

PORTLAND ECONOMIC VALUE ATLAS

MARKET SCAN



EXECUTIVE SUMMARY

By most measures, the Portland metropolitan economy sits in an enviable position. Over the past decade, the metro area expanded production of goods and services at one of the highest rates across the country. It also added jobs faster than the national average. In addition, the high concentration of tradable industries—collections of firms that sell goods and services outside the metro area—helped boost productivity by 22 percent and increase average wages by 12 percent. Finally, more people keep moving to the area, confirming the economic opportunities and high quality of place the metropolitan area offers.

Yet these past successes are not guaranteed in the future. The metropolitan area's public, private, and civic leaders must continue to focus on growing industries, cultivating a highly-skilled workforce, fostering inclusive economic development, and promoting high quality of life to remain domestically and globally competitive. Achieving such future growth requires a suite of built environment policies and infrastructure investments that work in service of those broader economic objectives.

Moving forward, the Portland metropolitan area is well-positioned to adopt this two-fold approach in future plans and investments. Doing so requires a clear understanding of where the metro economy stands, how the built environment currently supports or restricts the drivers of economic growth, and how related public policies and investment decisions can improve outcomes in the long-run.

Using a three-pronged framework to judge economic performance and how each category relates to the built environment, this market scan reveals several key findings.

- **Business:** Tradable industries only employ 31 percent of all metropolitan workers, but generate 45 percent of the area's production. Growth in tradable industries is anchored by six distinct clusters, all of which demonstrate competitiveness by growing employment faster than comparable national industries. Tradable industries, such as semiconductor manufacturing or consulting services, are complemented by local service industries, such as hospitals and restaurants, which represent 57 percent of all jobs and are growing at an even faster rate. A well-connected airport and high-volume freight flows support growth in all industries via access to domestic and global markets, although persistent highway congestion could threaten long-term trade efficiency.
- **People:** The Portland metropolitan area continues to add jobs faster than the national average and is similar to high-performing domestic peers, such as San Diego and Denver. However, much of that job growth is within high- and low-skill occupations, which

contributes to growing income inequality at the regional scale. In particular, inflation-adjusted changes in median wages are flat among all workers and negative among black residents and adults with only a high school diploma. The region also faces persistent poverty, including a metropolitan poverty rate exceeding 12 percent—higher than most of its peers—and contains a growing number of neighborhoods with concentrated poverty.

- **Place:** Portland’s business community demonstrates a mix of concentration and dispersion, with the six tradable clusters locating around job hubs but local service industries dispersed across the metro area. At the same time—and even with nearly 15,000 new housing units annually permitted since 2014—home values keep rising and residents of many neighborhoods can no longer afford local increases. Given the broad mix of job and housing locations alongside extensive roadway investments, vehicles often offer greater access to most destinations. As a result, over three-quarters of Portland metropolitan residents drive to work, although multimodal alternatives represent a higher share of trips than they do in peer metro areas and are continuing to experience growth.

This market scan demonstrates the deep connection between economic development and

the built environment. Freight flows, commuting patterns and housing prices are all impacted significantly by where businesses and households choose to locate. Likewise, travel habits and location decisions by people and business will be similarly influenced by built environment decisions like zoning and capital improvements. As such, these findings demonstrate the need for a sustained tool to both track progress against economic development objectives and to determine where built environment policies can support improved economic outcomes.

Defining the Geography

This Market Scan uses the seven-county Portland-Vancouver-Hillsboro, OR-WA metropolitan area as the primary unit of geographic analysis. To promote readability, any singular references to “Portland” relate to this metropolitan definition. Metro operates in a subset of three counties, and the Market Scan specifically references that geography when applicable. Similarly, any references to the city of Portland are called-out explicitly.

01 INTRODUCTION

Every day, Portland's metropolitan economy relies on a built environment designed and delivered decades ago. The urban core's old, dense street grid and mixed-use zoning promotes taller buildings and incentivizes job and housing density. Highways, rail lines, bike lanes, and other corridor infrastructure help shuttle travelers between the urban core, other regional centers, residential neighborhoods, and everywhere in between. Trade flows follow freight rail alignments, port and airport locations, highways, and industrial zoning. The Urban Growth Boundary helps to manage regional growth.

Yet these legacy plans and investments will not always be enough to support the Portland economy. The population is expected to grow by over 600,000 people and the economy is expected to add 370,000 more jobs by 2040 just within Metro's 3-county borders.¹ The region will certainly need to build more to accommodate more

people, but infrastructure and land use policies must also act in support of the region's long-term economic competitiveness. Manufacturing and tradable service industries demand efficient access to domestic and global markets. A changing climate, seismic threats, and other stressors require environmental resilience. And all workers—regardless of income or demographic characteristics—should be able to afford a home and connect to employment opportunities.²

Local policymakers, planners, and other public and private leaders carry the responsibility to ensure the next phase of physical development supports these competitiveness goals. Zoning, infrastructure investment, pricing, and related decisions will all influence where employers choose to locate, how and where those companies ship goods, which neighborhoods attract new residents, and how people choose to travel between their homes, jobs, and other key destinations. Portland's economy



will be physically shaped by such long-term policies and investments.

Designing new plans and future infrastructure improvements, however, must contend with fiscal realities.³ The federal government, already an uncertain financial partner in competitively-selected infrastructure projects, may scale back net investment.⁴ While Portland should continue to expect some level of flexible federal funding, it's prudent for regions to lower expectations around large capital grants like those that supported MAX light rail's build-out.⁵ Likewise, American infrastructure projects continue to grow in cost over time, limiting the number of projects the region can expect to deliver.⁶ And with much of the metropolitan area's infrastructure reaching the end of its useful life, any new expansions must be balanced against long-term maintenance needs.⁷ Since the region will only be able to invest so much—and likely only build a small number of transformative projects—maximizing local revenues and returns on investment is crucial.

Executing such a vision—one that promotes shared economic goals while navigating fiscal limitations—is a common challenge across the country. To respond effectively, built environment policymakers must step beyond traditional measurements of return on investment, such as supply-side measures like roadway level of service that often guide billion-dollar decisions. Instead, policymakers need more comprehensive metrics and flexible planning tools to help translate regional economic goals into transportation, land use, and other infrastructure policies.⁸

At the same time urban planning and transportation professionals are considering new approaches to planning and investment, their peers in economic development are also reevaluating their goals. Decreased business relocation activity, the rise of automation, and declining startup rates have challenged traditional approaches to economic development and forced a shift towards bolstering the competitiveness of a region's existing small- to

mid-sized firms and making long-term investments in innovation, skills, and traded-sector assets.⁹ Meanwhile, stagnant wage growth for many occupations, racial income inequality, challenges connecting labor pools and employers, and an education and skills gap have combined to create a new call for more inclusive forms of economic development that seek to intentionally connect a broader swathe of the population to economic opportunity and the benefits of growth.¹⁰

A core challenge facing economic development professionals, then, is to better understand how the built environment impacts inclusive economic development. Pillars of an advanced economy—globally competitive industries; a highly- and diversely-skilled workforce; shared prosperity; vibrant and connected communities—can all benefit from a built environment that eases the movement of goods, offers people timely access to key destinations, promotes a high quality of life, and enables all residents to afford housing and essential goods and services.

Achieving these objectives, however, will require improved understanding of where the economy stands today, how the built environment currently supports or restricts the drivers of economic growth, and how related public policies—including investment decisions—can improve long-term outcomes.

The first step in the development of Metro's Economic Value Atlas, this report aims to assess Portland's economic performance and built environment more holistically, both at a metropolitan and local scale. To do so, it begins with a brief summary of regional economic development priorities. Next, the bulk of the report is a statistical assessment of the current marketplace, using the framework of Business, People, and Place. Finally, the report concludes with a brief set of implications based on the market assessment.

02 RELATING ECONOMIC OBJECTIVES TO THE BUILT ENVIRONMENT

The Portland metropolitan area benefits from a clear set of economic development goals. Although it can be difficult at times to follow all the various lists covering the region's economic priorities given the number of agencies and organizations involved— including Clackamas County Economic Landscape Reports and Columbia River Economic Development Council's Strategic Economic Development Plan at the county level; Prosper Portland's Strategic Plan and economic development plans among many cities; Greater Portland 2020 at the regional

scale; plus Oregon and Washington states—there are clear commonalities among them:

- ***Promote industrial competitiveness and diversity.*** Like every metropolitan area, Portland's economy depends on tradable industries that can sell their goods and services outside the region, bringing new financial resources to benefit the local economy. Portland's continued economic growth requires a business environment where industries can access physical and



capital markets, new firms can form, and new products can be developed.

- **Retain talent, attract new workers, and foster equitable opportunity.** The Portland region will maximize prosperity if individuals of all skill levels and demographic characteristics can access economic opportunity within local industries. This applies to both current residents and outside talent that would consider relocating. It includes promoting skill development among the future and current workforce.
- **Preserve and enhance quality places.** Portland benefits from a shared appreciation of its natural beauty and the need to sustain it. Economic development plans also recognize the need to maintain affordable housing,

physical access to economic opportunities, and developable land for all industries.

While there is consensus around these three priority action areas (Business, People, and Place), the core strategies and specific priorities under each do not consider geography equally. This puts the onus on policymakers to track economic progress at metropolitan scale, and to determine where built environment policies at a more granular scale may either promote or restrict metropolitan economic performance. The following Market Scan both judges progress against shared economic priorities and situates the economy in a more consistent geographic context.

Box A: Focus Clusters and Comparison Metropolitan Areas

Tradable industries, such as semiconductor manufacturing or consulting services, are the primary enabler of metropolitan economic growth. They not only use external sales of locally-produced goods and services to bring new financial resources to the economy, but they also support virtuous cycles of industrial reinvestment and enable growth in local services.¹¹ Portland's tradable industries are anchored by six core clusters.¹² As important drivers of regional economic activity today and well-positioned to spark future growth, these clusters are a critical touchpoint for assessing the metropolitan economy.¹³

In addition to the cluster focus, this report also compares the Portland metropolitan area to six domestic peers to help provide

a clearer benchmark to gauge economic performance. Cluster analysis from a prior Brookings Institution project revealed Portland and the six other metropolitan areas to be Knowledge Capitals, or metropolitan areas with innovative industrial bases and a talented workforce. The comparison metropolitan areas are:

- Austin-Round Rock, TX;
- Baltimore-Columbia-Towson, MD;
- Denver-Aurora-Lakewood, CO;
- Hartford-West Hartford-East Hartford, CT;
- San Diego-Carlsbad, CA; and
- San Jose-Sunnyvale-Santa Clara, CA.¹⁴

Box A (contd.): Focus Clusters and Comparison Metropolitan Areas



Clean Technology + Green Cities

Manufacturing, energy production, design, and waste disposal industries related to sustainability and resilience.



Computer + Electronics

Establishments that manufacture computers, computer peripherals, communications equipment, and similar electronic products.



Health Sciences + Technology

Advanced medical device manufacturers, plus related research and development establishments; does not include local hospitals.



Metals + Machinery

Broad array of goods-producing establishments working with heavy metals, ranging from foundries to pump makers to ship builders.



Software + Media

Service establishments writing software, planning and managing computer systems, hosting data, and producing and distributing video and sound recordings.



Sporting Equipment + Apparel + Design

A unique collection of global apparel companies, personal hardware manufacturers, and various design establishments.

03 MARKET SCAN

Portland is one of the fastest growing metropolitan economies over the past decade, with output and job creation consistently rising faster than national benchmarks. Tradable industries are a major anchor for this performance, employing highly productive workers and raising the metropolitan area's average annual wages. Alongside an extensive regional highway network, Portland also benefits from one of the country's biggest light rail, streetcar, and bicycle infrastructure networks—plus a well-connected commercial airport.

Yet the regional economy is far from perfect. Income inequality is growing. Housing prices continue to rise faster than median and average wages. Many neighborhoods don't have access to multimodal transportation infrastructure, travel times are on the rise, and regional highway congestion is a persistent challenge to commuters and companies.

The following market scan situates core indicators of economic development specific to the region, using three categories proposed for the Economic Value Atlas: Business, People, and Place. Each category also includes an assessment of how well local transportation infrastructure and land uses advance or restrict relevant priorities.

Business

Portland's industries are the anchor of long-term economic growth. Tradable industries produce the goods and services that are sold beyond the metropolitan borders, offering highly-productive job opportunities to local residents, are a source of innovation, and help to bring new financial resources to the community. Local services complement tradable industries: feeding households, educating students, keeping people healthy, and offering other support services. And



across all types of firms, every industry relies on physical market access: freight networks to get goods to and from markets, intermetropolitan passenger networks to allow staff and clients/customers to enter and leave Portland, and local transportation networks to move workers.

Together, Portland's businesses create enormous wealth for the region. The metropolitan area's industries collectively produced \$158.8 billion in gross regional product, making it the country's 20th largest metropolitan economy in 2015 (as compared to the 25th largest by population).¹⁵ More importantly, the economy is on an upward growth trajectory (54 percent) since 2000, both in comparison to the country and its metropolitan peers (Figure 1). Only Austin, TX, exceeds Portland's growth rate over the past 15 years (77 percent), and Austin did so with a considerably

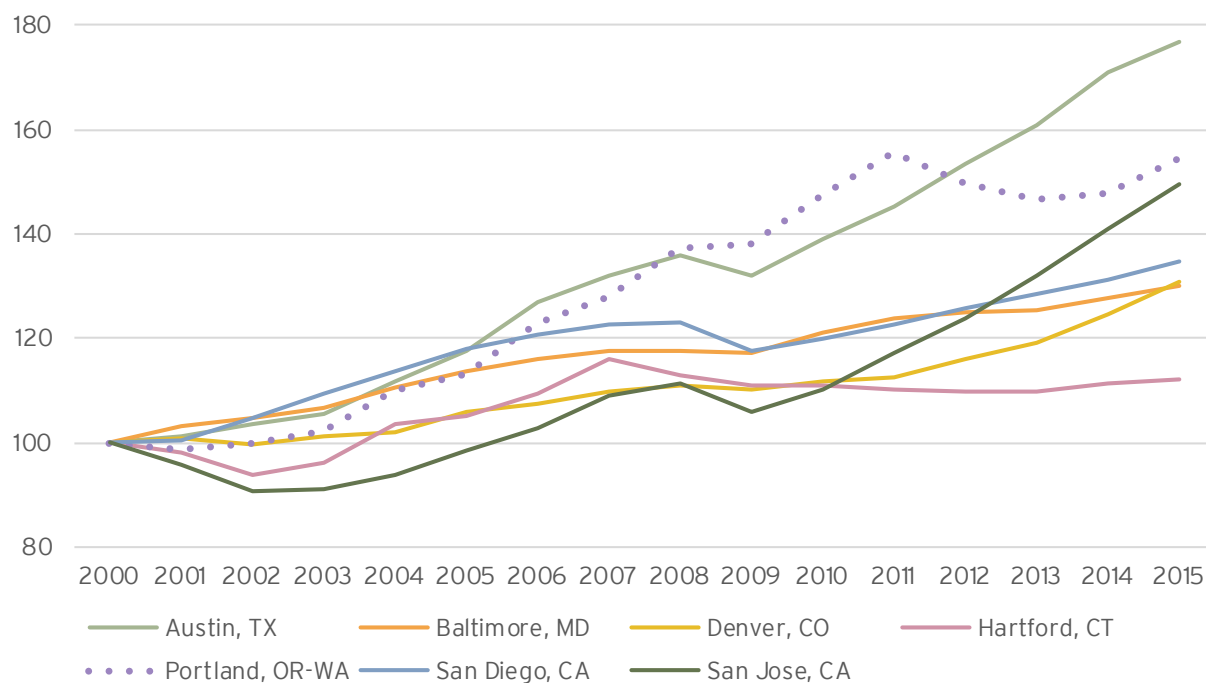
faster population growth rate. Portland's 15-year growth is even more remarkable considering the larger post-Recession dip related to its peers, of which Portland just recently recovered.

