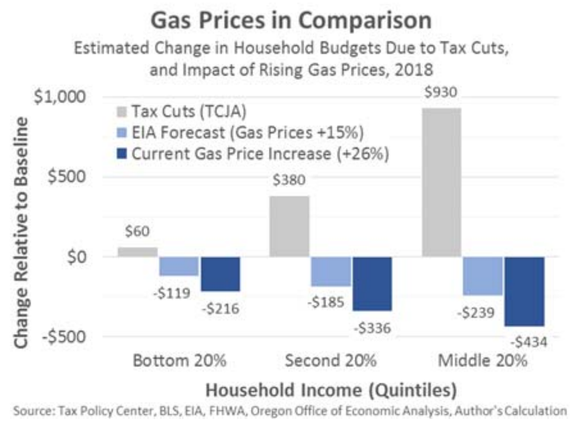
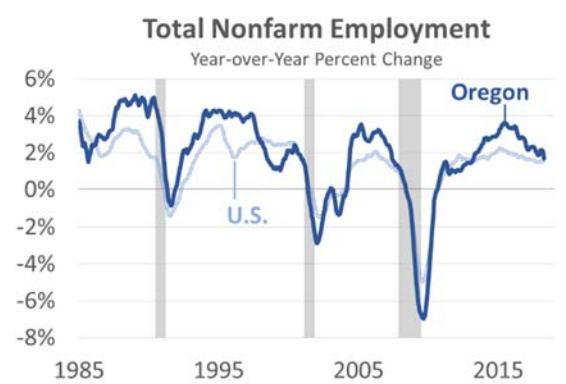
The good news is that the economy continues to expand and looks to have further room to run in the near-term. That said, while expansions do not die of old age, they do typically die due to mistakes and policies that slow or even snuff out growth. For the first time this expansion, a plausible recession scenario over the medium-term is beginning to come into focus. The heart of it lies in the fact that the federal stimulus unwinds in a couple years, moving from a new positive to a net drag on growth. Furthermore the Federal Reserve is in a tightening cycle and signals their intention to continue to raise interest rates. This combination of fiscal and monetary policy, at best, would slow growth. Provided the economy truly is near full employment and at capacity, slower growth is just what the doctored ordered to head off inflationary pressures and grow at a sustainable pace. However, engineering the so-called soft landing is very difficult in practice. Restrictive fiscal and monetary policy may be more likely to send the economy into recession. Of course this is far from a foregone conclusion. Policymakers, in particular the "data dependent" Fed, can adjust course as needed.

Besides the Federal Reserve raising interest rates, another common issue that can derail an economic expansion is an oil shock, or energy prices more broadly. Today, oil prices are rising quickly and are up around 50 percent relative to a year ago. Given the big increase in U.S. oil production in the past 15 years, rising prices are no longer just a drag on growth. In fact, some recent research indicates that high oil prices are now a positive of the U.S. economy overall due to wages and business investment in new mining equipment. That said, rising gas prices still crimp household budgets, slowing consumer spending for those in the middle and bottom part of the distribution in particular. To help put this impact in perspective, it is very likely that higher gas prices in 2018 are enough to wipe out any tax savings from the Tax Cut and Jobs Act for lower-income households. And these higher prices will likely negate a quarter to a half of the tax savings for middle-income households as well.



Oregon Economy

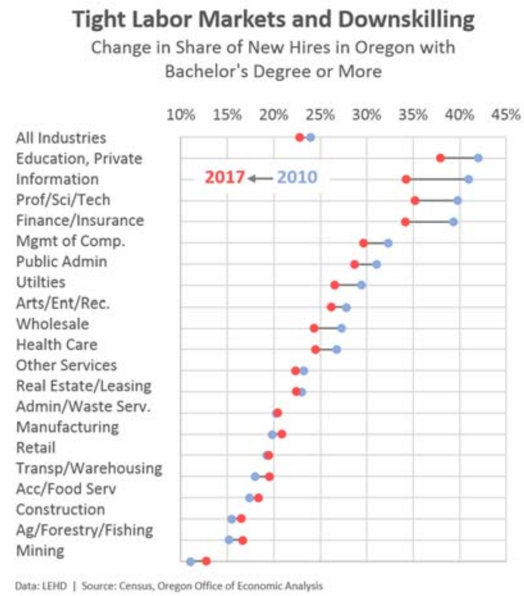
Oregon's expansion continues to outperform the typical state due to our industrial structure and ability to attract and retain young, working-age households. That said, job growth continues to slow as the regional economy transitions down to more sustainable rates. This slowdown is not driven by one or two industries in particular, but is broad-based across nearly all sectors and all regions within the state. Encouragingly, job growth remain strong enough to keep up with population gains and to absorb the workers coming back into the labor market.



