled workforce includes not only the educational attainment of the workforce as measured by post-secondary degrees, but also the ability of companies to integrate these skills as measured by the proportion of knowledge-based occupations and patents created. Indeed, the analysis shows that a region's skilled workforce contributes significantly to its productivity growth. Those metro areas excelling with respect to a skilled workforce—Boulder, Colorado; San Jose, California; and Austin, Texas—all experience high productivity growth rates. The NEO region could fare better on the skilled workforce factor: The Cleveland-Lorain-Elyria area and Akron rank near the middle of the 118 metro areas (43rd and 55th, respectively), while Youngstown-Warren and Canton-Massillon are in the bottom quartile.

Business dynamics is the primary driver of metropolitan employment growth. This factor includes not only the opening and expansion of businesses but also the closing and contraction of existing businesses. Both dimensions together capture the vitality of a region as manifested through the process of creative destruction, whereby aging and less productive enterprises are replaced with newer, more innovative ones. The NEO region does not fare as poorly with respect to business dynamics. The four metro areas are within the second quartile of cities, with Canton-Massillon ranked 31st, Akron 34th, Cleveland-Lorain-Elyria 44th and Youngstown-Warren 54th. It is noteworthy that these NEO metro areas outrank areas such as Austin and Seattle, but this factor weights equally job loss and job creation.

The resulting indicators also suggest that it is not only economic factors that impact a region's growth. The analysis shows that the social values of racial inclusion and income equality are contributing factors toward economic growth, as well.

In the four areas of economic growth investigated, the NEO economy fares poorly. The region is in the bottom quartile with respect to employment growth and real output growth. The four NEO metro areas are ranked slightly higher with respect to per capita income growth and productivity. During the past decade, Akron ranked 45th in per capita income growth and Cleveland-Lorain-Elyria ranked 35th in productivity growth. Youngstown-Warren is near the bottom on all four measures.

Lessons and Conclusions

Several key lessons emerge from this analysis, which are important for developing a shared regional vision and agenda.

1. There is no "silver bullet" that will turn a slow-moving economy based on traditional industries into a vibrant, high-performance one.
2. A skilled workforce and strong business dynamics are most highly correlated with regional economic growth.
3. The pursuit of social goals, such as racial inclusion and income equality, can enhance regional economic growth.
4. While positively related to per capita income growth, locational amenities are not as important to regional growth as the other factors included in the analysis.
5. The region's growth is impeded by legacy costs, which are the result of an aging infrastructure and an unpopular climate

Going forward, the NEO Dashboard of Regional Indicators will track these eight factors over time for each of the four NEO metro areas. In addition, the ranking of the four metro areas with respect to these factors and the four measures of regional growth will be updated annually to monitor the relative progress of the region.

The evidence-based approach used to construct the Dashboard yields regional economic indicators that local stakeholders can use to gain insights into how to structure an economic development agenda that focuses on issues that are directly related to growth. The indicators, by encompassing not only important economic factors but also societal values, allow the region's stakeholders to advance a highly focused regional economic development agenda that can lead to a long-term economic transformation, both in terms of promoting economic growth and in improving its civil society.

I. Introduction

The Fund for Our Economic Future (The Fund) is a multiyear collaborative effort "to encourage and advance a common and highly focused regional economic development agenda that can lead to a long-term economic transformation of the Northeast Ohio (NEO) economy." Over 80 organizations, including philanthropic foundations, corporate giving programs, chambers of commerce and local governments, have contributed nearly $30 million to the Fund.

The Fund pursues three related strategies::

- making grants to nonprofit organizations that have the potential to make a substantial economic impact on the regional economy;
- conducting a public outreach effort, Voices & Choices, which strives to create a shared agenda among the citizens and leaders of Northeast Ohio for revitalizing the regional economy; and
- creating and regularly updating Dashboard Indicators for the Northeast Ohio Regional Economy—the subject of this report. The Dashboard is intended to provide a framework for understanding the regional economic process and a set of meaningful indicators that can be used to track the region's economic progress.

This report presents the methodology used to develop the Dashboard Indicators and a discussion of the indicators, with an explanation for interpreting them.[1]

Many organizations concerned about the economic development of their region have established a set of indicators that measure the economic vitality of their region. However, many of these efforts share the pitfall of including too many indicators, which can be confusing and misleading. Too often, indicators that are "interesting" and seemingly useful are assembled into a dashboard system with the idea that the user can "pick and choose." The approach ignores whether or not the indicators have a meaningful relationship with the underlying regional or local economy. In developing the Dashboard Indicators for Northeast Ohio, we adopted the adage that "less is more." Like the dashboard

1. A preliminary step for this study was a statistical analysis comparing the economic competitiveness of the NEO region to other metropolitan areas. The NEO competitive analysis study is not included in this working paper but is available upon request from the W.E. Upjohn Institute. The data shows that Northeast Ohio's subpar industrial performance is due to two factors. First, most of its traditional core industries face shrinking national and international markets. Second, the competitiveness of the industries in the region is mediocre. The region is home not only to industries that are growing more slowly than the nation overall but also to companies that are less competitive than their counterparts elsewhere. Some regions are fortunate to excel in both factors, but many which we associate with high growth succeed primarily because of their above-average competitiveness. For example, Austin, San Diego, Seattle, and Indianapolis have grown because their companies are more competitive than companies in the same industry located elsewhere.

of a car, which displays only those indicators that are necessary to properly operate and maintain the vehicle, our regional dashboard should include only those indicators necessary to understand and monitor regional growth. We constructed eight such indicators from 40 economic, demographic, and social variables that we demonstrate through empirical analysis are highly correlated with regional economic growth.

The first step in this effort was the development of a framework to analyze and understand the economic growth dynamics of the region. The analysis tells us what the determinants of economic growth are, which matter most in regional development, and where Northeast Ohio stands in terms of the determinants. This information enables us to prioritize and select economic variables—such as the percentage of adults holding graduates degrees—according to the extent to which they are correlated with measures of economic growth. The factors that are shown to contribute the most to growth are included in the Dashboard.

Because of the multidimensional nature of the regional growth process, it is important that the Dashboard Indicators are based on sound empirical evidence. Doing so is important for the success of economic development initiatives for several reasons:

1. Regional economic growth is dictated by powerful market forces. Appropriate and effective intervention must be based on understanding how to nudge these forces in the direction that the region prefers and how to turn local assets "into the wind," so to speak, so that market forces can carry the region forward. Attempting to stand against the wind is futile and foolish. Therefore, it is critical that policymakers and economic planners understand which forces drive the regional economy, the direction they are pushing the local economy, and how to use these forces to their advantage.
2. Understanding these forces helps the region's stakeholders to envision the region's possible future courses. Wishing to become another region, which has evolved from an entirely different resource base and is subject to different historical circumstances, contributes little to a concrete strategy for the future. Rather, understanding the possible contributors to future growth and taking stock of the region's assets are important steps in pursuing a viable economic development strategy.
3. Economic development is a never-ending process, and economic planners must continue to monitor and discuss their region's progress while charting their future course. A set of local economic development indicators provides a basis for ongoing policy discussion and planning and a means of assessing progress.

There is considerable experience from which to better understand the factors that contribute to regional growth. Each of the more than 300 metropolitan areas in the country has pursued economic development efforts for decades and continues to respond to its specific circumstances in line with its own aspirations for rate and quality of growth. Each metropolitan area obviously has unique attributes and challenges, but it is safe to say that there are more similarities than differences in the challenges they face and the measures they have taken to address them. While a region must set its own agenda, the process of developing regional strategies can benefit from the rich set of experiences taking place in hundreds of regional economic development "laboratories" across the country. Understanding which metropolitan areas excel and which lag behind with respect to specific factors that affect growth can help local leaders hone in on policies that have been successful in some areas and that might prove appropriate for the NEO region.

Our approach to developing the Dashboard Indicators was based upon rigorous empirical analysis. The analysis identifies broad factors that are associated with the economic growth of metropolitan areas. By estimating the extent to which these factors are correlated with economic growth, they provide a framework for prioritizing public initiatives. We constructed indicators using these broad factors and the variables that are statistically associated with them.

The Dashboard Indicators were developed in seven steps.

1. The organizing committee of the Fund for Our Economic Future outlined five themes of regional growth that they wanted to investigate or track. We would determine to what extent each was important for regional economic growth and in what way in steps 1–5.
2. We identified variables that measure various attributes of these five themes, and added other variables that we know from past research affect economic growth. For example, in order to investigate one of the preselected areas, a skilled workforce, we identified the following variables as measures: percentage of the population holding a bachelor's degree, percentage holding a graduate degree, number of major universities located in the area, percentage of professional occupations, and a composite measure of the skill content of workers. In total, we identified 40 variables. Next we compiled data on those variables for 118 U.S. metropolitan areas that were similar in size to those in Northeast Ohio.[2,3]

2. Only metropolitan areas that are between 200,000 and 3 million in population were included in the study.

3. In an earlier version of this report "Building a Set of Dashboard Indicators for the Northeast Ohio Economy," we included 43 variables for 157 metro areas. The reduction in the number of metro areas examined is due to the non-availability of current statistics for 49 of these metro areas.

3. We applied a statistical technique to the data to group these variables into factors. The technique groups variables based on how strongly correlated they are with each other. Eight factors were generated which captured 90 percent of the variation of the 40 variables. Based on which variables fall into which factor, factors can be interpreted in an intuitive way. For example, some of the variables selected for the area of a skilled workforce did, in fact, turn out to be related to each other: percentage of the population with a graduate degree, percentage with a bachelor's degree, the composite measure of skill content of different workers, and the percent of the workforce in professional occupations. However, other variables grouped with these as well, but these reflect the same concept: productivity in the information sector, the number of patents per employee, and the percent of the population between 15 and 65 years old.

   The eight factors derived from the analysis are:

   - Skilled workforce
   - Urban assimilation
   - Racial inclusion
   - Legacy of place
   - Urban/metro structure
   - Locational amenities
   - Business dynamics
   - Income equality.

4. The eight factors gleaned from the empirical analysis were related back to the five preselected themes identified by organizing committees. Several of the areas correspond to the factors resulting from the analysis, but additional factors were identified as well. The resulting indicators reflect not only economic factors but also social attributes and physical and cultural amenities. The analysis shows that both economic and noneconomic factors contribute to regional growth.

5. We applied another statistical procedure to determine the degree to which these eight factors are correlated with four measures of economic growth: employment, per capita income, output, and productivity. The technique determines how much of the variation across the 118 metro areas in these measures of growth is explained by each of the eight factors. All were highly correlated with at least some of the economic growth measures.

6. We ranked the set of metropolitan areas in each of the eight factors, as a way of gaining a better understanding of how to interpret the factors (and not to establish a set of comparison metropolitan areas).

7. Once the relationship between the factors and regional growth were estimated, the final step was the construction of the eight dashboard indicators to track the area's relative performance. These indicators are weighted indexes based on the variables that cluster around each of the identified factors. The eight indicators and the variables that characterize them are shown in table 1.

Table 1. Components of the Eight Dashboard Indicators

Skilled Workforce
- Productivity in information sector
- Number of patents per employee
- Graduate degree
- Bachelor's degree
- Skill differences
- Professional occupation
- Percent of population between 16 and 64

Urban Assimilation
- Percent Asian
- Percent minority business employment
- Percent foreign born
- Percent homeownership
- Commuter time
- Cost-of-living index
- Percent Hispanic

Racial Inclusion
- Percent Black
- Isolation index
- Dissimilarity index

Legacy of Place
- Number of governmental units
- Climate index
- Gross change in employment due to business churning
- Crime index
- Percent of houses built before 1940

Income Equality
- Ratio of income of top 10 to bottom 10
- Percent of children living in high-poverty neighborhoods

Locational Amenities
- Major university presence
- Transportation index
- Arts index
- Health index
- Recreation index

Business Dynamics
- Percent of businesses employing fewer than 20 workers
- Gross change in employment due to business churning
- Concentration in manufacturing employment

Urban/Metro Structure
- Percent of metro population in core city
- Concentration of poverty in core city

II. Analyzing Economic Growth Dynamics of the Region

Starting Point

As a starting point in our analysis of the economic growth dynamics of the region, we first examined several themes suggested by the project's organizing committee. These themes were believed to be important in the development of a regional economic dashboard—either as important aspects of growth to track or suggestions about which characteristics of the region might contribute to economic growth. These themes were:

- Economic growth and employment
- Education and workforce
- Equity and fairness
- Quality of life and place
- Cooperation and governance.

Next, these themes were divided into subcategories. The themes and the subcategories identified for each are displayed in table 2.

Table 2. Conceptual Themes of the Regional Framework

Economic Growth and Employment
1. Industry structure/clusters
2. Knowledge-based economy
3. New industry development
4. Improving the business environment
5. Entrepreneurship

Education and Workforce
1. Workforce development to meet societal and business needs
2. Lifelong learning including K-12 education

Equity and Fairness
1. Create an open, diverse, and international community
2. Age
3. Ethnic/immigrant
4. Access to basic services

Quality of Life and Place
1. Core city/neighborhood regeneration
2. Arts and culture
3. Keep communities' distinctive attributes
4. Safety

Cooperation and Governance
1. Regional cooperation
2. Public sector efficiency
3. Civic engagement/entrepreneurship
4. Public/private partnerships

Selecting Relevant Data

For each of the subcategories, we identify a list of variables for which it is possible to find comparable data for a broad sample of metropolitan areas, and then we added other variables that we know from past research affect economic growth.[4] A total of 40 variables were identified. We based our final selection of variables on 1) their connection to the specific economic area we wish to monitor, 2) their reliability, 3) their timeliness (the data should be available with a lag of two years or less), and 4) their availability (most data should be available on an annual basis and be reasonably inexpensive to acquire). However, for several of the factors found to be associated with economic growth, timely economic variables are not available.

Each theme is associated with a number of variables. For instance, the skill content of a region's workforce cannot be captured merely by one variable, such as the percentage of residents with bachelor's degrees. Skills are acquired in other ways, and they are reflected in the prevalence of certain kinds of occupations, such as professional and technical occupations, and in knowledge generated by those skilled individuals—measured, perhaps, by the number of patents held in a region. Therefore, one would expect that regions with a high concentration of these attributes would be associated with a highly skilled workforce.

We intend these variables to measure "inputs" rather than "outputs," and they are for the most part expected to serve the function of defining policy issues and informing the formulation of policy. The set of variables may be related in a hierarchical fashion, in that some variables may be considered intermediate inputs that relate to higher-order inputs, which in turn affect outputs. For example, patents may affect the production process which improves productivity. In this sense, patents affect the output of goods and services through productivity changes. While it is important at this stage to recognize the hierarchical nature of some inputs, we will keep the analysis relatively simple and will not dwell much on this issue.

Identifying Underlying Factors

We compiled data on the 40 variables for 118 U.S. metropolitan areas that were similar in size to those in Northeast Ohio. These data were obtained from various sources, but most came from government agencies, such as the Bureau

4. We start out with data for all metropolitan areas and then select a subset of metro areas based upon various criteria pertinent to each stage of the analysis. We use metropolitan areas (and primary metropolitan areas, where appropriate) as our definition of a region. Four metropolitan statistical areas (MSAs) and primary metropolitan statistical areas (PMSAs) lie within the NEO region: Akron, Canton-Massillon, Cleveland-Lorain-Elyria, and Youngstown-Warren. While there are small regions of NEO that are not included in these definitions, the four metro areas comprise the bulk of the population and economic activity in the area. The only criterion we use initially to restrict our sample to comparable metropolitan areas is to include only those with populations greater than 200,000 and less than 3,000,000. We have benefited greatly from the set of indicators that Ziona Austrian has compiled at Cleveland State University.

of the Census, the Bureau of Labor Statistics, and the Bureau of Economic Analysis. The list of variables is displayed in table 3, and a list of variables along with their sources is included in Appendix A.

In the data we look for relationships among the variables. Identifying these relationships can offer insights into how to think about the components of growth. Should education be viewed as a distinct component or is it observed consistently with other closely related components such as research and development? If so, perhaps the two components should not be disentangled but rather considered together as one larger factor when formulating development strategies.

To identify the underlying factors among the 40 variables, we use the statistical technique of factor analysis. Factor analysis estimates a small number of common factors from a larger set of variables. This technique, in essence, seeks to discover if the observed variables can be explained largely or entirely in terms of a much smaller number of variables called factors.

In this case, we collapse 40 variables into 8 independent factors. It is important to point out that these factors are not absolute. Others factors may be equally valid. Therefore, we do not claim that our list of factors is a complete description of the economic development process. Rather, we submit that after several iterations of analyzing the data using factor analysis, these factors appear to be the ones that best summarize the large set of variables associated with regional economic development.