Tradable industries produce roughly 45 percent of gross regional product while employing only 31 percent of workers. These wealth-creating industries include classic goods-producing industries like commercial printing, modern advanced industries like semiconductor manufacturing, and combination goods/service establishments like breweries. The services side of the traded economy is also varied, ranging from commercial bankers to college and university staff.¹⁶

The region's six focus clusters demonstrate the importance of tradable industries to the

FIGURE 1

Gross regional product growth rates by metropolitan area, 2000 to 2015



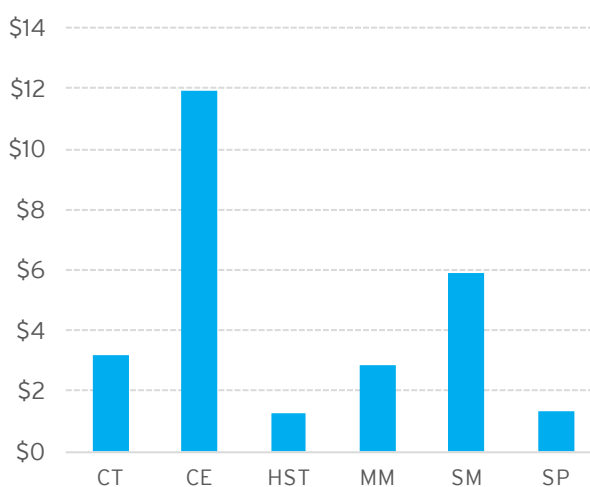
Source: Brookings analysis of Moody's Analytics data

FIGURE 2

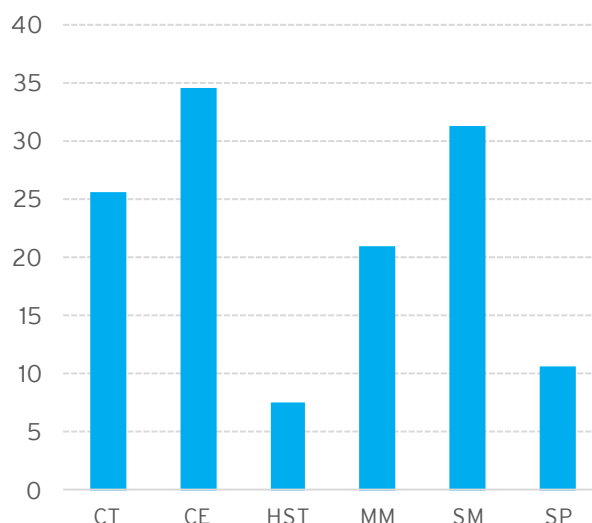
Portland MSA focus clusters: Various performance measures, 2016 (excluding Shift Share, 2001-2016)

CT - Clean Tech + Green Cities, CE - Computer + Electronics, HST - Health Sciences + Technology
MM - Metals + Machinery, SM - Software + Media, SP - Sporting Equipment + Apparel + Design

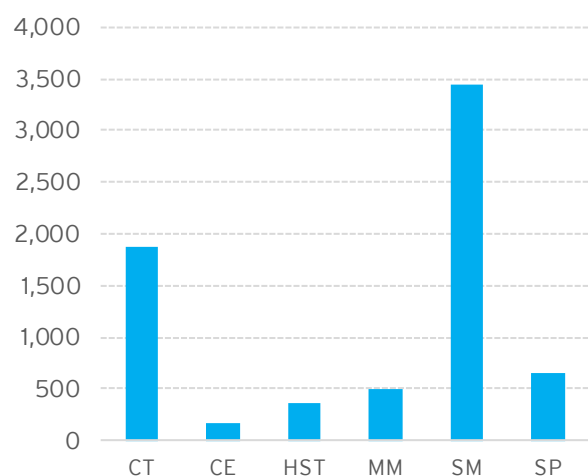
Gross Regional Product (in \$US billion)



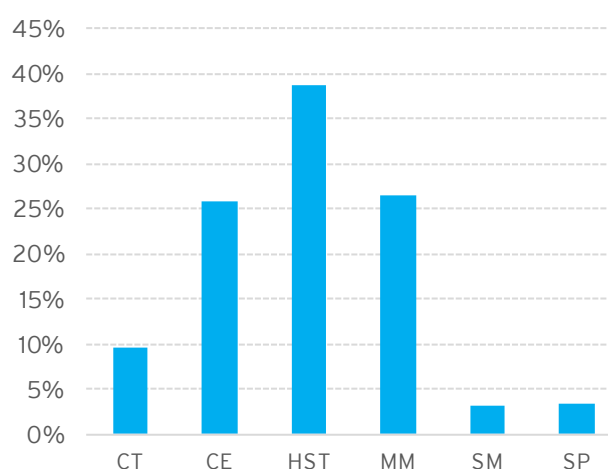
Jobs (in thousands)



Establishments



Shift Share



Source: Brookings analysis of Emsi data

metropolitan economy. The clusters—each of which include specific groups of tradable goods and services industries—generated 20 percent of all metropolitan output in 2015. They were also highly productive, generating GDP per worker of over \$202,000, nearly double the metropolitan average.

When comparing the clusters to one another, their differences reflect the immense variation of the industrial base. First, the clusters deviate in size (Figure 2). The Computer and Software clusters have the largest output and employment, while Health Sciences and Sporting Equipment are each considerably smaller.¹⁷ The number of

establishments associated with each cluster also varies markedly, with the Computers cluster relying on less than 200 establishment locations compared to thousands in both Software and the emerging Clean Tech cluster.

Critically, each of the clusters were nationally competitive. One way to measure competitiveness is to compare how local job growth rates compare to national growth rates in the same industries—or what’s known as shift share. If local growth rates are higher than national peers, then the local industry is thought to be competitive. In the case of Portland, all six clusters are competitive, but some clusters are more competitive than others, with Health Sciences, Metals, and Computers far exceeding national growth patterns.

While tradable industries may produce outsized shares of wealth, local service industries are invaluable assets to the metropolitan economy. Led by employment in primary schools, hospitals, and retail like restaurants, local service industries primarily sell goods and services to local

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businesses and households. They also represent 59 percent of all metropolitan jobs.

Overall, local service employment grew by roughly 25 percent between 2001 and 2016, adding well over 100,000 total jobs over that period. Food service industries rapidly expanded employment, both at restaurants and grocery stores. Care for children and the elderly also grew faster than regional averages and the country overall. Local services were less productive than their tradable peers—producing \$82,592 in GDP per worker—but that’s to be expected. Instead, these industries should be seen as important sources of employment and, in certain cases, pathways to higher-paying jobs.¹⁸

Of course, not every industry or regional trend points in a positive direction. Many tradable industries are contracting, including legacy industries like crop production, commercial printing, certain plastics manufacturing, and many insurance activities. Portland’s firms are growing older, with firms younger than five years old employing 7.5 percent fewer people in 2015 than in 2005 (although the growth trend is upward since the Great Recession).¹⁹ While consistent with national trends around sluggish firm creation, it still reveals challenges within Portland’s entrepreneurial systems.²⁰ Portland’s share of employment in Foreign-Owned Establishments—a metric for foreign direct investment—ranks 50 among the 100 largest metro areas.²¹ Finally, Portland’s patenting and venture capital investment per capita are both strong relative to national performance, but still trail metropolitan peers such as San Jose and San Diego.²² The venture capital statistics are worth deeper investigation given the economy’s heavy tilt towards industries and occupations that attract venture funding in other places.²³

Portland is already a national hub of advanced industries, concentrating the 15th highest share of employment in such jobs and benefiting from the related wage premiums that derive from

it.²⁴ To maintain that advantage, it's sensible for local efforts to address these entrepreneurial, investment, and patenting gaps.²⁵ Officials within transportation and land use agencies should collaborate with their peers in economic development to determine where built environment policies could help address these gaps while continuing to support growth of the entire tradable industry.

Enabling Portland's successful industrial growth record is a broad array of regional transportation assets.

Portland International Airport (PDX) serves as the passenger gateway to domestic and global markets. PDX is primarily a local economic asset, with only 23 percent of passengers using the airport to transfer to other destinations.²⁶ Yet even without domestic hub status, Portland still benefits from strong direct connectivity across the country; roughly three-quarters of domestic passengers fly direct.²⁷ It's also a reliable airport, ranking second nationally in 2016 for on-time departures (the component the airport controls more than on-time arrivals).²⁸

PDX is also a major freight asset. Portland is one of the country's 20 busiest metropolitan areas in terms of air freight value by foreign exports, and ranks in the top 40 by domestic and global import value.²⁹ The export flows are driven almost entirely by electronics—which includes semiconductors and other computer products—suggesting the airport primarily serves local industry for freight and passengers.

Portland's seaports amplify the region's global freight reach, despite shipping a lower volume of local products compared to PDX. The metropolitan seaport complex imports and exports a relatively similar value of goods, although the weight of its exports is considerably higher due to heavier products like cereal grains, fertilizers, and logs. While most international goods tend to go to and from East and Southeast Asia, the port largely

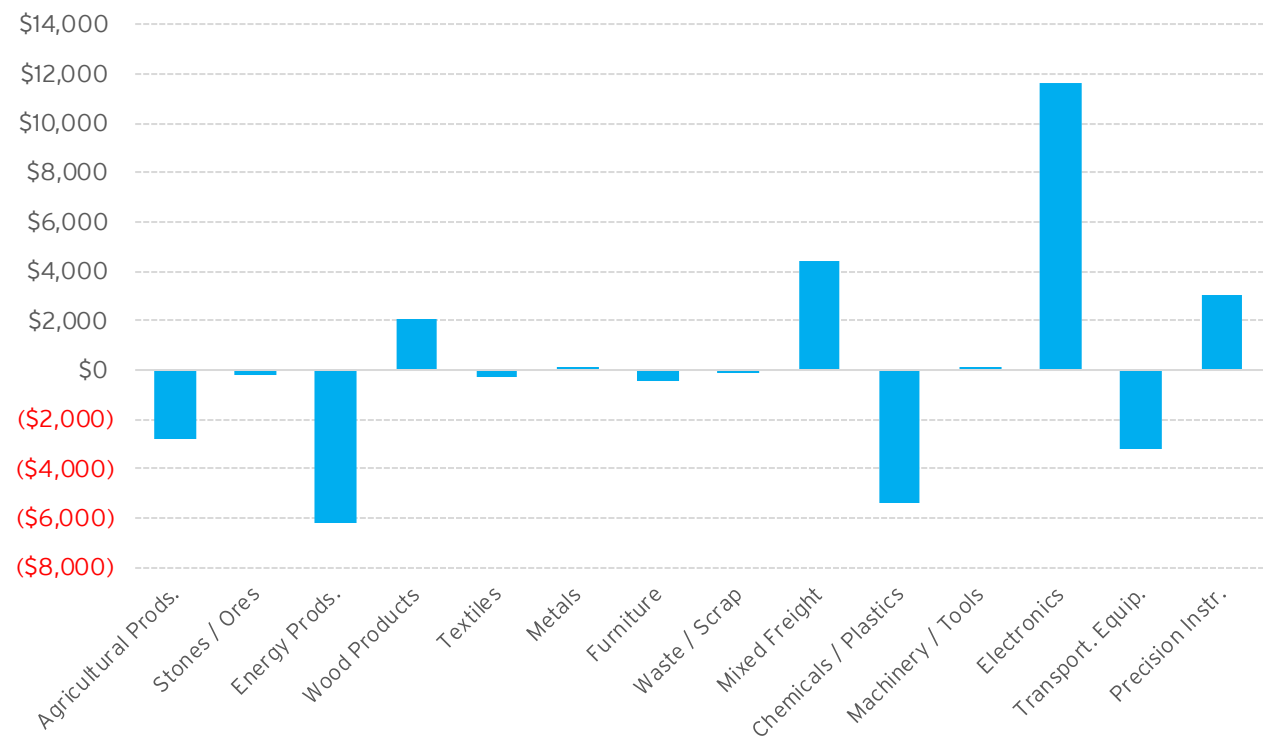
ships goods to and from surrounding states or Oregon counties outside. This certainly makes the port a valuable economic asset in terms of tradable employment and spillover benefits for local and statewide shippers—who can piggyback on these trade flows—but it also means the local ports are often not moving Portland-produced goods.³⁰

Instead, Portland relies on domestic freight networks to conduct most of its locally-generated trade, both within the metropolitan area, to the surrounding regions (including other ports), and to other metropolitan markets across the country. As such, when studying freight's role in the local economy, it's important to separate local ports' shipment needs from local industry's freight needs.

By focusing on total trade volumes and trade balances (i.e. exports minus imports), it becomes easier to see how Portland fits into larger freight networks nationally and internationally (Figure 3). Overall, Portland was one of the few metropolitan areas in the U.S. to run a goods trade surplus in 2010, the only year where such data is available.³¹ However, that surplus was driven by only a few commodities, including electronics, mixed freight, precision instruments, and wood and paper products. Many of Portland's other commodities—notably machinery / tools and metals categories—are exported and imported in relatively even volumes. Portland's remaining commodities show deficits, including energy products (purchased oil), chemicals, and transportation equipment, which tend to serve as vital inputs to the area's extensive tradable and local service industries.

Local industries tend to rely on metropolitan road networks, making the local roadway network an important component to support supply chain reliability.³² Like all U.S. metropolitan areas, trucks move the vast majority of trade flows, including strictly local trade flows—like those from warehouses to retailers or farms to markets—that represent nearly half of all commodity flows.

FIGURE 3

Trade balances by designated commodity groups, in billions of USD, 2010

Source: Brookings analysis of EDR data

TABLE 1

Portland's top trading partners by value, in millions of USD, 2010

Rank	Trading Partner	Total Value (\$)	Trade Balance (\$)	Top Traded Commodity
1	Seattle-Tacoma-Bellevue, WA	16,831.2	\$2,504.7	Agricultural Products
2	Salem, OR	8,242.7	\$3,868.7	Mixed Freight
3	Los Angeles-Long Beach-Santa Ana, CA	7,221.4	-\$2,531.7	Transportation Equipment
4	China	5,821.3	-\$1,078.3	Electronics
5	Rest of Oregon	4,555.0	\$1,162.0	Mixed Freight
6	Rest of Washington	3,402.4	-\$1,549.3	Agricultural Products
7	Mexico	2,983.0	\$634.3	Electronics
8	San Jose-Sunnyvale-Santa Clara, CA	2,791.5	\$1,475.6	Electronics
9	Eugene-Springfield, OR	2,749.6	\$773.1	Mixed Freight
10	Canada	2,711.9	\$472.1	Electronics

Source: Brookings analysis of EDR data

Ensuring goods can flow into, out of, and within Portland requires reliable transportation times, available parking in key locations, and access to key freight facilities. That means trucks must be able to reach major warehouses, business-to-business wholesale centers, and intermodal facilities like the ports and freight rail connections. And considering that the majority of long-distance truck trade is Pacific Coast oriented—including use of other coastal seaports—north-south freight corridors are especially important to maintain freight fluidity (Table 1).

