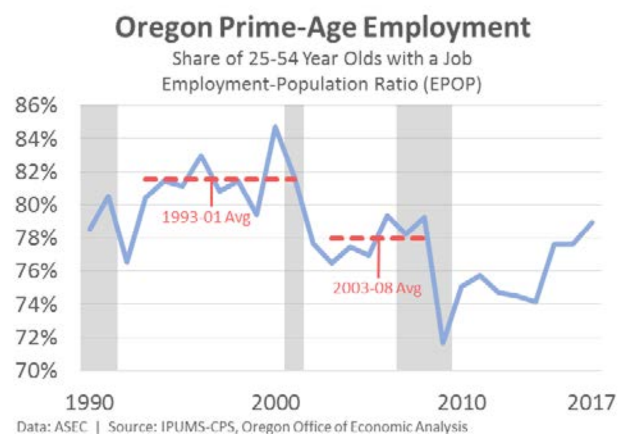
President Trump's Council of Economic Advisors[1], shows the typical channel is through investment and productivity gains. As businesses invest a portion of their tax savings in new, better, or more capital, their workers become more productive, and earn higher wages. This is very much a multi-year process. As such, recent media reports and corporate press releases noting worker bonuses and pay raises may better reflect the current tight labor market, rather than compensation increases solely due to the tax legislation.

U.S. Bottom Line: The economic expansion marches on and the flow of economic data remains healthy. The U.S. is about to embark on a fiscal experiment of stimulating a relatively strong economy. Expectations are for somewhat stronger growth in the near-term. However, even as the probability of recession remains low – just 14 percent based on the latest Wall Street Journal consensus – a plausible recession scenario has now come into focus. Should the economy truly be at full employment, then the stimulus will manifest itself in higher inflation, leading to interest rates rising faster than currently expected, and potentially choking off economic growth entirely. However, this is far from a foregone conclusion at this date and economists and the Federal Reserve are watching for signs of better employment gains, wage growth, inflation, and pushing through supply side constraints.

Oregon Economy

The Oregon economy continues to hit the sweet spot. Job growth is strong enough to keep up with population gains and absorb the workers coming back into the labor market. The state's participation gap is effectively gone, following the rising labor force participation rate in recent years. The tight labor market is resulting in faster wage gains here in Oregon than in the typical state. While Oregon's average wage remains lower than the U.S. average, it is now at its highest relative point since the mills closed in the 1980s. And Oregon's per capital personal income is now at its highest relative point since the dotcom crash. All told, Oregon's expansion remains intact. However, both job growth and measures of economic wages, like those from the Bureau of Economic Analysis, have come in below forecast in recent quarters. Oregon is still seeing growth, however a bit below our office's expectations. Combining this relatively lower starting point, with the modest expansionary gains from federal tax reform results in a relatively unchanged forecast overall.



Like the U.S., Oregon's labor market is tight. Difficulty finding and retaining workers[2] is the biggest challenge many businesses face today. This tight labor market is expected to remain in place until the next recession for two different reasons that are coming to a head today: the business cycle and demographics.

First, the unemployment rate is flirting with record lows even as Oregon has seen the labor force response one

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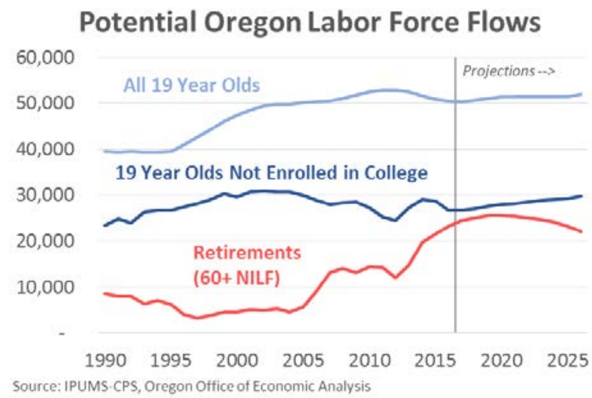
[1] https://www.whitehouse.gov/sites/whitehouse.gov/files/documents/Tax%20Reform%20and%20Wages.pdf
[2] https://www.qualityinfo.org/documents/10182/90519/A+Lack+of+Applicants+in+a+Growing+Economy?version=1.2

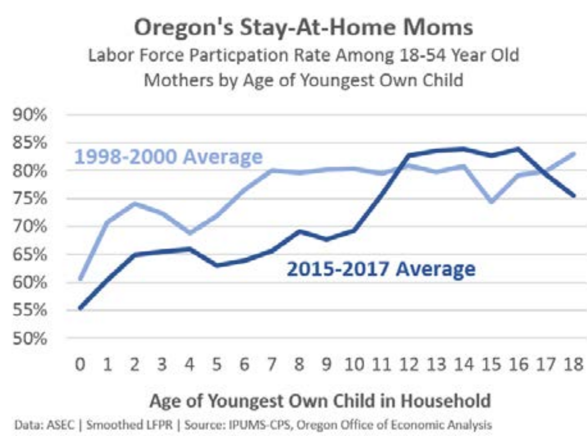
would expect. There is no longer a large reserve of potential workers waiting around for a job. In fact, the share of prime working-age Oregonians with a job is back to where it was prior to the Great Recession. This employment rate can go higher still, and we should hope it does. The tight labor market not only pulls workers back in, but it also forces businesses to dig deeper into the resume stack. The employment rate is not only back in aggregate, but also for each level educational attainment.

Second, the labor market is tight for demographic reasons. Baby Boomer retirements have picked up in recent years and will remain at these higher levels for the coming 15 years or so, or until the Boomer have fully aged into retirement. Now, the working-age population in Oregon is continuing to increase – the Millennials and Gen Z are larger in number than the Boomers, and Oregon sees net in-migration – but at slower rates than in past decades. The labor force will continue to grow, but competition for available workers will remain strong across industries and firms.



Given the cyclical strength and the demographic constraint, where will additional labor come from? First and foremost, the labor force will continue to grow due to population. Oregon remains a magnet state. In particular Oregon is able to attract young, working-age households which provide an ample supply of labor for local businesses. However, beyond population growth, there are three pockets of potential workers that have remained untapped in recent decades. Each of these groups, should they return to the workforce in greater numbers, could account for around 20,000 potential workers, or 10 months of job gains by themselves. Combined these three groups could represent nearly 3 years of Oregon job growth.

The first group are those with self-reported disabilities, physical and/or cognitive. Over the past 20-30 years there has been a massive increase in the share of prime-age adults citing illness or disability as the reason they are not working. This increase is approximately 3 percentage points of the prime-age population nationwide and 4 percent in Oregon. However there has not been a corresponding increase in Social Security Disability Insurance caseloads, nor a big increase in households reporting disability income[3]. This difference is puzzling. To the extent some of this increase in self-reported disabilities represents individuals trying to save face when discussing employment with government survey workers, then a tight labor market may produce a cyclical decline among this seemingly structural trend. If a quarter of the increase in prime-age Oregonians citing disability as a barrier to work returned to the labor force, that is approximately 20,000 potential workers.