The eight factors capture more than 90 percent of the variance of these 40 variables. The factors and their "factor loadings" are shown in table 4.[5] In order to determine which variables should be included with each factor, we look across the row for each variable and determine which factor loading has the highest absolute value (positive or negative). We assign the variable with the largest value to that particular factor (i.e., column). In some cases, the factor loadings might be small, which indicates that that particular variable does not have a sufficient correlation with any of the factors, and these variables are not included. However, all but a few of the 40 variables are associated with one of the eight factors.[6]

5. The factor loadings are the correlation coefficients between the variables (rows in table 4) and factors (columns). The squared factor loading is the percent of the variance in that variable explained by the factor. For instance, for the loading of 0.938 on the variable bachelor's degree means that the first factor accounts for 88 percent (.938*.938) of the variance of this variable. To obtain the percent of the variance in all the variables accounted for by each factor, add the sum of the squared factor loadings for that factor (column) and divide by the number of variables (Garson, Factor Analysis, www2.chass.ncsu.edu/garson/pa765).

6. In order to make the output more understandable and to facilitate interpretation of the factors, common practice is to rotate the initial factor loadings. We use the varimax rotation, which is an orthogonal rotation of the factors to maximize the variance of the squared loadings of a factor (column) on all the variables (rows) in a factor matrix. This technique minimizes the number of variables which have high loadings on any one given factor, resulting in each factor tending to have either high large or small loadings of particular variables on it. This makes it easy to identify each variable with a single factor.

Table 3. Variables Associated with the Five Themes of Regional Development Offered by the Organizing Committee

I. Economic Growth and Employment

- Productivity of the information sector
- Number of patents per employee
- Percentage of businesses employing fewer than 20 workers.
- Employment dynamics (churning) as measured by the sum of jobs created due to startups and expansions plus the jobs lost due to closings and contractions divided by base employment

II. Education and Workforce

- Percentage holding bachelor's degree
- Percentage holding graduate degree
- Major universities located in the metropolitan area
- Percentage professional occupations
- Composite measure of skill content of workers (skill differences)

III. Equity and Fairness

- Percentage African American
- Percentage Hispanic
- Percentage Asian
- Percentage foreign born
- Income gap (income at the 90th percentile minus income at 10th percentile divided by income at the 10th percentile)
- Spatial concentration of poverty (percent of children in high-poverty census tracts)
- Racial dissimilarity index
- Racial isolation index
- Homeownership rate
- Concentration of poverty in the core city
- Percentage minority business ownership
- Dependency: the percentage of the population less than 16 and greater than 65

IV. Quality of Life and Place

- Commuting times
- Art index (*Places Rated Almanac*)
- Recreation index (*Places Rated Almanac*)
- Crime index (*Places Rated Almanac*)
- Health index (*Places Rated Almanac*)
- Transportation index (*Places Rated Almanac*)
- Cost of living
- Climate Index

V. Cooperation and Governance

- Number of city governments within metropolitan area divided by metro population
- Core city's share of metropolitan population

Additional Variables not Associated with the Five Themes

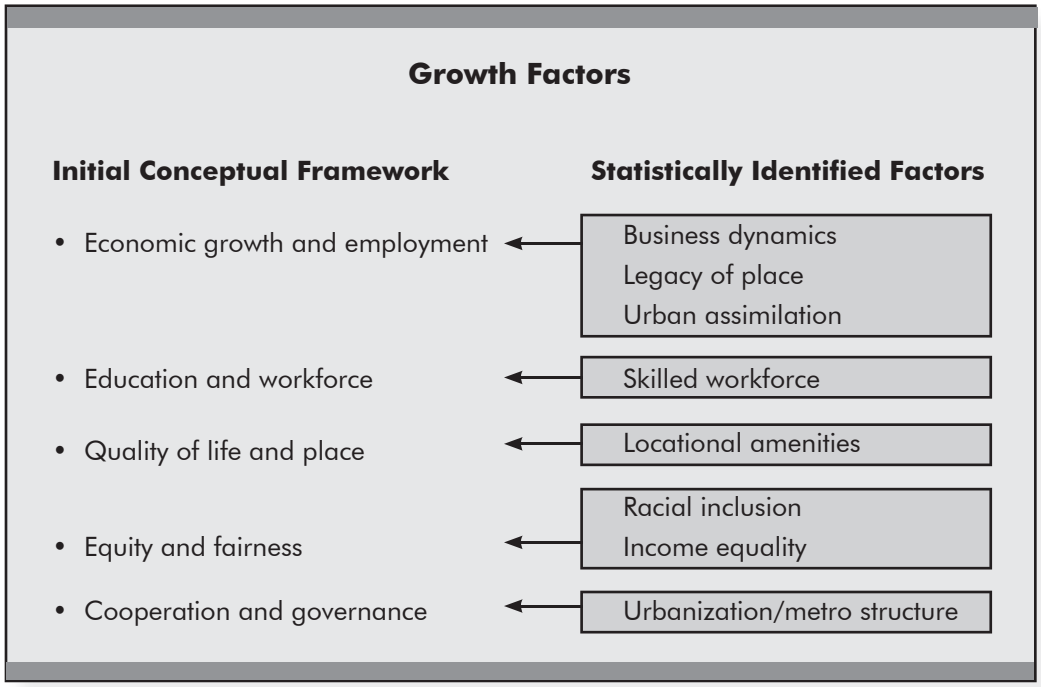
- Percentage of housing stock built before 1940
- Concentration of manufacturing jobs

Table 4. Elements of the Regional Framework

Variable	Skilled workforce	Urban assimilation	Racial inclusion	Legacy of place	Income equality	Locational amenities	Business dynamics	Urban/ metro structure
Professional occupation	0.955	0.062	–0.042	0.053	–0.032	0.033	0.017	–0.010
Graduate degree	0.906	0.064	–0.077	0.006	0.010	0.039	0.075	0.058
Bachelor's degree	0.881	0.177	–0.049	0.063	–0.182	0.131	0.081	–0.089
Skill differences	0.612	–0.083	0.199	0.011	–0.188	0.152	–0.041	0.075
% population >16 or 64	–0.660	0.056	0.142	0.125	0.018	-0.081	0.280	0.142
Number of patents/emply.	0.480	0.142	–0.181	–0.120	–0.176	–0.017	–0.087	0.073
Productivity information sec.	0.456	0.271	–0.042	–0.013	–0.011	–0.049	0.152	–0.025
% foreign born	0.097	0.927	–0.105	0.023	0.084	0.055	0.153	0.084
% minority business emply.	0.031	0.884	0.056	0.125	0.223	–0.087	0.076	–0.012
% Hispanic	–0.138	0.770	–0.260	0.122	0.250	–0.030	0.142	–0.123
Cost of living index	0.342	0.683	–0.149	0.222	–0.132	–0.002	0.098	0.141
% Asian	0.341	0.663	–0.180	0.104	–0.056	–0.033	–0.192	0.032
Commuter time	0.144	0.549	0.256	0.167	–0.080	–0.149	0.168	0.303
% homeownership	–0.160	–0.537	0.223	0.068	–0.349	–0.124	–0.027	0.324
Isolation index	–0.034	–0.121	0.928	–0.025	0.182	0.167	–0.017	0.071
Disimiliarity index	–0.157	–0.167	0.826	–0.334	0.009	0.164	–0.031	0.141
% Black	0.061	–0.121	0.587	0.299	0.394	–0.066	–0.058	–0.014
Climate index	–0.076	0.469	–0.247	0.623	0.187	–0.050	0.343	0.097
Gross change in emply. due to business churning	0.163	0.356	–0.042	0.618	0.142	0.120	0.470	–0.075
No. governmental units	–0.164	–0.387	0.117	–0.449	–0.210	–0.070	–0.071	0.038
Crime index	0.150	–0.217	–0.359	–0.530	–0.352	–0.153	–0.125	0.192
% of houses built <1940	–0.035	–0.050	0.137	–0.878	–0.030	0.027	–0.118	0.086
% children living in high pov. nbds.	–0.358	0.195	0.128	0.075	0.814	–0.029	0.039	–0.183
Income inequality	–0.005	0.387	0.285	0.206	0.765	–0.028	0.122	–0.054
Transportation index	0.126	–0.099	0.168	–0.026	0.043	0.824	–0.074	–0.155
Recreation index	0.083	–0.108	0.372	0.142	–0.265	0.584	0.214	0.184
Arts index	0.525	0.241	0.248	–0.087	–0.244	0.535	–0.067	0.053
Major university	0.487	0.026	0.074	0.107	0.104	0.520	–0.085	0.086
health Index	0.445	0.003	0.196	0.019	0.186	0.451	–0.037	0.045
% businesses employing <20 workers	–0.023	0.200	–0.032	0.177	–0.047	–0.109	0.832	0.226
Gross change in employment due to business churning	0.163	0.356	–0.042	0.618	0.142	0.120	0.470	–0.075
Concentration in manufacturing employment	–0.096	–0.151	0.016	–0.261	–0.288	–0.077	–0.693	0.164
Concentration of poverty in core city	0.089	0.107	0.124	–0.141	–0.034	–0.071	0.037	0.716
% metro pop in core city	0.128	–0.034	–0.154	0.098	0.262	–0.021	–0.109	–0.762

As shown in figure 1, the statistically identified factors correspond nicely to the themes initially identified by the project's organizing committee. However the analysis identified other themes that were not included in the original list. Furthermore, some of the suggested themes were outcome measures, and not input measures, such as, economic growth and employment and these were eliminated.

Figure 1. Correspondence between Initial Themes and Factors Derived from Factor Analysis



Description of the Factors

Skilled Workforce (Column One)

Consider the first column in table 4. This factor loads most highly on variables related to the workforce. We see high factor loadings for the percentage of the population with a bachelor's degree and the percentage with graduate degrees. We also find that occupations with high education content, such as professional occupations, are also associated with this factor. In addition, variables measuring patents per employee and productivity of the information sector are also correlated with these other variables. The variable "skills differences" is a composite measure of the skills of the labor force as reflected in educational levels and occupations, and this, too, is included in this factor. Since these variables all load with the same sign, they are positively correlated. That is, metropolitan areas with a high percentage of bachelor's degrees also have a high number of patents per employee. Because of the dominance of education and workforce variables underlying this factor, we label it "skilled workforce."

Urban Assimilation (Column Two)

The next factor, as shown in column two, includes variables that have to do with ethnic diversity (percent Asian, Hispanic, or foreign born), minority business ownership, and homeownership. Note that variables reflecting racial and income isolation, such as racial diversity (black), racial isolation and dissimilarity indexes, and income inequality, are missing from this factor. These variables load highly on two different factors. It is noteworthy that a high cost of living, a low rate of homeownership, and long commutes also load with ethnic diversity, suggesting that these metropolitan areas are experiencing strong pricing pressure on real estate. Because of the distinct ethnic and immigrant aspects underlying this factor and the association with areas experiencing a high cost of living and low homeownership rates, we classify the underlying theme of this set of variables as "urban assimilation."

Racial Inclusion (Column Three)

Included in the list of variables are two indexes of racial inclusion. One is racial isolation index and the other is a racial dissimilarity index (dism2000). These variables, along with a measure of the percentage of the population that is African American, all exhibit high loadings on this factor. That these variables all have the same sign clearly points to the underlying factor of racial inclusion. It should be noted that the analysis has separated the racial dimension of inclusion from the economic dimension. The income measures of inclusion (or conversely isolation) form their own factor, as shown in the last column of table 4. The two income inequality measures exhibit high loadings together but low loadings in the third column. The same is true for the racial isolation measures with respect to income equality—they have low correlations (low loadings) in the last column. All this leads to the conclusion that race and income are two distinct dimensions of social inclusion.

Legacy of Place (Column Four)

Some metropolitan areas are plagued by what can best be described as high "legacy of place" costs These costs may be related to a declining industrial base that has left the area with an older infrastructure, high unemployment, a population with lower educational attainment and thus fewer opportunities, a disproportionate need for human services, and a tax base that is not sufficient to support the demand for services without raising taxes. We have included several measures that capture these circumstances. The percentage of housing stock put in place before 1940 measures the age of the city and reflects the costs of maintaining older infrastructure such as roads and sewers. Older cities may also be associated with higher demand for other services and require higher tax rates to support them, particularly if the tax base is shrinking or not growing sufficiently. Thus, we find that variables that reflect crime rates are associated with this factor. In addition, the structure of local government, as measured by the number of municipalities per capita in the local metropolitan area, is also positively correlated with these legacy of place costs, in that metropolitan areas with more fragmented government structures may be associated with higher costs. In addition, we find that these attributes are less likely to be found in areas with favorable climates, as evidenced by the negative loading of the climate index. Finally, business churning, which partly reflects a region's past and present business and entrepreneurial environment, is also associated with this factor. Churning is a measure of the business activity in the area. It is constructed by adding the number of jobs gained due to startups and expansions over a three-year period, subtracting the number of jobs lost due to contractions and closings over the same period, and dividing by employment in the base period. This variable is also included in the "business dynamics" (column seven). We classify the factor underlying the variables in this grouping as "legacy of place."

Income Equality (Column Five)

This underlying factor is related conceptually to racial inclusion (column 3), but focuses on income not race. It is measured by an income inequality index, constructed by taking the difference between the income at the 90th percentile of the income distribution and at the 10th percentile and dividing the result by the 10th percentile income. The other measure is the percentage of children under the age of 18 living in census tracts with poverty rates of 20 percent or higher. Both of these variables load high on this factor.

Locational Amenities (Column Six)

This factor includes most of the quality-of-life variables that were compiled for the analysis. These include indexes measuring the transportation system, recreational opportunities, the arts, and health services. Joining these quality-of-life variables is the presence of a major research university in the metropolitan area. The two quality-of-life indexes that did not load high on this factor are crime rate and climate. Crime and climate loaded high on the "legacy

cost" factor. The quality-of-life variables that did coalesce with this factor are those that can be constructed privately or publicly. In other words, a region can invest in arts and cultural institutions and transportation infrastructure, whereas they have little control over climate.

Business Dynamics (Column Seven)

Three variables loaded highly on this factor—churning (also included in legacy of place), the proportion of small establishments, and the concentration of manufacturing. It is important to note that churning is the addition of the gross flows of jobs, which is a measure of business activity, not a measure of net employment change. The concentration of manufacturing is measured by the location quotient. Metropolitan areas that score high on this factor are characterized by high business activity in small establishments outside of the manufacturing sector.

Urbanization/Metro Structure (Column Eight)

This factor includes important variables describing the government structure of the metropolitan area, particularly as it pertains to the core city, and the core city's share of poverty. The poverty variable measures the core city's share of poverty relative to its share of the metropolitan population. A value greater than one indicates that its share of poverty is greater than its share of the population. Thus, a negative relationship suggests that poverty is less concentrated in the core city. This variable has ramifications for the ability of government entities to share tax revenue across a broader population and spread the costs of poverty over a larger population and tax base. It is curious, however, that the variable called the number of municipalities per capita within a metropolitan area is not part of this group. The evidence is clear that the degree of fragmentation is not related to the core city's population share. The factor loading of the fragmentation variable, the number of governmental units, on this factor is quite low (0.038), and the factor loading of the population share of the core city on this factor is also low (-0.156), indicating that there is little correlation between the two variables. While other labels may also fit this factor, we have associated it with metro government structure and its consequences with respect to poverty.

III. Measures of Regional Growth

Our analysis examined the data with respect to four measures of regional growth—percentage change in output, employment, productivity, and per capita income.[7] Together these measures offer a comprehensive view of the economic development of regions. Output growth is the clearest measure of a region's business performance and is the regional counterpart of the nation's gross domestic product. Employment growth reflects employment opportunities for local residents as well as for in-migrants. In fact, many argue that it is employment opportunities that attract people to an area, but still others may find a region attractive for other reasons. Productivity—output per employee —is a key factor determining the region's overall competitiveness. Per capita income growth measures the income-generating aspect of a region. Employment opportunities are important, but additional jobs must also be accompanied by pay increases or a greater share of high-paying jobs in order for a region's standard of living to improve, as reflected in higher incomes per person. We expect to find that certain factors will affect these three measures differently.

We examine the past ten years, 1994 to 2004, for most of the analysis. Unfortunately, due to data limitations only 118 metropolitan areas are included in the sample. The 2004 data from the U.S. Census American Community Survey (ACS), from which a large share of our data is derived, are still limited to only 118 of the 187 metro areas that had a population of between 200,000 and 3,000,000 individuals in 2000. The ten-year time span covers approximately a full business cycle and provides sufficient time for short-term disturbances or interventions to work through the regional economies. Regardless of which of the four measures of economic growth is used, the four metropolitan areas in NEO grew at a modest pace during the period, as shown in tables 5 through 8. In terms of employment growth, all four of the NEO metro areas grew at a rate below the average, 16.5 percent for the 118 metro areas, during the period. Akron achieved the highest percent change in employment, 6.5 percent, with Youngstown-Warren lagging the other three with a 3.5 percent decline. In terms of output growth, none of the NEO metro areas achieved the sample's average growth of 45.4 percent during the ten-year period. As shown on table 6, Akron was the only metro average in the NEO region to exceed the average percent increase in per capita income, 45.9 percent, during the period (1993 to 2003). On the other hand, the Cleveland MSA achieved greater-than-average productivity growth, surpassing the sample's average of 20.7 percent for the ten-year period.