People

Growing an inclusive metropolitan economy demands all residents have the ability to find employment and for those occupations to pay high enough wages for households to afford a relatively

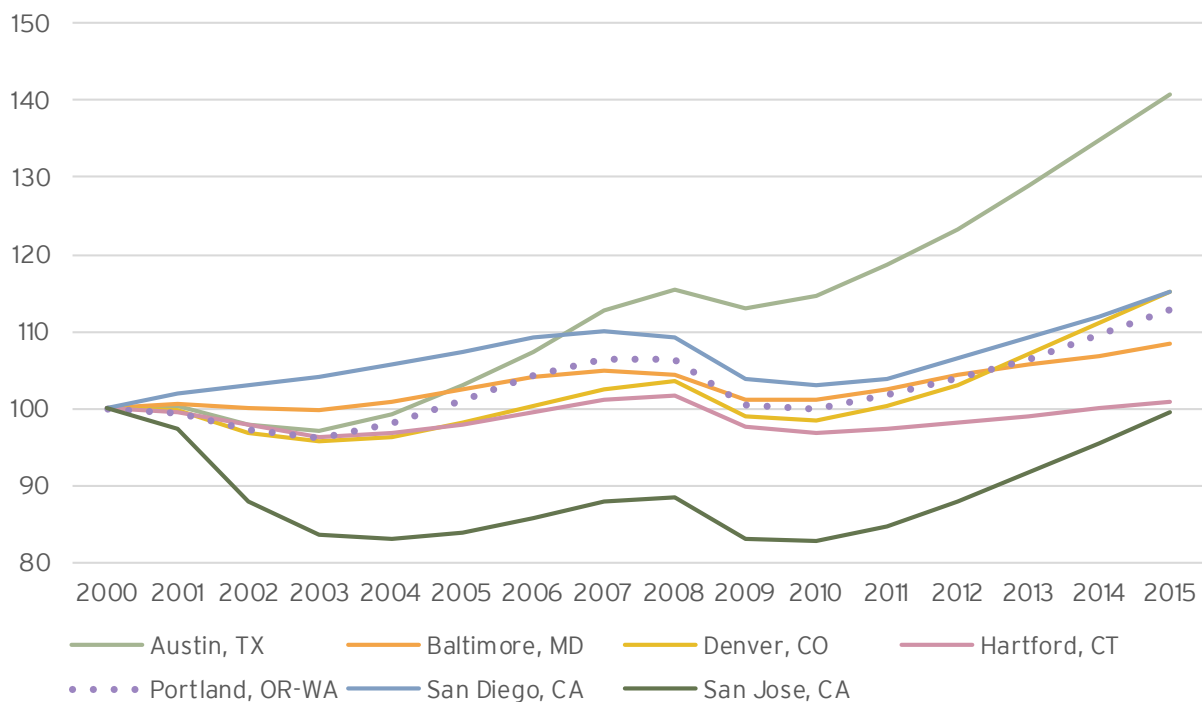
high quality of life. While Portland's business environment has comparative advantages driven by key clusters and strong growth overall, Portland's economic measures directly related to the population—including their occupations and wages—are more mixed.

Portland is certainly healthy when it comes to overall population and employment metrics. The metropolitan area population grew by 26 percent between 2000 and 2015, significantly faster than the national average. The region also continues to add jobs, with roughly 13 percent growth since 2000 (Figure 4).

Looking at all industries, there is growing demand for many occupations across a range of skillsets and wage levels. Table 2 shows a range of different occupations associated with a mix of tradable

FIGURE 4

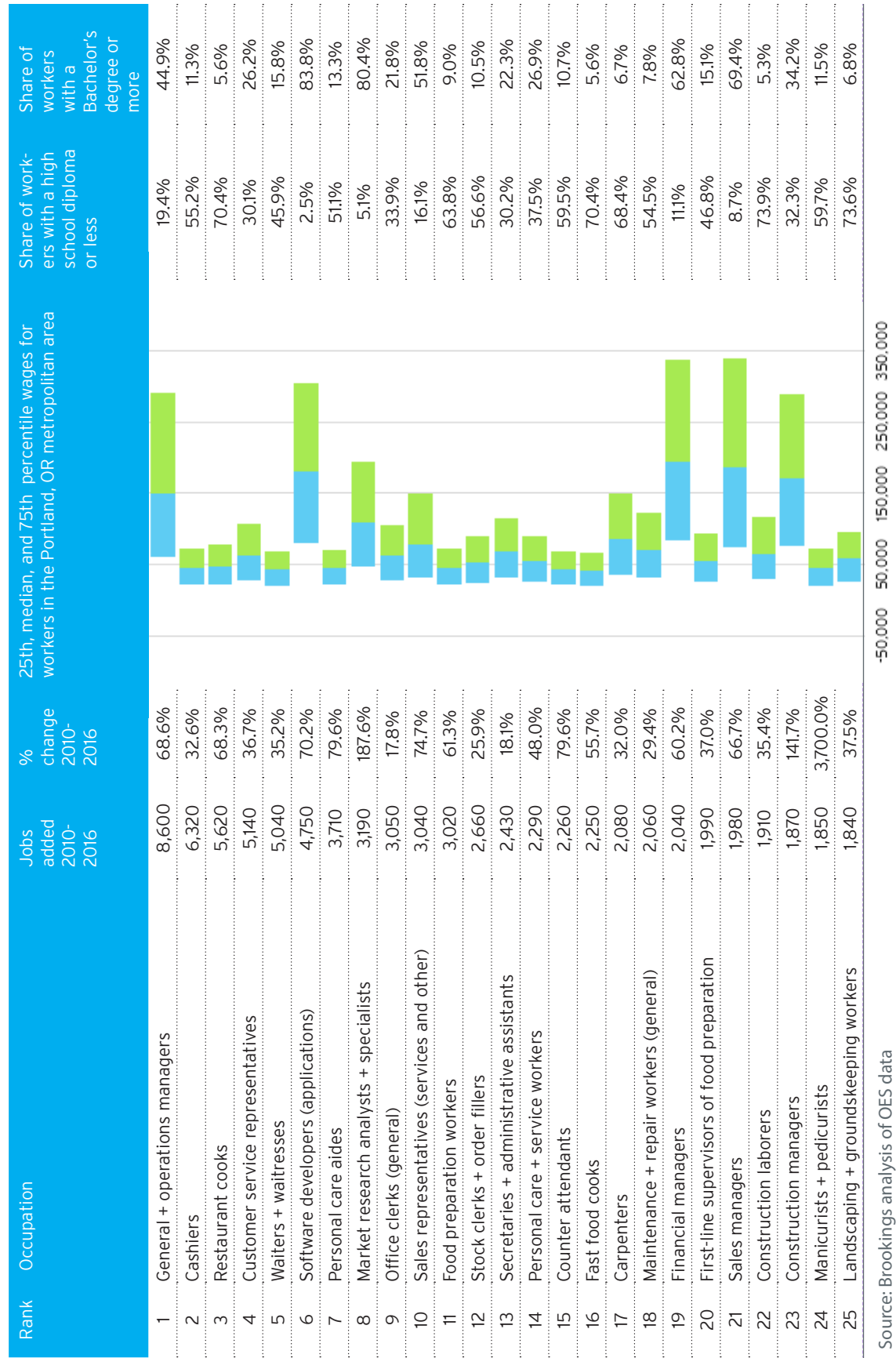
Job growth by metropolitan area, 2000 to 2015



Source: Brookings analysis of Moody's Analytics data

TABLE 2

Fastest growing occupations in the Portland metropolitan area, 2010-2016



and local service industries.³³ The growing output in food service mentioned earlier clearly corresponds with similar growth trends in related occupations such as cooks and waitresses, which have extremely low barriers to entry and—for those making above median wages—may reach incomes above \$50,000 per year. Software developers continue to find work in Portland, which pays well but tends to require at least a bachelor's degree. Carpenters' median wage is higher than the metropolitan average, and does so with more applied training and skills development.

Generally, Portland's fastest-growing occupations are a microcosm of broad-ranging employment opportunities in the national marketplace. At the top end of the spectrum, 4 of the top 10 occupations have median annual wages below \$50,000. At the other end, 3 of the top 10 occupations have median annual wages above \$100,000. This kind of income polarization is becoming too common—and it is often middle-skill jobs that are not growing

as fast as low- and high-skill occupations.³⁴ For example, while metropolitan job growth was 13 percent between 2010 and 2015, middle skills jobs like education, installation, maintenance, and repair occupations grew at less than half the rate over the same period.



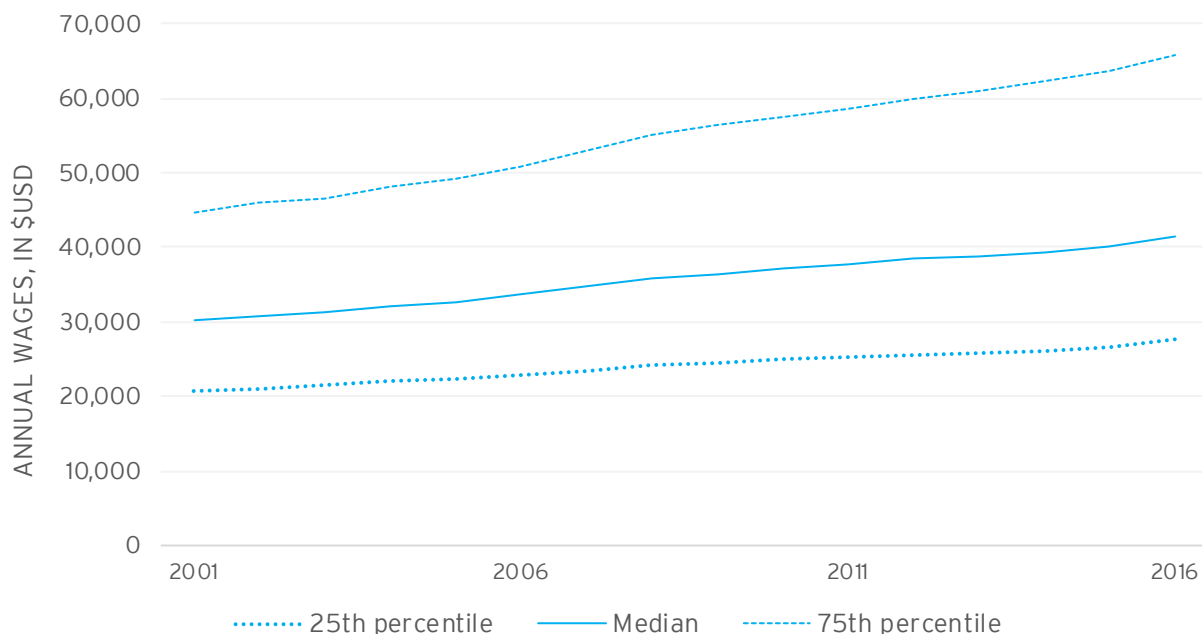
Income polarization

is becoming too common—and it is often middle-skill jobs that are not growing as fast as low- and high-skill occupations.



FIGURE 5

Nominal wage growth by income bands in the Portland metropolitan area, 2001-2016



Source: Brookings analysis of OES data

These changes in occupational employment also relate to broader wage concerns in Portland, which is facing growing levels of inequality. The GINI coefficient—a measure of income inequality—rose from 0.439 in 2006 to 0.4581 in 2015, meaning higher income households earned greater shares of total metropolitan income over those 10 years. This may seem like a minor shift, but even small movements within GINI statistics represent significant shifts of aggregate metropolitan income going to higher wage earners.

A major reason for growing inequality is unequal growth rates among workers at different income bands. While the average Portland income grew 24 percent over the most recent 10-year period, median wages grew by only 19 percent—underscoring that most wage growth is occurring at the top of the income ladder (Figure 5). Over the same time period, the regional consumer price index rose by nearly 20 percent, eating into median wage gains.³⁵ In other words, price inflation in goods and services consumed most

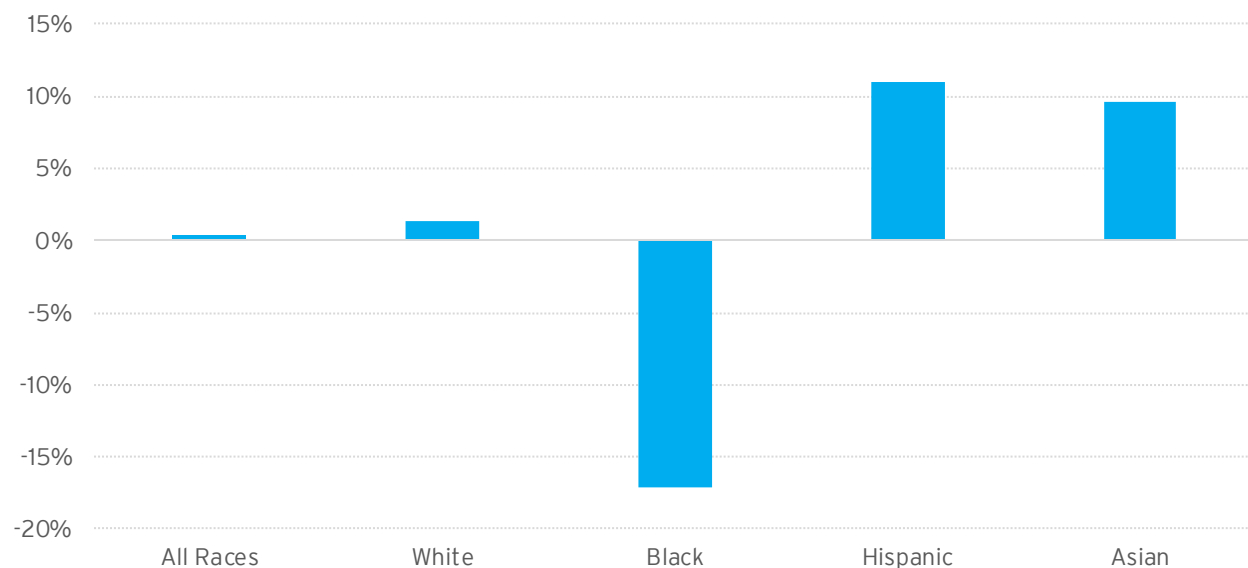
of the higher wages earned by a median-income worker. As a result, inflation-adjusted median wage growth was nearly flat.

Inequality challenges also extended to specific groups based on demographic characteristics.

Inflation-adjusted median wage growth deviated widely by race. Hispanics and Asians experienced relatively high wage growth between 2000 and 2015, but black residents experienced median wage drops of 17 percent (Figure 6).³⁶ Employment rates also split between racial groups, albeit smaller differences. The metropolitan area saw a net decrease in the total employment rate (-1.3 percent) from 2006 to 2015, driven primarily by a 2.5 percent drop among whites, who are easily the largest racial group. Blacks also saw their employment rates drop by 3.1 percent. Conversely, Asian and Hispanic employment rates jumped significantly, by 10.4 percent and 6.7 percent, respectively.

