PORTLAND MSA
ECONOMIC & POPULATION OUTLOOK
APRIL 2019
ACKNOWLEDGEMENTS

NERC is based at Portland State University in the College of Urban and Public Affairs. The Center focuses on economic research that supports private and public policy decision-making, and relates to issues important to the Pacific Northwest and the Portland Metropolitan Area. NERC serves the public, nonprofit, and private sector community with high quality, unbiased, and credible economic analysis. Dr. Tom Potiowsky is the Senior Advisor of NERC. Dr. Jenny H. Liu is NERC’s Assistant Director and Associate Professor in the Toulan School of Urban Studies and Planning. Peter Hulseman is NERC’s Senior Economist. Research support and report design were provided by Economist Emma Willingham, and additional support was provided by Adam Rovang, Devin Bales, Katelyn Kelly and Hoang The Nguyen.

Special Thanks to our Technical Advisory Committee, whose expertise informed this report: Josh Harwood, Josh Lehner, Jeff Renfro, Amy Vander Vliet, and Michael Paruszkiewicz.
SPECIAL THANKS TO OUR SPONSORS:

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We are coming up to a ten-year anniversary for the US economy. According to recession dating by the National Bureau of Economic Research, the trough of the Great Recession was June 2009. If the US economy keeps rising thru this July, this will be the longest expansion on record, surpassing the 120 months of expansion in the 1990s.

There is not a corresponding dating system of business cycles for states, counties, or cities. The best we might be able to do is to compare employment across the business cycle at the more local level, and doing so, we find that in terms of employment the 1990s expansion was bit less than 120 months. For the state of Oregon, employment expanded for 9 years and 7 months, while both the US and Portland MSA had job growth for 9 years and 9 months. So how does this expansion compare, in regional terms? The latest scorecard is to the right.

If the Portland MSA makes it thru the summer, this will be longest job expansion for the city on record. Well, we don’t know about the time that people migrated into our region by crossing the Bering Strait land bridge during the Pleistocene period, but we can be pretty sure that this coming August will be a record.

As in our last publication, the big question remains: when this expansion will end? Our outlook for the Portland MSA economy is continued growth but a slower pace. Most economists see little chance of recession this year and a bit more heightened risk next year. And just as the US House of Representatives is currently consumed with the exposure of “bad behavior,” we economists are on the lookout for “bad behavior” in the economy. One indication of bad behavior is reported in a Wall Street Journal article from April 9th of this year—apparently “house flipping” has come back in a big way, reaching levels approaching those in the peak housing boom period of 2006. However, the article points out that the “Flippers” have a different financial profile this time, and we should not expect economic havoc if house prices should take a dive down. Let’s hope that the Journal is correct in this assumption. Other forms of near-term bad behavior observed at the national level but with influences at the local level include possible trade wars, immigration policy, and political pressure on the Federal Reserve.

While we may soon celebrate the longest job expansion here in the Portland MSA, not all is rosy in the Rose City and surrounding counties. Issues that put pressure on economic growth include public sector budgets, housing affordability and homelessness, the opioid crisis, and climate change. We take a closer look in this publication at homelessness with the article Homelessness in the Portland MSA: Examining Policies and Cost (pg. 18), looking at potential impacts of various policy tools on drivers of homelessness. Another article, Automation and the Drive for Driverless Trucks (pg. 7), addresses the question of whether driverless trucks will disrupt employment in the transportation services sector. It can be difficult to assess the impacts of technological change on overall employment, and the article looks at the relative exposure of employment to automation in the counties that comprise the Portland MSA—will we see this type of change increase or decrease the number of jobs, given the current economic profile of these areas?

As always, we welcome your comments on the April 2019 forecast release as we strive for continual improvement.

Best Regards,

[Signature]

Now a single month away from an even decade, the U.S. expansion is on track to surpass the Great Moderation of the nineties and become the longest in recorded history. Similarly, Oregon has seen continuous job growth since June of 2011. However, simply because the expansion has lasted for a long time does not mean it has been strong.

On January 1, 2018, a policy targeted to boost the national economy—The Tax Cuts and Jobs Act (TCJA)—went into effect. Typically, fiscal stimulus of this magnitude does not occur during expansions. However, with Real GDP growth hovering around a historically meek 2%, little pickup of real wage growth, and an altogether soft recovery, lawmakers decided that more should be expected from the U.S. economy. Now, almost a year and a half later, it is possible to sift through the data and begin to pick out the important outcomes of this dramatic policy change.

One bright spot of the recovery is the growth in employment. Notably, the U.S. hit the lowest unemployment rate in almost fifty years this past April. This is certainly a success for the Federal Reserve, as their dual mandate stipulates maximum employment along with stable prices. However, the persistent lack of inflation combined with sluggish Real GDP growth has led some to question if the Fed is doing enough. This section will discuss Real GDP, the effects of the TCJA, housing, employment, and Federal Reserve policy.

**REAL GDP**

Economic forecasters foresaw one clear outcome of the tax cuts—rising real GDP. Everything else held equal, lowering taxes for corporations and individuals should spur consumption and investment. And indeed, this was an effect: real GDP growth kicked up to 2.9% in 2018, a bit higher than the Congressional Budget Office’s (CBO) pre-TCJA expectation of 2.3% (see Figure 1). However, it also didn’t have quite the effect that the CBO anticipated, as their post-TCJA forecast was for 3.3% growth.¹

Perhaps other factors, such as rising interest rates, dampened the effect of the policy in 2018. It is likely that the brunt of the policy’s effect has yet to be felt. The initial estimate for the first quarter of 2019 could be an indication of this, coming in at a strong 3.2%. This was an altogether solid report, with Personal Consumption Expenditures (PCE) rising at a seasonally adjusted annualized rate (SAAR) of 1.2% and gross private domestic investment rising at a SAAR of 5.1% (contributing 0.92% of the 3.2% Real GDP growth). However, a good chunk of this increase in private domestic investment came from growth in private inventories (0.65% of the 3.2%) which is not a source of long-term, sustainable growth. Changes in net exports also contributed significantly, accounting for almost a third of the quarter’s real GDP growth (1.03% of the 3.2%).

But this is just one report. It is difficult to tell if there will be sustained growth through 2019 and beyond from these initial (unrevised) estimates.
One of the major goals of the policy was to incentivize domestic business investment, and while the data have not shown a massive uptick (see Figure 2) there has been relative stability in the growth of the indicator since the TCJA went into effect.

