A Roadmap for Growing Good Jobs

Using the visualization

This visualization, A Roadmap for Growing Good Jobs, intends to show that tailored data can help cities drive dynamic growth that also creates opportunity for the local workforce. The methods underlying our analysis are designed to accommodate a wide range of regional needs and goals. However, these insights and strategies are not meant to be prescriptive. Rather, they present a set of options to inform regional development based on different priorities and tailored to the strengths of each city. Local contexts and priorities are crucial to meaningful interpretations of the data.

Regional leaders may pursue different goals, three of which the visualization may inform: to diversify their economy, foster job quality, or pursue job growth. City leaders may also pursue strategies in tandem based on available resources and political capital. Our insights provide an evidence-based foundation for promoting inclusive growth, adapted to the uniqueness of place. These insights are meant to help policymakers map their opportunities and prioritize them based on their unique strengths. In 2020, the Workforce of the Future Initiative will release a complete dataset of each metric for each Metropolitan Statistical Area (MSA).

Background

The visualization displays research by the Brookings Workforce of the Future Initiative, led by Senior Fellow Marcela Escobari. The Initiative applies and adapts the methods of Economic Complexity—pioneered by the Growth Lab at Harvard's Center for International Development and utilized in an international context—to the subnational context to inform actionable policy insights at the metropolitan level within the United States.

The Initiative's first report, "Growing cities that work for all: A capability-based approach to regional economic competitiveness," includes methods, findings, policy implications, and case studies. A detailed methodology and data description for the report can be found in the related technical paper, "Economic complexity and technological relatedness: Findings for American cities."

The research suggests a "capabilities-based approach" to regional economic development. Capabilities are the hard-to-measure qualities of a city that allow industries to appear and thrive in a given location. They can include everything from infrastructure to talent and institutions. One of the key insights of the Economic Complexity methodology is that these capabilities can be measured implicitly by examining which industries tend to co-locate in the same Metropolitan Statistical Area (MSA).[1]

This tendency to co-locate can be analyzed as a network, or industry space, in which each node represents an industry and the link between two nodes represents an implicit overlap of capabilities that both industries require. For example, dairy product manufacturers and beverage manufacturers both require workers with the technical know-how to operate sophisticated machinery as well as easy access to infrastructure to distribute their final goods. They also likely both prefer regulatory environments where food safety compliance is straightforward. These are only some of their shared capability requirements, implicitly captured by the fact that the two industries typically co-locate.

Some industries in this network are more complex than others, implying they require a more diverse and sophisticated set of capabilities to thrive. The average complexity of all industries in a city is captured by the city's **Economic Complexity Index** (ECI). The most complex cities possess the most sophisticated capabilities. "Growing cities that work for all" showed that more complex cities tend to have higher per capita incomes and faster population growth, more readily attracting workers to the opportunities therein. The visualization highlights industries that are feasible, strategic, complex, and those that bring good jobs to help policymakers prioritize industries and target investments.

Industries: Growth, diversity, and quality job industries

"Growing cities that work for all" found that the current industrial composition of each city partially determines its future industrial evolution. Intuitively, cities that possess more of the capabilities an industry requires tend to grow that industry faster. A city's ability to host an industry is captured in a metric called **Feasibility**. Feasibility measures the implicit capability overlap of a given industry with all the industries present in a city. It is one of the key measures used in the "Planning for the Future" section of the visualization, as it identifies the short list of industries that are likely to deliver growth, industrial diversification, or quality jobs. For the purposes of this visualization, we highlight only the most feasible among 178 tradable industries.

We restrict the industries displayed in the visualization to tradable sectors—those which produce goods and services that can be consumed outside the MSA—since urban employment in tradable industries has a multiplier effect on job growth.[2] We also choose to omit industries whose presence depends on availability of natural resources, such as petroleum and gas extraction, since not all places have such natural resources.