While the tight labor market continues to drive a virtuous economic cycle as local wage growth outpaces the typical state, like the U.S. overall, it is harder for businesses to find workers. This tight labor pool is due to both the cyclical strength of the economy, and due to rising Baby Boomer retirements. As such, these conditions are expected to remain until the next recession.

For firms looking to expand and growth with the economy, they must dig deeper into their resume stacks and hire candidates they may have previously passed over. During and after the Great Recession we know employers upskilled many positions. That is they added additional education or experience requirements for new hires. Some of this was so firms could be more productive during tough economic times. But some upskilling was also used more as an applicant screening tool for human resource reasons.

In a tight labor market, expectations are for employers to downskill many of these positions in order to fill the openings. Given the increase in employment rates across all age groups and all levels of educational attainment in Oregon, we know downskilling is happening to some degree. New hires today generally do have less formal education than a few years ago.



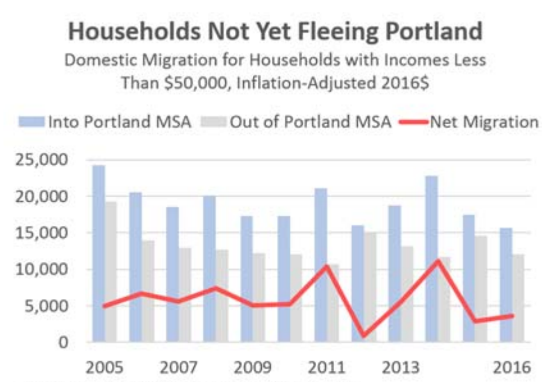
However, was is surprising in the hiring data is that the industries with higher levels of educational attainment have seen the largest declines. And the industries with lower levels of educational attainment, like retail and leisure and hospitality, have seen their college graduate share stay steady or even rise during the economic expansion.

One possibility for this pattern could simply be the industry mix of job growth. Sectors with lower levels of educational attainment are hiring in greater numbers today than a few years ago, but this accounts for only a minor share of the overall decline. Another possibility may simply be a shift in the occupations that businesses are hiring. After running lean for years, firms may now be filling out their office support staff, their sales teams, and the like in greater numbers. This may or may not count as true downskilling, but it would certainly alter hiring patterns.

Finally, one labor issue that continues to crop up is drug testing. At least anecdotally, more firms are reporting trouble finding workers who can pass a drug test. Given the tight labor market, and legal recreational marijuana up and down the Left Coast, these reports are a bit surprising. It may be that the pool of available applicants has shifted; that individuals who can pass drug test already have a job. It may be for insurance-related reasons that employers are ensuring they have a drug-free workplace, even if it means monitoring their employees behavior on their own time. However it is possible that these anecdotal reports reflect a broader increase in drug usage that would be both an economic and societal problem.

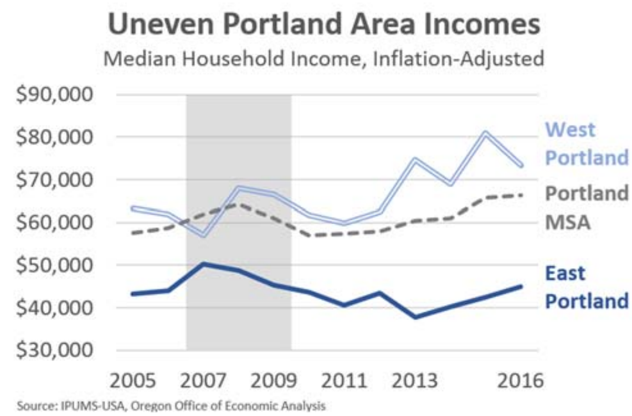
Housing: Affordability and Migration

Oregon is a magnet state. Our ability to attract, and retain young, working-age households is an economic tailwind ever and always. It ensures an ample supply of labor for local businesses, and an increase in demand of consumer services. As such, any event that restricts migration has clear implications for the longer-run outlook. And when examining surveys of why people move, most do so for housing and job reasons. Given Oregon's history we know migration flows dry up during recessions and return in expansions.