The second group are stay-at-home moms of elementary school age children, which have increased considerably in recent decades[4]. Labor force participation rates are 10-15 percentage points lower today than in the late 1990s. Given high childcare costs, especially in Oregon, and possibly

[3] For more see: https://oregoneconomicanalysis.com/2017/08/09/labor-supply-how-much-more/
[4] For more see: https://oregoneconomicanalysis.com/2014/06/18/oregon-stay-at-home-parents/

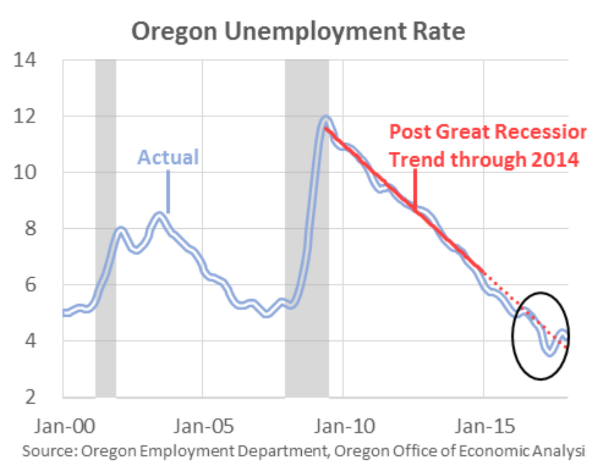
family leave practices, it may be unlikely that mothers with newborns or preschoolers will return to the workforce in greater numbers. However, moms with elementary schoolers may return in a stronger economy. Today's elementary school students were all born at the peak of the housing bubble, during the Great Recession, or in its immediate aftermath. Job opportunities barely existed for anyone looking. It is possible that today's middle school and high school students were born long enough ago that their moms were able to stay in or enter the labor market under better economic conditions. The big unknown, however is just how much of these participation rate changes are economic related versus broader societal shifts or personal and family preferences.

The third group are young adults, or teenagers and college-age kids. Participation rates among this population have fallen around 15 percentage points since the turn of the century. However there was been a corresponding increase in school enrollment. To the extent that falling participation rates reflected a weak economy with fewer opportunities for young adults without work experience and fewer skills, then some reversal of these trends in a strong economy would be expected. This reversal, should it come to pass, means lower enrollments in higher education, particularly among the more cyclically sensitive institutions like community colleges and trade schools. Whether or not this would be a good development is an open question. The silver lining to fewer young adults working today is that when they return to the labor market in the future, they will have additional skills. However, in a strong economy young adults face better employment prospects and higher wages, thus raising the opportunity costs of attending college. Already, enrollments have fallen across the country in part due to demographics, in part due to fewer international students choosing to come to America, and in part due to the stronger economy.

<u>Oregon Bottom Line</u>: All told, the current outlook for Oregon remains positive. The labor market is tight due to the strong economy and the demographic crunch. Oregon is expected to continue to transition down to a more sustainable rate of growth over the medium term. However, boosts from federal fiscal policy raise the near-term outlook slightly even as employment and wages have come in a bit below expectations to end 2017. Between today and the next recession, Oregon is expected to continue to hit the sweet spot. Workers are being pulled back into the labor market, household incomes are rising and poverty rates are falling.

Oregon's Labor Market

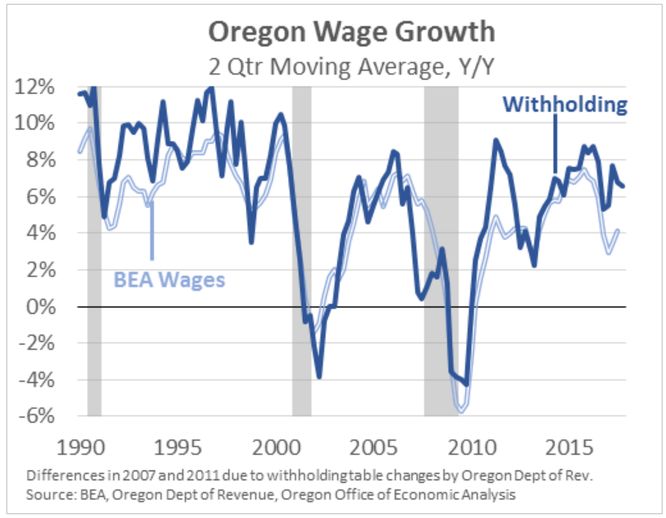
The Office of Economic Analysis examines four main sources for jobs data: the monthly payroll employment survey, the monthly household survey, monthly withholding tax receipts and the quarterly census of employment and wages. Right now all four measures of the labor market are improving. Jobs are being added, albeit at a slower rate. Wages are rising, both in aggregate and for each worker. The unemployment is under what can be considered full employment for Oregon.



As our office has been discussing, or more accurately, warning over the past few years, the pattern of unemployment rate changes does not likely reflect the overall pattern of growth in the Oregon economy.

The preliminary data for both 2015 and 2016 showed the Oregon unemployment rate going on a roller coaster ride. A few months of extreme declines to start each year were followed by huge increases over the next few months. These types of increases in the unemployment rate have only been seen during recessions. These wild swings have largely been revised away each year during the annual benchmarking process (i.e. revisions). The overall pattern of Oregon's unemployment rate has been a fairly steady decline since the depths of the Great Recession.

However, it must be noted that once again Oregon's unemployment rate plunged again in early 2017 followed by increases over the summer months. If the recent past is any guide, expect the month to month changes to be moderated once the data is revised in early 2018 (March). That said, Oregon's unemployment has continued to decline in 2018, particularly relative to 2017.



More importantly, wages in Oregon remain relatively strong, although different measures have diverged in recent quarters. Withholding collections, which matter the most to our office given the revenue forecast, continue to see healthy gains. Although withholdings have slowed some in recent years, in keeping with the slower employment growth. That said, withholdings also include revenue from bonuses, stock options and the like which are not pure wages. Measures of economic wages have slowed further in recent quarters, although with each round of revisions they are shifting up and the gap between the series is shrinking somewhat. This divergence is something our office is keeping a close eye on and will monitor moving forward. For now, expectations are for ongoing healthy wage gains in Oregon given the labor market continues to advance.

Overall, getting a handle of the health of Oregon's labor market is being somewhat complicated by technical issues within the underlying payroll jobs data. For this reason the employment data in our office's forecast is adjusted for two important technical purposes: seasonality at the detailed industry level and the upcoming benchmark revisions[5]. Specifically, our office uses the benchmarked, or revised employment data through 2017q3 and imputes the 2017q4 employment data based upon the available preliminary Oregon estimates, national data, and our office's economic forecast model. As such, for this quarterly forecast, the first pure forecast period is 2018q1.

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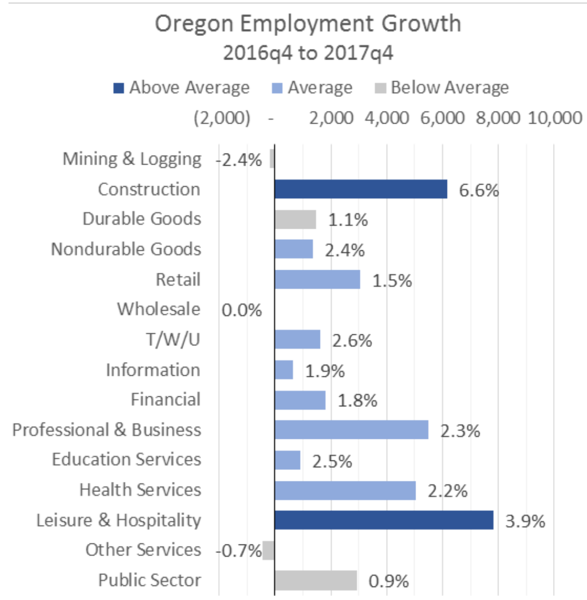
[5] Each year the U.S. Bureau of Labor Statistics revise the employment data – a process known as benchmarking. The current establishment survey (CES), also known as the monthly payroll survey, is benchmarked against the quarterly census of employment and wages (QCEW), a series that contains all employees covered by unemployment insurance. The monthly CES is based on a sample of firms, whereas the QCEW contains approximately 96 percent of all employees, or nearly a complete count of employment in Oregon. The greatest benefit of the CES is the timeliness – monthly employment estimates are available with only a one month lag – and these estimates are reasonably accurate. However the further removed from the latest benchmark, the larger the errors. The QCEW is less timely as the data is released approximately 3-4 months following the end of the quarter. The greatest benefit of the QCEW is that is a near 100 percent count of statewide employment. For these reasons, the CES is usually used to discuss recent monthly employment trends, however once a year the data is revised to match the historical QCEW employment trends. The last month of official benchmark data is September 2016. The QCEW is currently available through September 2017, thus the preliminary benchmark used here covers the October 2016 – September 2017 period.

