Charting a course to the Sacramento region's future economic prosperity
Appendix A.

Methodology and definitions

Peer Metro Identification

This report identified 15 metropolitan peers for the Sacramento region. Brookings evaluated the metro areas based on 22 economic variables, including population, nominal GDP, real GDP, real GDP per capita, productivity (defined as output per worker), share of the population in the labor force, industry share of total GDP (eight sectors), and productivity by sector (eight industries). These 16 metropolitan areas compose "American Middleweights," a group of mid-sized U.S. metro areas that are relatively wealthy and house strong universities and other anchor institutions. For more information: https://www.brookings.edu/research/redefining-global-cities/.

Next Economy Clusters

In 2012, the region identified six business clusters that would offer leading opportunities for economic growth and expansion by the six-digit NAICS code (North American Industry Classification System). For more information: https://valleyvision.org/research-report/key-findings-next-economy-cluster-research/

Advanced Industries

Brookings identified 50 R&D- and STEM-worker intensive industries by four-digit NAICS codes based on their STEM worker intensity and R&D intensity. For more information: https://www.brookings.edu/research/americas-advanced-industries-what-they-are-where-they-are-and-why-they-matter/.

Data sources:

Metro Monitor

The Metro Monitor's Inclusive Growth Index tracks the economic performance of the nation's 100 largest metropolitan areas along three dimensions critical to successful economic development: growth, prosperity, and inclusion. Growth is measured in gross metropolitan product (GMP), number of jobs, and number of jobs at young firms. Prosperity is measured in average wage, productivity (GMP) per job, and standard of living (GMP per capita). Inclusion is measured in employment rate, median wage, and relative poverty rate. For more information: https://www.brookings.edu/research/metro-monitor-2018/.

Struggling Family Analysis

The struggling family analysis relies on the University of Washington Center for Women's Welfare's Self-Sufficiency Standard to define family-sustaining income levels and to identify families whose income falls below this level by different family type in each county. The Self-Sufficiency Standard provides

estimated expenses for each family type using data sourced from federal agencies and public, private, and nonprofit surveys. For more information: http://www.selfsufficiencystandard.org/

Exports

Exports data are derived from a number of sources including: U.S. Census Bureau, the U.S. Bureau of Economic Analysis (BEA), Moody's analytics, the U.S. Bureau of Labor Statistics (BLS), the Association of International Educators (NAFSA), the Internal Revenue Service (IRS), the U.S. Energy Information Administration (EIA), and Sabre. The estimates include both goods and services and are calculated to reflect value-added exports from their point of production using the local share of national output to allocate national exports for each industry and county. For more information: https://www.brookings.edu/wp-content/uploads/2017/08/brookings-export-series-methodology-nm-5715.pdf

Employment, output and compensation (EMSI)

Economic indicators for U.S. metro areas come from EMSI. EMSI uses government sources like the U.S. Bureau of Economic Analysis (BEA), the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and others to arrive at county-level estimates for employment, output, and compensation. For non-disclosed data points, EMSI uses its own algorithms to replace the suppressions with mathematically educated estimates.

Kauffman index of growth entrepreneurship

The Growth Entrepreneurship Index is an equally weighted index of three components: rate of startup growth, share of scaleups, and high-growth company density. For more information: https://www.kauffman.org/kauffman-index

R&D expenditures

Data on R&D expenditures at higher education institutions come from the National Science Foundation's Higher Education Research and Development Survey (HERD). The survey is an annual census of institutions that expended at least $150,000 in separately accounted for R&D in the fiscal year. We then aggregate R&D expenditures from all universities within the metropolitan area where the institutions are physically located. For more information: https://www.nsf.gov/statistics/srvyherd/

Patents

The patent data were derived from the USPTO's Technology Assessment and Forecast database. We calculated average count of utility patent grants from 2000 to 2015 per 1,000 workers in the metropolitan area. One caveat is that regional patent counts are based on the residence locations of the inventors, which may differ from the locations of their inventive activity. For more information: https://www.uspto.gov/web/offices/ac/ido/oeip/taf/cls_cbsa/allcbsa_gd.htm

Knowledge complexity index

The Knowledge Complexity Index (KCI) is derived from a 2016 paper by Balland and Rigby on "The Geography of Complex Knowledge." The authors constructed the KCI for 366 U.S. metropolitan areas to measure the complexity of the knowledge base of cities, i.e. (1) which cities produce specific

technologies and (2) how common specific technologies are across cities. For more information: https://doi.org/10.1080/00130095.2016.1205947.

Venture capital

Venture capital investment in metro areas are derived from PitchBook, available through the National Venture Capital Association. Pitchbook analysts deploy web crawlers to perform a daily systematic scan of media reports and public filing information on deals that they then record and validate through a manual review process. For more information: https://pitchbook.com/research-process

Territorial fragmentation

Data on territorial fragmentation was compiled from the 2012 U.S. Census of Governments, defined as number of governments per 100,000 inhabitants of the metropolitan area. We take into account general purpose governments (municipal and township governments) as well as special district governments which are independent, special purpose governmental units that exist as separate entities with substantial administrative and fiscal independence from general purpose local governments. For more information: https://www2.census.gov/govs/cog/2012isd.pdf

Moody's business environment

Moody's Analytics ranked 65 metro areas with a population of 1 million or more in 2017. The business environment measure includes the state and metro area's credit ratings and the state's tax environment ranking from the Tax Foundation. In addition, they calculated incentives per worker for the state using *The New York Times* measure of state business incentives per year. Finally, five- and 10-year growth rates for both overall employment and high-tech employment are included to reflect the dynamism of the local economy. For more information: https://www.economy.com/dismal/analysis/commentary/298321/Where-Amazons-Next-Headquarters-Should-Go/

Digitalization scores

The primary data source of occupational digital scores is from the Occupation Information Network (O*NET) database. We use two variables, "Knowledge - Computer and Electronics" and "Work Activity - Interacting with Computers," to calculate a numerical score for each occupation. Statistics of occupational employment and wage come from the Occupational Employment Survey (OES) and the Current Population Survey (CPS) data. For more information: https://www.brookings.edu/research/digitalization-and-the-american-workforce/