One growing concern is that eroding housing affordability may slow or even choke of migration flows as households are unable to afford to move to Oregon. While this scenario remains a concern and risk to the outlook, to date it does not yet appear to be a real constraint on growth. For example, the Portland region continues to see net in-migration among lower-income households in recent years.

That said, the housing crunch has clearly displaced many lower-income households within the region, by pushing them toward the edges of the metro, and into east Multnomah County in particular. However, Portland's lower-income households are not packing up and leaving the region entirely for lower-cost metros like Boise, or Dallas, or the like. This displacement, and sorting within the region causes plenty of economic and societal issues in terms of geographic disparities, mismatches between where people live and where they work, broader transit access, and the like.



Another fallout from increased segregation due to the housing crunch may be lower levels of economic mobility in the future. The potential is real for the role model effect or peer impact from better-integrated communities, along with access to higher quality schools. These characteristics, along with a larger middle class, strong families, and greater social capital, do correlate across regions in terms of economic mobility. While the Portland area is better-integrated than most large metros around the country, the trends in the past decade are certainly towards more displacement and segregation. All told, the silver lining in the housing market thus far is that there is no pick-up in out-migration, nor in those specifically leaving for housing-related reasons.

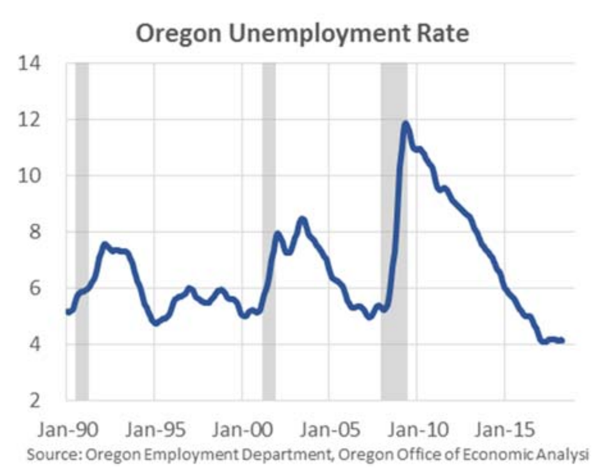
Similarly, another housing-related issue that is coming to the forefront in recent years is that of homelessness. While good data on homelessness is hard to come by, we dive into the U.S. Department of Housing and Urban Development's Point-in-Time numbers in the *State Comparisons* section on pg. 20.

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 2015, 2016 and 2017 all 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). This latest round, for the 2017 data, was no exception.

That said, the Oregon unemployment rate has now essentially stopped declining in the past 16 or so months. It has hovered right around 4.1 percent during this period. What this indicates is that job growth has slowed to match population and labor force gains in the past year or so. Expectations are for this relative pattern to continue in the near future.

More importantly, wages in Oregon remain relatively strong, although different measures have diverged over the past year or two. Withholding collections, which matter the most to our office given the revenue forecast, continue to see healthy gains. After slowing in 2016 and 2017, along with slower employment growth, withholdings have picked up in the first quarter of 2018, likely a result of federal tax policy. Withholding growth has cooled thus far in the second quarter, more in-line with expectations.

However, measures of economic wages remain below withholding, which does include revenue from bonuses, stock options and the like. Withholding is more than just wages. However the sizable gap between these wage measures is an outlier and something our office will continue to monitor. For now, expectations are for ongoing healthy wage gains in Oregon, and for upward revisions to the BEA measure of wages.