7. In our previous report, Building a Set of Dashboard Indicators for the Northeast Ohio Economy, we included change in population as a measure of regional growth. Reviewers of that report recommended that we drop population as a measure and use output and productivity in its place. Population is strongly correlated with employment growth, and several reviewers argued that by itself it is not necessarily a good measure of a region's development as it can be associated with sprawl.

Table 5. Change in Employment 1994–2004

Rank	Metropolitan Area	Percent Change
1	Sarasota-Bradenton,FL	49.3
2	Fayetteville-Springdale-Rogers, AR	42.5
3	Austin-San Marcos,TX	42.0
4	Fort Myers,FL	41.2
5	Boise City, ID	40.9
6	West Palm Beach, FL	40.3
7	Orlando, FL	39.5
8	Vallejo-Fairfield-Napa, CA	39.3
9	Provo-Orem,UT	35.4
10	San Luis Obispo, CA	35.0
11	Charleston-North Charleston, SC	34.7
12	San Diego, CA	34.6
13	Tampa-St. Petersburg, FL	32.2
14	Reno, NV	31.3
15	Raleigh-Durham-Chapel Hill, NC	31.3
16	Hamilton-Middletown, OH	30.6
17	Fort Lauderdale, FL	30.3
18	Daytona Beach, FL	30.0
19	Stockton-Lodi, CA	29.9
20	Colorado Springs, CO	29.6
21	Orange County, CA	28.5
22	Modesto, CA	28.3
23	Ventura, CA	27.0
24	Jacksonville, FL	26.8
25	Santa Rosa, CA	25.6
26	Monmouth-Ocean, NJ	25.2
27	Madison, WI	25.0
28	Bakersfield, CA	24.7
29	Dutchess County, NY	24.6
30	Salt Lake City, UT	24.4
31	Lincoln, NE	23.7
32	Fort Pierce, FL	22.8
33	Lakeland-Winter Haven, FL	22.6
34	Fort Worth, TX	22.4
35	Tallahassee, FL	22.3
36	Knoxville, TN	21.4
37	Huntsville, AL	21.2
38	Tucson, AZ	21.0
39	Tacoma, WA	20.9
40	Boulder-Longmont, CO	20.9
41	Fresno, CA	20.7
42	Oklahoma City, OK	20.6
43	Nashville, TN	20.5
44	Baton Rouge,LA	20.4
45	Denver, CO	19.6
46	Oakland, CA	19.5
47	Richmond-Petersburg, VA	19.1
48	Salinas, CA	18.9
49	Springfield, MO	18.1
50	Pensacola, FL	17.9
51	Lubbock, TX	17.9
52	Melbourne-Titusville-Palm Bay, FL	17.4
53	Lexington, KY	17.3
54	Trenton, NJ	17.2
55	Middlesex-Somerset-Hunterdon, NJ	17.1
56	Seattle-Bellevue-Everett, WA	16.7
57	Santa Barbara, CA	16.6
	SAMPLE AVERAGE	16.5
58	Ann Arbor, MI	16.4
59	Visalia-Tulare-Porterville, CA	16.4
60	Indianapolis, IN	16.3
61	Des Moines, IA	15.7
62	Montgomery, AL	15.3
63	Lancaster, PA	15.3
64	Spokane, WA	14.9
65	Jackson, MS	14.8
66	Corpus Christi, TX	14.7
67	Macon, GA	14.6
68	Atlantic-Cape May, NJ	14.1
69	Eugene-Springfield, OR	13.6
70	Appleton-Oshkosh-Neenah, WI	13.2
71	Mobile, AL	13.1
72	Kansas City, MO-KS	13.0
73	Grand Rapids, MI	12.9
74	Fayetteville, NC	12.7
75	Allentown-Bethlehem-Easton, PA	12.2
76	Little Rock, AR	11.9
77	Newark, NJ	11.6
78	Miami, FL	11.2
79	Birmingham, AL	11.1
80	Tulsa, OK	11.0
81	Shreveport-Bossier City, LA	8.5
82	Galveston-Texas City, TX	8.2
83	Augusta-Aiken, GA-SC	8.2
84	Jersey City, NJ	7.9
85	Bergen-Passaic,NJ	7.4
86	Pittsburgh, PA	7.3
87	Milwaukee-Waukesha, WI	7.3
88	Greenville-Spartanburg-Anderson, SC	6.8
89	Akron, OH	6.5
90	York, PA	6.5
91	Greensboro-Winston-Salem-High Point, NC	6.5
92	Davenport-Moline-Rock Isle. IA-IL	6.4
93	Peoria-Pekin, IL	5.8
94	Johnson City, TN-VA	5.5
95	New Orleans, LA	5.2
96	San Jose, CA	5.0
97	Fort Wayne, IN	4.9
98	Syracuse, NY	4.8
99	Lansing-East Lansing, MI	4.7
100	Utica-Rome, NY	4.2
101	Reading, PA	3.8
102	Beaumont-Port Arthur, TX	3.6
103	Erie, PA	3.2
104	Scranton-Wilkes-Barre-Hazleton, PA	3.2
105	South Bend, IN	3.1
106	Cleveland-Lorain-Elyria, OH	3.0
107	Canton-Massillon, OH	2.8
108	Kalamazoo-Battle Creek, MI	2.6
109	Rochester, NY	1.0
110	Rockford, IL	0.8
111	Buffalo-Niagara Fall, NY	0.3
112	Dayton-Springfield, OH	–0.6
113	Toledo, OH	–0.8
114	Binghamton, NY	–2.2
115	Saginaw-Bay City-Midland, MI	–3.0
116	Youngstown-Warren, OH	–3.5
117	Hickory-Morganton-Lenoir, NC	–6.6
118	Flint, MI	–11.5

Source: Economy.com

Table 6. Change in Real Output 1994 to 2004 (billions of dollars)

Rank	Metropolitan Area	Percent Change	Rank	Metropolitan Area	Percent Change
1	Boise City, ID	153.8	60	Birmingham, AL	36.3
2	Austin--San Marcos,TX	144.3	61	Lancaster,PA	36.2
3	San Jose,CA	134.6	62	Daytona Beach,FL	36.0
4	Boulder--Longmont,CO	111.2	63	Lakeland--Winter Haven,FL	35.9
5	Colorado Springs,CO	81.9	64	Knoxville,TN	35.2
6	Raleigh--Durham--Chapel Hill,NC	80.6	65	Fort Pierce,FL	34.7
7	Fayetteville--Springdale--Rogers,AR	79.7	66	Fresno,CA	33.8
8	San Diego, CA	77.1	67	Pensacola,FL	33.2
9	Jersey City, NJ	75.7	68	Tacoma,WA	31.7
10	West Palm Beach,FL	72.0	69	Allentown--Bethlehem--Easton,PA	31.6
11	Fort Myers,FL	66.8	70	Eugene--Springfield,OR	30.9
12	Santa Rosa,CA	66.2	71	Johnson City,TN--VA	30.4
13	Salt Lake City,UT	65.3	72	Baton Rouge,LA	30.2
14	Provo--Orem,UT	62.6	73	Appleton--Oshkosh--Neenah,WI	29.2
15	Seattle--Bellevue--Everett,WA	61.3	74	Richmond--Petersburg,VA	29.1
16	Orange County, CA	60.9	75	Des Moines,IA	28.5
17	Ventura,CA	59.9	76	Oklahoma City,OK	28.3
18	Fort Worth,TX	57.7	77	Spokane,WA	28.1
19	Oakland,CA	55.0	78	Tulsa,OK	27.7
20	Denver,CO	54.7	79	Miami,FL	27.5
21	Fort Lauderdale,FL	54.5	80	York,PA	27.4
22	Huntsville,AL	54.3	81	Fort Wayne,IN	26.7
23	Vallejo--Fairfield--Napa,CA	54.1	82	Fayetteville,NC	26.5
24	Sarasota--Bradenton,FL	53.5	83	Grand RapidsMI	26.5
25	Orlando,FL	52.7	84	Mobile,AL	26.5
26	Monmouth--Ocean,NJ	52.7	85	Cleveland--Lorain--Elyria,OH	26.3
27	Reno,NV	52.6	86	Bergen--Passaic,NJ	26.0
28	Hamilton--Middletown,OH	52.5	87	Akron,OH	24.1
29	Tampa--St. Petersburg,FL	52.1	88	Greensboro--Winston-Salem--High Point,NC	23.9
30	Dutchess County, NY	51.4	89	Little Rock,AR	23.2
31	Nashville,TN	49.1	90	Pittsburgh,PA	23.1
32	Modesto,CA	48.9	91	Canton--Massillon,,OH	21.4
33	Trenton,NJ	48.7	92	Atlantic--Cape May,NJ	21.0
34	Tucson,AZ	48.3	93	Dayton--Springfield,OH	20.6
35	Salinas,CA	48.3	94	Davenport--Moline--Rock Island,IA--IL	20.4
36	Middlesex--Somerset--Hunterdon,,NJ	48.1	95	South Bend,IN	20.3
37	Madison,WI	47.6	96	Shreveport--Bossier City,LA	20.0
38	Springfield, MO	47.1	97	Toledo,OH	19.7
39	Kansas City,,MO--KS	46.9	98	Scranton--Wilkes-Barre--Hazleton,PA	18.9
40	Indianapolis,IN	45.7	99	Reading,PA	18.8
	SAMPLE AVERAGE	45.4	100	Erie,PA	18.6
41	Jacksonville, FL	44.5	101	Lansing--East Lansing, MI	18.2
42	Milwaukee--Waukesha, WI	44.4	102	Peoria--Pekin, IL	17.5
43	Bakersfield, CA	44.2	103	Buffalo--Niagara Fall, NY	16.9
44	San Luis Obispo,CA	44.0	104	Rochester,NY	16.1
45	Newark,NJ	43.5	105	Hickory--Morganton--Lenoir,NC	15.5
46	Lincoln,NE	43.5	106	Augusta--Aiken,GA--SC	13.7
47	Santa Barbara, CA	43.2	107	Utica--Rome,NY	13.3
48	Melbourne--Titusville--Palm Bay,FL	43.1	108	New Orleans,LA	13.0
49	Montgomery,AL	43.0	109	Kalamazoo--Battle Creek, MI	12.9
50	Tallahassee,FL	42.7	110	Galveston--Texas City,TX	12.2
51	Stockton--Lodi,CA	42.2	111	Rockford,IL	12.0
52	Charleston--North Charleston,SC	41.2	112	Binghamton,NY	11.6
53	Ann Arbor,MI	40.4	113	Corpus Christi,TX	11.3
54	Lexington,KY	39.7	114	Syracuse, NY	11.0
55	Greenville--Spartanburg--Anderson,SC	39.3	115	Beaumont--Port Arthur,TX	10.1
56	Macon,GA	39.0	116	Saginaw--Bay City- Midland,MI	9.4
57	Visalia--Tulare--Porterville,CA	36.9	117	Youngstown--Warren,OH	3.1
58	Jackson,MS	36.6	118	Flint,MI	–11.0
59	Lubbock,TX	36.3			

Source: Economy.com

Table 7. Change in Per Capita Income 1993 to 2003

Rank	Metropolitan Area	Percent Change
1	San Jose,CA	65.0
2	Boulder--Longmont,CO	62.9
3	San Diego,CA	62.4
4	Denver,CO	60.4
5	Salt Lake City,UT	57.8
6	Seattle--Bellevue--Everett,WA	57.7
7	Colorado Springs,CO	57.5
8	San Luis Obispo,CA	57.4
9	Birmingham,AL	57.1
10	Charleston--North Charleston,SC	56.3
11	Jackson,MS	55.7
12	Oakland,CA	55.6
13	Madison,WI	54.7
14	Lincoln,NE	54.0
15	Austin--San Marcos,TX	53.3
16	Nashville,TN	53.1
17	Oklahoma City,OK	52.9
18	New Orleans,LA	52.3
19	Galveston--Texas City,TX	52.2
20	Milwaukee--Waukesha,WI	52.0
21	South Bend,IN	51.2
22	Tacoma,WA	51.2
23	Montgomery,AL	51.1
24	Santa Rosa,CA	50.8
25	Little Rock,AR	50.8
26	Pittsburgh,PA	50.4
27	Corpus Christi,TX	50.4
28	Ann Arbor,MI	50.1
29	Appleton--Oshkosh--Neenah,WI	49.9
30	Tulsa,OK	49.8
31	Scranton--Wilkes-Barre--Hazleton,PA	49.6
32	Middlesex--Somerset--Hunterdon,NJ	49.5
33	Kansas City,MO--KS	49.4
34	Des Moines,IA	49.2
35	Orange county,CA	49.0
36	Fort Myers,FL	49.0
37	Reno,NV	48.9
38	Newark,NJ	48.7
39	Provo--Orem,UT	48.5
40	Vallejo--Fairfield--Napa,CA	48.4
41	Hamilton--Middletown,OH	48.2
42	Beaumont--Port Arthur,TX	47.8
43	Lexington,KY	47.7
44	Indianapolis,IN	47.6
45	Akron,OH	47.3
46	Daytona Beach,FL	47.2
47	Monmouth--Ocean,NJ	47.1
48	Jacksonville,FL	47.0
49	Bergen--Passaic,NJ	46.7
50	Davenport--Moline--Rock Island,IA--IL	46.6
51	Dayton--Springfield,OH	46.6
52	Shreveport--Bossier City,LA	46.5
53	Springfield,MO	46.5
54	Tallahassee,FL	46.2
55	Sarasota--Bradenton,FL	46.2
	SAMPLE AVERAGE	45.9
56	Baton Rouge,LA	45.9
57	Huntsville,AL	45.9
58	Tampa--St. Petersburg,FL	45.9
59	Ventura,CA	45.8
60	Greenville--Spartanburg--Anderson,SC	45.8
61	Melbourne--Titusville--Palm Bay,FL	45.7
62	Fayetteville,NC	45.5
63	Jersey City,NJ	45.5
64	Lakeland--Winter Haven,FL	45.4
65	Richmond--Petersburg,VA	45.3
66	Knoxville,TN	45.0
67	Fort Worth,TX	44.8
68	Tucson,AZ	44.6
69	Macon,GA	44.5
70	Pensacola,FL	44.4
71	Buffalo--Niagara Fall,NY	44.2
72	Peoria--Pekin,L	44.0
73	Lansing--East Lansing,MI	43.9
74	Mobile,AL	43.9
75	Allentown--Bethlehem--Easton,PA	43.7
76	Salinas,CA	43.7
77	Orlando,FL	43.5
78	Spokane,WA	43.2
79	Raleigh--Durham--Chapel Hill,NC	43.1
80	Eugene--Springfield,OR	42.8
81	Fayetteville--Springdale--Rogers,AR	42.8
82	Grand Rapids,MI	42.8
83	Cleveland--Lorain--Elyria,OH	42.3
84	Augusta--Aiken,GA--SC	42.2
85	Boise City,ID	42.0
86	Johnson City,TN--VA	41.3
87	Dutchess County,NY	41.2
88	Canton--Massillon,OH	41.2
89	Kalamazoo--Battle Creek,MI	41.1
90	Syracuse,NY	40.7
91	Toledo,OH	40.6
92	Miami,FL	40.5
93	Saginaw--Bay City- Midland,MI	39.9
94	Fort Wayne,IN	39.3
95	Santa Barbara,CA	39.2
96	Lubbock,TX	38.9
97	Fort Pierce,FL	38.8
98	Youngstown--Warren,OH	38.5
99	Rochester,NY	38.1
100	Utica--Rome,NY	37.7
101	West Palm Beach,FL	37.3
102	Greensboro--Winston-Salem--High Point,NC	36.4
103	Modesto,CA	36.3
104	Lancaster,PA	36.3
105	Fort Lauderdale,FL	35.8
106	Visalia--Tulare--Porterville,CA	35.4
107	Atlantic--Cape May,NJ	35.3
108	Binghamton,NY	35.2
109	Flint,MI	35.1
110	Fresno,CA	34.4
111	Reading,PA	34.3
112	Hickory--Morganton--Lenoir,NC	33.8
113	Erie,PA	33.3
114	Stockton--Lodi,CA	32.7
115	Bakersfield,CA	32.6
116	York,PA	32.0
117	Rockford,IL	30.7
	Trenton,NJ	na