However, the evidence of economic stimulation does not address the tricky question of tradeoffs. A minor uptick in real GDP growth and slightly more stable private investment is all well and good, but at what cost? The CBO estimated that the TCJA would increase the 11-year projection of the deficit by $1.3 trillion, and raise debt-service costs by $600 billion, for a total of $1.9 trillion (even after taking into account economic feedback).²

What determines if this policy is worth its $1.9 trillion bill is what corporations actually do with their ballooning pocketbooks, a question that we addressed in a special article in our forecast release last April. If corporations significantly increase domestic private investment which, in turn, spurs wage growth and job creation, then it will be well worth the cost. While we have yet to see that spike in investment, that doesn’t mean it won’t happen. However, if corporations survey their investment opportunities and find them lacking, then they may choose to return value to their shareholders through stock buybacks, resulting in increased concentration of wealth and subsequently increased inequality, certainly in the short term. Since the economic literature suggests that wealthier households save more (and consume less), and because the wealthiest 10% of U.S. households own 84% of all stocks, the connection between stock buybacks and more traditional measures of economic growth—such as wages and employment—is tenuous at best.³⁴ Therefore it is not a great sign that since 2018, when the TCJA went into effect, stock buybacks have seen significant growth while investment has not (see Figure 3).

**Housing**

The housing narrative has not changed significantly over the past six months. The same problems acting as weight on residential investment continue to plague the housing supply: restricted land supply, local regulations, material costs, and difficulty in hiring laborers. This is
shown by the plateauing of permits in Figure 4. The growth in construction jobs that was reported in NERC’s October 2018 release has begun to slow, and the TCJA has seemingly had minimal impact on the housing sector.

**Employment and Wages**

With the April unemployment rate falling to 3.6%, the lowest level since December 1969, we may have reached full employment (see Figure 6). Now, full employment does not mean that everyone who wants a job has one, or that workers are in positions that suit their skills and preferences. There are three basic types of unemployment: frictional (people voluntarily changing jobs), structural (mismatch between job opening skills and skills of workers, and discrimination), and cyclical (due to the business cycle). With recession far in the rear window, the cyclical reason is not relevant and we are left with frictional and structural unemployment. An economy can be at full employment and get the unemployment rate down even further, if policy strives to whittle away at the structural causes, but this generally takes time and is slow to implement through job training programs and policies to eliminate discrimination. But as firms find it increasingly difficult to find workers, we suspect that discrimination and job skills become somewhat less of a barrier for employment.

And as jobs become more available, those who were not looking for work might be encouraged to reenter the labor force. Wages are rising now more than 3% per year, and with relatively low inflation, real wages are making greater gains. Some prime-age workers (24-54 years of age) otherwise capable are still sitting on the sidelines: both labor force participation and the proportion of adults working are not quite back to their 2000 peak. Possibly the best we can hope for the job market is a slight boost in labor force participation, but it is hard to say if this will help out those industries in most need of workers. One indication worth watching is the increase in wages that will signal that the labor market is becoming ever tighter.

As the supply of labor is not enough to meet the demands of business, organizations, and government, it will be difficult for the economy to grow faster. The supply of labor will be further compromised by restrictive immigration policies. The labor market is one of the contributing factors to a slower growth outlook for the US economy.

The U.S. and Oregon have continued to add jobs at a decent clip—coming
in at a year-over-year (YoY) rates of 1.9% and 1.7% respectively (see Figure 7). This is notable not only because both rates beat population growth, but also because Oregon has finally dipped below the nation. While at first glance this might seem dire, it likely means that the Oregon expansion has reached a new phase. No longer playing catchup in the recovery, Oregon is now adding jobs at a similar pace to population growth—a sign that there are fewer discouraged workers to draw back into the labor force.

Employment in industries in the US and Oregon pretty much followed each other in 2018: both saw strong employment in Durable Manufacturing, Transportation, Warehousing, and Utilities (TWU), and Construction. Notable for construction is that while growth in the US was at 4.0%, Oregon’s construction jobs surged ahead at a rate of 7.5%. Within durable manufacturing, computer and electronic products were both above 2% growth, with Oregon coming in at a relatively strong 2.9%. Distribution and product clearing centers, especially Amazon in Oregon, pushed TWU to overall sector job growth of 3.3%. Finance, Professional and Business Services, and Leisure and Hospitality all grew above 2% in the US and Oregon. The latter lagged behind in Oregon, at a slower pace of 2.1% compared to 2.7% for the US. Retail is likely struggling with internet sales competition, and grew only 0.3% in the US and 0.5% in Oregon. Information also has its struggles with technology in the printed publishing area, and saw jobs decline by 1.0% in the US and rise only 0.3% in Oregon. Government employment in 2018 was a bit difficult to track given a definitional transfer of health care workers in Oregon from state government to health care services. Regardless, it appears that health care jobs grew at a good pace in 2018 in Oregon (9.2%, albeit inflated by the transfer) and by 2.1% in the US overall.

As we move into the first half of 2019, initial employment numbers indicate that prevalent industries in 2018 have continued their growth, albeit at a slower pace.

**Interest Rates and the Federal Reserve**

One of the curious aspects of the current expansion is the lack of inflation. The current rate barely threatens the Federal Reserve’s target of 2%, and some speculate
that there may even be room to cut interest rates. As ever, this leaves the Fed in a precarious position, pressured politically to cut rates while the economic data suggest holding the line. At the time of writing, the expectation is that rates will hold steady in the upcoming year unless inflation finally rears its head—then increases are likely (see Figure 8).

**THE OUTLOOK**

Even incorporating the TCJA, the outlook for U.S. housing, employment, and output remains moderate. Policy risks remain: if the Fed tightens the money supply too fast or the U.S. continues to engage in trade-wars, the economy will suffer. The Portland MSA generally tracks with the U.S., but its unique combination of size, rate of growth, and industrial composition present different barriers and risks, discussed in *The Portland MSA* (pg. 10).

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A growing concern among workers and economists alike is the automation of segments of the workforce, such as manufacturing, trucking, and trade work. These jobs, widely considered to be high quality due to a generous pay rate and benefit schedule, are at risk of disappearing. Figure 10 shows the long-running divergence between manufacturing employment and output compiled from BLS data. From 1990 to 2018, manufacturing employment fell by 26.9% while manufacturing output increased by 72.3%, suggesting that manufacturing workers now are 2.4 times more productive than they were 28 years ago. Such a drastic change is largely attributed to the rise of computers and the declining cost of automation. As technological progress continues to expand its frontiers, economists wonder whether it will continue to reduce employment and lead to more job losses.

Early literature on the subject noted the increasing automation and falling employment share of production workers, machine operators, and clerical workers starting in 1970s. These middle-skill workers undertake mostly routine tasks, which are more easily codified to be accomplished by machines. The declining cost of automation due to technological innovation then makes machines increasingly more efficient. Consequently, augmented by machines, fewer workers are required to yield even more output than ever before.