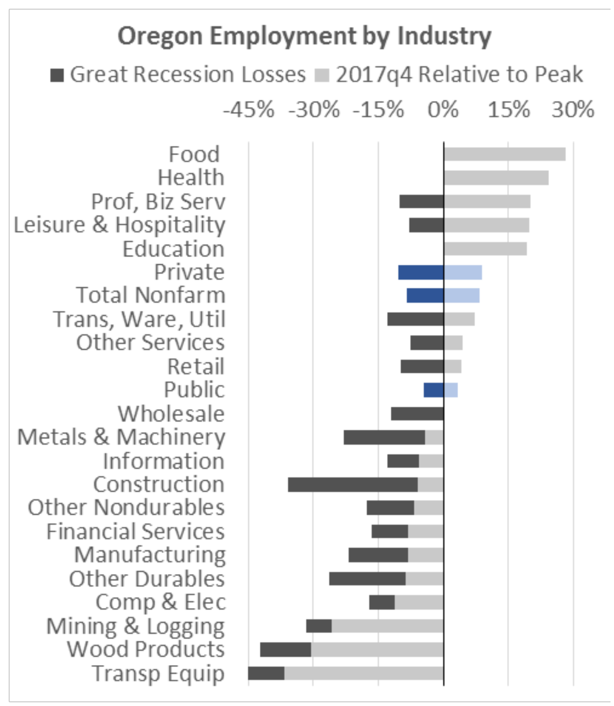
In the fourth quarter, total nonfarm employment increased 2.0 percent over the past year with the private sector growing at 2.3 percent and the public sector at 0.9 percent. These rates of growth are a clear step down from the full-throttle rates seen in recent years, however still remain faster than needed to keep pace with population gains so far.

The nearby graph illustrates the number of job gains by major industry by the length of the bar. The percentage increase these changes represent is noted as well. The bars are color coded by growth rate relative to total employment growth. Industries with dark blue colored bars are growing at rates much faster than total employment, light blue bars represent industries which are growing approximately in line with the average, while grey bar industries are growing at rates significantly less than the average.



So far in recovery, the large service sector industries have generally led job growth in terms of the number of jobs added and with above-average growth rates. These include jobs in professional and business services, health services, and leisure and hospitality industries. These three industries have gained 18,300 jobs in the past year and account for 49 percent of all job gains across the state. The good news is that this share has fallen as the expansion continues and other industries add jobs, which was not the case earlier in the expansion.

In terms of illustrating how each industry has fared over the Great Recession and so far in recovery, the second graph shows both the depths of recessionary losses[6] and where each industry stands today relative to pre-recession peak levels.



Currently, ten major industries are at all-time highs. Private sector food manufacturing, education, and health never really suffered recessionary losses – although their growth did slow during the recession. Professional and business services and leisure and hospitality have each regained all of their losses and are leading growth today. In recent months retail emploment, other services, wholesale, and transportation, warehousing and utilities, in addition to the public sector have surpassed their pre-recession levels and are at all-time highs. The nine private sector industries at all-time highs account for 62 percent of all statewide jobs.

[6] Each industry's pre-recession peak was allowed to vary as, for example, construction and housing-related industries began losing jobs earlier than other industries or the recession's official start date per NBER.

The public sector accounts for an additional 17 percent of all jobs.

With the Great Recession being characterized by a housing bubble, it is no surprise to see wood products, construction, mining and logging and financial services (losses are mostly real estate agents) among the hardest hit industries. These housing and related sectors are now recovering, although they still have much ground to make up. Transportation equipment manufacturing suffered the worst job cuts and is likely a structural decline due to the RV industry's collapse[7]. With that being said, the subsectors tied to aerospace are doing better and the ship and boat building subsector is growing again. Metals and machinery manufacturing, along with mining and logging, have shown the largest improvements since the depths of the recession.

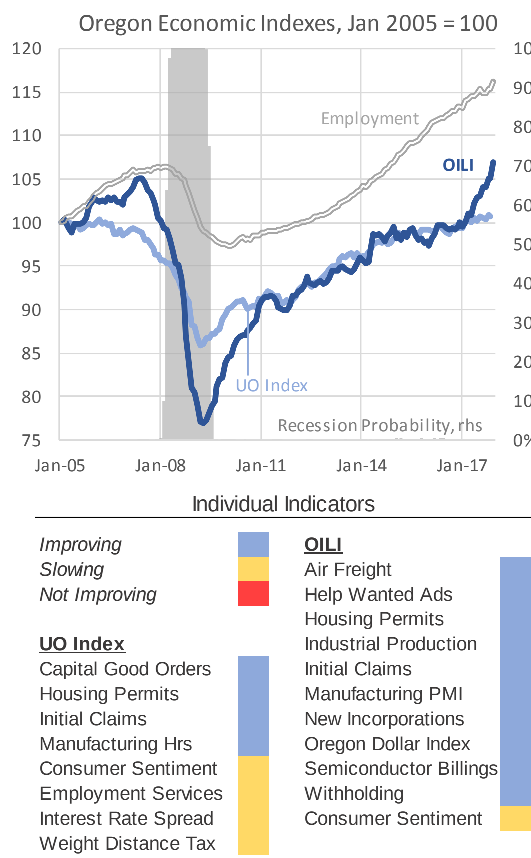
Coming off such a deep recession, goods-producing industries exhibited stronger growth than in past cycles. While all manufacturing subsectors have seen some growth, they are unlikely to fully regain all of their lost jobs. The good news, certainly in the short-term, is that much of the manufacturing sector has returned to growth in recent months following declines a year ago. All told, Oregon manufacturers typically outperform those in other states, in large part due to the local industry make-up. Oregon does not rely upon old auto makers or textile mills. The state's manufacturing industry is comprised of newer technologies like aerospace and semiconductors. Similarly Oregon's food processing industry continues to boom.

All told, each of Oregon's major industries has experienced some growth in recovery, albeit uneven. As the economy continues to recover there will be net winners and net losers when it comes to jobs, income and sales. Business cycles have a way of restructuring the economy.

For additional information on the most recent quarter's employment forecast errors, please refer to Table A.1 in Appendix A.

Leading Indicators

After more than two years of no real sustained movement up or down, both of the Oregon-specific composite leading indicators have broken through the malaise to the upside in recent months. In keeping with the general pattern of economic growth, the mixed bag of indicators in both our office's Oregon Index of Leading Indicators (OILI) and the University of Oregon's Index of Economic Indicators, showed many of the manufacturing, or goods-producing indicators languishing while all others pointed toward growth. As discussed in recent quarters, the manufacturing indicators began picking up, leading to gains in the overall index. This pattern has continued.



As of today no individual indicators are showing no growth. In recent quarters both Help Wanted Ads and the Oregon Dollar Index were flashing warning signs for those indicator series. However businesses are posting more job openings and the

[7] http://oregoneconomicanalysis.com/2012/07/10/rv-workers-and-reemployment/

dollar is depreciating. Among the indicators that are currently slowing, none are particularly worrisome from an economic growth perspective. The fact that housing permits and new construction continues to increase slowly in fits and starts is worrisome from an affordability point of view, but it also suggests the housing expansion still has legs to run.

Across both aggregate leading indicators there are no real signs for concerns at the moment. This is one reason economic forecasters are sanguine about the risk of recession in the immediate future, outside of unforeseen geopolitical shocks and the like. University of Oregon professor Jeremy Piger has created a real time probability of recession[8] model, and finds there is just 0.5 percent chance the U.S. has entered into a recession. However, another recession will come, of that we can be sure. IHS Global Insight puts the probability of recession over the next year at 20 percent, and the Wall Street Journal consensus is at 14 percent.

Hopefully Oregon's leading indicators will give a signal in advance of the next recession, which neither is doing today. While past experience is no guarantee of future performance, Oregon's leading indicator series do have a good track record in their relatively brief history. Both series flattened out in 2006 and began their decline in advance of the Great Recession. Similarly both Oregon series reached their nadir in March 2009, a few months before the technical end of the recession (June 2009 per NBER) and about 9 months in advance of job growth returning to Oregon.