Source: BEA

Table 8. Change in Productivity (Output per Worker) 1994 to 2004

Rank	Metropolitan Area	Percent Change
1	San Jose,CA	123.4
2	Boise City,ID	80.2
3	Boulder--Longmont,CO	74.6
4	Austin--San Marcos,TX	72.0
5	Jersey City,NJ	62.9
6	Colorado Springs,CO	40.3
7	Seattle--Bellevue--Everett,WA	38.2
8	Raleigh--Durham--Chapel Hil,NC	37.6
9	Milwaukee--Waukesha,WI	34.7
10	Salt Lake City,UT	32.8
11	Santa Rosa,CA	32.3
12	San Diego,CA	31.6
13	Greenville--Spartanburg--Anderson,SC	30.4
14	Kansas City,MO--KS	30.0
15	Oakland,CA	29.6
16	Denver,CO	29.4
17	Fort Worth,TX	28.9
18	Newark,NJ	28.6
19	Huntsville,AL	27.3
20	Trenton,NJ	26.8
21	Middlesex--Somerset--Hunterdon,NJ	26.5
22	Fayetteville--Springdale--Rogers,AR	26.1
23	Ventura,CA	25.9
24	Indianapolis,IN	25.3
25	Orange county,CA	25.3
26	Salinas,CA	24.7
27	Springfield,MO	24.5
28	Montgomery,AL	24.0
29	Nashville,TN	23.8
30	Hickory--Morganton--Lenoir,NC	23.7
31	Johnson City,TN--VA	23.6
32	Santa Barbara,CA	22.7
33	West Palm Beach,FL	22.6
34	Birmingham,AL	22.6
35	Cleveland--Lorain--Elyria,OH	22.6
36	Tucson,AZ	22.6
37	Monmouth--Ocean,NJ	21.9
38	Melbourne--Titusville--Palm Bay,FL	21.9
39	Dutchess county,NY	21.5
40	Dayton--Springfield,OH	21.4
41	Macon,GA	21.3
	SAMPLE AVERAGE	20.8
42	Fort Wayne,IN	20.8
43	Toledo,OH	20.7
44	Ann Arbor,MI	20.6
45	Provo--Orem,UT	20.1
46	York,PA	19.7
47	Lexington,KY	19.0
48	Jackson,MS	18.9
49	Fort Lauderdale,FL	18.6
50	Fort Myers,FL	18.1
51	Lancaster,PA	18.1
52	Canton--Massillon,OH	18.1
53	Madison,WI	18.0
54	Visalia--Tulare--Porterville,CA	17.7
55	Bergen--Passaic,NJ	17.2
56	Allentown--Bethlehem--Easton,PA	17.2
57	South Bend,IN	16.8
58	Hamilton--Middletown,OH	16.7
59	Tallahassee,FL	16.7
60	Buffalo--Niagara Fall,NY	16.6
61	Akron,OH	16.5
62	Greensboro--Winston-Salem--High Point,NC	16.4
63	Reno,NV	16.2
64	Modesto,CA	16.1
65	Lincoln,NE	16.0
66	Bakersfield,CA	15.6
67	Lubbock,TX	15.6
68	Scranton--Wilkes-Barre--Hazleton,PA	15.3
69	Eugene--Springfield,OR	15.2
70	Tulsa,OK	15.1
71	Tampa--St. Petersburg,FL	15.0
72	Rochester,NY	15.0
73	Erie,PA	14.9
74	Miami,FL	14.7
75	Pittsburgh,PA	14.7
76	Reading,PA	14.5
77	Appleton--Oshkosh--Neenah,WI	14.2
78	Binghamton,NY	14.1
79	Jacksonville,FL	14.0
80	Davenport--Moline--Rock Island,IA--IL	13.1
81	Pensacola,FL	13.0
82	Lansing--East Lansing,MI	12.9
83	Saginaw--Bay City- Midland,MI	12.8
84	Fayetteville,NC	12.2
85	Grand Rapids,MI	12.0
86	Mobile,AL	11.8
87	Spokane,WA	11.6
88	Knoxville,TN	11.4
89	Rockford,IL	11.2
90	Peoria--Pekin,IL	11.0
91	Des MoinesIA	11.0
92	Fresno,CA	10.8
93	Lakeland--Winter Haven,FL	10.8
94	Shreveport--Bossier City,LA	10.6
95	Vallejo--Fairfield--Napa,CA	10.6
96	Little Rock,AR	10.1
97	Kalamazoo--Battle Creek,MI	10.0
98	Fort Pierce,FL	9.7
99	Stockton--Lodi,CA	9.5
100	Orlando,FL	9.5
101	Tacoma,WA	8.9
102	Utica--Rome,NY	8.7
103	Richmond--Petersburg,VA	8.4
104	Baton RougeLA	8.2
105	New OrleansLA	7.4
106	Youngstown--Warren,OH	6.8
107	San Luis ObispoCA	6.6
108	Oklahoma CityOK	6.4
109	Beaumont--Port ArthurTX	6.3
110	Atlantic--Cape MayNJ	6.1
111	Syracuse,NY	5.8
112	Augusta--Aiken,GA--SC	5.1
113	Charleston--North CharlestonSC	4.8
114	Daytona Beach,FL	4.7
115	Galveston--Texas CityTX	3.6
116	Sarasota--Bradenton,FL	2.8
117	Flint,MI	0.6
118	Corpus Christi,TX	–3.0

IV. Contributions of the Factors to Regional Growth

We applied another statistical procedure to determine the degree to which the eight factors are correlated with the four measures of regional economic growth. Although the four measures of growth are statistically related to various degrees, they are all used because each captures a different aspect of growth. The results are displayed in table 9. Since the factors have a mean close to zero and a standard deviation close to one, the values of the coefficients indicate the relative contributions of each of the factors to the respective output measures. Notice that many of the factors are statistically significant at the 95 percent confidence level.

The coefficients can be interpreted as the percentage change in a growth measure that is associated with a change in the factor score of one standard deviation. For instance, a one standard deviation change in the factor score related to a skilled workforce results in a 0.019 percentage point change in employment growth during the decade. The eight factors together explain almost two-thirds of the variation in employment, output, and productivity growth among the 118 metro areas and over 45 percent of the change in per capita income, as indicated by the adjusted R-squared shown in the table.

Table 9. Contribution of Factors to Growth Measures

Factors	Employment	Output	Per Capita Income	Productivity
1. Skilled workforce	0.019	0.119	0.039	0.081
2. Urban assimilation	0.019	0.083		0.056
3. Racial inclusion	0.033	0.081		0.034
4. Legacy of place	–0.065	–0.077	–0.017	
5. Income equality	0.025	0.049	0.013	
6. Locational amenities			0.011	
7. Business dynamics	0.054	0.041		–0.022
8. Urban/metro structure		0.041	0.015	
Adjusted R-squared	0.66	0.64	0.46	0.62

Note: The growth measures are expressed as percentage changes between 1994 and 2004, except for per capita income, which spans the time period 1993–2003. All coefficients are statistically significant at the 95 percent level.

The magnitude (in absolute terms) indicates the size of the effect of the factors on the growth measures. For instance, legacy of place has the greatest effect on employment growth, whereas skilled workforce has the greatest effect on output, per capita income, and productivity growth.

The factors affect the four measures of growth differently in many instances. Some factors do not have a statistically significant relationship at a 95 percent level with the growth measures, and these are excluded from the table. All factors affect the four growth measures in the same direction, with one exception—legacy of place. Metro areas with high legacy of place costs tend to have a declining industrial base, fewer business formations, and a lack of housing growth. The business dynamics factor has a positive effect on employment and output change but a negative effect on productivity growth. This suggests that employment may be growing in the less productive services sectors, as the highly productive manufacturing sector is shedding workers. Therefore, with positive signs on most of the coefficients, with a few exceptions, metropolitan areas that are higher on the lists (that is, have a higher score for the factors) have higher growth rates in employment, output, per capita income, and productivity.

V. Rankings of Metropolitan Areas According to Factor Scores

The NEO metropolitan areas can be ranked against the other 118 areas included in the analysis according to how they score to each of the eight factors. The scores for each factor are based upon weights associated with the variables include in each factor and the actual values of the respective variables for each metropolitan area. The score does not have any intrinsic meaning, but it does provide a cardinal ranking (that is, one can tell the distance between metropolitan areas in the value of the factor). Using these factors, it is instructive to observe the metropolitan areas immediately around each of the four metropolitan areas in the NEO region.

Skilled Workforce

The ranking of the metropolitan areas according to the skilled workforce factor is displayed in table 10. Those metropolitan areas that rank the highest include Boulder-Longmont, Colorado; San Jose, California; Ann Arbor, Michigan; Madison, Wisconsin, and Austin, Texas, among others. The Cleveland-Lorain-Elyria PMSA is immediately below the cutoff between the top third and middle third of the metro areas. The Akron MSA is in the top half, while both the Canton-Massillon MSA and the Youngstown-Warren MSA are toward the bottom of the list. It is useful to see which areas are close to the four metro areas in rank. Cleveland is below Pittsburgh, Indianapolis, and Milwaukee with respect to a skilled workforce, but higher than Buffalo, Fort Worth, and Oklahoma City, to name a few of the larger areas. Youngstown-Warren is below Fort Wayne and slightly above Scranton, Pennsylvania, and Akron is comparable to Buffalo and Scranton. The significance of this ranking will become more apparent when we discuss the importance of a skilled workforce in explaining regional growth. For now, suffice it to say that those metropolitan areas with a more skilled workforce (and the attributes associated with this factor) have experienced greater growth rates, particularly with respect to per capita income.

Lessons from selected research: Skilled Workforce/ Business Dynamics

According to JunFu Zhang, the greatest asset in Silicon Valley is its ability to accommodate rapid structural changes by having a dynamic labor force. In a study, High Tech Start-ups and Industry Dynamics in Silicon Valley,[8] Zhang examines the rates of firm formation, growth, and mortality in Silicon Valley, compared to rates for other high-tech centers.

New firms are a dynamic force in the Valley and successfully coexist with the region's larger firms. According to Zhang's study, new firms established after 1990 created all the job growth between 1990 and 2001. These firms appear to attract a large amount of venture capital as well. Having the ability to attract venture capital five months faster than the national average (11.6 months), according to this study, gives the region an advantage over competing areas in the country. Established firms tend to spin off more startups in the Valley compared to other parts of the country. As firms mature, their major concern becomes sustainability, and the Valley's high operating costs force many to move out of the region. In fact, more establishments tend to move out of the Valley than move in. Still, those that move out remain close to the area. Having a "high velocity labor market" through which workers move frequently from one job to another helps the region to adapt to structural changes. Immigrants provide a large reserve of high quality engineers and scientists, which satisfies sudden surges in demand from particular industries.

Zhang offers the following recommendations:

1. **Promote Technological Innovation and Entrepreneurship**. Since university research is a major source of innovation, strong support for research and development is needed. State government should continue its support, and federal funds should be secured through legislative delegation in Washington, D.C.
2. **Encourage Firm Founding**. Instead of being preoccupied with retaining businesses, policymakers should focus on promoting start-ups. Offering favorable tax breaks, opening industrial parks, building high-tech incubators, and providing seed capital for commercialization of research are widely used policy approaches. Improving the quality of life is also crucial.
3. **Look Beyond Silicon Valley.** The Valley is not an isolated region and is embedded in the state's economy. State policies should take into account connections between the Valley and the rest of the state economy.
4. **Maintain a Dynamic Labor Pool.** The Valley's ability to quickly upgrade its labor force and skills relies on local universities and community colleges to help retool the labor force continuously. Employers need to recruit talent not only through local universities but also by hiring qualified immigrants. The immigrant pool can prove to be a major source of engineers and scientists to satisfy surges in demand in certain industries as well as source of innovation and entrepreneurship. In short, regions should keep the academic and business doors open to international talent.

8. Junfu Zhang, High-tech start-ups and industry dynamics in Silicon Valley, Public Policy Institute of California, 2003.

Table 10. Rank of Sample Metropolitan Areas According to Skilled Workforce Score

Rank	Metro Areas	Score	Rank	Metro Areas	Score
1	Boulder--Longmont,CO	4.092	60	Jacksonville,FL	-0.153
2	Madison,WI	2.671	61	Knoxville,TN	-0.179
3	Middlesex--Somerset--Hunterdon,NJ	2.326	62	Baton Rouge,LA	-0.186
4	Raleigh--Durham--Chapel HillNC	2.297	63	Augusta--Aiken,GA--SC	-0.187
5	San Jose,CA	2.267	64	San Luis Obispo,CA	-0.205
6	Tallahassee,FL	2.115	65	Pensacola,FL	-0.209
7	Ann ArborMI	2.110	66	Salt Lake CityUT	-0.210
8	Austin--San MarcosTX	1.675	67	Kalamazoo--Battle CreekMI	-0.216
9	Seattle--Bellevue--Everett,WA	1.561	68	Saginaw--Bay City- MidlandMI	-0.242
10	Trenton,NJ	1.490	69	Orlando,FL	-0.248
11	Oakland,CA	1.378	70	Fort LauderdaleFL	-0.251
12	Huntsville,AL	1.352	71	Springfield,MO	-0.266
13	Newark,NJ	1.287	72	Mobile,AL	-0.329
14	Bergen--Passaic,NJ	1.234	73	Fayetteville--Springdale--Rogers,AR	-0.366
15	Denver,CO	0.902	74	Greensboro--Winston-Salem--High Point,NC	-0.367
16	Lincoln,NE	0.833	75	Tulsa,OK	-0.379
17	Provo--Orem,UT	0.821	76	Macon,GA	-0.379
18	Lubbock,TX	0.808	77	Tampa--St. PetersburgFL	-0.387
19	Richmond--Petersburg,VA	0.755	78	Reno,NV	-0.410
20	Jackson,MS	0.725	79	Toledo,OH	-0.412
21	Colorado SpringsCO	0.699	80	Grand RapidsMI	-0.422
22	Monmouth--Ocean,NJ	0.586	81	Melbourne--Titusville--Palm BayFL	-0.423
23	Charleston--North CharlestonSC	0.558	82	Davenport--Moline--Rock IslandIA--IL	-0.522
24	Santa RosaCA	0.524	83	Peoria--Pekin,IL	-0.550
25	Orange countyCA	0.508	84	Flint,MI	-0.581
26	San DiegoCA	0.506	85	South BendIN	-0.609
27	Birmingham,AL	0.501	86	Reading,PA	-0.630
28	Lexington,KY	0.485	87	Sarasota--Bradenton,FL	-0.633
29	Nashville,TN	0.482	88	Tacoma,WA	-0.635
30	Kansas CityMO--KS	0.424	89	Lancaster,PA	-0.670
31	Montgomery,AL	0.387	90	Vallejo--Fairfield--Napa,CA	-0.690
32	Rochester,NY	0.345	91	Rockford,IL	-0.697
33	Dutchess countyNY	0.342	92	Fort WayneIN	-0.739
34	Lansing--East LansingMI	0.312	93	Shreveport--Bossier CityLA	-0.743
35	Binghamton,NY	0.310	94	Utica--Rome,NY	-0.755
36	Indianapolis,IN	0.299	95	Fort MyersFL	-0.779
37	Boise CityID	0.285	96	Greenville--Spartanburg--Anderson,SC	-0.782
38	Pittsburgh,PA	0.280	97	Salinas,CA	-0.803
39	Des MoinesIA	0.256	98	York,PA	-0.814
40	Spokane,WA	0.237	99	Atlantic--Cape MayNJ	-0.821
41	Milwaukee--Waukesha,WI	0.221	100	Corpus ChristiTX	-0.875
42	Eugene--Springfield,OR	0.213	101	Appleton--Oshkosh--Neenah,WI	-0.893
43	Cleveland--Lorain--Elyria,OH	0.211	102	Miami,FL	-0.947
44	Hamilton--Middletown,OH	0.211	103	Youngstown--Warren,OH	-0.957
45	Ventura,CA	0.170	104	Erie,PA	-0.964
46	Dayton--Springfield,OH	0.168	105	Beaumont--Port ArthurTX	-1.003
47	Santa BarbaraCA	0.156	106	Daytona BeachFL	-1.043
48	Oklahoma CityOK	0.106	107	Scranton--Wilkes-Barre--Hazleton,PA	-1.045
49	Buffalo--Niagara FallNY	0.081	108	Fresno,CA	-1.083
50	Galveston--Texas CityTX	0.073	109	Johnson CityTN--VA	-1.149
51	Fort WorthTX	0.061	110	Fayetteville,NC	-1.173
52	Jersey CityNJ	0.059	111	Stockton--Lodi,CA	-1.19
53	Little RockAR	0.053	112	Canton--Massillon,OH	-1.216
54	New OrleansLA	0.041	113	Fort PierceFL	-1.264
55	Akron,OH	-0.017	114	Hickory--Morganton--Lenoir,NC	-1.353
56	Tucson,AZ	-0.019	115	Modesto,CA	-1.809
57	West Palm BeachFL	-0.057	116	Bakersfield,CA	-1.868
58	Syracuse,NY	-0.132	117	Lakeland--Winter HavenFL	-1.872
59	Allentown--Bethlehem--Easton,PA	-0.145	118	Visalia--Tulare--Porterville,CA	-1.888

Urban Assimilation

Those metro areas with high scores on this factor are associated with higher employment and output growth but low per capita growth. These metro areas are typically home to recent immigrants who have started small businesses. While their numbers increase the population, their presence reduces the overall per capita income growth of the metro area. Table 11 shows the ranking of the metropolitan areas according to this factor. These variables loaded negatively, so we reversed the ranking so that a high rank indicates metro areas with a high percentage of Hispanics and Asians and low homeownership, to mention a few of the key variables associated with this factor. Miami, Jersey City, and San Jose are metro areas at the top of the list for this factor, while Tallahassee, Florida; Binghamton, New York; and Springfield, Missouri are at the bottom (table 11). All four of the NEO metro areas are in the lower half of the rankings. Cleveland is in the middle third of the distribution of scores, while the other three metro area are in the lower third.