FIGURE 6

Inflation-Adjusted median wage growth by race in the Portland metropolitan area, 2000-2015



Source: Brookings analysis of American Community Survey (ACS) data

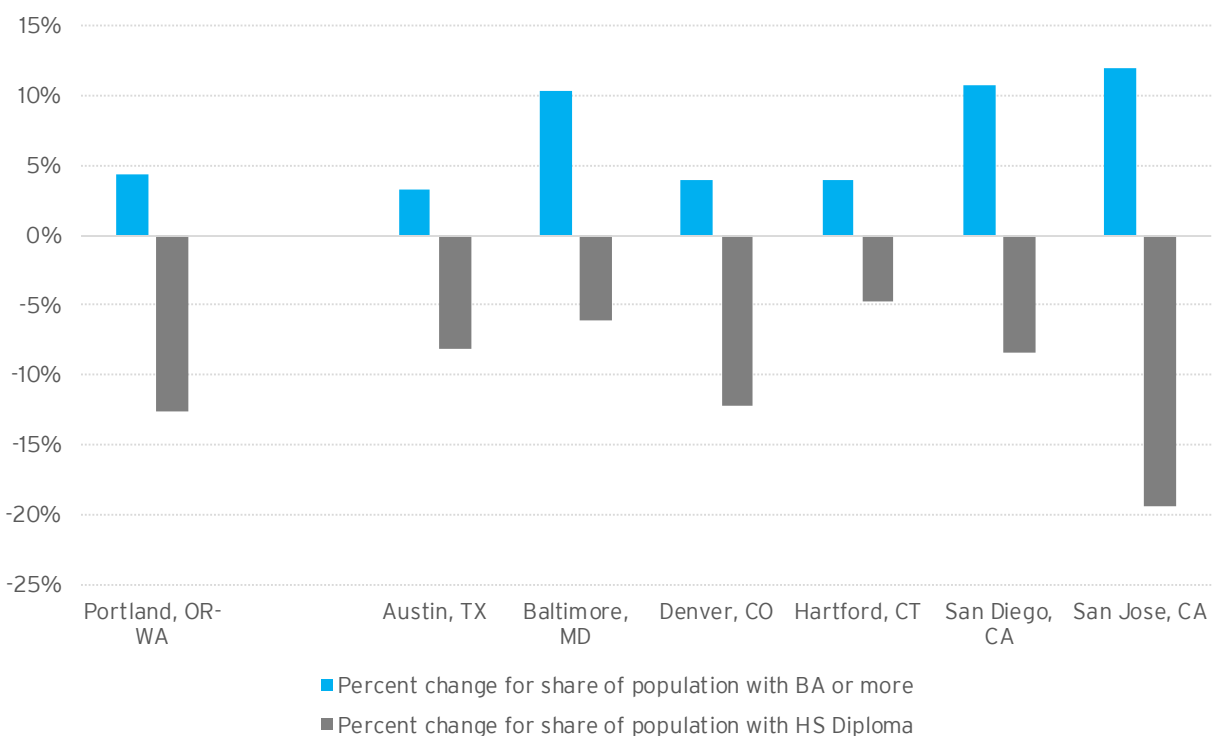
These indicators expose a significant economic rift. Not only did more Asians and Hispanics find jobs within the metropolitan labor market over the 15-year period, they also filled higher-earning jobs. In contrast, not only did fewer adult blacks work over the period, the ones actively working tended to fill lower-paying jobs. The patterns did break a bit over the most recent five years, with the employment rate growing by 7 percent, but the median wage declines persisted. This is a dangerous mix within the black community and is only amplified by other related risk indicators found via other local research, such as higher rates of food insecurity, lower reading rates, and higher blood pressure.³⁷ Addressing the gap through sustained and collaborative regional action—including Metro’s own research and convenings around construction trades—is vital to positively

impact the region’s black households and reduce barriers for other disadvantaged groups.³⁸

Income and employment challenges also deviated based on education levels. All across the country, employment rates and incomes are consistently higher as adults attain more formal education.³⁹ Yet in Portland—as well as its peer metropolitan areas—the bigger challenge is the growing gaps between groups. Changes in median incomes were especially pronounced between 2000 and 2015, with bachelor’s degree holders experiencing wage growth of 4 percent while those with a high school diploma saw median wages fall by 13 percent (Figure 7). Employment rates saw a similar split, albeit at smaller levels. Individuals with no more than some college experience—including those with and without high school diplomas—saw their

FIGURE 7

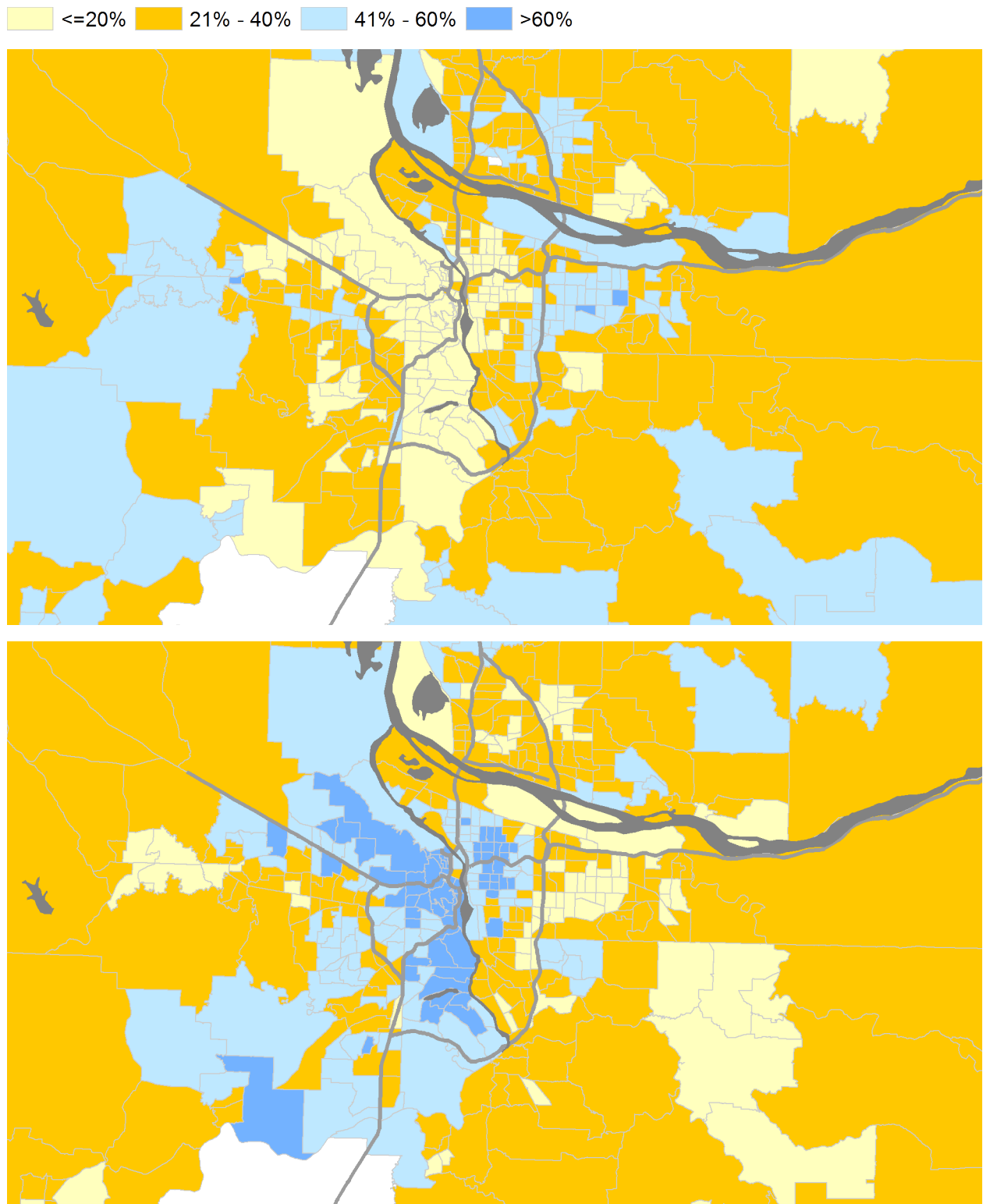
Percentage change in inflation-adjusted median earnings by educational attainment, by metropolitan area, 2000-2015



Source: Brookings analysis of American Community Survey (ACS) data

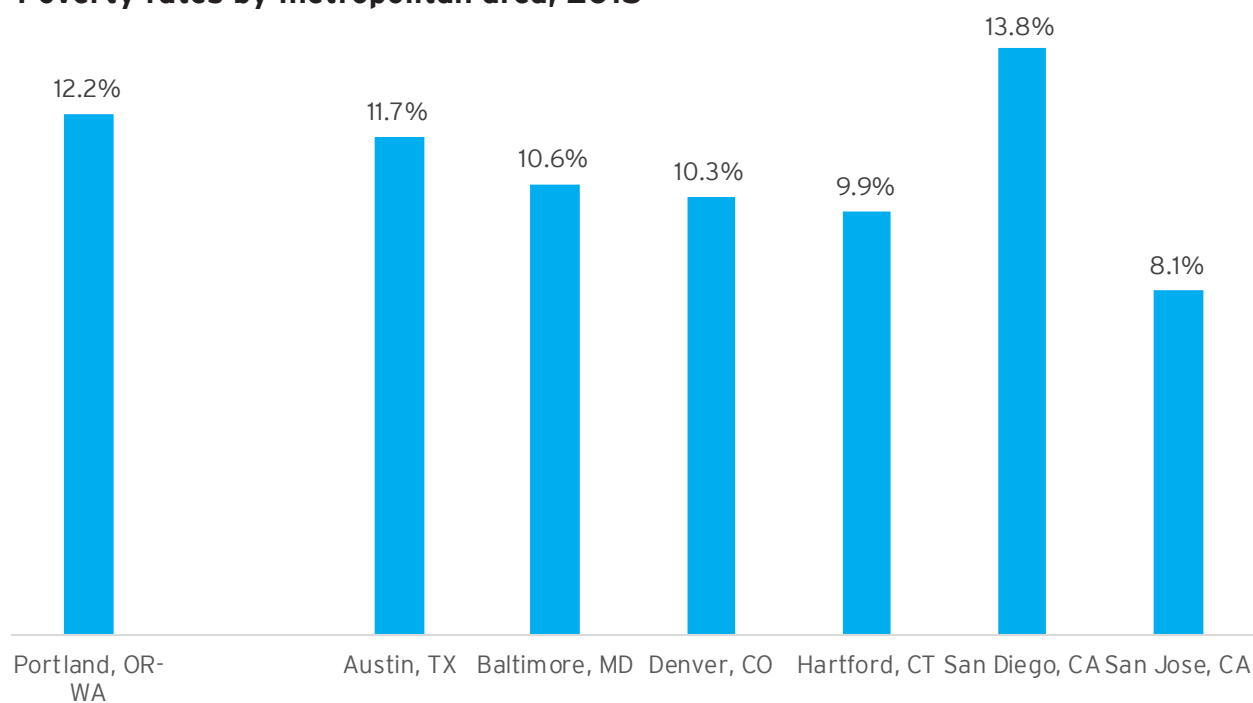
FIGURE 8

Percent population with a high school degree or less (top), and a Bachelor's degree or higher (bottom), by census tract, 2011-2015



Source: Brookings analysis of American Community Survey (ACS) data

FIGURE 9

Poverty rates by metropolitan area, 2015

Source: Brookings analysis of 2015 1-year American Community Survey (ACS) data

employment rates drop by at least 5 percent. Individuals with at least a bachelor's degree saw their employment hold steady.

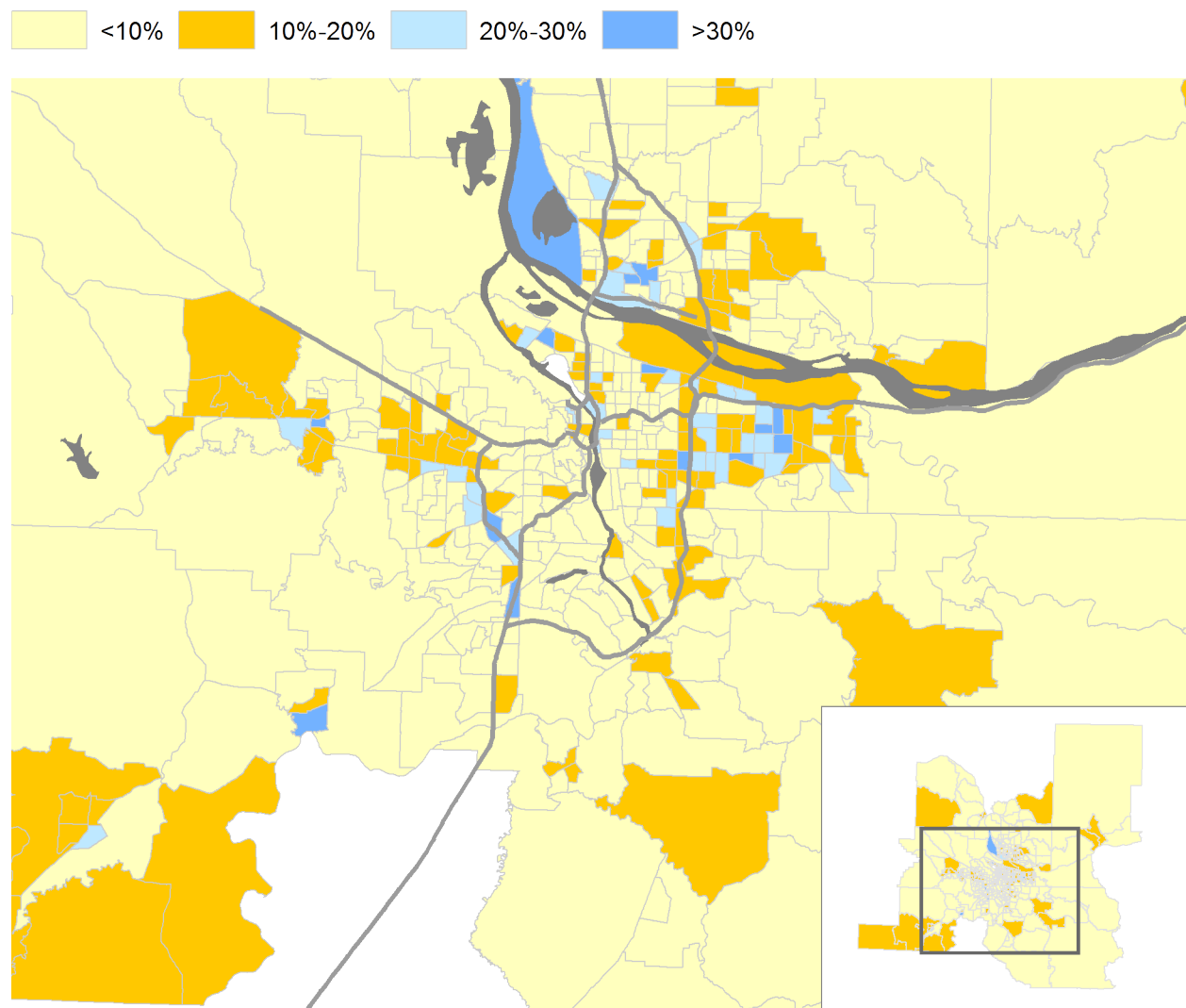
The split in economic outcomes by educational attainment do not just reveal themselves at the metropolitan scale—they also lead to different neighborhood economic conditions. Bachelor's degree holders tend to concentrate in the urban core and the inner-ring western suburbs (Figure 8). By contrast, individuals with high school diplomas or less holders tend to concentrate in different locations like the far east side of Portland city. Comparing every neighborhood's educational attainment levels to median incomes finds a relatively strong correlation.⁴⁰ For many of those neighborhoods with relatively low educational attainment, it is especially critical that residents can feel physically connected to local job opportunities that match their skills and offer pathways to durable economic opportunity.

Partially because of stalled income growth and employment rates, Portland faces persistent poverty. While the metropolitan poverty rate steadily fell after the Great Recession and was always below the national average, it still sits at 12.2 percent in 2015. It was also the second-highest rate among peer metro areas, trailing only San Diego's 13.8 percent (Figure 7).

Poverty is also not equally distributed across the region (Figure 10). Like most large metropolitan areas, there are multiple pockets of concentrated poverty—in this case, Census tracts where over 20 percent of people live below the poverty line—and the number of poor people living in such neighborhoods grew by 27 percent since 2000.⁴¹ Neighborhoods of concentrated poverty exhibit multiple negative features that impact all residents regardless of income, including higher crime rates, lower-performing schools, and weaker job-seeking networks.⁴² These neighborhoods also do not

FIGURE 10

Neighborhood poverty rates by census tract, Portland metropolitan area, 2015



Source: Brookings analysis of 2011-2015 American Community Survey data

necessarily follow a geographic or jurisdictional pattern. Concentrated poverty is a truly regional challenge.