Short-term Outlook

While Oregon's economic expansion continues, growth has slowed and stabilized. In recent years, the state has enjoyed robust, full-throttle rates of job gains in the 3-3.5 percent range, or nearly 5,000 jobs per month. No longer is this the case. Oregon is expected to continue to see healthy job gains – a bit more than 3,000 per month or about 2 percent over the course of the 2017-19 biennium – but the state is now past its peak growth rates for this expansion. Importantly, such gains remain strong enough to hold unemployment down and account for ongoing population growth.

After these near-term job gains, longer-run demographic trends weigh on growth to a larger degree. While consistent with the general character of recent forecasts, there are a few minor revisions. Employment is revised down a few thousand jobs in 2018 due to actual employment coming lower than expected to end 2017. However the forecast is revised up 4-5,000 jobs in 2019 and 2020 due in part to federal fiscal stimulus. Similarly, personal income is revised down slightly in 2018, before seeing upward revision in 2019 and 2020. All told, the expectation of future growth rates remains largely unchanged, however the growth path between today and 2027 has been altered slightly.

The state's new minimum wage law, passed during the 2016 legislative session, will also impact the Oregon economy over the forecast horizon. Using estimates provided by the Oregon Legislative Revenue Office, along with the academic literature, our office's outlook includes a slowdown in job growth due to the higher minimum wage moving forward. While the impact is small when compared to the size of the Oregon economy, it does result in approximately 40,000 fewer jobs in 2025 than would have been the case absent the legislation. Our office is not predicting outright job losses due to the higher minimum wage, however we are expecting future growth to be slower as a result. In the near term, the higher minimum wage boosts overall state income as low-wage workers receive raises. Over the medium term, employers are expected to adjust to the higher wages and

[8] http://pages.uoregon.edu/jpiger/us_recession_probs.htm/

increase worker productivity, possibly via capital for labor substitutions. Our office has incorporated these overall effects into the outlook for wages and in the industries which employ the largest numbers of low-wage workers. These include the obvious like leisure and hospitality, and retail trade, but also health care and food processing manufacturing, among others.

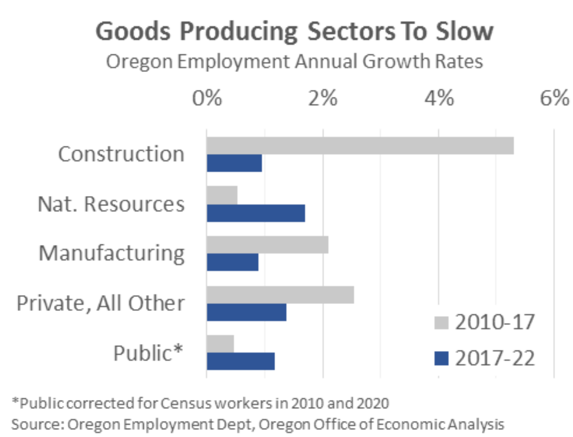
Economic Forecast Summary

		Quarterly					Annual				
		2017:4	2018:1	2018:2	2018:3	2018:4	2016	2017	2018	2019	2020
Personal Income, Nominal	U.S.	4.3	4.6	5.0	5.2	5.0	2.4	3.1	4.4	5.2	5.0
% change	Oregon	6.4	5.4	6.1	6.0	5.7	4.2	3.7	5.5	5.7	5.3
Wages and Salaries, Nominal	U.S.	3.8	4.4	5.0	5.4	5.6	2.9	3.1	4.4	5.5	4.9
% change	Oregon	7.1	5.6	6.8	6.5	6.5	5.4	4.3	6.3	6.2	5.1
Population	U.S.	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8
% change	Oregon	1.4	1.3	1.5	1.7	1.3	1.5	1.6	1.5	1.4	1.3
Housing Starts	U.S.	1.27	1.25	1.27	1.28	1.36	1.18	1.21	1.29	1.40	1.45
U.S. millions, Oregon thousands	Oregon	19.5	19.6	20.4	21.0	21.1	19.1	19.0	20.5	22.1	23.7
Unemployment Rate	U.S.	4.1	4.0	3.9	3.8	3.7	4.9	4.4	3.9	3.7	3.8
	Oregon	4.2	4.3	4.4	4.5	4.5	4.9	4.0	4.4	4.5	4.7
Total Nonfarm Employment	U.S.	1.5	1.6	1.6	1.8	1.8	1.8	1.5	1.6	1.5	0.7
% change	Oregon	1.4	2.2	2.4	2.3	2.4	2.9	2.1	2.1	2.1	1.1
Private Sector Employment	U.S.	1.7	1.8	1.8	2.0	2.0	1.9	1.7	1.8	1.6	0.6
% change	Oregon	2.4	2.4	2.5	2.5	2.5	3.1	2.3	2.3	2.2	1.0

Should this overall economic outlook come to pass, it will have matched the equivalent of previous expansions in Oregon. Given demographic trends today, particularly the aging Baby Boomer cohort, job growth of 3 percent is considered full throttle. In decades past, growth of 4 or 5 percent was common during expansions in Oregon, however that time period also coincided with the Baby Boomers entering their prime working years. Today the opposite is occurring. Even so, demographic trends are not all bad, as the even larger cohort of Millennials are currently entering their prime working years. The net effect is overall lower rates of labor force and economic growth, due to demographics.

Private sector growth, measured by the number of jobs created, will be dominated by the large, service sector industries like professional and business services, leisure and hospitality and health.

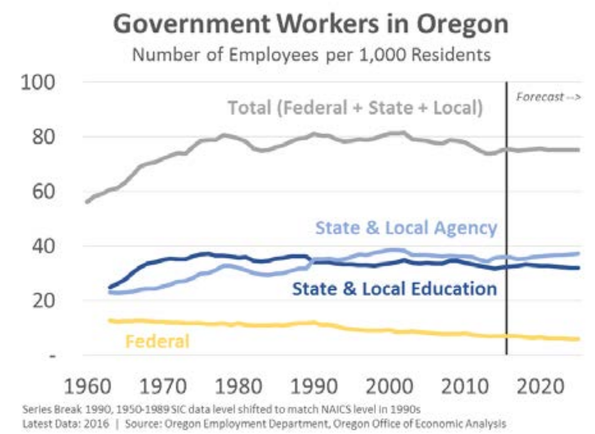
Nevertheless, goods-producing industries, while smaller, had previously been growing at above-average rates. Expectations in recent forecasts have been that these goods-producing industries would slow. Growth over the next few years would be considerably less than that seen in the past few years. Even construction is expected to add jobs at a slower pace even as the housing rebound continues. This is in part due to the fact that growth must cool off after the exceptionally strong gains in construction in recent years.



Natural Resources (mining and logging) are somewhat of a technical exception. There was a reclassification of a few firms out of this industry, leading to employment “losses” in 2017 and weighing on the growth rate seen in the nearby chart. What looks like acceleration in employment growth in natural resources is merely a return to growth rates seen in past forecasts.

Additionally, manufacturing is expected to see minimal gains in the coming years. The good news is that after sustaining losses during the middle of 2016, manufacturing employment in Oregon has started to add jobs again. As the manufacturing cycle continues to strengthen some, additional gains are expected. This growth is expected to be strongest among the state’s food processors, and beverage manufacturers, predominantly breweries. That said, any global weakening or further strengthening of the dollar will weigh further on growth.

Public sector employment at the local, county and state level for both education and non-education workers is growing in Oregon, as state and local revenues continue to improve along with the economy. Over the forecast horizon, government employment is expected to grow roughly in line with population growth and the increased demand for public services, albeit just a hair faster than population growth alone. One risk to the outlook is the recent Oregon Supreme Court decision which reversed earlier Public Employees Retirement System (PERS) changes enacted by the Legislature. The extent to which the court decision will impact hiring by local and state public entities is unknown, but it is a risk to the outlook.