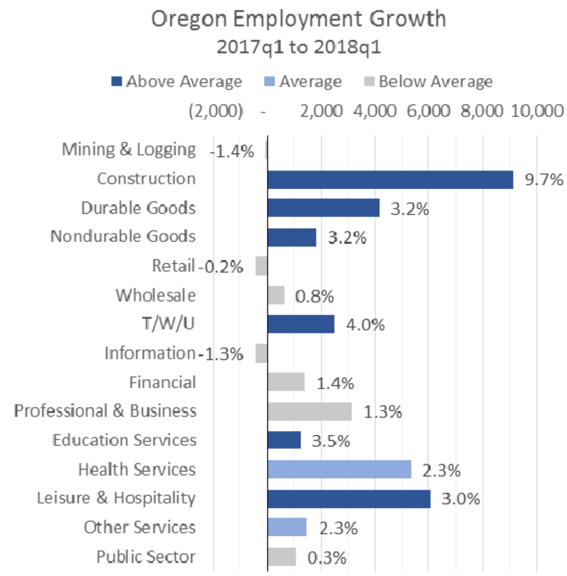
Overall, getting a handle of the health of Oregon's labor market is being somewhat complicated by technical issues within the underlying payroll jobs data. For this reason the employment data in our office's forecast is adjusted for two important technical purposes: seasonality at the detailed industry level and the upcoming benchmark revisions[1]. Specifically, our office uses the benchmarked, or revised employment data through 2017q4 and imputes the 2018q1 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 2018q2.

In the first 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 0.3 percent. These rates of growth are a clear step down from

[1] 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 2017. The QCEW is currently available through December 2017, thus the preliminary benchmark used here covers the October 2017 – December 2017 period.

the full-throttle rates seen in recent years, however still remain faster than needed to keep pace with population gains so far.

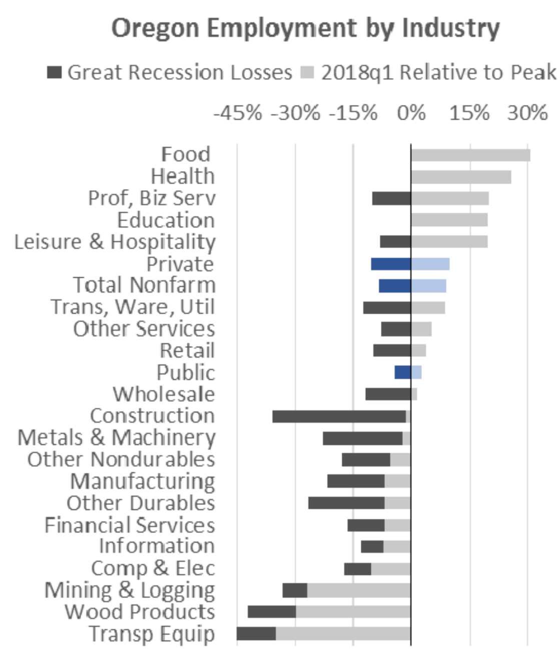
The nearby graph illustrates the number of job gains by major industry by the length of the bar. The percentage increase these changes represent is noted as well. The bars are color coded by growth rate relative to total employment growth. Industries with dark blue colored bars are growing at rates much 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 14,500 jobs in the past year and account for 39 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[2] 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 quarters 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. The public sector accounts for an additional 16 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

[2] 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.

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[3]. 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.

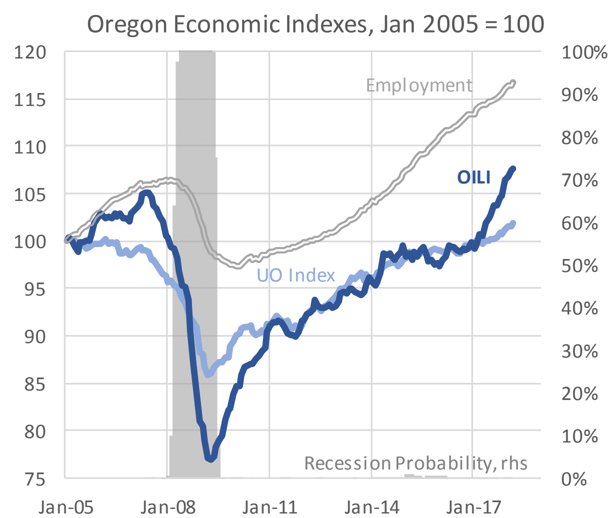
All told, each of Oregon's major industries has experienced some growth in recovery, albeit uneven. As the economy continues to recover there will be net winners and net losers when it comes to jobs, income and sales. Business cycles have a way of restructuring the economy.