To identify groups of industries (Growth, Diversify, Quality Job Industries), the visualization relies on three other key metrics, described below. In each case, to limit the list of industries for each city to those that are most conducive to each strategy, we choose the most feasible, with the most jobs, and with the highest metric relevant to each strategy explained below.

To determine the Growth Industries, we derive each industry's **Industrial Complexity Index** (ICI). This metric describes industries' implicit capability requirements, such as talent, infrastructure, and institutions. And, since complex cities tend to have higher per capita income and tend to grow population faster, Growth Industries are those with the highest ICI.

For Diversify Industries, we compute the **Strategic Gain** (SG) that each industry would deliver to a given city. SG captures the potential of a particular nascent industry to improve the capabilities of a city through that industry's relatedness to other complex industries, thus accelerating growth. We categorize industries as "nascent" in a city if they show low measures of Revealed Comparative

Advantage, a metric which captures the degree to which a city specializes in an industry relative to national averages. This categorization allows us to examine opportunities for diversification. SG captures the propensity of a nascent industry, if a city were to specialize in it, to add capabilities required by other complex industries. Nascent industries with the highest SG represent high opportunity for a city to promote resilient future growth.

A complete mathematical description of ECI, ICI, SG, RCA, along with feasibility, can be found on [page 42 of "Growing cities that work for all](.")

Finally, for Quality Job Industries, we follow an approach outlined by our colleagues in the Brookings Metropolitan Policy Program, largely following researchers at the Federal Reserve Bank of Philadelphia and Cleveland.[3] We use 2017 American Community Survey microdata to compute the annual median wage for each occupation in each metropolitan area. We also calculate the share of workers without a bachelor's degree (sub-BA) who have employer-provided health insurance. "Quality jobs" are those occupations that pay more than the median wage for the MSA as a whole and that provide health insurance. We find the share of those sub-BA workers with health insurance in an occupation that pays more than the median and aggregate those shares across occupations using Emsi[4] industry staffing patterns to yield the final index: the industry's share of quality jobs.

Metropolitan measures of job growth, low-wage workers, and change in median wages

Under "The State of Your Workforce," the data visualization shows the percentage change of two baseline statistics for each MSA: number of jobs and real median wages. This allows the user to assess the MSA's recent trajectory and compare it to that of the U.S.

We compute percentage change in the number of jobs from Emsi data, and we use real median annual wages from the Brookings Metro Monitor. These median wages are computed using American Community Survey (ACS) one-year estimates and adjusted for inflation using the Bureau of Economic Analysis's (BEA) Personal Consumption Expenditure index.[5] We adjust further for the regional cost of living using the BEA's Regional Price Parities.

For each MSA, the visualization provides a third metric for comparison, the share of the MSA's workforce comprised of "low-wage workers"— workers who earn less than $16.03 per hour, adjusted for regional costs of living. The estimates come from 2012-2016 ACS five-year estimates. The derivation of that threshold and demographic analysis of the low-wage workforce was conducted in collaboration with colleagues Martha Ross and Nicole Bateman. Implications for cities and low-wage workers are outlined in the Brookings report, "[Realism about reskilling: Upgrading the career prospects of America's low-wage workers.](")"

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[1] MSA is a designation by the Office of Management and Budget—one or more adjacent counties that have at least one urban core area of at least 50,000 population.

[2] One job added in a tradable sector leads to additional jobs added in local or nontradable sectors such as construction or personal services. Estimates of the multiplier vary between 1.1 and 6 depending on the regional level of analysis, the skill level of the tradable job, and the method of estimation. See https://research.upjohn.org/up_workingpapers/301/.

[3] See https://www.philadelphiafed.org/-/media/community-development/publications/special-reports/identifying_opportunity_occupations/opportunity_occupations_revisited.pdf

[4] Emsi: Labor Market Analytics. See https://www.economicmodeling.com/

[5] For more detail, see https://www.brookings.edu/research/metro-monitor-2018/