Along with an improving labor market, stronger personal income gains are here, although tax law changes have pushed around growth rates in the recent past (see the expiring Bush tax cuts and the fiscal cliff) and may do so again moving forward. Personal income is forecasted to be 5.5 percent in 2018, 5.7 percent in 2019, before tapering off to 5.3 percent in 2020 and averaging 4.8 percent per year through 2027.

As the economy continues to improve, household formation is increasing too, which will help drive up demand for new houses. Household formation was suppressed earlier in the recovery, however the improving economy and increase in migration have returned in full force. Even as more young Oregonians are living at home, as the Millennials continue to age beyond their early 20s, demand for housing will increase as well.

Housing starts in the fourth quarter totaled 19,500 at an annual pace. The second half of 2017 marked the highest rate of new construction since early 2007. Overall a level of about 21,000 housing starts is the long-run average for the state prior to the housing bubble. The forecast calls for moderate to strong growth in the coming few years with starts reaching just over 20,500 in 2018, 22,100 in 2019 and 23,800 in 2020. Over the extended horizon, starts are expected to average around 24,000 per year to meet demand for a larger population and also, partially, to catch-up for the underbuilding that has occurred in recent years. As of today, new home construction is cumulatively about one year behind the stable growth levels of prior decades even after accounting for the overbuilding during the boom.

A more complete summary of the Oregon economic outlook and forecast changes relative to the previous outlook are available as Table A.2 and A.3 in Appendix A.

Forecast Risks

The economic and revenue outlook is never certain. Our office will continue to monitor and recognize the potential impacts of risk factors on the Oregon economy. Although far from comprehensive, we have identified several major risks now facing the Oregon economy in the list below:

- U.S. Economy. While Oregon is more volatile than the nation overall, the state has never missed a U.S. recession or a U.S. expansion. In fact, Oregon's business cycle is perfectly aligned with the nation's, at least when measuring peak and trough dates for total nonfarm employment. If anything, Oregon actually leads the U.S. by a month or two. The fact that there are a few worrisome trends at the U.S. level and the slowdown has hit Oregon means there should be some concerns about the outlook. Should the U.S. fall into recession, Oregon will too. That said, should the U.S. economy accelerate following the lifting of headwinds, Oregon's economy should receive a similar boost as well.
- Housing affordability. Even as the housing market recovers, new supply has not kept up with demand (both from new households and investor activity). This applies to both the rental and ownership sides of the market. As such, prices have risen considerably and housing (in)affordability is becoming a larger risk to the outlook. Expectations are that new construction will pick up in the next year or three, to match the increase in demand, which will alleviate some price pressures. However to the extent that supply does not match demand, home prices and rents increasing significantly faster than income or wages for the typical household is a major concern. While not included in the baseline outlook, significantly worse housing affordability may dampen future growth given Oregon's reliance on net in-migration.
- Global Spillovers Both Up and Down. The international list of risks seems to change by the day: sovereign debt problems in Europe, equity and property bubbles in places like Canada, South America and Asia, political unrest in the Middle East and Ukraine, nuclear arsenal concerns with North Korea, and commodity price spikes and inflationary pressures in emerging markets. In particular, with China now a top destination for Oregon exports, the state of the Chinese economy – and its real estate market, or public debt burden – has spillover effects to the Oregon economy. Any economic slowing in Asia is a potential threat to the Pacific Northwest.
- Federal fiscal policy. The uncertainty regarding federal fiscal policy remains a risk. Some policies are likely to impact Oregon than the typical state, while others maybe not as much. The good news for Oregon is that outside of outright land ownership, the federal government has a relatively small physical presence in the state. This means that direct spending reductions are less likely to hurt Oregon. Of course, it also limits the local benefit from any potential increases in federal spending, as was recently passed by Congress in early 2018. In terms of federal grants as a share of state revenue, Oregon ranks 29th highest. For federal procurement as a share of the economy, Oregon ranks 48th highest. Oregon ranks below average in terms of military-dependent industries as well. The one area that Oregon ranks above average is in terms of direct federal employment, ranking 19th highest among all states. Oregon also is exposed to an above-average share of federal transfer payments to households. Transportation funding is also a major local concern. Overall, the direct impact may be less than in other states but the

impact will be felt nevertheless, particularly as our closest neighboring states have large federal and military workforces.

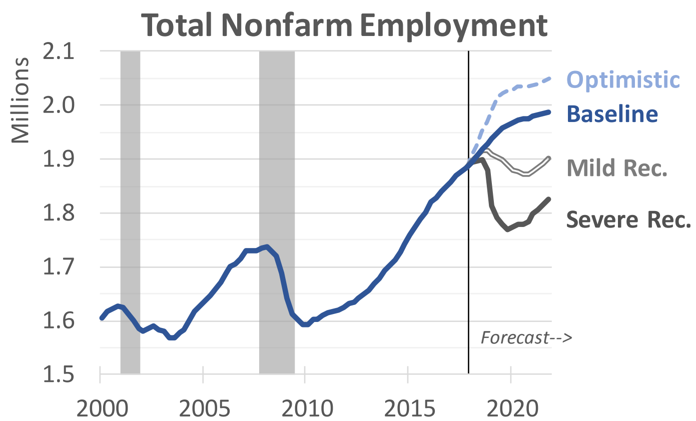
- Climate and Natural Disasters. Weather forecasting is even more difficult than economic forecasting a year or two into the future. While the severity, duration and timing of catastrophic events like earthquakes, wildfires and droughts are difficult to predict, we do know they impact regional economies. Fires damage forests and tourism. Droughts in particular impact our agricultural sector and rural economies to a larger degree. Whenever Cascadia, the big earthquake, hits, we know our regional economy and its infrastructure will be crippled and in need of immediate repairs. Longer-term issues like the potential impact of climate change on domestic migration patterns are likewise hard to predict and outside our office's forecast horizon. There is a reasonable expectation that migration flows will continue to be strong as the rest of the country becomes less habitable over time.
- Commodity price inflation. Always worrisome is the possibility of higher oil (and gasoline) prices. While consumer spending has held up pretty consistently in this recovery, anytime there is a surge in gas prices, it eats away at consumers' disposable income, leaving less income to spend on all other, non-energy related goods and services.
- Federal timber policy. Even with a temporary reinstatement of payments, it has been and it is clear that federal policymakers will not reinstate the program the same as before, however negotiations are ongoing for more sustainable timber harvests and related revenue. In the meantime, reductions in public employment and services are being felt in the impacted counties. For more information from a historical perspective, see two recent blog posts, here and here[9].
- Initiatives, referendums, and referrals. Generally, the ballot box and legislative changes bring a number of unknowns that could have sweeping impacts on the Oregon economy and revenue picture.

[9] http://oregoneconomicanalysis.wordpress.com/2012/01/23/historical-look-at-oregons-wood-product-industry
http://oregoneconomicanalysis.wordpress.com/2013/05/28/timber-counties/

Alternative Scenarios

The baseline forecast is our outlook of the most likely path for the Oregon economy. As with any forecast, however, many other scenarios are possible. In conjunction with the Legislative Revenue Office, this forecast provides three alternative scenarios, which are modeled on growth patterns over previous business cycles.

Alternative Scenarios **Mar 2018**



	2017	2018	2019	2020
Employment				
Baseline	2.1%	2.1%	2.1%	1.1%
Optimistic	2.1%	3.5%	4.0%	0.9%
Mild Recession	2.1%	1.9%	-0.4%	-1.3%
Severe Recession	2.1%	1.1%	-5.5%	-0.5%
Personal Income				
Baseline	3.7%	5.5%	5.7%	5.3%
Optimistic	3.7%	8.9%	7.7%	5.4%
Mild Recession	3.7%	5.3%	3.1%	3.4%
Severe Recession	3.7%	4.9%	-3.1%	4.3%

<u>Optimistic Scenario</u>:

The recovery gathers steam and pulls the economy into a stronger cyclical expansion. The relatively lackluster economic growth seen in the earlier stages of recovery, the manufacturing weakness in 2015 and 2016 and the recent slowing in U.S. personal income all recede into the rearview mirror of history and the U.S. economy builds momentum throughout 2018 and into 2019. The economy is soon firing on all cylinders. Economic growth is above potential in 2018, resulting in stronger job and income gains. This stronger growth leads to more consumer spending and more business investment.