More recently, progress in Artificial Intelligence (AI) is enabling autonomous machines to perform increasingly complex tasks. This trend in AI raises concerns that labor displacement by machines is no longer exclusive to the routine tasks of manufacturing, clerical, and administrative work. When assessing the susceptibility to computerization of 702 occupations in the U.S., an Oxford University report asserts that some non-routine tasks are likely to be computerized, including truck driving. In fact, large scale testing of autonomous trucks has occurred since 2014 with some actually operating in select U.S. states, and tech titans and truck producers are investing heavily in improving autonomous vehicles.

To understand the importance of the trucking industry and how substantially AI may transform the transportation labor market, it is important to note that truck driver is the most common occupation in 29 different states in the U.S., including in Oregon. According to American Truck Association, the trucking industry yielded annual revenues of over $700 billion in 2017, and employed roughly 7.7 million workers, including 3.5 million drivers. Automation of even a fraction of these jobs could spell disaster for hundreds of thousands of workers. However, firms have strong financial incentive to pursue automated vehicles. One report estimates that fully automated trucks would reduce operating costs by 45%, saving the industry between $85 and $125 billion.

Closer to home, this raises the question: If widespread automation of the trucking industry takes place, how might this affect the Portland MSA? As of 2018, there are over 34,000 truckers (consisting of heavy, tractor-trailer, light, or delivery drivers) in Oregon according to state Bureau of Labor and Industries.
data. Within the Transportation, Warehousing, and Utilities (TWU) “super-industry,” the number is nearer to 67,500 (including positions that support trucks, such as maintenance and warehousing), which constitutes only 3.5% of total employment in Oregon, despite “trucker” being the most common job title.

Figure 11 displays the location quotients for industries at risk of automation within MSA counties. Location quotients represent the size of the local share of workers in the industry relative to the national share, with a value above 1 indicating a disproportionate local industry size. Compared to the US, the trucking industry in most counties of the Portland MSA bears considerably less risk than average, with only Multnomah and Columbia counties at slightly increased job loss risk due to trucking automation. Comparatively, the Portland MSA is at much greater risk of manufacturing or repair and maintenance automation. The majority of MSA counties have shares of these industries near or above the US average, and Washington and Yamhill counties have twice the national share of manufacturing workers.

Despite the drive for driverless trucks, there are a number of barriers to their market, both legal and practical. Legislators, as well as the public, are concerned whether the technology will assure the trucks’ safety and reliability. Unlike machines in factories, trucks operate in a more open and unpredictable environment, and thus require a great deal of flexibility. And similar to manufacturing work, there are numerous types of truck drivers, from delivery to long-hauls, each with its own set of challenges to implementation. It could be some time before such obstacles are overcome.

Considering the national scale of the industry and the rate of technological change, precautions for potential shifts away from “drivered” trucking
may be in order. However, apart from job displacement, new jobs will likely be created to complement newly developed technologies.\textsuperscript{10} In the 1980s, for example, worries about ATMs putting bank tellers out of work were quelled when their work transitioned to more complex tasks. Most recently, Daimler Trucks, a truck producer based in Portland, announced the hiring hundreds of engineers to develop its self-driving trucks.\textsuperscript{11} In the short term, proposals such as retraining programs or expanding the Earned Income Tax Credit (EITC) might be due more attention. And in the long term, it will be important to identify new skills to make workers more flexible, and incorporate them into education and training program, thus preparing the next generation of workers for further labor market changes. All in all, addressing employment woes by preparing workers for a more automated future is likely an excellent method of easing worries of jobs lost to automation, particularly for the manufacturing and repair and maintenance industries. However, trucking automation should pose less of a threat for the Portland MSA than it does for the nation at large.

\textsuperscript{1} Federal Reserve of St. Louis. All Employees: Total Nonfarm Payrolls, All Employees: Manufacturing. Retrieved from www.fred.org.


Broadway Bridge, Portland
The Portland MSA

The Portland Metropolitan Statistical Area (MSA) will be celebrating ten years of job growth if the trend extends to this November 2019. Year over Year (YoY) job growth thru March 2019 was 1.84%, placing the metro area as the 114th out of 399 of the largest metro areas in the United States. Over the same period a year ago, job growth was 2.01%, and Portland ranked 106th in terms of job growth.1 So, recent job growth has slowed in relative terms, but remains respectable.

The unemployment rate for the MSA was 3.8% in March 2019, and has been between 4.1% and 3.6% since December 2016. This long stretch of historical low unemployment rates within a narrow band suggests that the Portland MSA is at or very near full employment. That doesn’t mean everyone who wants a job has one, but that the business cycle causes of unemployment are gone and we are left with unemployment related to the natural process of workers changing jobs, and the structural problems of a mismatch of skills to job openings and discrimination.

This section will discuss employment, income (along with wages and inflation), and housing dynamics for the most recent period, and the near term outlook for those variables. Additionally, this report includes the latest population outlook using the estimates from our friends at the Population Research Center at Portland State University. We will end with a comparison of the current forecast with the past two forecasts, and a summary of factors on our watch list that could impact our economic outlook.

EMPLOYMENT

When looking at the job growth over the past 4 years, quarterly YoY growth has been on a slowing trend (see Figure 13). We saw low 3% growth in 2015 followed by high 2% growth in 2016, mid to low 2% growth in 2017 and now the last three quarters of 2018 have been below 2%. With the economy running at or near full employment and labor force participation rates straining to add workers, a slowing of job growth is a natural outcome for the economy.

Among industries, recent growth to close out 2018 has seen some strengths and weaknesses. Construction continues to show strong growth with seasonally adjusted annual rates (SAAR) exceeding 5.5% since 2015Q3 except for the second quarter (0.9%) and fourth quarter (4.0%) of 2018. Housing, hotels, roads, and schools have all contributed to fast growth in construction. Two related industries, Transportation, Warehousing, Utilities (TWU) and Wholesale, recorded fast growth during the last two quarters of 2018. Some of this is related to the opening of Amazon distribution centers. After following a weak first half of 2018, Information had job growth of 4.2% and 3.4% SAAR for the third and fourth quarters of 2018. After getting through a relatively weak 2016 and 2017, Manufacturing finished 2018 with 4.2% and 2.8% SAAR for the third and fourth quarters, mainly led by durables.

Countering these stronger job growth industries during the second half of 2018, we had some relatively large employment industries closing the year out with slower growth. Leisure and Hospitality did have 2.1% growth in the fourth quarter of 2018 but a
relatively weak third quarter at 0.6%. Professional and Business Services declined -3.1% in the second quarter and -0.7% in the fourth quarter, with a relatively weak increase of 1.1% in the third quarter. This is quite a slowdown from the 2.0-3.0% range of a few years ago. Retail establishments appear to be feeling the pressure from internet sales, posting 0.6% job growth in the third quarter and a decline of -0.4% in the fourth quarter. While durable manufacturing rebounded in 2018, nondurable manufacturing faltered with declines of -0.2% and -0.5% in the third and fourth quarters. Financial Activities ended the fourth quarter of 2018 with a decline of -2.9%. Both State and Local Governments closed out the fourth quarter with declines of -2.8% and -0.6%, respectively.