Lessons from Selected Research: Urban Assimilation

Research has shown that, in most cases, immigrants have greatly benefited our nation and economy. For example:

- They generally have a high labor force participation rate,
- They have a high propensity to start new businesses and be self employed,
- They use relatively small amounts of public services and transfers, and
- They do not generally cause unemployment among native citizens.
- Recent history has shown that we must compete effectively with other developed countries for skilled labor. One implication is that we must take steps to assure the smooth assimilation of immigrants financially and culturally, while we simultaneously address complex security issues.

Based on research[9] completed by Chicago Fed economist Maude Toussaint-Comeau, immigrants are important contributors to the revitalization and economic development of many urban communities and neighborhoods. They account for much of the growth of minority small businesses. Policy initiatives should address business development needs of immigrant groups by promoting educational and entrepreneurial training, providing assistance with business development plans, language training, financial literacy, and providing affordable housing near the concentration of ethnic businesses.

9. Maude Toussaint-Comeau, Self-employed Immigrants: An Analysis of Recent Data, Chicago Fed Letter April 2005.

Table 11. Rank of Sample Metropolitan Areas According to Urban Assimilation Score

Rank	Metro Areas	Score	Rank	Metro Areas	Score
1	Miami,FL	4.642	60	South BendIN	-0.312
2	Jersey CityNJ	4.280	61	Fort PierceFL	-0.319
3	San JoseCA	2.855	62	Raleigh--Durham--Chapel HillNC	-0.320
4	Orange CountyCA	2.234	63	Fort MyersFL	-0.322
5	Salinas,CA	2.171	64	Lancaster,PA	-0.338
6	Oakland,CA	2.093	65	Toledo,OH	-0.348
7	Vallejo--Fairfield--Napa,CA	1.894	66	Augusta--Aiken,GA--SC	-0.381
8	Bergen--Passaic,NJ	1.643	67	Cleveland--Lorain--Elyria,OH	-0.414
9	Stockton--Lodi,CA	1.549	68	York,PA	-0.422
10	Ventura,CA	1.439	69	Appleton--Oshkosh--Neenah,WI	-0.433
11	Fort LauderdaleFL	1.339	70	Sarasota--Bradenton,FL	-0.436
12	Modesto,CA	1.293	71	Davenport--Moline--Rock Island,IA--IL	-0.441
13	Visalia--Tulare--Porterville,CA	1.251	72	Baton RougeLA	-0.457
14	San DiegoCA	1.191	73	Boise cityID	-0.460
15	Fresno,CA	1.133	74	Buffalo--Niagara FallsNY	-0.466
16	Newark,NJ	1.124	75	Lincoln,NE	-0.466
17	Middlesex--Somerset--Hunterdon,NJ	1.037	76	Lubbock,TX	-0.472
18	Trenton,NJ	0.843	77	Reading,PA	-0.474
19	Santa BarbaraCA	0.628	78	Flint,MI	-0.477
20	Austin--San MarcosTX	0.628	79	Peoria--Pekin,IL	-0.491
21	Orlando,FL	0.598	80	Melbourne--Titusville--Palm BayFL	-0.493
22	Corpus ChristiTX	0.586	81	Huntsville,AL	-0.502
23	Galveston--TexasTX	0.567	82	Oklahoma CityOK	-0.508
24	Denver,CO	0.551	83	Ann ArborMI	-0.509
25	Fort WorthTX	0.543	84	Rochester,NY	-0.512
26	Seattle--Bellevue--Everett,WA	0.541	85	Birmingham,AL	-0.532
27	Bakersfield,CA	0.479	86	Des MoinesIA	-0.537
28	Fayetteville,NC	0.342	87	Scranton--Wilkes-Barre--Hazleton,PA	-0.545
29	Reno,NV	0.318	88	Lexington,KY	-0.553
30	Santa RosaCA	0.292	89	Akron,OH	-0.562
31	West PalmFL	0.258	90	Hamilton--Middletown,OH	-0.619
32	Tacoma,WA	0.202	91	Provo--Orem,UT	-0.624
33	Tucson,AZ	0.194	92	Lansing--East LansingMI	-0.627
34	Tampa--St. PetersburgFL	0.132	93	Pittsburgh,PA	-0.635
35	Milwaukee--Waukesha,WI	0.131	94	Knoxville,TN	-0.647
36	Dutchess CountyNY	0.046	95	Spokane,WA	-0.665
37	Monmouth--Ocean,NJ	-0.036	96	Montgomery,AL	-0.687
38	Jacksonville,FL	-0.088	97	Johnson CityTN--VA	-0.696
39	Lakeland--Winter HavenFL	-0.111	98	Erie,PA	-0.698
40	Rockford,IL	-0.123	99	Charleston--North charlestonSC	-0.703
41	Greensboro--Winston-Salem--High Pt,NC	-0.126	100	Saginaw--Bay City MidlandMI	-0.726
42	Fayetteville--Springdale--Rogers,AR	-0.155	101	Macon,GA	-0.731
43	Beaumont--Port ArthurTX	-0.164	102	Eugene--Springfield,OR	-0.752
44	New OrleansLA	-0.167	103	Boulder--Longmont,CO	-0.757
45	Hickory--Morganton--Lenoir,NC	-0.179	104	Youngstown--Warren,OH	-0.766
46	Grand RapidsMI	-0.213	105	Syracuse,NY	-0.776
47	Colorado SpringCO	-0.225	106	Kalamazoo--Battle CreekMI	-0.776
48	Indianapolis,IN	-0.234	107	Canton--Massillon,OH	-0.798
49	Fort WayneIN	-0.235	108	Little RockAR	-0.799
50	Allentown--Bethlehem--Easton,PA	-0.237	109	Mobile,AL	-0.806
51	Atlantic--Cape MayNJ	-0.252	110	Daytona BeachFL	-0.814
52	Richmond--Petersburg,VA	-0.260	111	Madison,WI	-0.818
53	Salt Lake CityUT	-0.267	112	Shreveport--Bossier CityLA	-0.850
54	Greenville--Spartanburg--Anderson,SC	-0.272	113	Jackson,MS	-0.885
55	Tulsa,OK	-0.275	114	Utica--Rome,NY	-0.944
56	San Luis ObispoCA	-0.278	115	Springfield,MO	-0.991
57	Dayton--Springfield,OH	-0.278	116	Pensacola,FL	-1.018
58	Nashville,TN	-0.280	117	Binghamton,NY	-1.075
59	Kansas CityMO--KS	-0.282	118	Tallahassee,FL	-1.124

Racial Inclusion

Those metro areas that have high scores related to racial inclusion experience positive growth rates in employment and population. The Cleveland metro area is near the bottom of the list of 118 metro areas (table 12). Only Milwaukee, and Flint, Michigan have a lower score for racial inclusion. Of the four NEO metro areas, Canton has the highest score for racial inclusion, but it still falls within the middle third of the distribution of scores. Akron and Youngstown are in the upper end of the lowest third of the scores.

Table 12. Rank of Sample Metropolitan Areas According to Racial Inclusion

Rank	Metro Areas	Score
1	Eugene--Springfield,OR	1.985
2	Boise CityID	1.871
3	Spokane,WA	1.800
4	Salt Lake CityUT	1.576
5	Tucson,AZ	1.549
6	Reno,NV	1.526
7	Modesto,CA	1.475
8	Visalia--Tulare--Porterville,CA	1.471
9	Provo--Orem,UT	1.415
10	Boulder--Longmont,CO	1.399
11	Santa BarbaraCA	1.351
12	Johnson CityTN--VA	1.317
13	Binghamton,NY	1.307
14	Orange CountyCA	1.299
15	Bakersfield,CA	1.253
16	Lincoln,NE	1.194
17	Springfield,MO	1.120
18	Allentown--Bethlehem--Easton,PA	1.107
19	Fresno,CA	1.104
20	Scranton--Wilkes-Barre--Hazleton,PA	1.074
21	Appleton--Oshkosh--Neenah,WI	1.026
22	Santa RosaCA	1.009
23	Hickory--Morganton--Lenoir,NC	0.987
24	Tacoma,WA	0.968
25	San JoseCA	0.882
26	Colorado SpringsCO	0.867
27	San Luis ObispoCA	0.852
28	Madison,WI	0.828
29	Reading,PA	0.818
30	Stockton--Lodi,CA	0.811
31	San DiegoCA	0.785
32	Seattle--Bellevue--Everett,WA	0.782
33	Lexington,KY	0.782
34	Fayetteville--Springdale--Rogers,AR	0.778
35	Corpus ChristiTX	0.756
36	Ventura,CA	0.722
37	Greenville--Spartanburg--Anderson,SC	0.679
38	Lancaster,PA	0.638
39	Austin--San MarcosTX	0.567
40	Pensacola,FL	0.553
41	Middlesex--Somerset--Hunterdon,NJ	0.540
42	Lubbock,TX	0.439
43	Lansing--East LansingMI	0.415
44	Fayetteville,NC	0.407
45	Utica--Rome,NY	0.397
46	Davenport--Moline--Rock IslandIA--IL	0.330
47	Canton--Massillon,OH	0.292
48	Kalamazoo--Battle CreekMI	0.253
49	Melbourne--Titusville--Palm BayFL	0.233
50	Erie,PA	0.198
51	Salinas,CA	0.198
52	Tallahassee,FL	0.114
53	Hamilton--Middletown,OH	0.088
54	Dutchess CountyNY	0.086
55	Raleigh--Durham--Chapel HillNC	0.061
56	Des MoinesIA	0.040
57	Charleston--North CharlestonSC	0.040
58	Knoxville,TN	0.018
59	Lakeland--Winter HavenFL	0.017
60	York,PA	-0.010
61	South BendIN	-0.076
62	Augusta--Aiken,GA--SC	-0.079
63	Oklahoma cityOK	-0.092
64	Rochester,NY	-0.170
65	Fort WorthTX	-0.175
66	Denver,CO	-0.185
67	Orlando,FL	-0.235
68	Greensboro--Winston-Salem--High Point,NC	-0.290
69	Vallejo--Fairfield--Napa,CA	-0.312
70	Oakland,CA	-0.323
71	Macon,GA	-0.340
72	Ann ArborMI	-0.346
73	Daytona BeachFL	-0.354
74	Nashville,TN	-0.410
75	Tampa--St. PetersburgFL	-0.415
76	Syracuse,NY	-0.442
77	Rockford,IL	-0.444
78	Huntsville,AL	-0.468
79	Pittsburgh,PA	-0.517
80	Sarasota--Bradenton,FL	-0.555
81	Little RockAR	-0.604
82	Tulsa,OK	-0.610
83	Richmond--Petersburg,VA	-0.655
84	Jersey cityNJ	-0.666
85	West Palm BeachFL	-0.764
86	Fort MyersFL	-0.769
87	Shreveport--Bossier cityLA	-0.782
88	Jacksonville,FL	-0.797
89	Akron,OH	-0.811
90	Galveston--Texas CityTX	-0.824
91	Bergen--Passaic,NJ	-0.845
92	Fort PierceFL	-0.847
93	Atlantic--Cape MayNJ	-0.888
94	Peoria--Pekin,IL	-0.888
95	Monmouth--Ocean,NJ	-0.900
96	Fort LauderdalFL	-0.922
97	Grand RapidsMI	-0.930
98	Montgomery,AL	-0.946
99	Youngstown--Warren,OH	-0.954
100	Trenton,NJ	-1.030
101	Fort WayneIN	-1.141
102	Toledo,OH	-1.153
103	Dayton--Springfield,OH	-1.174
104	Indianapolis,IN	-1.193
105	Buffalo--Niagara FallsNY	-1.204
106	Baton RougeLA	-1.211
107	Mobile,AL	-1.223
108	Beaumont--Port ArthurTX	-1.227
109	Kansas CityMO--KS	-1.236
110	New OrleansLA	-1.328
111	Miami,FL	-1.356
112	Jackson,MS	-1.385
113	Saginaw--Bay City MidlandMI	-1.398
114	Birmingham,AL	-1.711
115	Newark,NJ	-1.772
116	Cleveland--Lorain--Elyria,OH	-1.998
117	Milwaukee--Waukesha,WI	-2.023
118	Flint,MI	-2.051

Legacy of Place

High legacy of place costs are associated with lower growth rates in employment and population, higher business taxes, an older infrastructure including housing, a less favorable climate and higher crime rates. The metro cities in table 13 are ranked from the highest legacy of place costs (positive score) to the lowest legacy of place costs (negative score). Obviously, metro areas such as Tampa Bay and Orlando are associated with low legacy costs, and metro areas such as Jersey City and Utica, New York experience high legacy costs. Recognizing their shared heritage of industrialization during the first half of the twentieth century, it is not surprising that the four NEO metro areas are clustered together and are in the top third of the list of metro areas, indicating high legacy of place costs.

Table 13. Rank of Sample Metropolitan Areas According to Legacy of Place

Rank	Metro Area	Score	Rank	Metro Area	Score
1	Jersey City,NJ	3.337	60	Tacoma,WA	-0.256
2	Utica--Rome,NY	2.637	61	Bakersfield,CA	-0.284
3	Scranton--Wilkes-Barre--Hazleton,PA	2.339	62	Santa Barbara--Santa Maria--Lompoc,CA	-0.296
4	Binghamton,NY	2.177	63	Hamilton--Middletown,OH	-0.297
5	Syracuse,NY	1.928	64	Colorado Springs,CO	-0.326
6	Rochester,NY	1.804	65	Boise City,ID	-0.333
7	Buffalo--Niagara Falls,NY	1.551	66	Salt Lake City--Ogden,UT	-0.360
8	Dutchess County,NY	1.546	67	San Luis Obispo--Atascadero--Paso Robles,CA	-0.378
9	Bergen--Passaic,NJ	1.474	68	Hickory--Morganton--Lenoir,NC	-0.386
10	Erie,PA	1.309	69	Galveston--Texas City,TX	-0.393
11	Trenton,NJ	1.285	70	Jackson,MS	-0.426
12	Lincoln,NE	1.241	71	Macon,GA	-0.439
13	Pittsburgh,PA	1.229	72	Boulder--Longmont,CO	-0.441
14	Reading,PA	1.229	73	Eugene--Springfield,OR	-0.445
15	Davenport--Moline--Rock Island,IA-IL	1.202	74	Austin--San Marcos,TX	-0.460
16	Allentown--Bethlehem--Easton,PA	1.193	75	Raleigh--Durham--Chapel Hill,NC	-0.477
17	Peoria--Pekin,IL	1.085	76	Oakland,CA	-0.525
18	Canton--Massillon,OH	0.992	77	Augusta--Aiken,GA--SC	-0.568
19	Miami,FL	0.937	78	San Diego,CA	-0.571
20	Appleton--Oshkosh--Neenah,WI	0.900	79	Little Rock--North Little Rock,AR	-0.576
21	York,PA	0.883	80	Richmond--Petersburg,VA	-0.612
22	Des Moines,IA	0.862	81	New Orleans,LA	-0.614
23	Newark,NJ	0.861	82	Beaumont--Port Arthur,TX	-0.620
24	South Bend,IN	0.850	83	Shreveport--BossierLA	-0.623
25	Lansing--East Lansing,MI	0.835	84	Huntsville,AL	-0.647
26	Toledo,OH	0.799	85	Fort Worth--Arlington,TX	-0.652
27	Madison,WI	0.772	86	Reno,NV	-0.655
28	Milwaukee--Waukesha,WI	0.729	87	Stockton--Lodi,CA	-0.663
29	Lancaster,PA	0.706	88	Knoxville,TN	-0.673
30	Youngstown--Warren,OH	0.702	89	Ventura,CA	-0.674
31	Fort Wayne,IN	0.669	90	Fayetteville,NC	-0.689
32	Rockford,IL	0.660	91	Santa Rosa,CA	-0.710
33	Cleveland--Lorain--Elyria,OH	0.639	92	Greensboro--Winston-Salem--High Point,NC	-0.739
34	Spokane,WA	0.613	93	Modesto,CA	-0.782
35	Saginaw--Bay City--Midland,MI	0.565	94	Tucson,AZ	-0.838
36	Springfield,MO	0.518	95	Greenville--Spartanburg--Anderson,SC	-0.859
37	Akron,OH	0.470	96	Corpus Christi,TX	-0.868
38	Dayton--Springfield,OH	0.388	97	Fort Lauderdale,FL	-0.892
39	Kalamazoo--Battle Creek,MI	0.359	98	Nashville,TN	-0.904
40	Grand Rapids--Muskegon--Holland,MI	0.309	99	Melbourne--Titusville--Palm Bay,FL	-0.938
41	Ann Arbor,MI	0.245	100	Montgomery,AL	-0.976
42	Atlantic--Cape May,NJ	0.222	101	Birmingham,AL	-0.981
43	Visalia--Tulare--Porterville,CA	0.202	102	Tallahassee,FL	-0.984
44	Lexington,KY	0.199	103	West Palm Beach--Boca Raton,FL	-0.984
45	Johnson City--Kingsport--Bristol,TN-VA	0.198	104	San Jose,CA	-1.016
46	Indianapolis,IN	0.188	105	Pensacola,FL	-1.028
47	Fayetteville--Springdale--Rogers,AR	0.154	106	Orange County,CA	-1.120
48	Fresno,CA	0.137	107	Mobile,AL	-1.165
49	Middlesex--Somerset--Hunterdon,NJ	0.043	108	Charleston--North Charleston,SC	-1.172
50	Monmouth--Ocean,NJ	0.034	109	Fort Myers--Cape Coral,FL	-1.196
51	Provo--Orem,UT	-0.008	110	Daytona Beach,FL	-1.199
52	Denver,CO	-0.045	111	Vallejo--Fairfield--Napa,CA	-1.226
53	Flint,MI	-0.074	112	Lakeland--Winter Haven,FL	-1.241
54	Seattle--Bellevue--Everett,WA	-0.147	113	Sarasota--Bradenton,FL	-1.247
55	Tulsa,OK	-0.159	114	Fort Pierce--Port St. Lucie,FL	-1.250
56	Oklahoma City,OK	-0.176	115	Jacksonville,FL	-1.251
57	Kansas City,MO-KS	-0.205	116	Orlando,FL	-1.294
58	Salinas,CA	-0.207	117	Tampa--St. Petersburg,FL	-1.302
59	Lubbock,TX	-0.256	118	Baton Rouge,LA	-1.401