In Oregon, job gains are broad based with strong growth in all private sector industries. The unemployment rate remains lower than under the baseline scenario as individuals are able to find employment more readily and income growth accelerates. The labor force participation gap closes and even turns positive. The increase in employment and income support a self-sustaining economic expansion in which new income fuels increased consumer spending (and debt reduction) which begets further increases in employment. Such an expansion increases housing demand as newly employed households (and increasing income for existing households) find their own homes after doubling-up with family and friends during the recession. This results in new construction returns to normal levels about a year earlier than the baseline.

<u>Mild Recession Scenario</u>:

The Oregon employment and GDP grow slowly in 2018. The housing market stalls (again), removing one driver of growth. Strained trade relations result in falling exports, business confidence tumbles and so does capital spending. The U.S. dollar strengthens, chocking off the manufacturing cycle. These factors are enough weight on the recovery that by mid- or late-2018 the economy slides back into recession. Job losses ensue and while not severe – about 45,000 jobs in Oregon when it is all said and done – it takes a toll on business income, housing starts and personal income. The unemployment rate returns to nearly 7 percent. The net effect of the mild recession is an extended period of prolonged economic weakness, not unlike Japan's so-called Lost Decade(s). Although inflation is expected to remain positive, a key difference.

Severe Recession Scenario:

After expanding for 8+ years at relatively lackluster growth rates, the U.S. economy falls back into recession. Industrial production declines and the slower personal income growth in the U.S. worsens. Strained trade relations develop into an all-out trade war. The Fed, already lacking in traditional monetary policy ammunition, is not able to stave off the impact. While the catalyst may be different, the economic effect is similar to late 2008 and early 2009, although not quite as severe when the dust settles. This is little comfort when the unemployment spikes back to near 10 percent and nearly 135,000 Oregonians lose their jobs by late-2019. Besides the domestic economic headwinds and Federal Reserve tightening, the likely culprit in this scenario is either a meltdown of the financial markets sparked by some geopolitical shock, or quickly rising inflation in part due to the fiscal stimulus. Economic growth in the U.S., while fairly steady as of late, is not nearly strong enough to withstand an external financial shock of this magnitude, nor a Federal Reserve quickly raising rates to fight inflation. Further economic effects of a recession this size are personal income losses of around 4 percent, about three-quarters the size of the Great Recession losses in Oregon. Housing starts plummet to near historical low levels of construction and home prices decline further. On the bright side, when construction does rebound, it will result in a surge of new home building that will rise above the state's long term average level of building due to pent-up demand for housing and that the state will have under built housing during this time period.

Extended Outlook

IHS Economics projects Oregon's economy to fare well relative to the rest of the country in the coming years. The state's Real Gross State Product is projected to be the fifth fastest among all states across the country in terms of growth with gains averaging 2.7 percent through 2023. Total employment is expected to be the ninth strongest among all states at an annualized 1.2 percent, while manufacturing employment will be the second fastest in the country at 1.6 percent. Total personal income growth is expected to be 4.9 percent per year, the fifteenth fastest among all states, according to IHS Economics.

Our office is equally bullish in terms of Oregon's relative growth prospects. Much of Oregon's advantage comes from population growth, specifically the ability to attract and retain young, working-age households. In recent years, IHS had been forecasting Oregon population growth of around 1 percent annually. Our office expects it to average 1.3 per year over the next handful of years. In recent months, IHS has raised their Oregon population forecast to 1.24 percent annually, which is very close to our office's expectations. As such, our overall economic outlooks are now similar.

OEA has identified three main avenues of economic growth that are important to continue to monitor over the extended horizon: the state's dynamic labor supply, the state's industrial structure and the current number of start-ups, or new businesses.

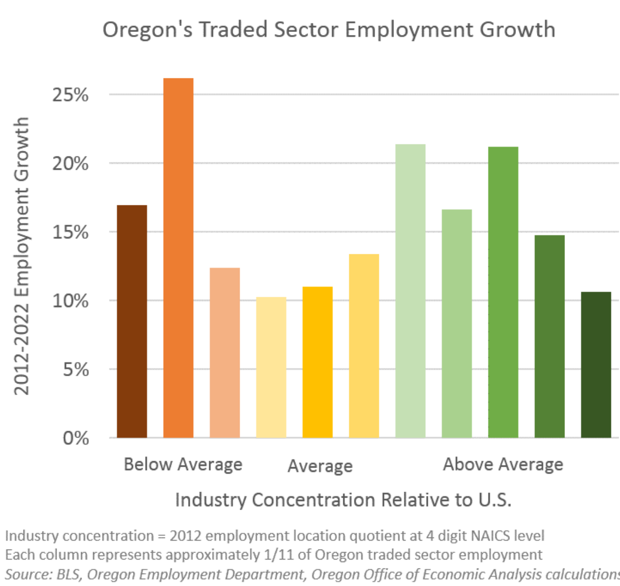
Oregon has typically benefited from an influx of households from other states, including an ample supply of skilled workers. Households continue to move to Oregon even when local jobs are scarce, as long as the economy is equally bad elsewhere, particularly in California. Relative housing prices also contribute to migration flows in and out of the state. For Oregon's recent history – data available from 1976 – the labor force in the state has both grown faster than the nation overall and the labor force participation rate has been higher. However while the past two years have brought considerable improvements there remain potentially worrisome signs, particularly when the next recession comes.

First, on the bright side, all of the recessionary-induced declines in the labor force itself have been reversed in the recent years. Oregon's labor force has never been larger. However, the participation rate remains a little lower than expected, when adjusting for the size of the population and the aging demographics. Oregon's participation rate continues to rebound today, which is great news, however any participation gap is still cause for concern. While much of the past decade's patterns can be attributed to the severe nature of the Great Recession, and even the lackluster housing boom itself, some damage is likely permanent. The longer the expansion continues without seeing rising participation rates among some segments of the population, the more likely the damage is permanent. A stronger economy and a longer expansion will minimize any permanent damage.

All told, our office's baseline outlook calls for some continued improvement in the near-term for both the labor force participation rate and the employment to population ratio. These gains are due to the shorter run cyclical rebound in the economy, before longer-run demographic trends will weigh on these measures. Focusing just on the prime working age cohorts reveals stronger improvements and a better outlook.

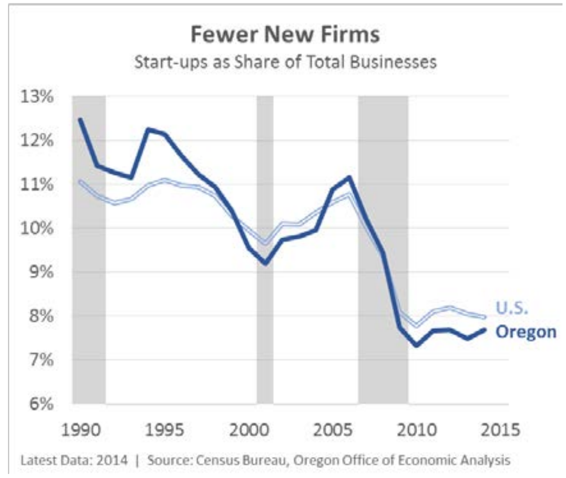
Oregon's industrial structure is very similar to the U.S. overall, even moreso than nearly all other states. That said, Oregon's manufacturing industry is larger and weighted toward semiconductors and wood products, relative to the nation which is much more concentrated in transportation equipment (autos and aerospace). However, these industries which have been Oregon's strength in both the recent past and historically, are now expected to grow the slowest moving forward. Productivity and output from the state's technology producers is expected to continue growing quickly, however employment is not likely to follow suit. Similarly, the timber industry remains under pressure from both market based conditions and federal regulations. Barring major changes to either, the slow growth to downward trajectory of the industry in Oregon is likely to continue.