Place

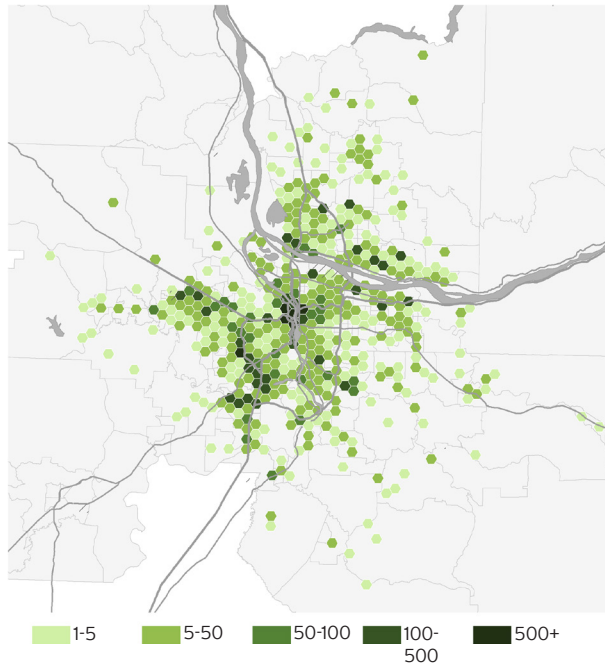
The evaluation of economic conditions for Business and People are complemented by a look at how the Portland economy spatially functions. Situating where businesses locate,

where people live, and how those two intersect—especially around accessibility—can express how past built environment policies and investments impact current behavior. The results of this find a metropolitan area with mixed job concentrations and growing housing affordability concerns, both of which impact how well each mode of transportation can help residents physically access opportunity.

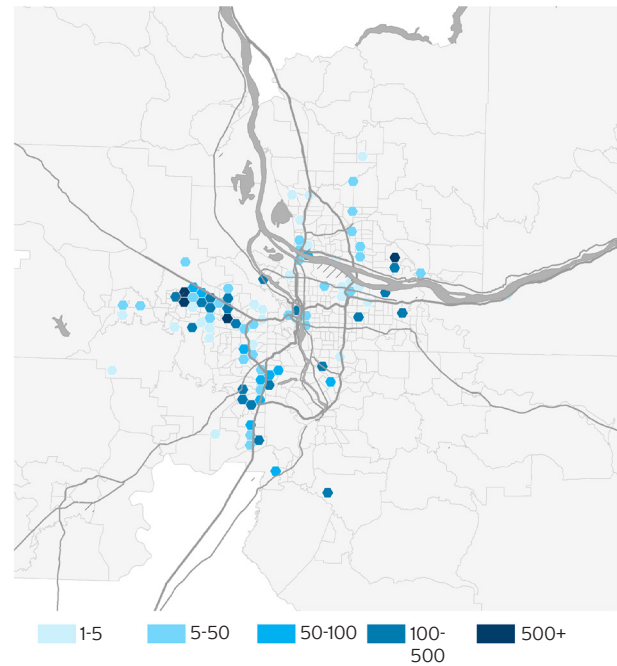
FIGURE 11

Six focus clusters and other major industries, employment by area, METRO counties, 2015

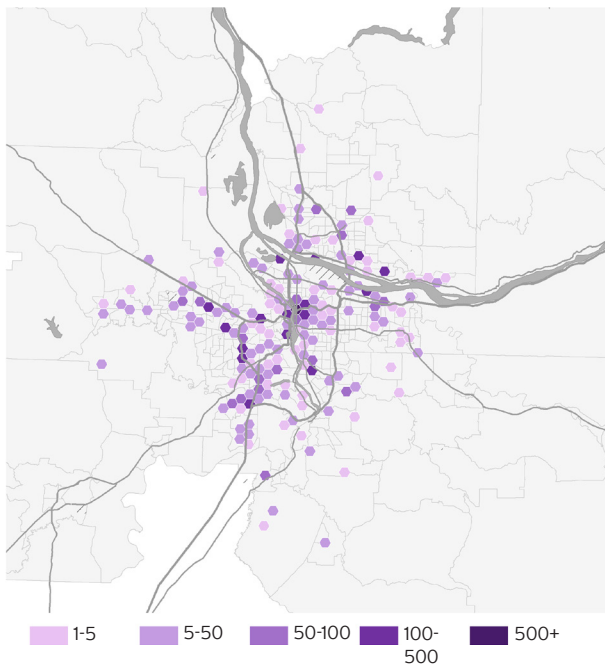
Clean Tech + Green Cities



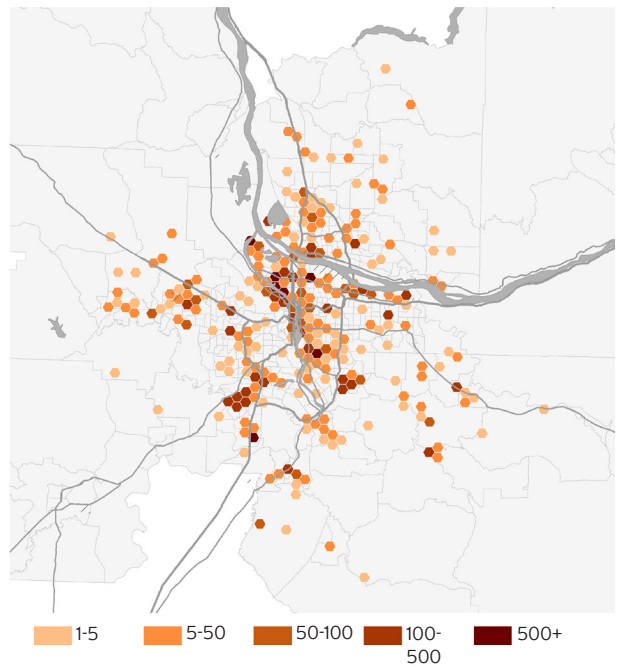
Computer + Electronics



Health Science + Technology



Metals + Machinery

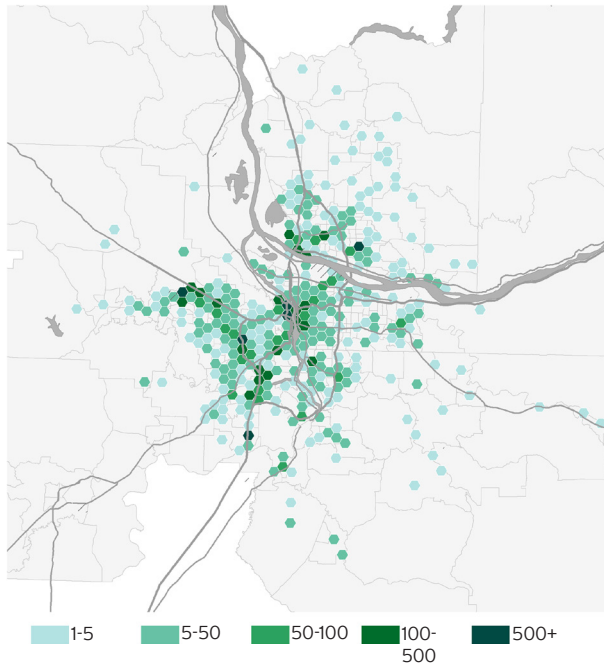


Source: Brookings analysis of InfoUSA data

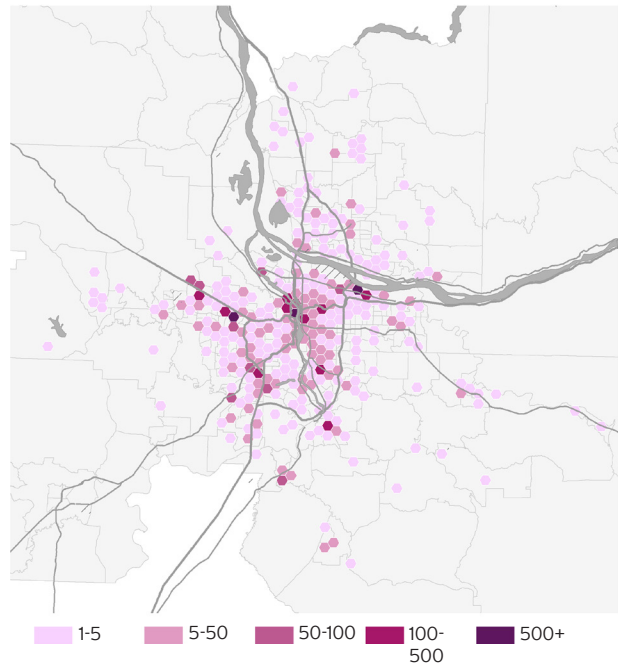
FIGURE 11 CONT.

Six focus clusters and other major industries, employment by area, METRO counties, 2015

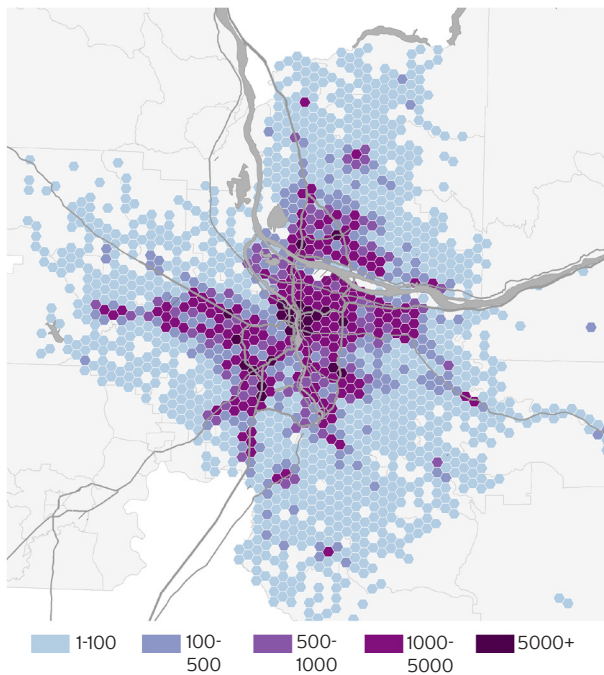
Software + Media



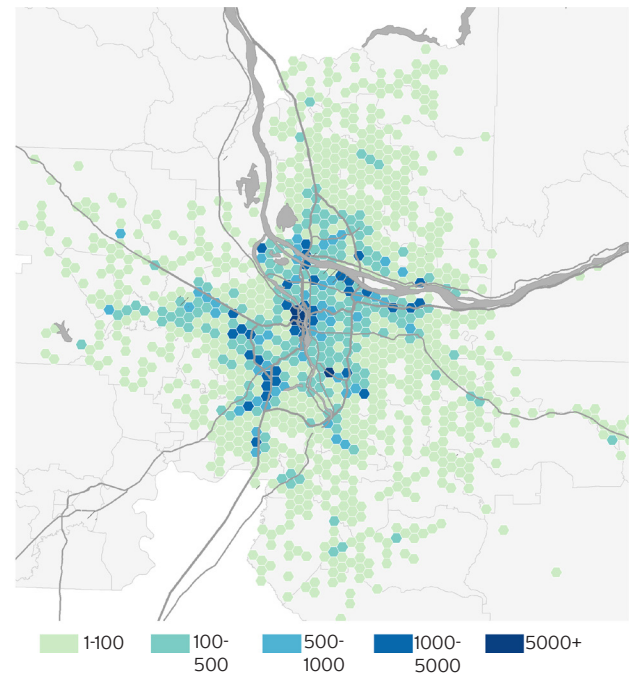
Sporting Equipment + Apparel + Design



Local Services



Tradable Services + Tradable Goods



Source: Brookings analysis of InfoUSA data

There are clear employment agglomerations among Portland's tradable industries, as evidenced by the six focus clusters (Figure 11). These include the large Computer, Software, and Sporting Apparel establishments on metropolitan area's west side. There is another shared geographic hub around downtown Portland for Clean Technology plus more Software and Sporting Apparel employment. Establishments in the Metals cluster orient themselves more towards North Portland, while Health Sciences concentrate in multiple centers across the metropolitan area.

While these clusters tend to concentrate in specific commercial and industrial hubs, assessing the metro area's local service jobs shows other employment tends to be fairly scattered.

For example, roughly three-quarters of all metropolitan jobs are located at least three miles from downtown Portland, including roughly 30 percent that are more than 10 miles from downtown.⁴³ While the region's job sprawl is clear, it is holding steady at current levels. As such, the amount of jobs the average metropolitan resident can reach has not changed much since 2000, although central city residents are certainly within reach of more jobs than their suburban peers.⁴⁴ Many suburban jobs also cluster: 40 percent of jobs more than three miles from downtown are in relatively dense ZIP codes with at least 1,330 jobs.⁴⁵ These kinds of suburban employment hubs can best support corridor-driven development plans.⁴⁶

Portland's population and job growth has spurred significant housing construction, but not necessarily enough to maintain affordability for all. Across 2014 to 2016, the Portland metropolitan area annually permitted over 13,000 new housing units on average (Figure 12). That trailed only Austin and Denver among peers, and surpassed other Pacific tech hubs in San Jose and San Diego. Notably, half of those total units were in buildings with at least five units, proving that Portland developers and regulators are willing to

build densely. However, it still means single-unit buildings represent about half of all permits.

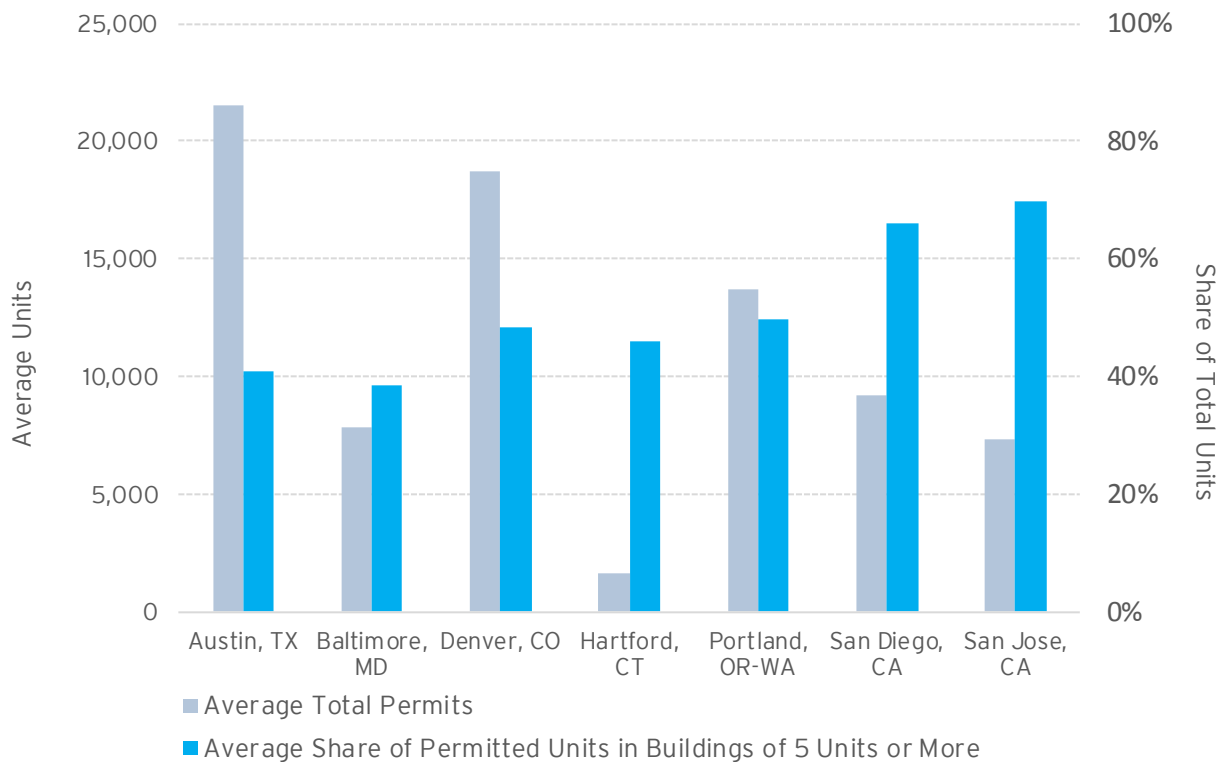
As expected, the location of new housing units—and the average size of the related building—varied based on local geography. Only the central parts of Portland city and some isolated western suburbs were home to both many new units and a disposition toward multiunit buildings. The more typical growth pattern in most growing suburbs was a near exclusive delivery of single-family homes. Yet there are also large stretches of inner-ring suburbs where little new construction is occurring. If the region wants to stretch multiunit construction to other neighborhoods, new transportation infrastructure and related housing policies could create more attractive investment opportunities in some of these lower-density suburbs.