We will explore in more detail the reasons behind these recent growth rates and how they play into our employment outlook. One must keep in mind that these numbers are a bit like shifting sand—revisions are always at play and these numbers may not truly settle down until the next major “benchmarking” revisions in February/March of 2020.

We like to group our industrial sectors for employment by short term forecast growth strength: fast, medium, and slow. These are relative measures of how these sectors compare to each other over the next two forecast years—from 2019Q1 to 2020Q4 (see Figures 14a-c).

For our fast job growth industrial sectors, we have Health and Education services; Professional and Business services; Construction; Other Services; and Federal government. Demographics will be a key driver
for health care services as the Metro population ages. Professional and Business Services includes a wide range of activities including legal and accounting services, engineering, computer system design, management of companies, administrative support, and waste management. While this sector slowed in 2018, we believe continued support to manufacturing, the software industry, and even the hotel business will keep this sector at a relatively higher growth rate, but certainly slower than the rates observed from 2010 thru 2016.\textsuperscript{2} Construction can move quickly from high to low job growth. We ratchet this growth down from the fast growth of the second half of 2018 but keep it relatively strong thru 2019. While housing is starting to cool off, there are still sufficient projects occurring in 2019 to keep the numbers up. Combine this with road work and the likely Intel expansion, and 2019 should be another good year for construction. The Other Services sector includes repairs and maintenance along with a host of personal services. While we do not expect the 7.7% SAAR growth of the fourth quarter of 2018 to continue, we do have growth between 2.0% and 1.5% for 2019, enough to push this sector into our fast growth category. Finally, Federal Government makes the fast growth list mainly because of the coming decennial Census. This is temporary, but big enough to move the needle on job growth in the next 2 years.

For our medium job growth industries we have Durable Manufacturing; Local Government; Information; Wholesale; Transportation, Warehousing, and Utilities; Retail; and Financial Activities. In our last October forecast, we had Durable Manufacturing in the slow growth category. This sector turned in a strong job report for 2018. This alone would not necessarily push Durable Manufacturing into the medium job growth group, but the addition of the third phase of D1X on the Intel Ronler Acres campus in Washington County could push up employment by 1,750.\textsuperscript{3} While this only raises the MSA

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**Notable Employment Events:**

- **Ergotron**, an office furniture manufacturer in Tualatin, will close by March, laying off 103 people. (The Oregonian, 11/28/2018)

- San Francisco-based **Genentech**, a biotechnology company, will open an office in **northeast Portland** that will employ more than 300 people. (Portland Business Journal, 10/15/2018)

- **BRIDGE Housing**, a provider of affordable housing, is building the first phase of RiverPlace Parcel 3—a 203-unit, 13-story apartment building in **Portland’s South Waterfront District**. Construction on the second phase—a six-story, 177-unit mixed-use building—will begin once public funding from state and local sources is secured. (Daily Journal of Commerce, 11/29/2018)

- **Daimler Trucks** plans to hire 200 workers to develop self-driving semi trucks. Most of them will work at its North American headquarters in **Portland**. (The Oregonian, 01/07/2019)

- **Supervalu** will close its grocery distribution center in **Milwaukie**, laying off 200 people. (The Oregonian, 02/14/2019)

- **Intel** in **Hillsboro** will build a massive semiconductor factory and a technology building to support the factory. It plans to add about 1,750 workers. (Portland Business Journal, 02/07/2019)

- **NEXT Renewable Fuels**, a renewable diesel fuel producer, plans to build a plant at the Port of Columbia County’s Port Westward Industrial Park near **Clatskanie** that would employ about 200 workers. Construction could begin in 2020 and be operational by 2021. (Columbia County Spotlight, 03/01/2019)
Durable Manufacturing jobs by 1.8%, in combination with likely increases in the supply chain it is enough to lift job to a level appropriate for inclusion in the medium growth group. Given that construction is expected to take place this year, we attribute the jobs numbers to 2020. Over in Clark County, Vigor Industrial landed an Army contract and will open the closed Christensen Yachts facility in Vancouver, adding around 400 jobs (including around 40 transfers from Clackamas).4

Information ended 2018 on a strong note after some closures in 2017. The largest employment segment in this sector is publishing, which includes software publishers in addition to newspapers, magazines and the like. Growth is expected to be somewhat less than 1% over the next 2 years. Local Government ended 2018 on a soft note for job growth, possibly due to the lessening proportion of school-age children in the Portland MSA. With questions surrounding state budgeting for K-12 education and slower projected population growth, we project Local Government employment to be below 1% for the second half of 2019 thru 2020. Grouping together Wholesale, Retail, and TWU, we can see evidence of the changing spending patterns of consumers: TWU had quite the jump in employment with the opening of Amazon distribution centers, and that growth is expected to subside, though still remain above 1% for 2019. Wholesale will still play a pivotal role due to the geographic position of the highly populated Portland Metro, between the more populated areas of Washington and California. We don’t count Retail completely out, but lower its growth rate to only 0.2% at the close of 2020. Financial Activities had a rough fourth quarter in 2018, after strong growth of 3.4% in 2017. Clark County continues to outpace the rest of the region, with annual finance job growth of 4.3% in 2017 and 5.4% in 2018. However, when we look at the sector across the entire MSA, growth of only 0.7% on average is expected for the next 2 years.

For our slow job growth industrial sectors, we have State Government, Mining and Logging, Leisure and Hospitality, and Nondurable Manufacturing. State Government is still shaking out definitional changes with reclassifications of education and health care jobs to other sectors. This complicates forecasting and this sector could have made it into the medium growth list with some minor assumptions about future job growth. Mining and Logging is the smallest employment sector in the Portland MSA, and small movements can result in wide percentage growth swings. This sector will not be helped by the closure of the concrete division of Ross Island Sand & Gravel in southeast Portland, resulting in the layoff of about two dozen people.5 We are still a bit puzzled by the weak job growth for Leisure and Hospitality. This sector is doing fairly well in Clark and Yamhill Counties with the opening of the new Waterfront in Vancouver, and additional lodging and eating establishments in wine destination Yamhill County. However, these counties are not enough to overcome the relatively slow job growth elsewhere. Especially unusual is the slow sector job growth in Multnomah County, where it seems another hotel and restaurant is opening every other day. Our forecast for Leisure and Hospitality reflects this more recent slowdown and we will watch this sector closely for data revisions and signs of picking up.