Income Equality

Results show that income equality is positively associated with employment and output growth. Three of the four NEO metro areas are bunched at the top of the middle third of the distribution with respect to this factor, while Cleveland is in the lower part of the middle third. It is interesting that Cleveland is higher than San Diego with respect to income equality, while Akron is very close to Tampa Bay.

Lessons from Selected Research: Income Equality

A study completed by the Brookings Institution[10] focusing on economic inequality in the nation's 50 largest major metropolitan areas confirms that the 1990s were much better for cities and suburbs overall than the 1980s. In addition, the study reports that after a 30-year relative decline, central cities stopped falling behind their suburbs in per capita income during the 1990s. (Cleveland improved its standing since 2000). The researchers note that the national statistics, however, do not reflect the fact that significant gaps exist between cities and suburbs in the Northeast and Midwest. Yet suburban inequality in the Midwest and Northeast is less than in other regions of the country.

The study notes that scholars believe that the decline in concentrated poverty at the neighborhood levels may be due in part to a prosperous economy and tight job markets, which elevated distressed markets. The authors argue that the stubborn persistence of inequality even during the 1990s may be caused by municipal boundaries that continue to separate economic classes in the regional economy.

Spatial inequalities can generate pernicious regional competitiveness by fueling the abandonment of older parts of a region, accelerating sprawl and its costs, and making it difficult for broad coalitions to address these problems. Suburban exclusion inhibits economic productivity and labor mobility by separating low-income workers from areas of job growth in the region. A geographic mismatch between lower-skilled jobs and affordable housing is evident in many metro areas. Another public policy raised in this study is that lower-income workers have inferior access to local public goods such as education, parks, and police because they reside in jurisdictions with few taxable resources and more demands for government expenditures.

10. Todd Swanstron, Colleen Casey, Robert Flack and Peter Dreier. Pulling Apart: Economic Segregation among the Suburbs and Central Cities in Major Metropolitan Areas October 2004 Brookings Institution.

Table 14. Rank of Sample Metropolitan Areas According to Income Equality Score

Rank	Metro Areas	Score
1	Vallejo--Fairfield--Napa,CA	2.479
2	Appleton--Oshkosh--Neenah,WI	1.751
3	Fort Wayne,IN	1.409
4	Grand Rapids--Muskegon--Holland,MI	1.348
5	Santa Rosa,CA	1.317
6	Monmouth--Ocean,NJ	1.279
7	Colorado Springs,CO	1.144
8	Des Moines,IA	1.124
9	Hamilton--Middletown,OH	1.103
10	Tacoma,WA	1.093
11	Denver,CO	1.071
12	Lancaster,PA	1.061
13	Fayetteville--Springdale--Rogers,AR	1.054
14	York,PA	1.045
15	Salt Lake City,UT	0.981
16	Melbourne--Titusville--Palm Bay,FL	0.961
17	Ventura,CA	0.952
18	Atlantic--Cape May,NJ	0.914
19	Hickory--Morganton--Lenoir,NC	0.887
20	Seattle--Bellevue--Everett,WA	0.885
21	Sarasota--Bradenton,FL	0.885
22	Orlando,FL	0.850
23	Peoria--Pekin,IL	0.824
24	Boise City,ID	0.814
25	Dutchess County,NY	0.788
26	Rockford,IL	0.742
27	Kansas City,MO-KS	0.735
28	Daytona Beach,FL	0.733
29	Lincoln,NE	0.720
30	Indianapolis,IN	0.707
31	Jacksonville,FL	0.689
32	Fayetteville,NC	0.682
33	Ann Arbor,MI	0.654
34	Provo--Orem,UT	0.617
35	Tulsa,OK	0.604
36	Fort Meyers--Cape Coral,FL	0.585
37	Reno,NV	0.556
38	San Jose,CA	0.546
39	Salinas,CA	0.540
40	Fort Lauderdale,FL	0.516
41	San Luis Obispo--Atascadero--Paso,CA	0.497
42	Greensboro--Winston-Salem--High Pt,NC	0.490
43	Davenport--Moline--Rock Island,IA-IL	0.479
44	Fort Worth--Arlington,TX	0.381
45	Fort Pierce--Port St. Lucie,FL	0.354
46	Scranton--Wilkes-Barre--Hazleton,PA	0.350
47	Tampa--St. Petersburg,FL	0.331
48	Akron,OH	0.326
49	Madison,WI	0.315
50	Bergen--Passaic,NJ	0.282
51	Milwaukee--Waukesha,WI	0.207
52	Nashville,TN	0.201
53	Canton--Massillon,OH	0.198
54	Lakeland--Winter Haven,FL	0.187
55	Lansing--East Lansing,MI	0.169
56	Allentown--Bethlehem--Easton,PA	0.156
57	Youngstown--Warren,OH	0.131
58	Galveston--Texas City,TX	0.130
59	Springfield,MO	0.129
60	Middlesex--Somerset--Hunterdon,NJ	0.126
61	Orange County,CA	0.119
62	Greenville--Spartanburg--Anderson,SC	0.115
63	South Bend,IN	0.113
64	Reading,PA	0.110
65	Oakland,CA	0.022
66	Austin--San Marcos,TX	-0.022
67	Erie,PA	-0.044
68	Knoxville,TN	-0.055
69	Kalamazoo--Battle Creek,MI	-0.086
70	Dayton--Springfield,OH	-0.100
71	Richmond--Petersburg,VA	-0.150
72	Toledo,OH	-0.166
73	Syracuse,NY	-0.179
74	Johnson City--Kingsport--Bristol,TN-VA	-0.202
75	Little Rock--North Little Rock,AR	-0.225
76	Eugene--Springfield,OR	-0.243
77	Utica--Rome,NY	-0.276
78	West Palm Beach--Boca Raton,FL	-0.278
79	Cleveland--Lorain--Elyria,OH	-0.286
80	Raleigh--Durham--Chapel Hill,NC	-0.286
81	Oklahoma City,OK	-0.307
82	Saginaw--Bay City--Midland,MI	-0.318
83	Huntsville,AL	-0.320
84	Spokane,WA	-0.329
85	San Diego,CA	-0.355
86	Pittsburgh,PA	-0.401
87	Boulder--Longmont,CO	-0.434
88	Modesto,CA	-0.485
89	Flint,MI	-0.512
90	Lexington,KY	-0.520
91	Rochester,NY	-0.528
92	Charleston--North Charleston,SC	-0.583
93	Trenton,NJ	-0.594
94	Newark,NJ	-0.676
95	Binghamton,NY	-0.731
96	Buffalo--NiagaraNY	-0.801
97	Birmingham,AL	-0.821
98	Augusta--Aiken,GA--SC	-0.833
99	Beaumont--Port Arthur,TX	-0.840
100	Santa Barbara--Santa Maria--Lompoc,CA	-0.868
101	Miami,FL	-0.888
102	Mobile,AL	-0.911
103	Stockton--Lodi,CA	-1.051
104	Montgomery,AL	-1.068
105	Corpus Christi,TX	-1.163
106	Baton Rouge,LA	-1.213
107	Tucson,AZ	-1.273
108	Jersey City,NJ	-1.277
109	Pensacola,FL	-1.285
110	Macon,GA	-1.696
111	Jackson,MS	-1.808
112	Shreveport--Bossier City,LA	-1.956
113	Lubbock,TX	-1.965
114	Tallahassee,FL	-2.047
115	New Orleans,LA	-2.064
116	Bakersfield,CA	-2.421
117	Visalia--Tulare--Porterville,CA	-2.799
118	Fresno,CA	-2.819

Locational Amenities

According to the statistical analysis, the locational amenities factor has one of the lowest relative contributions to the growth measures. It is interesting that amenities do not affect employment or output growth, but they do affect per capita income growth. Since locational amenities, as measured here, includes the arts, the transportation system, and good health facilities, it is not surprising that Cleveland ranked high in the top third since it has world-renown cultural institutions and health facilities.

Lessons from Selected Research: Locational Amenities

Researcher Paul Gottliebk studied whether amenities are an important factor in companies' location decisions. He writes that there is no evidence that firms react to "locational amenities" to the exclusion of other factors in their location decisions. He emphasizes that for high-tech firms the existence of agglomeration economies is perhaps the most important location factor. Citing work by Alberta Charney, Gottlieb notes that this finding is understandable. Charney argues that "amenities are not likely to be important location factors to firms selecting a site within a metropolitan area because employees and managers can live in pleasant surroundings and send their children to good schools while working in an area with none of these characteristics; employees will thus lengthen their commutes without penalty.

Gottlieb reviews the literature and offers the following policy recommendations. Jurisdictions should focus on basics like schools, environment, crime, and congestion. Amenities should be regional. Adjacent jurisdictions may wish to cooperate when emphasizing amenities. Tax transfer may assist a community that is implementing a residential amenity program, with the direct benefits of commercial development going to its neighbor. Finally, an amenities strategy should be sensitive to city size. That is, standards should be achieved relative to cities of comparable size. It would be impossible for Bozeman, Montana, to achieve the cultural level of New York City.

11. Paul Gottlieb. Amenities as Economic Development Tool: Is There Enough Evidence? Economic Development Quarterly, 1994.

Table 15. Rank of Sample Metropolitan Areas According to Locational Amenities Score

Rank	Metro Area	Score
1	Salt Lake City--Ogden,UT	2.040
2	San Diego,CA	1.542
3	Syracuse,NY	1.412
4	Buffalo--Niagara Falls,NY	1.409
5	Miami,FL	1.371
6	Tampa--St. Petersburg,FL	1.320
7	Orlando,FL	1.291
8	Milwaukee--Waukesha,WI	1.267
9	Kansas City,MO-KS	1.218
10	Greensboro-Winston-Salem-High Pt,NC	1.182
11	Indianapolis,IN	1.178
12	Cleveland--Lorain--Elyria,OH	1.163
13	Pittsburgh,PA	1.134
14	Rochester,NY	1.116
15	Seattle--Bellevue--Everett,WA	1.075
16	Orange County,CA	1.073
17	Reno,NV	1.057
18	Knoxville,TN	1.056
19	West Palm Beach--Boca Raton,FL	1.052
20	New Orleans,LA	1.050
21	Tucson,AZ	1.040
22	Nashville,TN	1.017
23	Greenville--Spartanburg--Anderson,SC	0.995
24	Denver,CO	0.987
25	Fort Lauderdale,FL	0.923
26	Dayton--Springfield,OH	0.919
27	Santa Barbara--Santa Maria--Lompoc,CA	0.906
28	OklahomaOK	0.888
29	Fort Worth--Arlington,TX	0.874
30	Toledo,OH	0.795
31	Sarasota--Bradenton,FL	0.795
32	Tacoma,WA	0.769
33	Lexington,KY	0.657
34	Spokane,WA	0.614
35	Newark,NJ	0.601
36	Kalamazoo--Battle Creek, MI	0.589
37	Little Rock--North Little Rock,AR	0.565
38	Scranton--Wilkes-Barre--Hazleton,PA	0.549
39	Appleton--Oshkosh--Neenah,WI	0.527
40	Boise City,ID	0.520
41	Oakland,CA	0.503
42	Jacksonville,FL	0.492
43	Birmingham,AL	0.447
44	Akron,OH	0.405
45	Eugene--Springfield,OR	0.399
46	Grand Rapids--Muskegon--Holland,MI	0.395
47	Austin--San Marcos,TX	0.384
48	Raleigh--Durham--Chapel Hill,NC	0.373
49	Tulsa,OK	0.346
50	Richmond--Petersburg,VA	0.284
51	Lincoln,NE	0.281
52	San Jose, CA	0.257
53	Des Moines,IA-IL	0.256
54	Fort Meyers--Cape Coral, FL	0.190
55	Fresno,CA	0.145
56	Davenport--Moline--Rock Island, IA-IL	0.138
57	Salinas,CA	0.134
58	Madison,WI	0.128
59	Erie,PA	0.094
60	Fort Wayne, IN	0.050
61	Charleston--North Charleston, SC	0.029
62	Bakersfield,CA	-0.006
63	Lansing--East Lansing,MI	-0.012
64	Binghamton,NY	-0.063
65	Baton Rouge,LA	-0.086
66	Pensacola,FL	-0.096
67	Johnson City--Kingsport--Bristol,TN-VA	-0.153
68	South Bend, IN	-0.192
69	Canton--Massillon,OH	-0.192
70	Shreveport--Bossier City,LA	-0.210
71	Mobile,AL	-0.247
72	Fayetteville--Springdale--Rogers,AR	-0.261
73	Atlantic--Cape May,NJ	-0.269
74	Peoria--Pekin,IL	-0.279
75	Allentown--Bethlehem--Easton,PA	-0.293
76	Utica--Rome,NY	-0.375
77	San Luis Obispo--Atascadero--Paso Robles,CA	-0.378
78	Springfield,MO	-0.406
79	Daytona Beach, FL	-0.460
80	Colorado Springs, CO	-0.496
81	Youngstown--Warren,OH	-0.505
82	Lancaster,PA	-0.536
83	Tallahassee,FL	-0.537
84	Saginaw--Bay City--Midland,MI	-0.541
85	Reading,PA	-0.604
86	Melbourne--Titusville--Palm Bay,FL	-0.636
87	Hickory--Morganton--Lenoir,NC	-0.675
88	Rockford,IL	-0.712
89	Lubbock,TX	-0.717
90	Corpus Christi,TX	-0.729
91	Santa Rosa,CA	-0.820
92	Jackson,MS	-0.830
93	Huntsville,AL	-0.849
94	Lakeland--Winter Haven, FL	-0.954
95	Visalia--Tulare--Porterville,CA	-0.959
96	Flint,MI	-1.050
97	Ann Arbor,MI	-1.060
98	Beaumont--Port Arthur,TX	-1.075
99	Modesto,CA	-1.075
100	Augusta--Aiken,GA--SC	-1.125
101	Fort Pierce--Port St. Lucie, FL	-1.136
102	Jersey City, NJ	-1.143
103	Bergen--Passaic,NJ	-1.146
104	Trenton,NJ	-1.173
105	Provo--Orem,UT	-1.226
106	Ventura,CA	-1.248
107	Middlesex--Somerset--Hunterdon,NJ	-1.261
108	Fayetteville,NC	-1.324
109	Monmouth--Ocean,NJ	-1.348
110	Macon,GA	-1.349
111	Montgomery,AL	-1.370
112	Vallejo--Fairfield--Napa,CA	-1.416
113	Dutchess County, NY	-1.464
114	Stockton--Lodi,CA	-1.488
115	Boulder--Longmont,CO	-1.652
116	Hamilton--Middletown,OH	-1.790
117	York,PA	-1.914
118	Galveston City,TX	-2.353

Business Dynamics

The business dynamics factor positively affects employment growth but does not affect per capita income growth. It has a negative effect on productivity growth. Considerable churning of the local economy is due to the openings and closings of small service firms, which in general pay low wages and are not very productive. At the same time, a high concentration of employment in manufacturing is associated with low growth, as indicated by its negative loading with the other two variables within the business dynamics factor. Canton and Akron rank in the top third of the distribution, while Cleveland and Youngstown are in the middle third (table 16).