Even with this level of construction, rising home values are creating a strain on residents' budgets. According to Zillow, the median valuation for all home types was \$355,000 in 2016, up from a trough of \$213,000 in early 2012. That 67 percent increase in home values vastly surpassed average income gains of 11 percent over the same four years. Certainly, there is local variability: while Tigard, Lake Oswego, and Portland (city) all exceed the metropolitan valuation average, Aloha, Vancouver, and Gresham are below it. Yet as the region continues more corridor-based development—which will likely lead to higher values in many lower-valued neighborhoods—maintaining affordability for all households could grow more difficult.

Regional maps help visualize these housing affordability challenges. Given the ideal of spending less than 30 percent of income on gross housing, there are pockets that lack affordability in municipalities across the region (Figure 13).⁴⁷ Challenges are especially clear in swaths of Portland city, some Clark County suburbs, and western Oregon suburbs where over 60 percent of people can't meet this basic affordability

FIGURE 12

New housing construction permits by metropolitan area, 2014-2016 averages



Source: Brookings analysis of Census data

threshold. Even looking at households with mortgages, in multiple neighborhoods over half of residents still don't meet the 30 percent income threshold. While fast-rising housing prices can limit affordability, stalled incomes can also create the same pressures on housing affordability.

Transportation networks are economic glue for any place, both for local labor pools to get to work and for businesses to get goods to and from markets. Portland's mix of intra- and inter-metropolitan transportation both enable the metropolitan area to grow and shape where that growth will occur.

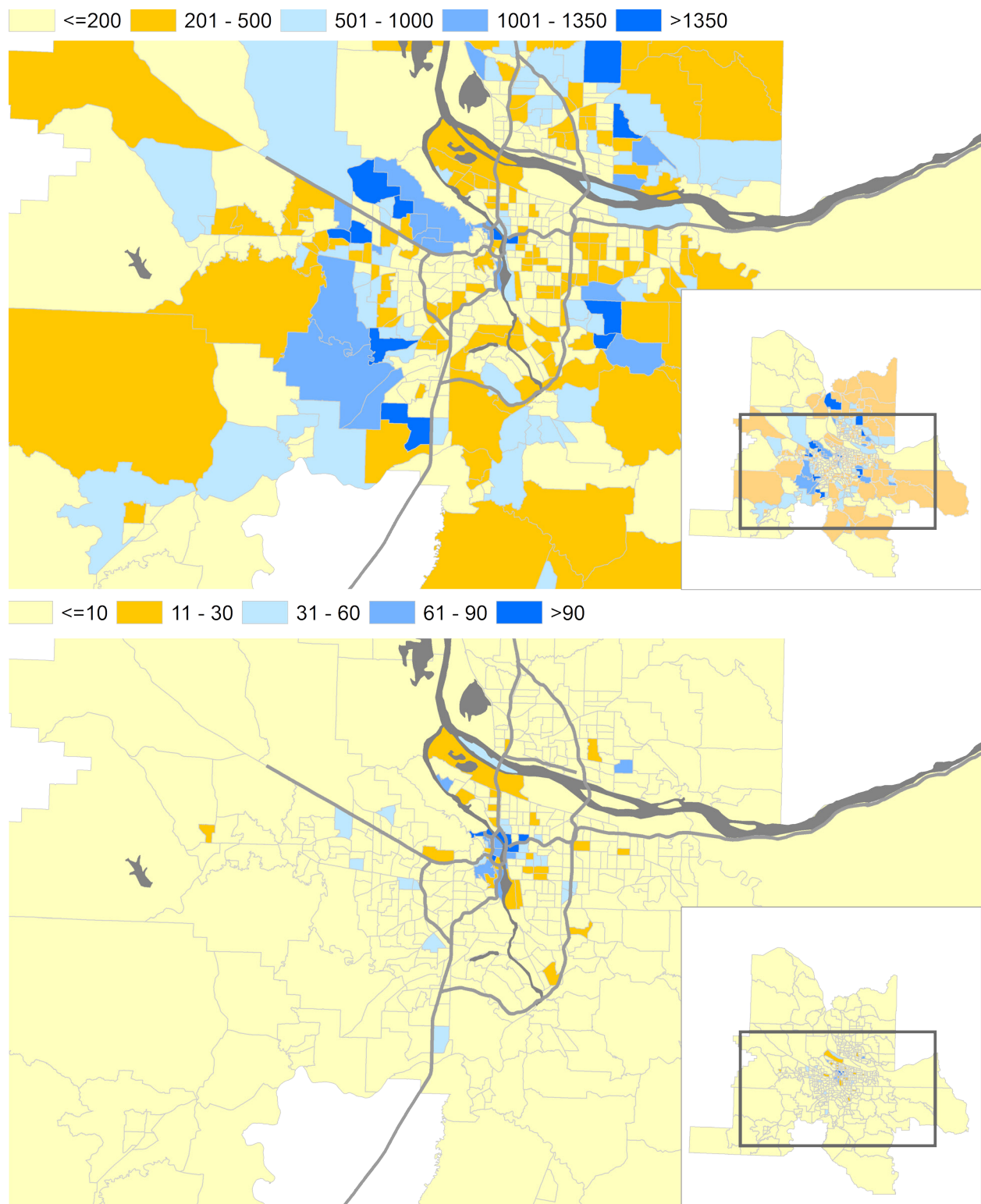
Portland benefits from a multi-decade strategy to offer local households travel choices. That effort included well-over 1,000 miles of on-street bike routes and over 60 miles of light rail and streetcar service, to complement the region's thousands of

miles of federal, state, county, and local roadways. As such, Portland's regional workers now commute via transit, bicycle, and foot more than any of their comparison metropolitan areas (Figure 15). Additionally, Portland only trails San Jose when it comes to carpooling. Non-driving commute rates grow higher when looking strictly at Clackamas, Multnomah, and Washington counties within Metro's jurisdiction, in particular the transit and biking rates in Multnomah County. However, whether one looks at the whole metropolitan area or the three counties, commuting shares show a region where the vast majority drive to work, including 70 percent of all regional commuters who drive alone.

Regional access to jobs, especially by comparing vehicles and transit, illuminates why automobile travel is still the preferred option for most residents.

FIGURE 13

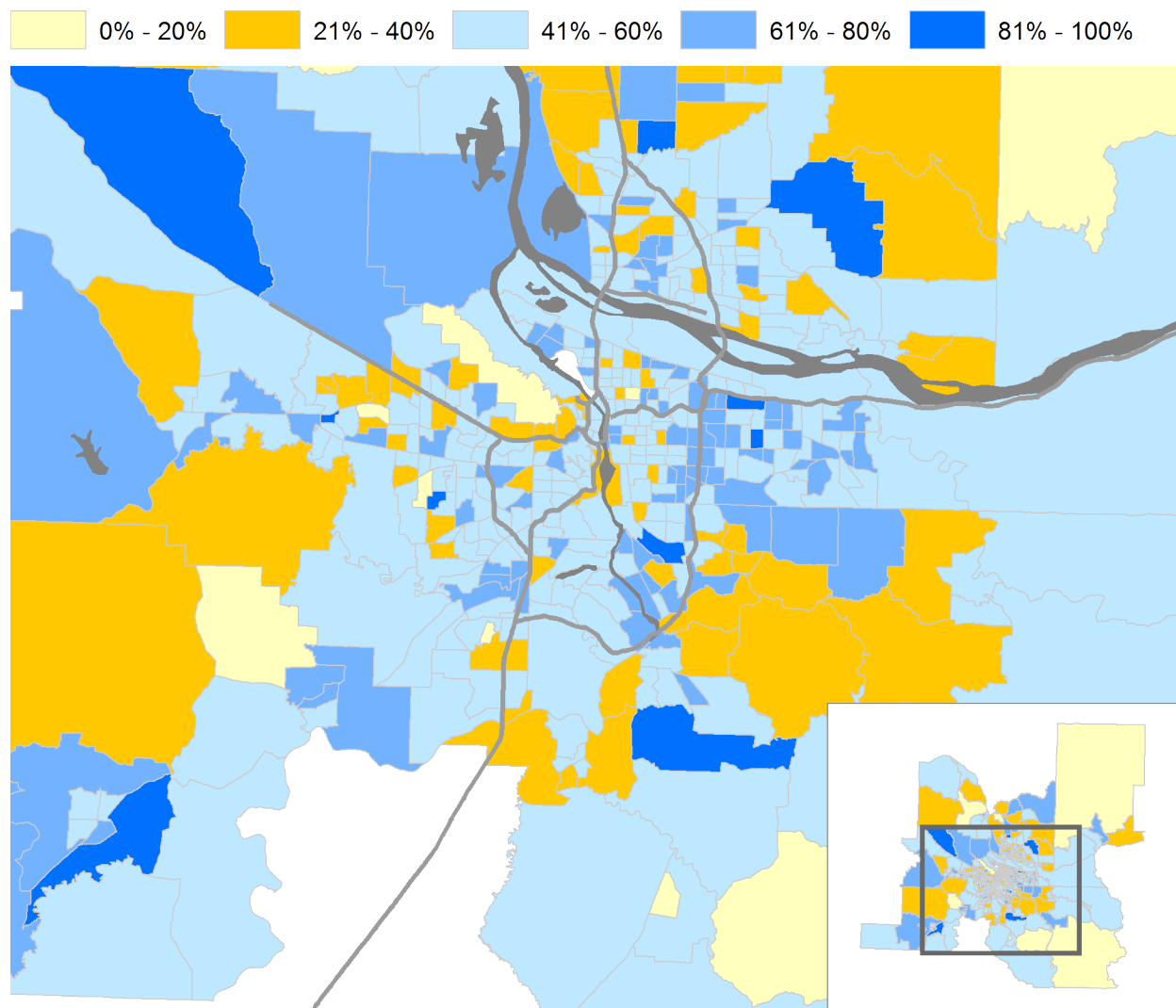
Total number of new approved permits for housing construction (top), and average units per approved permit (bottom), by census tract, 2016



Source: Brookings analysis of Metro data

FIGURE 14a

Share of renters spending over 30 percent of income on housing, by census tract, 2011-2015



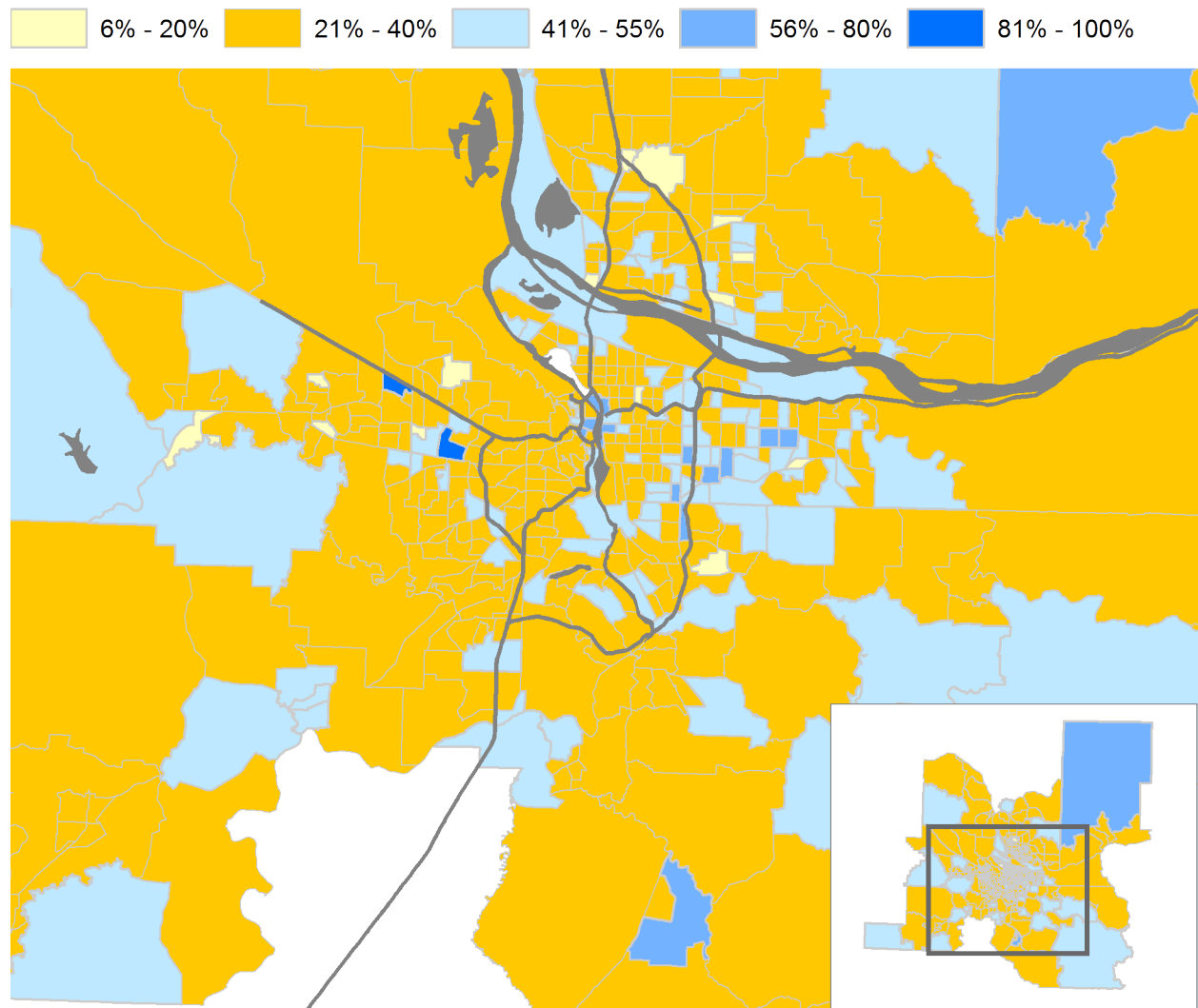
Source: Brookings analysis of 2011-2015 American Community Survey data

Simply put, driving puts people in reach of far more opportunities by time and distance. Figure 13 maps the average number of jobs reachable in 30 minutes—which is slightly longer than the average metropolitan commute—by both vehicle and transit. The differences are stark especially for suburban residents, but also from downtown Portland locations. Cars have a clear advantage, demonstrating an ‘access premium’ of 10 times the employment reach during the morning commute and 20 times during midday travel.

There is a tremendous amount of intercounty commuting within the metropolitan area. Roughly half of all commuters in Washington, Clackamas, and Clark counties leave their home county each day, and Multnomah County scatters roughly 100,000 workers across the region. Traveling across county lines often means long distances and switching transit agency jurisdictions, both of which advantage vehicle travel in terms of time savings.