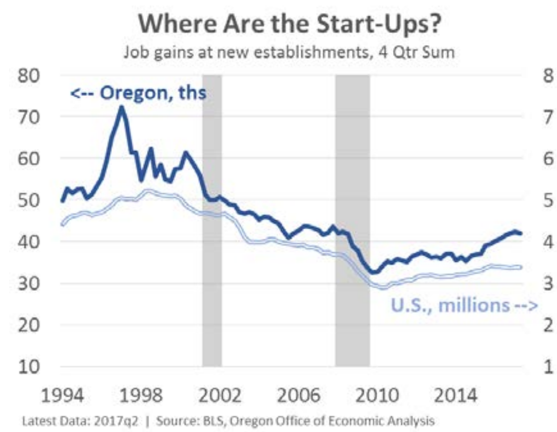
With that being said, certainly not all hope is lost. Many industries in which Oregon has a larger concentration that then typical state are expected to perform well over the coming decade. These industries include management of companies, food and beverage manufacturing, published software along with gains in crop production and nurseries.



The state's real challenges and opportunities will come in industries in which Oregon does not have a relatively large concentration (the orange bars in the graph). These industries, like consulting, computer system design, financial investment, and scientific R&D, are expected to grow quickly in the decade ahead. To the extent that Oregon is behind the curve, then the state may not fully realize these gains if they rely more on clusters and concentrations of similar firms that may already exist elsewhere in the country.

Another area of potential concern that may impact longer term economic growth is that of new business formation. Over the past few years, the number of new business license applications with the Oregon Secretary of State have begun to grow again and even accelerate. However data available from the U.S. Census Bureau and Bureau of Labor Statistics clearly indicate that entrepreneurship and business formation remain at subdued levels and rates.

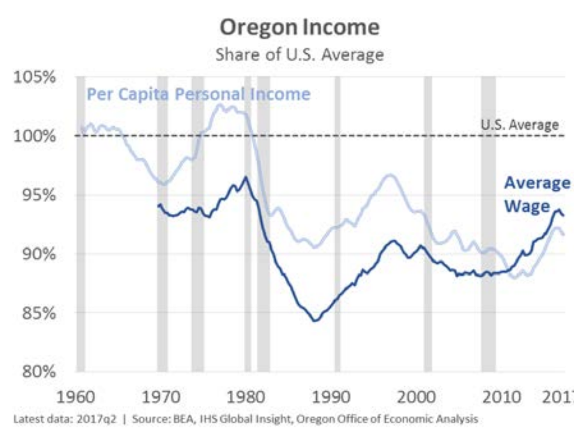




The share of all businesses that are start-ups, either in Oregon or across the nation, is effectively at an all-time low, with data starting in the late 1970s. Associated start-up employment follows a similar pattern. The concern is that new businesses are generally considered the source of innovation and new ideas, products and services that help propel economic growth. To the extent that fewer start-ups indicate that R&D more broadly is not being undertaken, slower growth is to be expected moving forward. However, if the larger firms that have won out in today's marketplace are investing in R&D and making those innovations themselves, then the worries about the number of start-ups today is overstated. It can be hard to say which is the correct view. However seeing these longer run, downward trends in new business formation warrants, at the very least, concern about future growth prospects.

Finally, Oregon also enjoys the long-term advantages of low electricity costs; a central location between the large markets of California, Vancouver and Asia; clean water; low business rents and living costs when compared to other Left Coast locations; and an increasingly diverse industrial base.

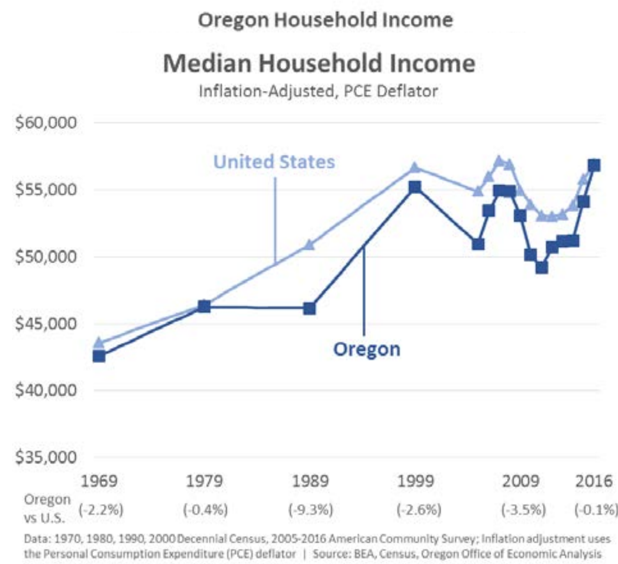
One long-run concern for policymakers, think tanks and Oregon's economy is that very little progress on raising per capita income is projected out to 2027. In and of itself, a higher per capita income level would better fund public services for citizens. The benefit side of the state's relatively low income figures is that local firms do not have to pay higher wages, thus helping support the firms' balance sheets as well. It is not purely a lose-lose proposition. The Oregon Employment Department has published[10] a detailed look at Oregon's per capita personal income.



[10] http://olmis.emp.state.or.us/olmisj/PubReader?itemid=00007366

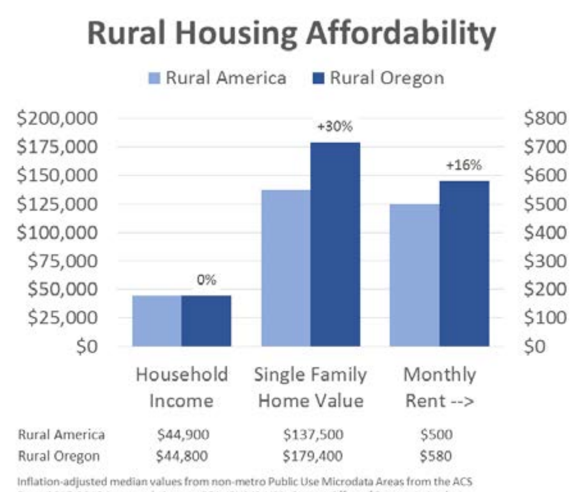
Today, Oregon’s average wage relative to the nation is at its highest point since the mills closed in the 1980s. While some industries are seeing stronger growth, these gains are broad-based across regions and industries in Oregon. Similarly, Oregon’s per capita personal income is at its highest relative point since the dotcom crash.

In terms of the outlook, expectations are that wages will remain at this high watermark but not increase much further, at least relative to the nation. The primary reason for this is that Oregon’s average wages have already accelerated in recent years, even as U.S. wages are just now picking up. Our office expects Oregon’s average wage to continue to increase by 4 percent per year. However as the U.S. accelerates closer to Oregon’s annual rate, Oregon’s growth advantage in recent years will lessen.



As for the per capita personal income outlook, expectations are that some progress will continue to be made. One major factor influencing the per capita income trends is the relative incomes at the very top of the distribution. Make no mistake, Oregon’s highest-income households have done well financially. However incomes at the top of the national distribution have increased even further. Additionally, Oregon’s highest-income households have considerably less income than their national counterparts. The further up in the distribution you go, the less income Oregonians have relative to the entire country. The concentration among the richest households is large enough to weigh on Oregon’s overall per capita income figures.

The good news is that median incomes in Oregon have not eroded over time relative to the nation. That means the typical household in Oregon is not continually becoming worse off relative to the typical American household. This difference of trends at various points along the income distribution indicates a more complicated economic story is unfolding. Yes, Oregon’s per capita personal income has eroded over the past generation. However that erosion is not seen among the typical household or for the typical worker. Given the distribution issues and the economic outlook, Oregon’s per capita personal income is not expected to catch the national average.