Lessons from Selected Research: Business Dynamics

CHI Research in its report for the Office of Advocacy of the Small Business Administration[12] examined small patenting firms and the contribution made by technical change to long-term economic growth. The report provides evidence of the significant role that small firms play in today's economy and the importance of understanding the small firm role in innovative networks. Key findings include:

- Small firms produce more highly cited patents than large firms on average. Small firm patents are twice as likely as large firm patents to be among the 1 percent most cited patents, meaning that small firm patents are on average more technically important than large firm patents.
- The small firms are more productive in terms of patents per employees than larger firms. More productive firms are younger in age than the large firms, but are not new startups. Persistence is a guiding characteristic of small patenting firms and they may be thought of as "serial innovators," a term suggested by Leigh Buchanan at Inc. magazine.
- Small firm innovation is very closely linked to scientific research and is more high-tech or leading-edge.
- Small firm innovation is more extensively linked to outside technology while large firms build more of their own technology.
- Small firm innovators are more dependent on local technology and pursue leading-edge technical niches. The current interest at the local level in industry clusters focusing on innovation should assist disproportionately small firms because the local technological environment is an important resource for small firms.
- Any barriers to their participation in new technologies or exclusion from policy development concerning those technologies would be most unfortunate

12. Small Serial Innovators: The Small Firm Contribution To Technical Change, CHI Research, Inc. under contract number SBAHQ-01-C-0149 Release Date: February, 27 2003.

Table 16. Rank of Sample Metropolitan Areas According to Business Dynamics Score

Rank	Metro Areas	Score	Rank	Metro Areas	Score
1	San JoseCA	2.635	60	Trenton,NJ	0.030
2	Hickory--Morganton--Lenoir,NC	2.273	61	Des MoinesIA	0.020
3	Appleton--Oshkosh--Neenah,WI	1.558	62	Rochester,NY	0.007
4	Grand RapidsMI	1.520	63	San DiegoCA	-0.051
5	Dayton--Springfield,OH	1.436	64	Tucson,AZ	-0.137
6	Greenville--Spartanburg--Anderson,SC	1.363	65	Corpus ChristiTX	-0.137
7	Orange CountyCA	1.314	66	Austin--San MarcosTX	-0.139
8	Fort WayneIN	1.243	67	Raleigh--Durham--ChapelNC	-0.144
9	Modesto,CA	1.229	68	Lubbock,TX	-0.147
10	Stockton--Lodi,CA	1.221	69	Santa BarbaraCA	-0.163
11	Rockford,IL	1.214	70	Lincoln,NE	-0.166
12	Milwaukee--Waukesha,WI	1.188	71	Springfield,MO	-0.172
13	South BendIN	1.093	72	Visalia--Tulare--Porterville,CA	-0.175
14	Lancaster,PA	1.086	73	Binghamton,NY	-0.201
15	Toledo,OH	1.058	74	Tulsa,OK	-0.218
16	York,PA	1.024	75	Little RockAR	-0.238
17	Hamilton--Middletown,OH	0.989	76	Oklahoma CityOK	-0.255
18	Kalamazoo--Battle CreekMI	0.932	77	Mobile,AL	-0.276
19	Johnson CityTN--VA	0.879	78	Reno,NV	-0.295
20	Nashville,TN	0.862	79	Charleston--North CharlestonSC	-0.340
21	Oakland,CA	0.818	80	Bakersfield,CA	-0.372
22	Greensboro-Winston-Salem-High Pt,NC	0.799	81	Seattle--Bellevue--Everett,WA	-0.379
23	Flint,MI	0.733	82	Pittsburgh,PA	-0.395
24	Huntsville,AL	0.715	83	Salt Lake CityUT	-0.461
25	Fort WorthTX	0.703	84	Eugene--Springfield,OR	-0.486
26	Middlesex--Somerset--Hunterdon,NJ	0.699	85	Lakeland--Winter HavenFL	-0.492
27	Fayetteville,NC	0.691	86	Jacksonville,FL	-0.532
28	Birmingham,AL	0.645	87	Orlando,FL	-0.536
29	Fayetteville--Springdale--Rogers,AR	0.631	88	Tallahassee,FL	-0.551
30	Saginaw--Bay City MidlandMI	0.630	89	Denver,CO	-0.551
31	Canton--Massillon,OH	0.630	90	Bergen--Passaic,NJ	-0.557
32	Baton RougeLA	0.623	91	Scranton--Wilkes-Barre--Hazleton,PA	-0.569
33	Richmond--Petersburg,VA	0.597	92	Syracuse,NY	-0.597
34	Akron,OH	0.587	93	Newark,NJ	-0.610
35	Knoxville,TN	0.587	94	Galveston--Texas City TX	-0.617
36	Indianapolis,IN	0.580	95	Boulder--Longmont,CO	-0.768
37	Reading,PA	0.552	96	Salinas,CA	-0.775
38	Lansing--East LansingMI	0.532	97	Pensacola,FL	-0.828
39	Augusta--Aiken,GA--SC	0.509	98	Tacoma,WA	-0.829
40	Madison,WI	0.508	99	Boise City,ID	-0.855
41	Peoria--Pekin,IL	0.505	100	Tampa--St. Petersburg,FL	-0.934
42	Lexington,KY	0.465	101	Colorado Springs,CO	-0.936
43	Davenport--Moline--Rock IslandIA--IL	0.444	102	Santa Rosa,CA	-0.943
44	Cleveland--Lorain--Elyria,OH	0.424	103	Jersey City,NJ	-0.991
45	Beaumont--Port ArthurTX	0.363	104	Spokane,WA	-1.028
46	Allentown--Bethlehem--Easton,PA	0.348	105	Melbourne--Titusville--Palm Bay,FL	-1.204
47	Vallejo--Fairfield--Napa,CA	0.333	106	San Luis Obispo--Atascadero--Paso Robles,CA	-1.250
48	Montgomery,AL	0.278	107	Utica--Rome,NY	-1.471
49	Kansas CityMO--KS	0.252	108	Dutchess County,NY	-1.475
50	Macon,GA	0.215	109	Provo--Orem,UT	-1.488
51	Ann ArborMI	0.179	110	Fort Lauderdale,FL	-1.513
52	Ventura,CA	0.173	111	Miami,FL	-1.643
53	New OrleansLA	0.170	112	Daytona Beach,FL	-1.862
54	Youngstown--Warren,OH	0.164	113	Monmouth--Ocean,NJ	-1.878
55	Jackson,MS	0.115	114	Fort Pierce--Port St. Lucie,FL	-1.898
56	Shreveport--Bossier CityLA	0.100	115	Fort Myers--Cape Coral,FL	-1.934
57	Fresno,CA	0.092	116	Sarasota--Bradenton,FL	-2.016
58	Buffalo--Niagara FallsNY	0.091	117	West Palm Beach--Boca Raton,FL	-2.075
59	Erie,PA	0.079	118	Atlantic--Cape MayNJ	-2.181

Urban/Metro Structure

This factor positively affects employment and per capita income, in part because it reflects a less fragmented system of government. The NEO metro areas lie in the middle third of the distribution of metro areas with respect to this factor (table 17). Akron has the highest score, and Youngstown the lowest.

Lessons from Selected Research: Urban/Metro Structure

Researchers Pastor, Dreier, Grigsby, and Lopez-Garza have found that efforts to reduce central city poverty lead to an increase in regional income. Collecting data on 74 metropolitan areas in the U.S., these researchers conducted an econometric study focusing on how growth itself will lower poverty by raising the demand for labor.

"Doing good and doing well went hand-in-hand for regions. Community developers and low-income individuals can also benefit from connecting to the larger region, particularly to the emerging sectors of sustainable employment. Across the country, those neighborhoods involved in broad strategic alliances with other partners do better in generating income and resources. Community-based organizations that have understood emerging business clusters and trained their constituents for these new industries are yielding results in employment. And individuals who escape the negative effects of concentrated poverty, who link to a new set of broader networks, tend to earn higher wages regardless of where they eventually choose to live."[13]

They also conducted case studies on "best" performers in growth and equity, which included Boston, San Jose/Santa Clara, and Charlotte. The research attributes part of Boston's success to "first-source hiring agreements" as well as "linkage" policies that helped to insure that poorer communities would share in the housing and employment expansion of that decade. The Boston program did not assume that growth would be enough to reduce poverty. In addition, heavy emphasis was placed on integrating the Community Development Commissions into the process.

Charlotte, North Carolina, undertook an innovative antipoverty effort designed to concentrate development efforts on the oldest and poorest neighborhoods in the city and adopted a county "scattered-site" strategy to deconcentrate public housing and the poor. Charlotte's commitment to a multidimensional approach to poverty reduction is viewed by urban expert Neal Pierce as "equaled in few cities around the nation."

San Jose benefited by creating a culture of collaboration; Boston focused on using social equity measures during a high-growth period; and Charlotte linked cities, suburbs, and counties toward antipoverty efforts.

In San Jose, however, a center of electronics production, Joint Venture Silicon Valley Network devoted little time to incorporating poorer communities into its planning and concentrated redevelopment plans in the downtown. As a result, the area's growth was accompanied by an increase in central city poverty. According to Pastor et al. "The San Jose experience serves as a warning to community developers and antipoverty activists about the limits of approaches that exclusively focus on growth."

13. National Housing Institute, Shelterforce Online January/February 1998. Article is drawn from the 1997 study, Growing Together: Linking Regional and Community Development in a Changing Economy. By Manuel Pastor, Jr., Peter Dreier, Eugene Grigsby III, and Marta Lopez-Garza 1997.

Table 17. Rank of Sample Metropolitan Areas According to Urban/Metro Score

Rank	Metro Area	Score
1	Lincoln,NE	2.526
2	Corpus Christi,TX	1.983
3	Colorado Springs,CO	1.802
4	Lubbock,TX	1.610
5	Jacksonville,FL	1.440
6	Des Moines,IA	1.382
7	Reno,NV	1.287
8	Indianapolis,IN	1.151
9	Tulsa,OK	1.120
10	Jersey CityNJ	1.089
11	Montgomery,AL	1.084
12	Madison,WI	1.083
13	Austin--San MarcosTX	1.078
14	San JoseCA	1.050
15	Fort WayneIN	1.041
16	Oklahoma City,OK	0.927
17	Springfield,MO	0.871
18	Milwaukee--Waukesha,WI	0.869
19	Fayetteville,NC	0.868
20	Tucson,AZ	0.845
21	Toledo,OH	0.826
22	San Diego,CA	0.729
23	Fresno,CA	0.709
24	Rockford,IL	0.643
25	Peoria--Pekin,IL	0.639
26	Salinas,CA	0.634
27	Vallejo--Fairfield--Napa,CA	0.607
28	Shreveport--Bossier City,LA	0.595
29	Jackson,MS	0.593
30	Spokane,WA	0.586
31	Tallahassee,FL	0.567
32	Lexington,KY	0.518
33	Bakersfield,CA	0.501
34	South BendIN	0.485
35	Little Rock--North Little Rock,AR	0.476
36	Akron,OH	0.466
37	Erie,PA	0.448
38	Stockton--Lodi,CA	0.380
39	Denver,CO	0.377
40	Mobile,AL	0.350
41	Baton Rouge,LA	0.341
42	Kansas City,MO-KS	0.332
43	Boise City,ID	0.318
44	Huntsville,AL	0.311
45	Fort Worth--Arlington,TX	0.288
46	Nashville,TN	0.277
47	Modesto,CA	0.272
48	Tacoma,WA	0.258
49	Beaumont--Port Arthur,TX	0.230
50	Davenport--Moline--Rock Island,IA-IL	0.159
51	Galveston--Texas City, TX	0.153
52	Syracuse,NY	0.130
53	Flint,MI	0.105
54	Buffalo--Niagara Falls,NY	0.070
55	Lansing--East Lansing, MI	0.069
56	Raleigh--Durham--Chapel Hill, NC	0.062
57	New Orleans, LA	0.061
58	Santa Rosa,CA	0.061
59	Eugene--Springfield,OR	0.059
60	Visalia--Tulare--Porterville,CA	-0.007
61	Appleton--Oshkosh--Neenah,WI	-0.008
62	Trenton,NJ	-0.013
63	Hamilton--Middletown,OH	-0.029
64	Grand Rapids--Muskegon--Holland,MI	-0.034
65	Ventura,CA	-0.069
66	Binghamton,NY	-0.141
67	Utica--Rome,NY	-0.154
68	Fort Meyers--Cape CoralFL	-0.168
69	Canton--Massillon,OH	-0.173
70	Santa Barbara--Santa MariaCA	-0.173
71	Fort Pierce--Port St. Lucie, FL	-0.174
72	Fayetteville--Springdale--Rogers,AR	-0.203
73	Provo--Orem,UT	-0.203
74	Macon,GA	-0.237
75	Greensboro--Winston-Salem--High Point, NC	-0.308
76	Seattle--Bellevue--Everett,WA	-0.311
77	Cleveland--Lorain--Elyria,OH	-0.373
78	Melbourne--Titusville--Palm Bay, FL	-0.375
79	Dayton--Springfield,OH	-0.380
80	Boulder--Longmont,CO	-0.387
81	Sarasota--Bradenton,FL	-0.396
82	Daytona Beach, FL	-0.411
83	Augusta--Aiken,GA--SC	-0.451
84	Reading,PA	-0.453
85	Rochester,NY	-0.485
86	Orlando,FL	-0.514
87	Birmingham,AL	-0.515
88	Salt Lake City--Ogden,UT	-0.516
89	San Luis Obispo--Atascadero--Paso Robles,CA	-0.566
90	Knoxville,TN	-0.575
91	Oakland,CA	-0.575
92	Youngstown--Warren,OH	-0.614
93	Ann Arbor,MI	-0.655
94	Tampa--St. Petersburg--Clearwater,FL	-0.663
95	Charleston--North CharlestonSC	-0.688
96	Richmond--Petersburg,VA	-0.738
97	Fort Lauderdale, FL	-0.755
98	Lancaster,PA	-0.773
99	Lakeland--Winter Haven,FL	-0.786
100	Dutchess County, NY	-0.790
101	Atlantic--Cape May, NJ	-0.815
102	Allentown--Bethlehem--Easton,PA	-0.857
103	Monmouth--Ocean,NJ	-0.921
104	Scranton--Wilkes-Barre--Hazleton,PA	-0.927
105	York,PA	-0.971
106	Kalamazoo--Battle Creek,MI	-1.026
107	Miami,FL	-1.027
108	Orange County, CA	-1.052
109	Pensacola,FL	-1.102
110	Newark,NJ	-1.167
111	Pittsburgh,PA	-1.167
112	Saginaw--Bay City--Midland, MI	-1.223
113	Hickory--Morganton--Lenoir,NC	-1.345
114	West Palm BeachFL	-1.354
115	Bergen--Passaic,NJ	-1.474
116	Johnson City--Kingsport--Bristol,TN-VA	-1.547
117	Greenville--Spartanburg--Anderson,SC	-2.214
118	Middlesex--Somerset--Hunterdon,NJ	-3.765

VI. Constructing the Dashboard Indicators

The development of the dashboard indicators follows directly from the results of the factor analysis. Each of the dashboard indicators is constructed by applying weights to the most current available reading of the variables that loaded high on each of the factors. The weighted values are summed for all the variables associated with the factor. The weights are derived from the factor loadings. Finally, the result was indexed so that 2004 equals 100.[14]

To observe how the dashboard indicators may move in the future, we calculated the index values for the four metropolitan areas for 2003 and 2004. The results are shown in table 18. The more dramatic changes in the indexes occurred in the skilled workforce index. Akron's skilled workforce index moved downward by 4.9 percent and Canton's by 7.2 percent. The skilled workforce index improved slightly for Cleveland and Youngstown, but neither area exhibited an increase that approached the sample mean of 4.5 percent. Movements in most of the other dashboard indexes were more modest. All of the areas saw an improvement in their immigrant assimilation index and racial inclusion index. It is important to note that the areas' indexes for income equality, locational amenities, and business dynamics remained unchanged because annual updates of the data are not available.