FIGURE 14b

Share of mortgage-holders spending over 30 percent of income on housing, by census tract, 2011-2015



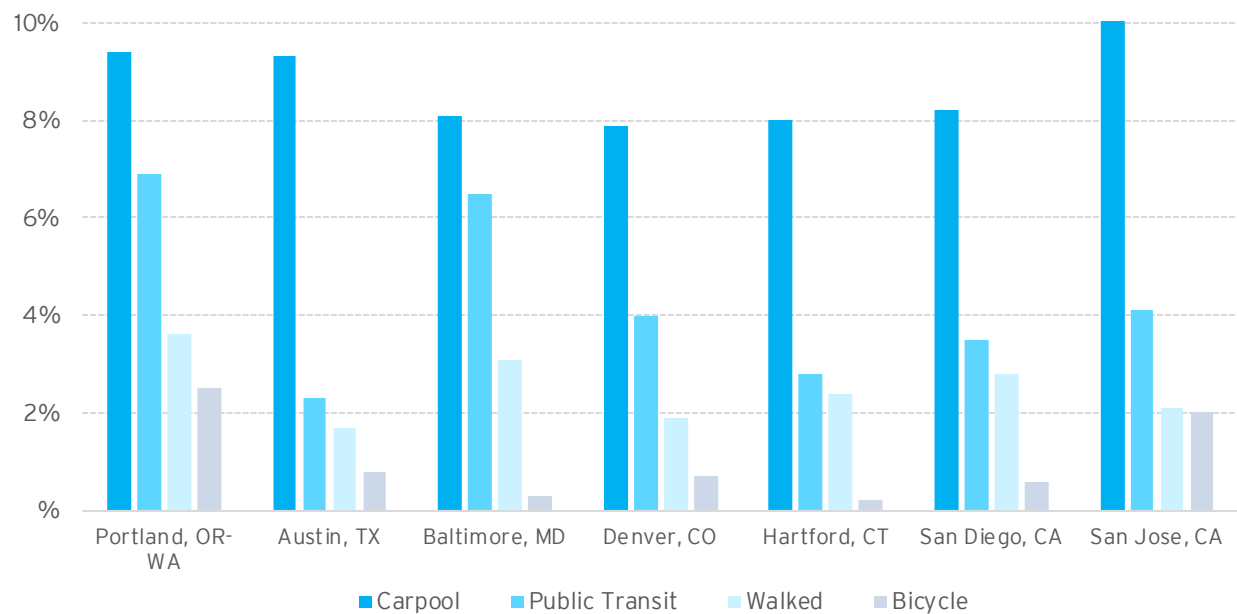
Source: Brookings analysis of 2011-2015 American Community Survey data

These aggregate trends can be visualized via access to two core job centers: the technology hub in Hillsboro and the tradable and local service hub in downtown Portland (Figure 16). In each case, it's clear that transit simply doesn't offer sub-30-minute or even sub-60-minute commute times for anywhere approaching the same land area as private vehicles. Even though fixed route transit serves both job centers, it has trouble competing for travelers in suburban areas.

Critically, commuting habits should not be confused with non-work trips. In this case, regional residents make different choices, as evidenced by the most recent Oregon Household Activity Survey.⁴⁸ Many of the multimodal investments impacted behavior, with non-automobile trips into the Central Business District rising and overall driving levels falling, especially in Portland city. Yet private vehicles still represent over 80 percent of non-work.

FIGURE 15

Modal commuting shares by metropolitan area, 2015



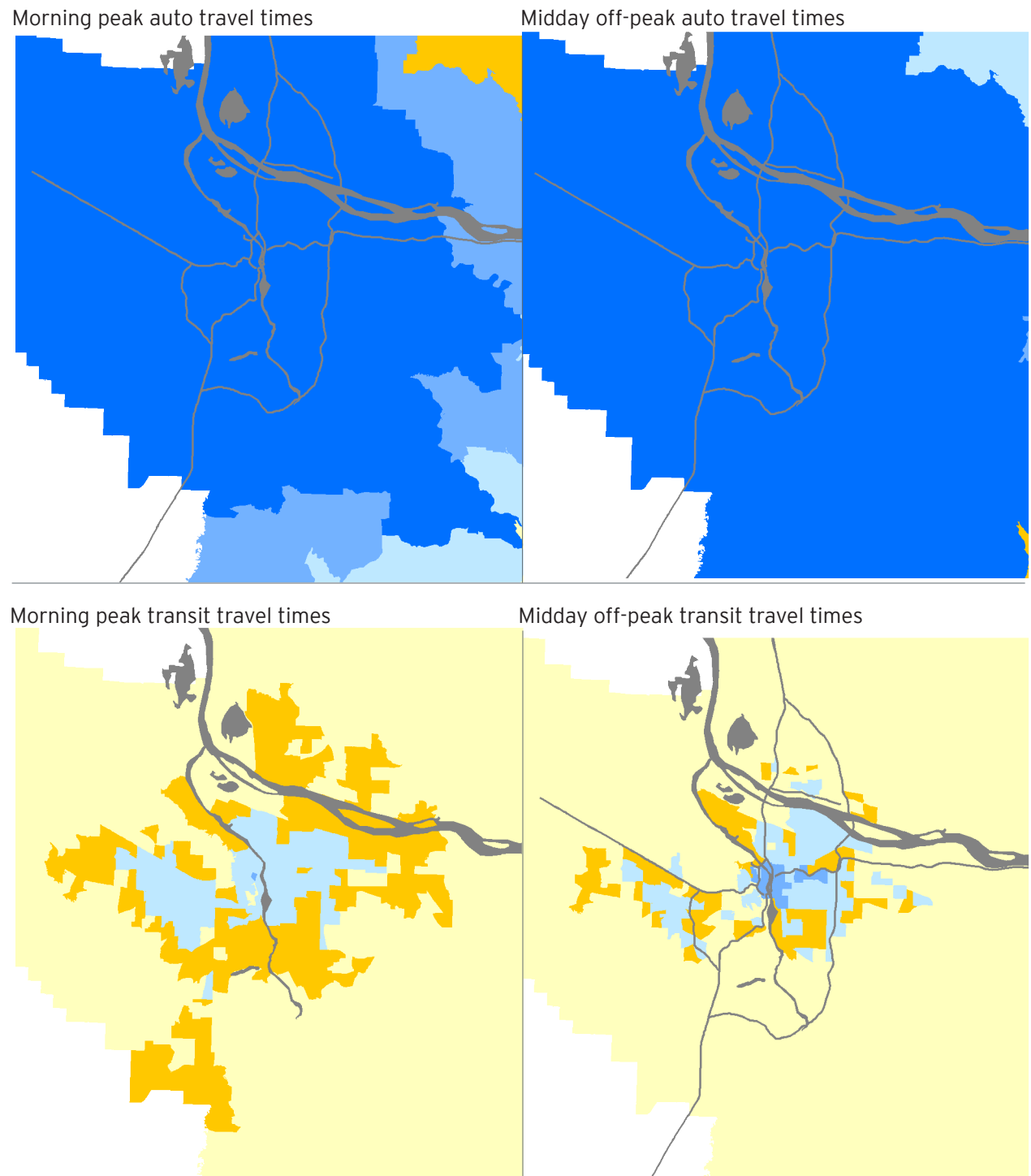
Source: Brookings analysis of 2015 1-Year American Community Survey data

While car travel often has the accessibility advantage relative to public transit's travel times, that shouldn't suggest Portland is a generally inaccessible metropolitan area. Well over 90 percent of Portland households have access to a vehicle, meaning they can enjoy the "access premium" that mode choice presents. Where accessibility is a challenge is for those without a personal vehicle, who may struggle to reach ideal jobs, training centers, grocery stores, and other vital destinations. This is a genuine barrier to inclusive economic development.

FIGURE 16

Number of jobs reachable in 60 minutes by private vehicle and transit during morning peak and midday travel, by census tract, 2015




0% - 20% 21% - 40% 41% - 60% 61% - 80% 81% - 100%



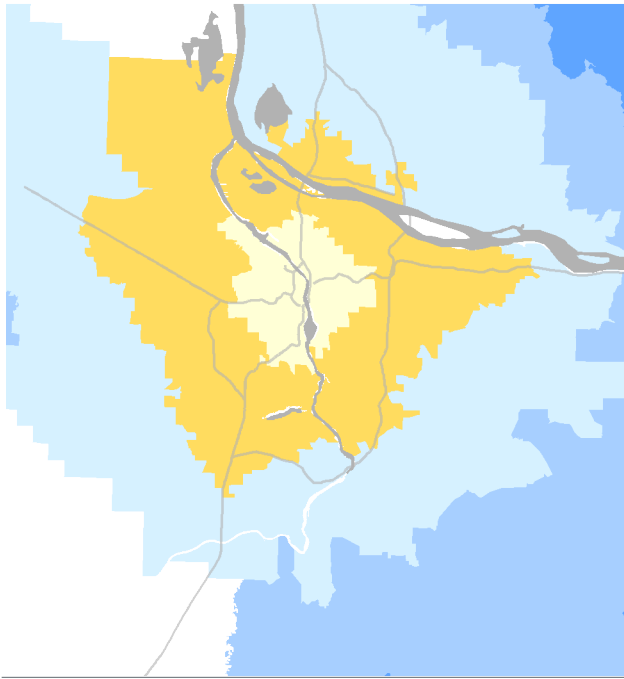
Source: Brookings analysis of METRO data

FIGURE 17

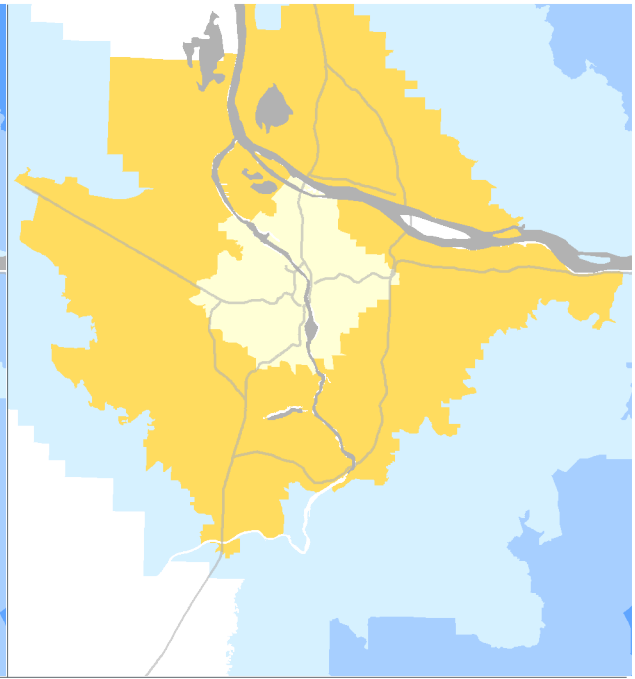
Access times to downtown Portland from Clackamas, Clark, Multnomah and Washington counties, by TAZ, 2015

 ≤15  16 - 30  31 - 45  46 - 60  >60  No transit connection

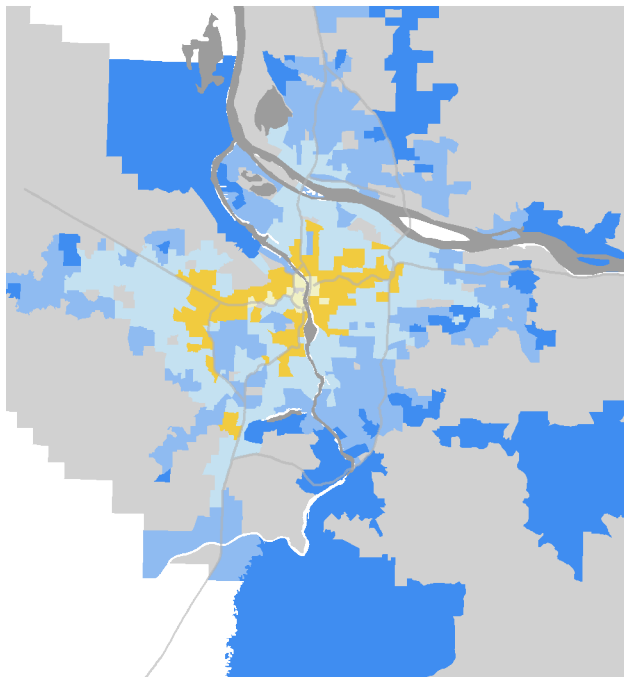
Morning peak auto travel times



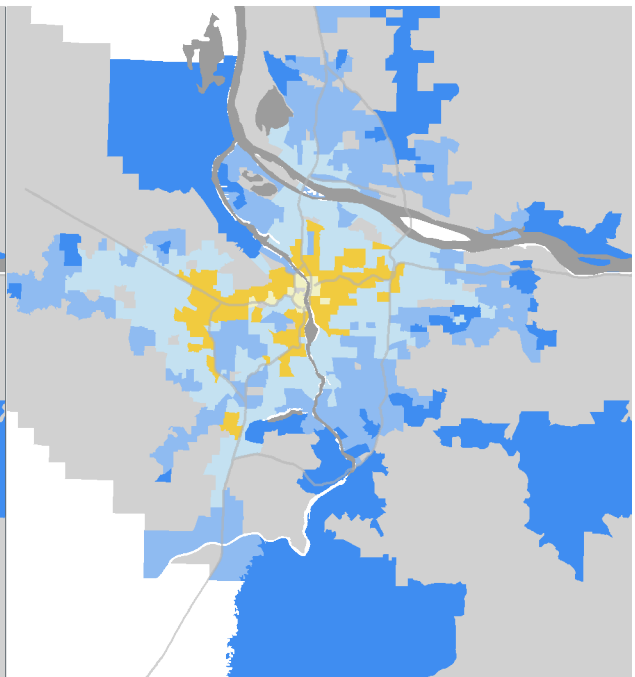
Midday off-peak auto travel times



Morning peak transit travel times



Midday off-peak transit travel times



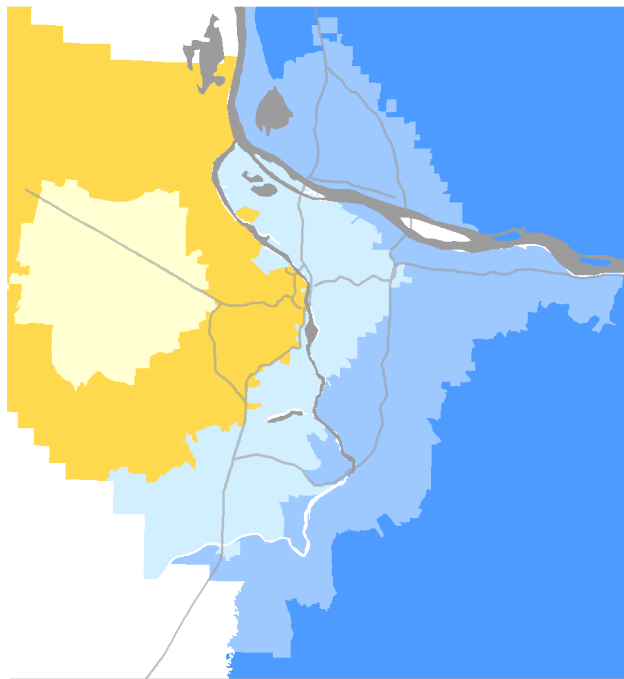
Source: Brookings analysis of METRO data

FIGURE 18

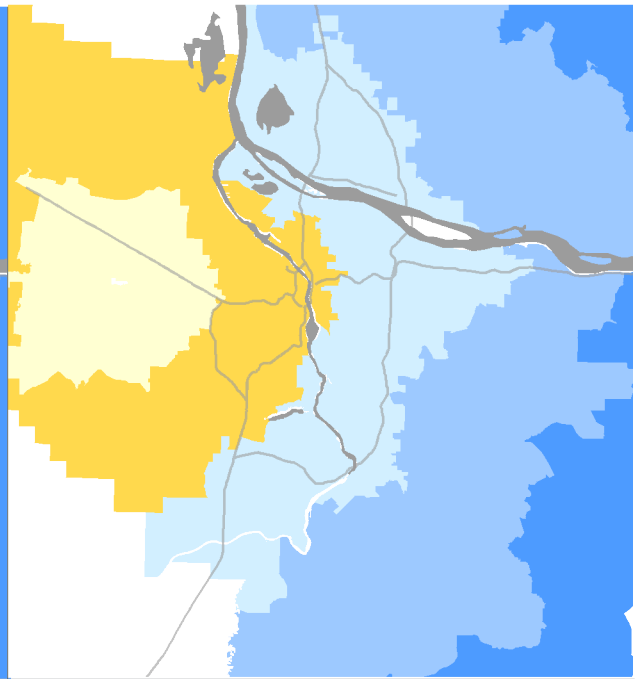
Access times to downtown Hillsboro from Clackamas, Clark, Multnomah and Washington counties, by TAZ, 2015