Regional Comparisons

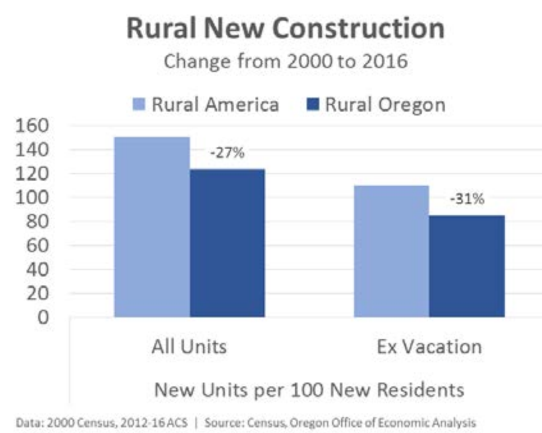
As our office documented a year ago[11], housing affordability truly is a statewide challenge. It is a major concern in our fast-growing urban areas, and throughout rural Oregon as well. In fact, rural Oregonian incomes are on par with rural American incomes, however home prices are 30 percent higher here and rents are 16 percent higher. These differences mean rural Oregon faces an affordability crunch. Pinpointing the exact

[11] For more see the March 2017 forecast, or https://oregoneconomicanalysis.com/2017/02/09/rural-housing-affordability/

reason for rural Oregon's housing challenges can be difficult, however the data do tell a clear, or at least consistent story.

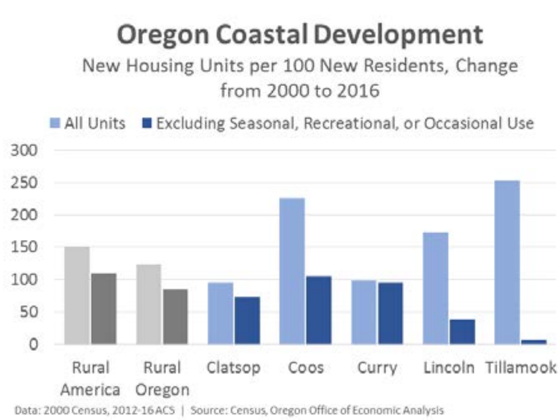
First, rural Oregon has experienced faster population growth than the rest of rural America. This results in stronger demand for housing. Given that new construction is almost always more expensive compared to the older housing stock, a more modern mix of housing, or a larger share of newer homes can lead to higher prices when looking at the market overall. This does not appear to be the case in rural Oregon, however. There is not a larger share of homes built in the last decade or two. Housing prices in rural Oregon are more expensive than their national counterparts for all types of units and for all vintages in the housing stock.

As such, if a region experiences faster population growth but an average amount of new construction overall, that means the region is building less on a population-adjusted basis and the vacancy rate is falling. This is exactly the case in rural Oregon, where new construction since 2000 is approximately 30 percent less than in rural America on a population-adjusted basis. The result is rural Oregon's vacancy rate is now nearly 2 percentage points lower than in rural America, while it was essentially the same back in 2000. Stronger demand coupled with limited supply is the classic recipe for rising prices. This is the story the data tells of rural Oregon's housing crunch, when compared with rural America overall.



However these challenges are not unique to Oregon, nor for rural Oregon in particular. The lack of housing supply in Oregon's urban areas, and in the other popular and fast-growing metropolitan regions of the country has eroded affordability everywhere. The lack of credit for single family developers and for land acquisition and development loans in particular appears to be a root issue impacting the supply. For more on the causes of the housing shortage, see our office's previous report[12].

That said, some regions of rural American and rural Oregon face additional challenges in the form of vacation homes. Many ski resorts and coastal communities have housing markets based in large part on external demand rather than on local economic conditions. This places increased pressure on moderately priced homes, or so-called workforce housing. Along Oregon's coast this issue is particularly pronounced. Both Lincoln and Tillamook counties have built an above average amount of housing in recent decades, at least relative to population growth. However after factoring in new developments targeted specifically as vacation homes, and an overall increase in vacation homes in general, the stock of workforce housing, or for local residents has barely increased. These pressures make it difficult for local businesses to hire and retain workers, and result in longer commutes for individuals taking these jobs. Finding a policy prescription to these issues is particularly challenging.



[12] https://oregoneconomicanalysis.com/2017/04/12/causes-of-the-great-housing-shortage/

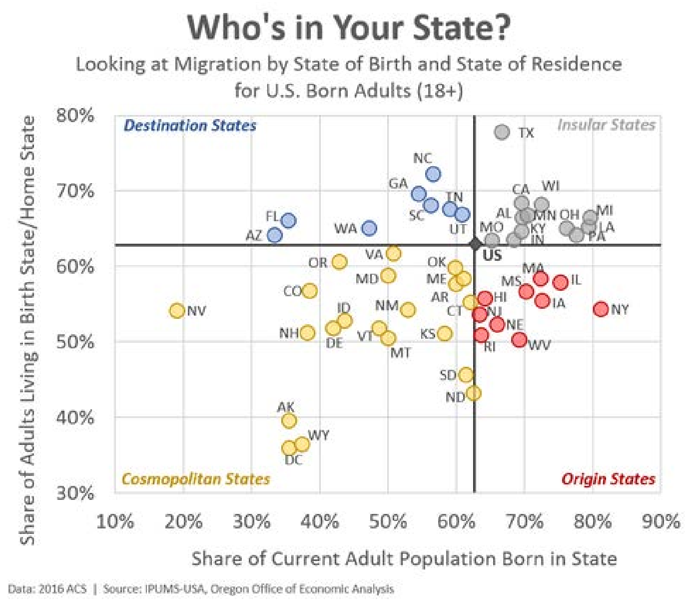
State Comparisons

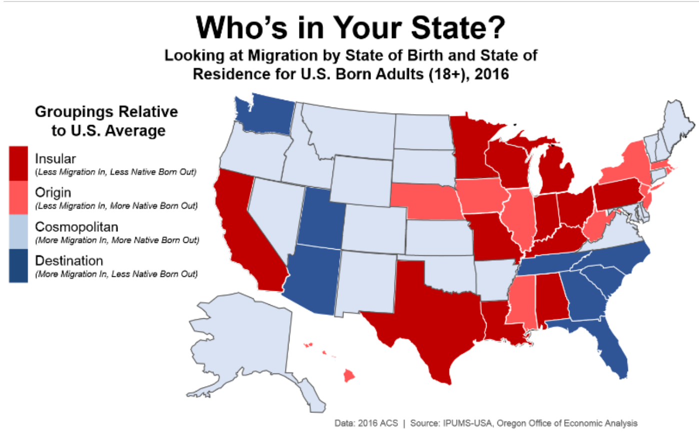
Oregon's ability to attract and retain young, skilled, working-age households is one of, if not the key driver of the regional economy over the long-run. If you look at the current population — among U.S.-born residents, excluding international migrants — Oregon is about 50/50 in terms of those born in Oregon versus those born in a different state. However if you look at just the adult population (kids don't really get to choose where they live), Oregon is 43% born in the state vs 57% born in a different state. Clearly, many of the discussions surrounding population growth, housing issues and the like have a strong twinge of migration hypocrisy.

While we typically talk about migration flows from one place to another, what about migration trends based upon where people are born? We know many of the current residents in Oregon were born outside the state, but where do all of the Oregon-born citizens live today? How many have stayed in Oregon, or fled to other states around the country?

Relative to the U.S. average overall, the states fall into four categories when it comes to both the share of their current population that was born in that state, and the share of residents born in that state that still live there.

- **Insular**: less migration in from other states, less migration out of native-born
- **Origin**: less migration in from other states, more migration out of native-born
- **Cosmopolitan**: more migration in from other states, more migration out of native-born
- **Destination**: more migration in from other states, less migration out of native-born





While this may sound confusing, so let's look at the results and use Oregon as an example. On the horizontal axis of the scatterplot, you see the share of the current population that was born in that state. For Oregon, that's 43% (meaning 57% migrant share). On the vertical axis you see the share of adults currently living in the state in which they were born. For Oregon that's 61% (meaning 39% of Oregon-born citizens have moved to a different state). The divisions into the various groups are relative to the U.S. averages. There are certainly shades of gray when dividing the states into groups, however a clear spatial pattern does emerge, which can be seen in the map.