Table 18. Dashboard Indicators for 2003 and 2004 using 2004 Weights

Indexes		Skilled workforce	Urban assimilation	Racial inclusion	Legacy of place	Income equality	Locational amenities	Business dynamics	Urban/ metro structure
Akron	2003	105.2	99.7	99.7	100.1	100.0	100.0	100.0	99.7
	2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Pct. Chg	-4.9%	0.3%	0.3%	-0.1%	0.0%	0.0%	0.0%	0.3%
Canton-Massillon	2003	107.7	98.4	99.5	100.1	100.0	100.0	100.0	100.7
	2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Pct. Chg	-7.2%	1.6%	0.5%	-0.1%	0.0%	0.0%	0.0%	-0.7%
Cleveland-Lorain-Elyria	2003	99.2	99.3	100.0	100.0	100.0	100.0	100.0	99.5
	2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Pct. Chg	0.8%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
Youngstown-Warren	2003	99.5	99.5	99.6	100.4	100.0	100.0	100.0	97.9
	2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Pct. Chg	0.5%	0.5%	0.4%	-0.4%	0.0%	0.0%	0.0%	2.2%
National mean index	2003	95.7	100.4	100.0	100.0	100.0	100.0	100.0	99.8
	2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Pct. Chg	4.5%	-0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%

14. We distinguish between indicators and indexes by designating factors comparing metropolitan areas as indicators and indicators computed over time as indexes. The reason for the distinction is that to track the indicators over time, we must set the indicator to a specific value in a specific year so that we can observe how the value changes over time. The convention is to set the value to 100 in a particular year. We chose 2004 as the reference year but the decision is arbitrary. In contrast, the values of the indicators recorded in the tables ranking the metropolitan areas have been computed such that the sample mean equals zero, with no reference to changes over time. Therefore, we make the distinction between indicator and index.

It is also possible to track the component variables of each of the eight indicators. While doing so loses the richness of the measure, it may be useful at times in order to follow the progress of certain initiatives carried out in a region or metropolitan area. For instance, if a region decides that increasing the percentage of residents with a bachelor's degree is important for improving regional economic growth, then focusing on that variable will help to track the progress of that initiative. Another possibility is that a region may decide that promoting high-tech startups is important, which follows from our broader factors. If so, a region may decide to track statistics on high-tech startups. It may be the case that such statistics are not available for all metropolitan areas from a common source, but even if the coverage is limited, it could be an important indicator for tracking that initiative.

These eight dashboard indicators provide the means to track changes in the four NEO metropolitan areas of factors that have been shown to be strongly correlated with the region's economic performance. Nevertheless, these indicators have one important limitation. Many of the variables used cannot be updated on an annual basis. For instance, two of the three variables used in the racial inclusion indicator cannot be updated until the 2010 Census. Most of the variables used in the locational amenities indicator come from a publication which is updated only periodically. While the advisory committee at this time has decided not to explore efforts to find alternative data series, this decision should be reviewed periodically so that the indexes are available on a timely basis.

Nonetheless, proxies, which may be available more frequently, could be substituted for some of these variables. For instance, the variables used to estimate racial inclusion are collected only by the decennial census, so they are available once every ten years. One possible alternative is to use the racial composition of school districts within the region. These figures may not be available on a national basis, but they should be available on a metropolitan basis, particularly if there is sufficient interest in the area to encourage the school districts to supply such information. This proxy may not be as comprehensive in its coverage of the population as the overall census, but it may prove useful in tracking progress on a more frequent basis.

Another important variable that is not collected on a timely basis is the gross change in employment due to the openings, closings, expansions, and contractions of local businesses. This variable, along with the percentage of businesses employing fewer than 20 workers, proved to be highly correlated with employment growth. The variable used in the analysis was taken from a special run of Census data. Replicating this on an annual or biannual basis may prove to be too costly, especially for the entire sample of metropolitan areas used in this analysis. The College of Urban Affairs of Cleveland State University receives data on individual enterprises on an ongoing basis. These data can be used to construct business dynamics similar to those computed for the indicators, but only for metropolitan areas within Ohio. At some future date,

the Bureau of Labor Statistics may provide similar statistics for metropolitan areas throughout the country.

With respect to the display of the information, it is important that the indicators are framed within a broader context, as emphasized in the description of the development of the dashboard indicators. Displaying the indicators without such a framework renders them less valuable for conveying an understanding of the regional growth process to the broader community, for informing the discourse on regional policy and strategy, and for monitoring the progress of the region.

VII. Lessons for the NEO Economy

The indicators are constructed from a large set of variables that reflect the multidimensional nature of the regional economic growth process. The indicators combine these variables into eight factors that, when related to regional measures of economic growth, identify the factors that are most highly correlated with the regional economic growth. Several key lessons emerge from this analysis for the NEO economy.

The first lesson is that no one factor is the key ingredient of economic growth. It is tempting to try to identify a "silver bullet" that will turn a slow-moving economy based on traditional industries into a vibrant, high-performance one based on cutting-edge, high-tech industries. As the indicators suggest, many factors come into play. These factors include attributes associated with a knowledge economy, such as a skilled workforce and innovative and entrepreneurial businesses. They also include an attitude of being open to new ideas and to new ways of doing things, as reflected in accepting new immigrants and the nurturing of businesses owned by minority and ethnic groups. Additional factors also include societal goals and quality of life attributes.

The second lesson is that a skilled workforce and strong business dynamics are most highly correlated with the four measures of regional economic growth. For growth in output, per capita income, and productivity, a skilled workforce topped the list of indicators.[15]For employment growth, the business dynamics indicator was the most influential factor.

15. Our results showing the high correlation between skilled workforce and the three measures of regional economic growth are consistent with the results of a recent report by the Federal Reserve Bank of Cleveland (forthcoming). Their analysis involved a more sophisticated approach that sought to determine the causal relationship between variables related to a skilled workforce, namely, graduation rates and patents, and per capita income. They found that college graduation rates and patents dominate the magnitude and statistical significance of all the variables included in their regression. When we relate the individual variables associated with the skilled workforce indicator to per capita income growth, we also find that the percentage with a bachelor's degree and patents are the most influential variables in the regression.

The third lesson is that the pursuit of societal goals, such as racial inclusion and lower income dispersion, are very compatible with economic growth. In fact, the analysis shows that those regions with a higher degree of racial inclusion and lower income dispersion have higher regional economic growth, particularly as measured by output growth.

The fourth lesson is that locational amenities are not as important to regional growth as the other factors included in the analysis. Investing in cultural and recreational amenities may enhance the attractiveness of the region for more highly skilled workers, but focusing on amenities alone is not enough to ensure future economic growth. Other factors must be in place for growth to happen.

The fifth lesson is that an area's regional economic growth is influenced by its history, and this is reflected in the indicator referred to as "legacy of place." Those areas that have a long history of housing traditional industries face competitiveness pressure from lower-cost regions and from newer, more robust industries, and they typically experience slower growth. These same regions may also be burdened with social costs, such as higher unemployment and the need for public assistance, social ills such as higher crime rates, and the higher costs and taxes associated with supporting services to meet these needs.

One of the priorities facing the NEO region is to find ways to increase output and productivity. Output growth of the four metropolitan areas in the NEO region lags behind the average growth of the 118 comparison metro areas. The Cleveland-Lorain-Elyria metropolitan area experienced the highest growth rate in output between 1994 and 2004 among the four metro areas but it still fell below the nation's average growth by 12 percentage points—26.3 percent compared with an average of 38.8 percent. Akron was a close second at 24.1 percent, followed by Canton-Massillon at 21.4 percent and Youngstown-Warren at 3.1 percent during the 10-year period we studied. The NEO metropolitan areas fared slightly better with respect to productivity growth. The Cleveland metro area was above the average rate for the 118 metropolitan areas, posting a 22.6 percent increase between 1994 and 2004 compared to an average rate of 18.9 percent. Canton-Massillon was next with 18.1 percent, followed by Akron at 16.5 percent, and Youngstown-Warren at 6.8 percent.

According to our analysis, the skilled workforce factor is most highly correlated with output growth and productivity growth. Therefore, those metropolitan areas with a more highly skilled workforce typically experience higher output and productivity growth.

The skilled workforce indicator comprises seven variables. However, when statistically related to output growth and productivity growth, two variables stand out in their correlation with these two growth measures. These variables are the percentage of the workforce with a bachelor's degree and the number of patents per employee. Three of the four metropolitan areas in the NEO region are below the sample average in the percentage of people with bachelor's

degrees. Youngstown-Warren has the lowest proportion of college-educated workers with 10.3 percent, Canton-Massillon is slightly higher at 11.5 percent, and Cleveland is next at 14.9 percent. Only Akron is above average, at 16.2 percent, but only by a percentage point.

The four metropolitan areas exhibit similar rankings for patents. Youngstown, Canton, and Cleveland are all below the sample average, and Akron is above average. In comparison, Austin is sixth with respect to patents per employee; with over twice as many as Akron and nearly nine times as many as Youngstown.

It is clear that the NEO region lags behind other metropolitan areas with respect to two important factors affecting growth in output and productivity—college education and patents. Boosting these two factors can lead to future economic growth. However, it may require more than simply increasing these two factors. Future growth requires that a college education leads to skills demanded by expanding and innovative industries. It also requires that there is the necessary research and development, conducted either at the industry or university levels or both, to generate new ideas that can lead to new products and processes. Such skill levels and technical expertise can also be reflected in the concentration of occupations with high skill requirements, such as technical, managerial, and professional occupations. However, higher skills and advanced technology do not necessarily lead to a specific industrial structure. Achieving a higher level of workforce skills does not dictate that a region's economy becomes concentrated in biotechnology or the latest technology breakthrough. Rather, it allows a region to pursue different paths and adjust more readily to changes in the economic environment. In fact, a more skilled workforce may lead to greater diversity across regions' industrial bases because greater workforce skills position a region to pursue different economic paths. The point is that a skilled workforce is manifested along several dimensions, and it is up to the local area policymakers to determine, through additional investigation and discussion, the key areas that need attention.

Finally, the fifth lesson from the analysis is that older metropolitan areas, such as those in the NEO region, suffer from high legacy of place costs. Their legacy of aging industries and infrastructure and the concomitant social needs can impede future growth. The legacy of place costs indicator captures attributes such as an aging infrastructure, fragmented governmental structure, social assistance needs, and an unfavorable climate. All four metropolitan areas in the NEO region are in the upper third with respect to legacy of place costs. For instance, Canton-Massillon is 18th highest among the 118 metropolitan areas in the sample with respect to legacy of place costs. Comparing that ranking with its ranking of 91 with respect to output growth illustrates the potential drag on output growth. While the legacy of place cost indicator is not the most highly correlated factor with respect to output growth, its modest effect on output suggests that metropolitan areas in this situation must work even harder to overcome their historical inertia.

VIII. Conclusion

The dashboard indicators developed in this paper are based upon an analytical framework that provides a comprehensive perspective of the multidimensional nature of regional growth but at the same time identifies a manageable set of factors that are correlated with several measures of regional growth. Such an approach captures the richness of the regional growth process while offering the ability to focus on factors that are key to future growth.

The eight dashboard indicators are distilled from a set of 40 variables that capture a broad set of attributes characterizing 118 metropolitan areas. The resulting indicators reflect not only economic factors but also social attributes and physical and cultural amenities. The analysis shows that both economic and noneconomic factors contribute to regional growth.

The analysis offers a profile of growing regions. Regions that have experienced higher-than-average growth are associated with a skilled workforce that can apply their skills to productive uses such as patent development, which results in high productivity in emerging sectors such as information. High growth regions also are related to a dynamic economy which experiences high levels of both openings and closings of establishments, so firms with new ideas and innovations are replacing older, less productive ones. High growth regions also tend to score high on social issues such as promoting racial inclusion and income equality, and they benefit from an urban and government structure that meets the needs of business as well as its citizens. Yet, regions must come to terms with their past. Older regions must deal with legacy costs, including aging infrastructure, a high demand for social services, and the cost through higher taxes needed to address these issues. These issues can be overcome, but as shown in the anecdotes presented in sidebars, it is through finding new ways to build on their assets and resources and not through holding on to past practices and institutions.

Five lessons follow from the analysis:

- No one factor determines whether a region's economy grows or not
- Factors vary in the degree to which they contribute to regional economic growth
- Regions can pursue societal goals without jeopardizing their economic growth
- Locational amenities are not as important to regional growth as the other factors included in the analysis, such as a skilled workforce
- An area's regional economic growth is influenced by its history.

The analysis also reveals that a skilled workforce contributes the most to

growth in output, per capita income, and productivity. Therefore, the analysis suggests that a focused regional economic development agenda should give considerable attention to issues related to improving the skill level of the workforce through providing greater opportunities for residents to attend college and through attracting more college-educated residents. Another dimension of a skilled workforce, as reflected in the indicator, is putting these skills to productive use, such as assuring that the skills attained in school are those needed by industries, that job opportunities for college-educated workers are available in the region, and that sufficient resources are devoted to research and development so the newly acquired knowledge can be put to work.

To conclude, our evidence-based approach of developing indicators offers insights for local stakeholders to structure an economic development agenda that focuses on issues and initiatives that are directly related to growth. Furthermore, the indicators, by encompassing not only important economic factors but also societal values and quality of life attributes, allow the region's stakeholders to track their progress in transforming the region not only in terms of its economic growth but also with respect to improving its civil society.

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Appendix A Primary Source Data Behind the Variables Used for Factor Analysis

Factor variable description	Source
I. Productivity/innovation	
1. Productivity of the information sector	Economy.com
2. Productivity of the manufacturing sector	Economy.com
3. Number of patents per employee	U.S. Patent & Trademark Office & BEA employment
4. Size of establishments	U.S. Census Bureau, County Business Patterns
5. Proprietor's share of total income	Bureau of Economic Analysis
6. Employment dynamics as measured by the sum of jobs created due to startups and expansions plus the jobs lost due to closings and contractions divided by base employment	W.E. Upjohn Institute. Based on special-run Census
7. University research and development	National Science Foundation
II. Education	
1. Degrees (percentage holding bachelor's and graduate degrees)	U.S. Census Bureau
2. Research universities located in the metropolitan area	Savageau, D. (2000) Places Rated Almanac. Defined by colleges with over 15,000 enrollment and granting advanced degrees.
3. Occupations with high education requirements (professional, managment, and technical)	U.S. Census Bureau
4. Composite measure of skill content of workers	Bureau of Labor Statistics
III. Racial Inclusion	
1. Percentage African American	U.S. Census Bureau
2. Percentage Hispanic	U.S. Census Bureau
3. Percentage Asian	U.S. Census Bureau
4. Percentage foreign born	U.S. Census Bureau
5. Income gap (income at the 90th percentile minus income at 10th divided by income at the 10th percentile)	HUD - Family income estimates
6. Spatial concentration of poverty (percent of children in high-poverty census tracts)	Jargowsky, P. (1997) Poverty and Place.
7. Racial dissimilarity index	Cutler, Glaeser and Vigdor (1999). Access via http://trinity.aas.duke.edu/~jvigdor/segregation/
8. Racial isolation index	Cutler, Glaeser and Vigdor (1999). Access via http://trinity.aas.duke.edu/~jvigdor/segregation/
9. Homeownership rate	U.S. Census Bureau
10. Concentration of poverty in the core city	U.S. Census Bureau
11. Children between the ages of 16 and 19 not working or in school.	U.S. Census Bureau
12. Minority business ownership	U.S. Census Bureau
13. Dependency: the percentage of the population less than 18 and greater than 65	U.S. Census Bureau
IV. Quality of Life	
1. Commuting times	U.S. Census Bureau
2. Art index	Savageau, D. (2000) Places Rated Almanac
3. Recreation index	Savageau, D. (2000) Places Rated Almanac
4. Climate index	Savageau, D. (2000) Places Rated Almanac
5. Health index	Savageau, D. (2000) Places Rated Almanac
6. Transportation index	Savageau, D. (2000) Places Rated Almanac
8. Cost of living	Savageau, D. (2000) Places Rated Almanac
V. Governance	
1. Cost of doing business: tax rate index	Economy.com
2. Number of city governments within metropolitan area divided by metro population	U.S. Census Bureau
3. Core city's share of metropolitan population	U.S. Census Bureau
Additional Variables not Associated with the Five Themes	
1. Cost of doing business: labor cost index	Economy.com
2. Cost of doing business: energy cost index	Economy.com
3. Cost of doing business: rent index	Economy.com
4. Percentage of housing stock built before 1940	U.S. Census Bureau
5. Concentration of manufacturing jobs	Bureau of Economic Analysis