1 - 15 16 - 30 31 - 45 46 - 60 61 - 149 No transit connection

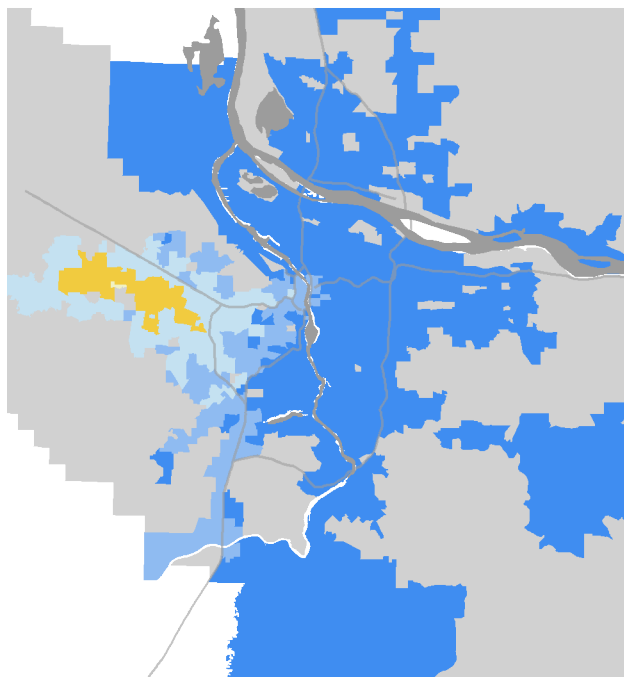
Morning peak auto travel times



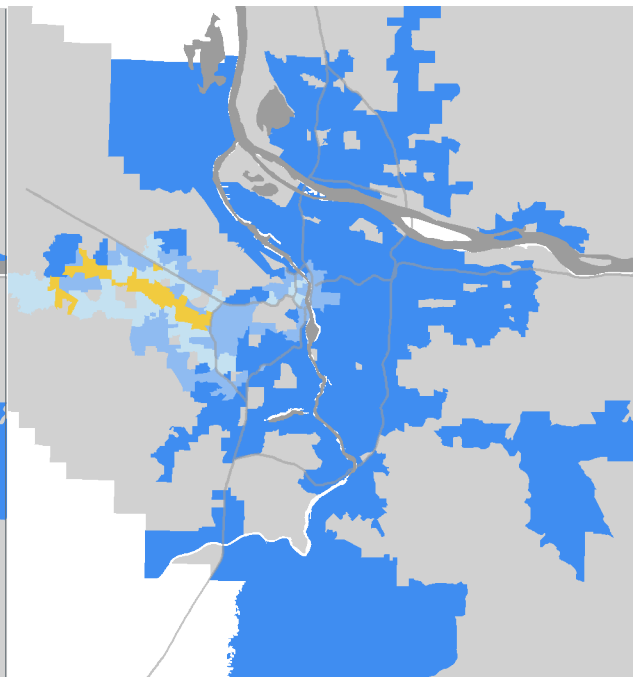
Midday off-peak auto travel times



Morning peak transit travel times



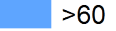
Midday off-peak transit travel times



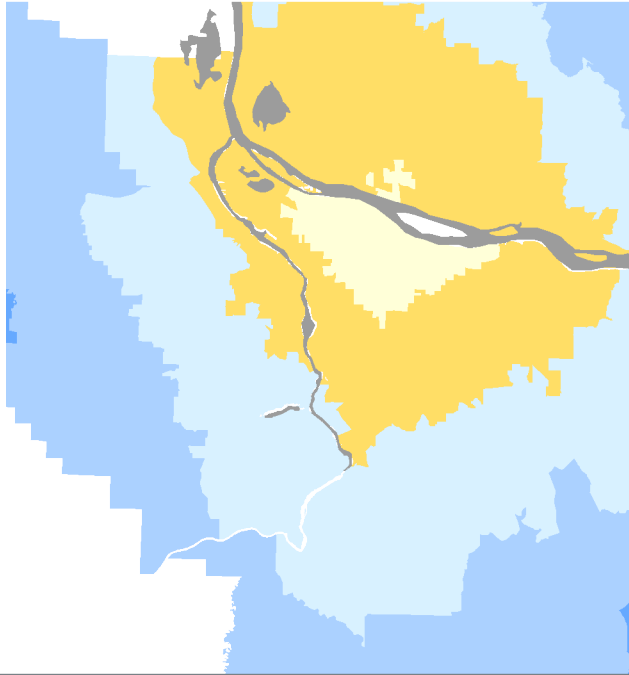
Source: Brookings analysis of METRO data

FIGURE 19

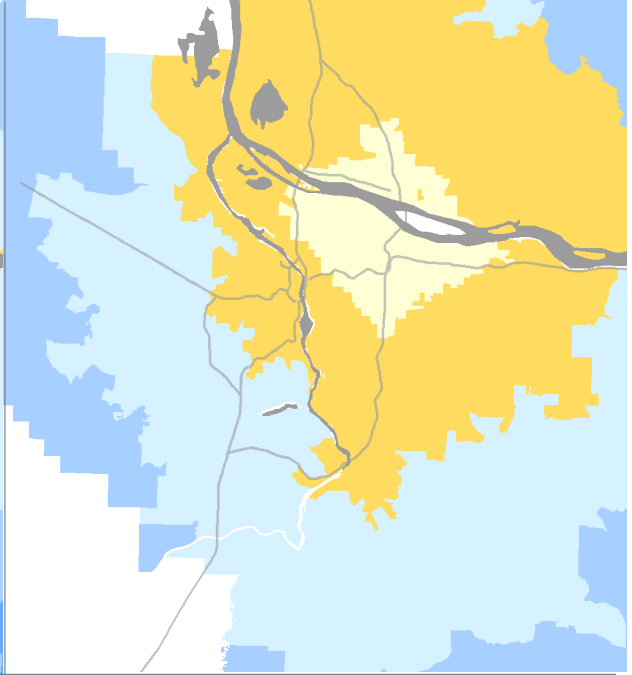
Access times to Portland International Airport from Clackamas, Clark, Multnomah and Washington counties, by TAZ, 2015

 ≤15  16 - 30  31 - 45  46 - 60  >60  No transit connection

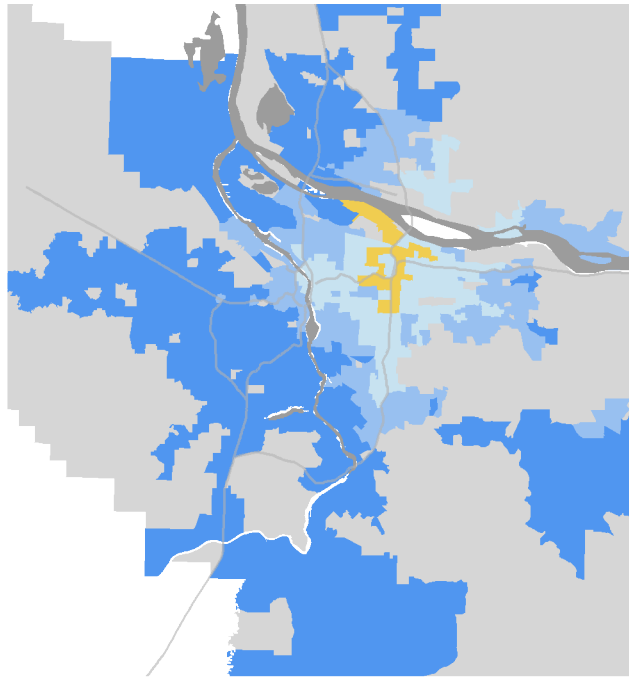
Morning peak auto travel times



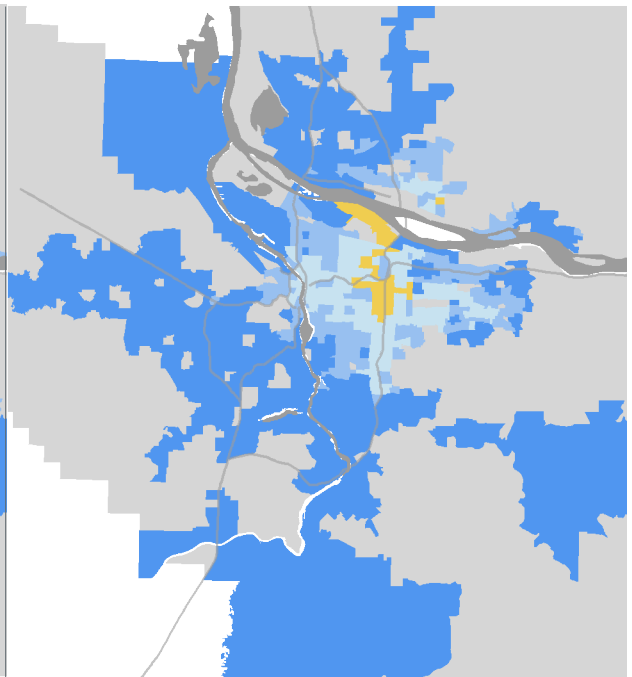
Midday off-peak auto travel times



Morning peak transit travel times



Midday off-peak transit travel times



Source: Brookings analysis of METRO data

04 IMPLICATIONS

Viewed at the regional scale, Portland's metropolitan economy is advancing many economic priorities. Focus tradable clusters are growing faster than national averages, there are increasing job opportunities on net, and people are continually moving to the metropolitan area. The housing market is healthier than most in the country, and more construction permits are issued each year. Local commuters can reach most regional destinations in less than 30 minutes by car, airport on-time performance and connectivity are enviable, and freight networks demonstrate Portland is well-connected to domestic and global markets.

However, when it comes to issues of economic equity, the gains are less remarkable. Lower wage earners continue to experience sluggish income growth, contributing to persistent and

concentrated neighborhood poverty. Middle-skill jobs are not growing as fast as high- and low-skilled alternatives. Rising home prices in many neighborhoods, from the core to distant suburbs, create high cost burdens. Job sprawl is significant, especially in local service industries. Even with strong net tradable industry growth, many specific industries are contracting. And after decades of multimodal investment, non-vehicle users still struggle to access many regional destinations in reasonable amounts of time.

The built environment's impacts on the region's economic conditions is clear, both positively and negatively. Job sprawl, housing affordability, and a lack of multimodal access are all challenges directly related to built environment policy. At the same time, many of the region's positive economic trends—tradable industries' access to markets, a



growing housing supply, strong vehicle access to employment opportunities—would be impossible without thoughtful, long-term planning and investment.

As Portland’s business, civic, and government leaders continue to pursue their shared agenda around regional economic development, better understanding how the built environment promotes or restricts priorities is an ongoing need. This market scan is an introductory attempt to provide a picture of the economy and spatially ground it; more closely tracking economic development from a spatial perspective will require a sustained analytical tool at the local level.

The Economic Value Atlas can meet that need. It can help operationalize more extensive, long-term spatial economic analyses, both to benchmark consensus economic development priorities and to judge the efficacy of future policies and

investments. It can set a consistent methodology for local measurement, and use more nuanced local data to expand the findings presented in this report. A sustained tool will also enable the region to respond to changes over time, whether they be the development of new industrial clusters or the emergence of new consumer tastes. Per the latter, emerging mobility choices like autonomous vehicles and ride-hailing are especially important.

Finally, a permanent tool could serve an invaluable communication role as the region debates its next developmental phase. While it’s clear that Portland’s built environment both promotes and restricts economic development, investment choices—ranging from new transit operations, expanded street maintenance, or new capital construction—will not come cheap. Like any other metropolitan area, Portland can benefit from a new information source to guide those decisions.

ENDNOTES

1 Metro, 2040 Distributed Forecast, 2016.

2 Academic literature clearly establishes how infrastructure and land use policies impact certain economic development components. Regarding trade, see: Paul Krugman, “The New Economic Geography, Now Middle-aged,” *Regional Studies*, Vol. 45.1, 2011, pp. 1-7. Regarding environmental resilience, see: Donald R. Nelson, W. Neil Adger, and Katrina Brown, “Adaptation to Environmental Change: Contributions of a Resilience Framework,” *Annual Review of Environment and Resources*, Vol. 32, 2007, pp. 395-419. Regarding housing affordability, see: Xavier Briggs, editor, *The Geography of Opportunity: Race and Housing Choice in Metropolitan America* (Washington: Brookings Institution Press, 2005).

3 See also: Metro, “Regional Infrastructure Analysis,” 2008. Available at <http://www.oregonmetro.gov/regional-infrastructure-analysis> [accessed August 2017].

4 For more background on historic federal infrastructure investment patterns, see: Adie Tomer, Joseph Kane, and Robert Puentes, “How historic would a \$1 trillion infrastructure program be?” (Washington: Brookings Institution, 2017).

5 For more information on how Metro spends flexible federal grants within the region, see: Metro, “How do we spend \$130 million for transportation? A regional flexible funds primer,” 2015. Available at <http://www.oregonmetro.gov/news/how-do-we-spend-130-million-transportation-regional-flexible-funds-primer> [accessed August 2017].

6 For a discussion of multiple factors potentially impacting rising American infrastructure costs, see:

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11 Sandile Hlatshwayo and Michael Spence, “Demand and Defective Growth Patterns: The Role of the Tradable and Non-tradable Sectors in an Open Economy,” *American Economic Review*, Vol. 104(5), 2014, pp. 272-77.

12 These clusters align almost perfectly with Greater Portland, Inc.’s target industries and are similar to designations by Clackamas County and the Columbia River Economic Development Council. For more information, see: Greater Portland Inc., “Greater Portland 2020: Comprehensive Economic Development Strategy”; Clackamas County cluster information available at <http://www.clackamas.us/business/economiclandscape.html> [accessed August 2017].

2017]; CREDC clusters are part of their strategic initiatives, with more information at <http://www.credc.org/strategic-initiatives/> accessed August 2017].

13 To define these clusters, Brookings staff used 6-digit NAICS designations provided by Metro and Greater Portland, Inc. Brookings further refined the Clean Technology + Green Cities based on national definitions of the clean economy, and refined Sporting Equipment + Apparel + Design based on available regional economic data and national staffing characteristics. A full industry list is available upon request.

14 To streamline design, the paper only uses the first city name from each metropolitan area. For more information on the cluster analysis and the related Knowledge Capitals cluster, see: Jesus Leal Trujillo and Joseph Parilla, "Redefining Global Cities" (Washington: Brookings Institution, 2016).

15 Based on Brookings analysis of Bureau of Economic Analysis data.

16 Note that postsecondary educational establishments are consistently found to be tradable since they attract students and capital from outside the region. For more information on the metropolitan area's traded economy, see: Portland Business Alliance, "2012 Portland Metro's Traded Sector," 2012. Available at https://portlandalliance.com/assets/cta_items/pdf/traded-sector-study-FINAL.pdf [accessed August 2017].

17 Note that the Sporting Equipment, Apparel, and Design cluster is likely to have multiple firms classified under management industries, rather than the related focus industries. This will reduce the performance numbers but are impossible to separate from those broader management industries.

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28 Bureau of Transportation Statistics, Airline On-Time Data.

29 Brookings analysis of Freight Analysis Framework, Version 4.

30 For value of the port to the Oregon statewide economy, see: International Trade and Logistics Initiative, "Steering Committee Report," 2015.

31 Due to assignment concerns within the international freight flows component of the U.S. Department of Transportation's Freight Analysis

Framework, the only adjusted data is courtesy of the Brookings Institution's MetroFreight series. That research only has a vintage of 2010.

32 Portland Business Alliance, "2014 Economic Impacts of Congestion on the Portland-metro and Oregon economy," 2014. Available at https://portlandalliance.com/assets/cta_items/pdf/2014-cost-of-congestion-FINAL.pdf [accessed August 2017].

33 Due to changes in OES classifications between 2009 and 2010, it is challenging to extend occupational analyses across the two decades. Hence, the related table only shows data from 2010 to 2016.

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36 Brookings analysis of Census data.

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downtown

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