**INCOME, WAGES, AND INFLATION**

For the Portland MSA, personal income picked up in 2017 growing at a 5.5% rate relative to the 4.7% growth in 2016. With the Tax Cut and Jobs
Act (TCJA), we expect personal income growth in 2018 to be stronger than 2017 (2018 Metro personal income will not be released until November 2019). But personal income growth for Oregon for 2018 (which was released at the end of March) came in at 4.9%, a tad slower than Oregon personal income growth for 2017 at 5.2%. Recall that job growth slowed for both Oregon and the Portland MSA in 2018. We believe that the stimulus effects from the TCJA were somewhat muted by the slower economic growth. Our projection for Portland MSA personal income growth for 2018 is 5.1%, followed by 4.8% in 2019 and 5.5% in 2020 (see Figure 16). The strongest projected growth for 2018 is expected in Washington

The tables to the right repeat our tables from the October 2018 forecast publication comparing the Portland-Salem All Items CPI-U with the West CPI-U. The Portland-Salem CPI-U was discontinued at the end of 2017. Many analysts for the Portland area are moving to the West CPI-U as the new Pacific CPI-U lacks history, having been established in January of 2018. The West CPI-U aggregates all states to the west of a north-south boundary from New Mexico to Montana. If you take out the north-south boundary states of Idaho, Nevada, Arizona and those states east, you are left with the Pacific CPI-U.

The bottom table compares the U.S., West, and Pacific CPI-U for the most recent data in 2018. The half year measures for the Pacific CPI-U might be underestimated as we do not have the corresponding measures of this statistic for 2017, and thus simply used the starting base of 100.0. The monthly changes are too noisy to compare, so we use half years. There is a slight trend of accelerated inflation increase, at least compared to 2015 and 2016.
and Clark Counties. Wages and salaries, the largest component of personal income, is projected to growth 5.1% in 2018, 4.8% in 2019, and 6.1% in 2020 for the Portland MSA. The strongest growth in wages and salaries should be in Washington, Clark, and Clackamas Counties.

As we have previously pointed out, with the demise of the Portland-Salem CPI-U at the end of 2017, we have to rely on other geographic measures of inflation for the Portland MSA. We reproduce and update our boxed item on inflation by adding in the second half of 2018. While the new Pacific CPI-U inflation measures are not directly comparable to the other CPI-Us in the table (calculations by US Bureau of Labor Statistics use 2017 measures which are not available for the Pacific CPI-U), inflation measures are higher for the West and Pacific regions relative to the US. While our inflation rates are higher, they do not appear to be accelerating and the slowing down of housing prices is likely contributing to this effect. Inflation outlooks are a hot topic, debated at the national level. We still believe that inflation will drift mildly upwards given tight labor markets, but the absence of further acceleration of inflation during this continued period of near full employment is a bit of a mystery.

**HOUSING**

Based on the latest S&P CoreLogic Case-Shiller 20-City Composite Index, house prices in the city of Portland rose 2.9% for the year ending in February 2019. This ranks Portland 12th in the 20-city index, tied with Washington D.C. House prices have slowed throughout the nation with not a single city in the 20-city index recording double digit percentage increases. While Seattle had double digit price increases in the middle of last year, the city had only a 2.8% house price increase and ranks 15th in this latest release (see Figure 17).

The slowing of house price increases during a time of near full employment may be showing that housing affordability makes a difference now, as opposed to the housing boom of 2003-2006. Zillow provides one type of housing affordability measure – the house price-to-income ratio. For the city of Portland, the price-to-income ratio is 5.22 in the fourth quarter of 2018, almost matching the peak of the last housing boom, when this ratio had a value of 5.38 in the fourth quarter of 2006. But the path followed at that time steeply accelerated into mid-2006, while this time around, the rise has slowed considerably since mid-2017 and appears to have plateaued. The level of house flipping today is almost back to its previous peak during the 2003-2006 house price explosion as measured by CoreLogic. It is argued that the economic profile of these flippers is different this time around, and these better-situated buyers have the ability to withstand
a downturn in housing prices, unlike the economically ill-equipped flippers of 13 years ago. All said, the slowing of house price increases is a welcome relief from the erosion of housing affordability.

Figure 18 shows building permits for single and multifamily housing, in recent history and forecast for the near term. Along with slowing housing prices and rents, permits have also slowed. For 2018, single family permit growth was essentially zero, due mainly to the drop in the fourth quarter. Multifamily permit growth averaged around 7.4%, much less than the recent double-digit growth rates, which are skewed by the bunching up of permits observed in Multnomah County immediately prior to the implementation of inclusionary zoning. We project that single family permits will once again outpace multifamily permits for the Portland MSA, but will tend closer to a 60/40 split of single-to-multifamily permits, a bit narrower than in the past. Growth of housing should continue to spill out of the dense parts of Multnomah County to the other counties in the Portland MSA, especially Washington, Clark, and Clackamas Counties.

**Population**

After very strong net migration into the Portland MSA in 2016 and 2017, the big story is the slowdown in net migration in 2018. Many factors are suspect for this slowdown: housing affordability (for both homeowners and renters), and the fact that the U.S. economic expansion has spread to places that were struggling previously, leaving inhabitants with a lessened need to move somewhere else. The outlook for population growth in the Portland MSA is continued increases but at a slower pace compared to recent years. Population growth in the Portland MSA should continue to outpace US population growth. Details on population are highlighted in our section *Comparing Across the Counties* (pg. 22).

**Headwinds and Tailwinds**

Figure 19 compares employment projections for the Portland MSA in our previous three forecasts to this one. We do not have complete data at the time of our release for the first quarter of 2019. Note that 2018Q2-Q4 (colored purple) are historic, not forecast. But we use the word “historic” with caution, as these numbers will be revised. Looking at the history of 2018Q2 from the October 2018 Forecast, this quarter was much slower than anticipated. The second half of 2018 picked up some steam and came in slightly faster than we forecast, but for the year, 2018 was decidedly slower: growth of 1.79% compared to our October forecast of 2.66%. We take the slower outcome for 2018 and other factors into account and slightly lower our near term forecast but add just a touch of staying power by slightly raising the forecast in 2020 and 2021. Given the long length of time for this expansion, we have been asked why we do not forecast a recession in 2020 or 2021. At this time, we do not see...
a particular imbalance or speculative bubble occurring in the economy. There are risks out there that we do consider, but for now, these risks are at a probability level of less than 50%. This is not a scientifically derived probability, but an assessment based on other forecasts for the US economy – and the Portland MSA has never missed a US recession, nor an expansion.

As mentioned, there are other factors that come into play for our forecast besides the most recent numbers since our last forecast. Here is a brief sample of special events, data releases, and factors to track that have influenced our forecast over the ensuing months, taken from research and expert consultations:

- World and US economic performance, the passage of the Tax Cuts and Jobs Act in December of 2017, and continued policies surrounding international trade and immigration.
- Oregon Economic Outlook report from the Oregon Office of Economic Analysis, population forecasts from the Research Population Center at Portland State University.
- Intel planned expansion, Daimler move into automated trucks, Adidas expansion, Vigor Industrial boat building, Supervalu grocery distribution closure
- Past policies at the state and local levels, especially budgeting, transportation and housing, that continue to play out their full impact on the region

The actual direction of the economy in the future is subject to many events, some of which are known but have impacts that are difficult to tease out or assess in entirety, and some for which impacts are unknown. Here is a partial list of potential headwinds and tailwinds that could significantly impact our outlook:

- The degree of impacts, both positive and negative, from the federal Tax Cuts and Jobs Act
- Federal Reserve interest rate policy going forwards
- Oregon State and local government budget problems
- Broad tariffs that may raise costs of imported supplies and finished products to businesses and consumers, and possible retaliatory tariffs that may hamper exported goods and services
- Possible new housing policies both in and outside of Multnomah County
- Immigration regulation
- Geo-political risks
- Climate change

We had “Climate change” in our list of longer-term issues but believe that it is an issue that has bearing on our economy today. Unknown is the extent to which climate change will impact our economy and whether policy changes will be able to mitigate the negative impact. Longer-term issues include income inequality and cyber security, all of which are likely already shaping current trends but the influence of which may intensify over the coming years.

5 Rogoway, Mike. Ross Island Company to Lay Off at Least Two Dozen Workers. (January 15, 2019.) The Oregonian. Retrieved from: www.portlandoregonian-or.newsmemory.com
As of October 2017, one in five Portland residents indicated they had been personally homeless at some point in their lives. It is perhaps unsurprising then that the January 2018 point-in-time (PIT) counts for the Portland Area documented over 3,400 unique households without permanent housing. While the magnitude of this local issue is hard to ignore, it is not a problem unique to Portland. Homelessness has been a visible American issue for nearly half a century. During this time an ongoing debate has formed about the underlying causes of homelessness and the economic tools that could mitigate it: is an increased incidence of homelessness caused by broad societal factors, changes in housing markets, or some combination of both? Answering these questions is made more difficult by the inconsistencies in homelessness estimates. To illustrate, Figure 21 shows the differences in two common homeless estimates for Multnomah County. While it may seem that the numbers are close enough, note that one series shows decreases at times that the other shows increases, and vice versa, rendering analysis difficult. Despite these challenges, both state and local legislators have enacted policies aimed at combating homelessness. This article considers the potential impacts of various policy tools on drivers of homelessness in Portland.

**Policies & Senate Bill 608**

Legislators across Oregon have implemented various policies with the stated intention of combating homelessness, including Multnomah County’s 2014 “A Home for Everyone” and the City of Portland’s 2016 Affordable Housing Bond. Figure 22 summarizes a few policies passed in Oregon with the goal of reducing homelessness.

In February, Oregon lawmakers passed the first statewide rent control bill in the country. Senate Bill (SB) 608, which took effect immediately after being signed, invokes several changes to the rental housing market; most significantly it caps annual rent increases to 7% (excluding inflation) and prohibits no-cause evictions for tenants who have lived in the building at least one year. Properties less than 15 years old are exempt from the increase ceiling.

Capping rent growth at 7% for older properties might not feel like much of a difference to many Oregon tenants. Since its peak in 2016, median rent growth across the state has averaged 1.9%; looking forward, in a time of economic slowdown for Portland and the state as a whole, it is unlikely this 7% threshold will be crossed anytime soon. Previous studies have shown that rent control, as a tool to decrease homelessness, can be a double-edged sword. In cases where rent controls are binding—when the policy is strictly followed—the positive effects caused by the possible deceleration of rent growth, captured in decreased rent-to-income ratios, may well be overshadowed by the negative effects from decreased rental vacancy rates. However, with SB 608, the combination of a relatively
high ceiling, multiple exemptions, and the immediate implementation suggest the new law will not bind for most landlords and therefore is unlikely to slow rent growth or lower vacancy rates at a significant level.

With the likely impacts of SB-608 being minimal, we look to understand what it would cost to expand policies with a proven track record for combating homelessness; providing direct rent assistance to those facing housing insecurity and potential homelessness.

Providing Affordable Housing

Housing assistance has been shown to effectively reduce homelessness. Both academic and professional literature show that programs such as housing choice vouchers and other forms of rent subsidies help those who receive it find and stay in housing. However, the limited resources and scope of existing programs means they do not impact a vast majority of those who face housing insecurity. With over 50,000 households facing some level of housing insecurity, implementing a program to cover all, or even a portion of this population, would require significant financial investment.

Conclusion

Formulating policy to address the homelessness crisis in the Portland MSA is a challenging task that requires traversing political, economic, and logistical hurdles. While research suggests lower rental prices are correlated with decreased level of homelessness, we predict SB-608’s attempt to shift the housing market will be to little avail. Instead, an approach aimed at expanding affordable housing and rental assistance could prove to be a meaningful tool toward alleviating area homelessness. As the Portland MSA continues to grow, housing all of its residents will likely be an ongoing challenge that requires continued policy adaptation and aligned efforts to control the affordable housing crisis.


4 Ingber, Sasha (February, 2019). Oregon Set To Pass the First Statewide Rent Control Bill. Retrieved from NPR.org


Tulip fields, Clackamas County
COMPARING ACROSS THE COUNTIES

POPULATION

<table>
<thead>
<tr>
<th>County</th>
<th>Population (2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clackamas</td>
<td>419,425</td>
</tr>
<tr>
<td>Clark</td>
<td>479,500</td>
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<tr>
<td>Columbia</td>
<td>51,900</td>
</tr>
<tr>
<td>Multnomah</td>
<td>813,300</td>
</tr>
<tr>
<td>Skamania</td>
<td>11,890</td>
</tr>
<tr>
<td>Washington</td>
<td>606,280</td>
</tr>
<tr>
<td>Yamhill</td>
<td>107,415</td>
</tr>
</tbody>
</table>

Share of Portland MSA (2018)

- Clackamas: 17%
- Clark: 24%
- Columbia: 33%
- Multnomah: 53%
- Skamania: 11,890
- Washington: 606,280
- Yamhill: 107,415

CURRENT AND FORECAST POPULATION GROWTH RATE

HISTORIC NET MIGRATION BY COUNTY
HISTORIC AND FORECAST INCOME PER CAPITA (THOUSANDS OF DOLLARS)

Single Family/Multifamily Split in Housing Construction

Note: Columbia, Skamania, and Yamhill Counties do not have consistent multifamily construction.
CLACKAMAS COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2018Q4

Average Annualized Employment Growth in Major Industries

Pre-recession: 2004-2007
Recession: 2008-2009
Post-recession: 2009-2018
Early Forecast: 2019-2022
Late Forecast: 2023-2028

- Durable Manufacturing
- Retail
- Health Services and Education
- Professional and Business Services
- Leisure and Hospitality

Northwest Economic Research Center
CLARK COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2018Q4

AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES

NORTHWEST ECONOMIC RESEARCH CENTER
COLUMBIA COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2018Q4

- Local Government: 1,890
- Health Services and Education: 1,466
- Retail: 1,509
- Durable Manufacturing: 1,082
- Other Industries: 3,434
- Leisure and Hospitality: 2,128

AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES

- Pre-recession: 2004-2007
- Recession: 2008-2009
- Post-recession: 2009-2018
- Early Forecast: 2019-2022
- Late Forecast: 2023-2028
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1

HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH

HISTORIC AND FORECAST HOUSING PERMITS
MULTNOMAH COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2018Q4

Average Annualized Employment Growth in Major Industries

Pre-recession: 2004-2007
Recession: 2008-2009
Post-recession: 2009-2018
Early Forecast: 2019-2022
Late Forecast: 2023-2028

- Retail
- Health Services and Education
- Professional and Business Services
- Leisure and Hospitality
- Local Government

Northwest Economic Research Center
Employment in Notable Fast- and Slow-Growth Industries, Indexed to 2005Q1

Historic and Forecast Average Annualized Nonfarm Wage Growth

Historic and Forecast Housing Permits
SKAMANIA COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2018Q4

AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1

HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH

HISTORIC AND FORECAST HOUSING PERMITS
WASHINGTON COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2018Q4

- Durable Manufacturing: 43,969
- Retail: 32,677
- Health Services and Education: 37,524
- Professional and Business Services: 54,583
- Leisure and Hospitality: 27,287
- Other Industries: 101,772

AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES

- Pre-recession: 2004-2007
- Recession: 2008-2009
- Post-recession: 2009-2018
- Early Forecast: 2019-2022
- Late Forecast: 2023-2028
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1

Historic and forecast average annualized nonfarm wage growth

Historic and forecast housing permits
YAMHILL COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2018Q4

Average Annualized Employment Growth in Major Industries


RECESSION: 2008-2009

POST-RECESSION: 2009-2018

EARLY FORECAST: 2019-2022

LATE FORECAST: 2023-2028

Manufacturing
Retail
Health Services and Education
Leisure and Hospitality
Local Government
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1

HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH

HISTORIC AND FORECAST HOUSING PERMITS
**IMAGE & DATA SOURCES**

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**Pg. 39**

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**All county locator maps from Wikimedia Commons.**

**Data Sources:**

Income and GDP – BEA

CPI and Wages - BLS

Employment – BLS, Oregon Employment Department, Washington State Employment Security Department


Interest Rates – U.S. Treasury and Freddie Mac

Housing Permits - U.S. Census
Forest Grove, Washington County
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30-8:15</td>
<td>Breakfast</td>
</tr>
<tr>
<td>8:15-8:30</td>
<td>Welcome &amp; Introduction</td>
</tr>
<tr>
<td>8:30-9:00</td>
<td>Outlook Presentation by Dr. Potiowsky</td>
</tr>
<tr>
<td>9:00-9:35</td>
<td>Ellen Zentner</td>
</tr>
<tr>
<td>9:35-9:50</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>9:50-10:50</td>
<td>Panel: The Economics of Current Events</td>
</tr>
<tr>
<td>10:50-11:00</td>
<td>Closing Remarks</td>
</tr>
</tbody>
</table>
PORTLAND MSA
ECONOMIC & POPULATION OUTLOOK
APRIL 2019

https://www.pdx.edu/nerc/projects
Scroll down to 2019: Portland MSA Regional Economic Outlook, April 2018
Two Articles: Homelessness in the Portland MSA: Examining Policies and Cost Automation and the Drive for Driverless Trucks

• **Homelessness:**
  • Potential impacts of various policy tools on drivers of homelessness, and examines potential costs to provide housing in the Portland MSA.

• **Driverless Trucks:**
  • Will driverless trucks disrupt employment in the transportation services sector? Relative exposure of employment to automation in the counties that comprise the Portland MSA.
Quick on National
Gross Domestic Product Growth, U.S.
Annualized Quarterly Percent Change, 1980Q1-2021Q4, dots indicate Fed forecasts

Source: BEA
Broad Unemployment Rates, U.S.
Percent, Monthly, Seasonally Adjusted, January 1994-March 2019

Source: BLS
U.S. Housing Permits by Type
Thousands of Units, Monthly, Seasonally Adjusted, January 1990-March 2019

Source: Census
PCE Implicit Price Deflators
Continuously Compounded Annual Rate of Change, Quarterly, Seasonally Adjusted, 2009 Q1-2019 Q1

Source: BEA
Various Interest Rates
Percent, Monthly, July 1954-April 2019

Sources: Freddy Mac, Board of Governors of the Federal Reserve System (via FRED)

- Federal Funds Rate
- 30-Year Fixed Rate Mortgage
- 10-Year Treasury Constant Maturity Rate

Values:
- 1954: 4.14%
- 1955: 2.57%
- 1956: 2.53%
- 1957: 0%
- 1958: 5%
- 1959: 10%
- 1960: 15%
- 1961: 20%
- 1962: 25%
- 1963: 1.14%
- 1964: 2.57%
- 1965: 2.53%
- 1966: 4.14%
- 1967: 2.57%
- 1968: 2.53%
- 1969: 4.14%
- 1970: 2.57%
- 1971: 2.53%
- 1972: 4.14%
- 1973: 2.57%
- 1974: 2.53%
- 1975: 4.14%
- 1976: 2.57%
- 1977: 2.53%
- 1978: 4.14%
- 1979: 2.57%
- 1980: 2.53%
- 1981: 4.14%
- 1982: 2.57%
- 1983: 2.53%
- 1984: 4.14%
- 1985: 2.57%
- 1986: 2.53%
- 1987: 4.14%
- 1988: 2.57%
- 1989: 2.53%
- 1990: 4.14%
- 1991: 2.57%
- 1992: 2.53%
- 1993: 4.14%
- 1994: 2.57%
- 1995: 2.53%
- 1996: 4.14%
- 1997: 2.57%
- 1998: 2.53%
- 1999: 4.14%
- 2000: 2.57%
- 2001: 2.53%
- 2002: 4.14%
- 2003: 2.57%
- 2004: 2.53%
- 2005: 4.14%
- 2006: 2.57%
- 2007: 2.53%
- 2008: 4.14%
- 2009: 2.57%
- 2010: 2.53%
- 2011: 4.14%
- 2012: 2.57%
- 2013: 2.53%
- 2014: 4.14%
- 2015: 2.57%
- 2016: 2.53%
- 2017: 4.14%
- 2018: 2.57%
- 2019: 2.53%
Portland MSA

Outlook
Portland MSA

Industry Outlook
County Net Migration
Annual, 2001-2018

Source: PRC, OFM
Housing Price to Income Ratio
Quarterly, 1990Q1 – 2019Q1

Source: Zillow
Unemployment Rates by County, Portland MSA
Percent, Monthly, 2007-March 2019 (WA counties seasonally adjusted by NERC)

Source: BLS, Quality Info LAUS
Employment Growth
YoY Growth Rate, Percent, Monthly, January 1991-March 2019, Forecast April 2019-December 2020

[Chart showing employment growth rates for the US, Oregon, and Portland MSA from 2000 to 2020.]
## Current and Previous Employment Forecast Comparison

Portland MSA Quarterly Seasonally Adjusted Annual Rates and YoY Percent Change

<table>
<thead>
<tr>
<th></th>
<th>APR 2019</th>
<th>OCT 2018</th>
<th>APR 2018</th>
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<tbody>
<tr>
<td><strong>SAAR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018Q2</td>
<td>0.29%</td>
<td>2.65%</td>
<td>1.83%</td>
</tr>
<tr>
<td>2018Q3</td>
<td>3.11%</td>
<td>2.21%</td>
<td>1.79%</td>
</tr>
<tr>
<td>2018Q4</td>
<td>1.48%</td>
<td>2.17%</td>
<td>1.80%</td>
</tr>
<tr>
<td>2019Q1</td>
<td>1.71%</td>
<td>1.64%</td>
<td>1.43%</td>
</tr>
<tr>
<td>2019Q2</td>
<td>1.65%</td>
<td>1.66%</td>
<td>1.55%</td>
</tr>
<tr>
<td>2019Q3</td>
<td>1.62%</td>
<td>1.58%</td>
<td>1.55%</td>
</tr>
<tr>
<td>2019Q4</td>
<td>1.41%</td>
<td>1.40%</td>
<td>1.40%</td>
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<tr>
<td><strong>YoY</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2018</td>
<td>1.79%</td>
<td>2.66%</td>
<td>1.83%</td>
</tr>
<tr>
<td>2019</td>
<td>1.71%</td>
<td>1.82%</td>
<td>1.63%</td>
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<tr>
<td>2020</td>
<td>1.33%</td>
<td>1.21%</td>
<td>1.07%</td>
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<tr>
<td>2021</td>
<td>0.85%</td>
<td>0.70%</td>
<td>0.73%</td>
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Employment in Fast-Growth Industries, Portland MSA
Index (2010 = 100), 2010-2027

Professional and Business Services
Health Services and Education
Construction
Federal Government
Other Services
Employment in Slow-Growth Industries, Portland MSA
Index (2010 = 100), 2010-2027

- Leisure and Hospitality
- Nondurable Manufacturing
- State Government
- Mining and Logging
County Total Nonfarm Comparisons
Indexed to 2005Q1
Portland MSA
Housing, Population, Income
Oregon, Washington, and Idaho Cities and MSAs
Single Family Building Permits

<table>
<thead>
<tr>
<th>City/MSA</th>
<th>Percent Change 2017-2018</th>
<th>2017</th>
<th>2018</th>
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<tbody>
<tr>
<td>Boise ID</td>
<td></td>
<td>6,275</td>
<td>6,917</td>
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<tr>
<td>Bend OR</td>
<td></td>
<td>1,777</td>
<td>1,819</td>
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<tr>
<td>Eugene MSA OR</td>
<td></td>
<td>821</td>
<td>695</td>
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<tr>
<td>Portland MSA OR</td>
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<td>6,211</td>
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<td>Seattle MSA WA</td>
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<td>9,997</td>
<td>9,034</td>
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<tr>
<td>Spokane WA</td>
<td></td>
<td>1,785</td>
<td>1,934</td>
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<tr>
<td>Salem OR</td>
<td></td>
<td>790</td>
<td>760</td>
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</tbody>
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Source: U.S. Census Bureau; National Association of Home Builders
Portland MSA Housing Permits, Historical and Forecast
Total Permits, Quarterly, 2004Q1 – 2027Q4

Source: Census, NERC
Case-Shiller Index for Select Areas
YoY Percent Change, Monthly, January 2000 – February 2019

June 2016: 12.5%
Historic and Forecast Total Personal Income Growth

Annual Percent Change, 2005-2027
Real Average Hourly Earnings, U.S., OR, and MSA
Dollars per Hour, Monthly, Seasonally Adjusted, January 2013-March 2019

Source: BLS
RIP: The Portland-Salem Consumer Price Index is Discontinued

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<tr>
<th>Year</th>
<th>US CPI-U</th>
<th>Portland-Salem CPI-U</th>
<th>West CPI-U</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>-0.4%</td>
<td>1.2%</td>
<td>1.2%</td>
</tr>
<tr>
<td>2016</td>
<td>1.0%</td>
<td>2.1%</td>
<td>1.9%</td>
</tr>
<tr>
<td>2017</td>
<td>2.1%</td>
<td>4.2%</td>
<td>2.8%</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>US CPI-U</th>
<th>West CPI-U</th>
<th>Pacific CPI-U*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018H1</td>
<td>2.6%</td>
<td>3.3%</td>
<td>3.2%</td>
</tr>
<tr>
<td>2018H2</td>
<td>2.4%</td>
<td>3.4%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

Source: BLS
Headwinds and Tailwinds
Recession Hazard Zone
Short Term and a Few Long Term + and – Risks
An Incomplete List: Dimmer Prospects or Rosier Outlook?

- International
  - Geopolitical Risks (Name your part of the world...)
  - Tariffs and More Tariffs?
  - Immigration regulation
  - Global Economic Growth

- US Domestic
  - Fiscal and Monetary Policies, Regulation (Infrastructure Spending, Tax Cuts, Dodd-Frank, Health Care,...)
  - Energy Prices (recent softening of oil prices)
  - Public Pension Funds
  - Income Disparity, Cyber Attacks, Climate Change

- Closer to Home
  - Oregon Budget
  - Minimum Wage
  - Housing
Thank you!

Contact – Follow NERC

Northwest Economic Research Center (NERC)

503-725-5158

nerc@pdx.edu

http://www.pdx.edu/nerc/