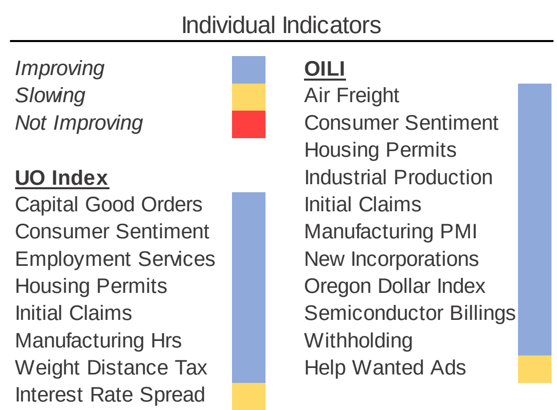
For additional information on the most recent quarter's employment forecast errors, please refer to Table A.1 in Appendix A.

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 quarters. Previously many of the manufacturing, or goods-producing indicators languished, while all other pointed toward growth. As the manufacturing rebound continues, now nearly all indicators are flashing green. As such, the overall indices are likewise signaling growth.

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 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.





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

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[4] model, and finds there is just 0.1 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 15 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 2,000 per month or about 2 percent over the remainder 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 to the fundamental outlook and one large technical revision.

Employment is revised up by 2-4,000 jobs in 2020 and beyond due to a slightly stronger outlook for growth. Somewhat larger revisions are seen for personal income and inflation. Personal income data from the BEA continues to come in below previous expectations. In large part this reflects the previously discussed gap between withholdings and other measures of wages. Nevertheless, one result is that the outlook for personal income has been revised lower to match the data. Additionally, the outlook calls for slightly faster inflation today than last forecast. Inflation has firmed in recent quarters, and given the strong economy it is expected to increase a bit faster moving forward. Combined, these two adjustments lower real, or inflation-adjusted income to a larger degree.

The large technical revision has to do with how home health workers are treated in the employment data. A decade ago, such workers were counted as independent contractors. As such they would be counted in the household survey but not the employer survey. Back in 2010, these home health workers were brought into the employer survey, or the Current Employment Statistics (CES) as government employees. While many of these workers were paid via public sector programs, such employees really were not government workers per se. Beginning in 2018, home health workers are now being counted as private sector health workers. The end result here is that the forecast now shows government employment in Oregon declining by nearly 5 percent in 2018,

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

while private sector health care employment grows by 10 percent in 2018. Absent this reclassification, the underlying outlooks for both the private and public sectors remains essentially unchanged.

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 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.

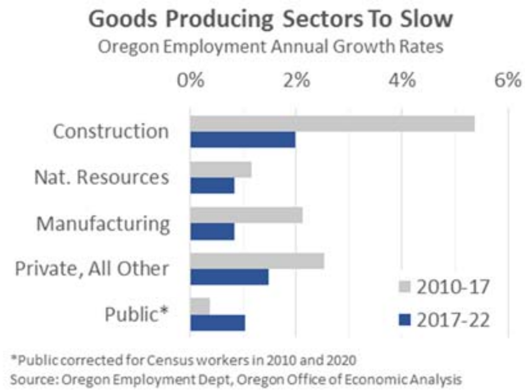
Should this overall economic outlook come to pass, it will have matched the equivalent of previous expansions in Oregon. Given demographic trends today, particularly the aging Baby Boomer cohort, job growth of 3 percent is considered full throttle. In decades past, growth of 4 or 5 percent was common 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.

Economic Forecast Summary

		Quarterly					Annual				
		2018:1	**2018:2**	**2018:3**	**2018:4**	**2019:1**	**2017**	**2018**	**2019**	**2020**	**2021**
Personal Income, Nominal	U.S.	5.2	4.0	5.2	5.4	6.0	3.1	4.5	5.4	5.1	4.8
% change	Oregon	6.4	5.4	6.2	6.2	6.2	3.3	5.1	6.0	5.4	5.1
Wages and Salaries, Nominal	U.S.	6.0	4.5	4.9	5.3	5.8	3.3	4.9	5.2	5.0	4.8
% change	Oregon	9.0	6.6	6.5	6.2	6.1	3.8	6.2	6.0	5.3	4.9
Population	U.S.	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
% change	Oregon	1.3	1.5	1.7	1.3	1.2	1.6	1.5	1.4	1.3	1.3
Housing Starts	U.S.	1.29	1.31	1.32	1.34	1.36	1.21	1.31	1.37	1.39	1.41
U.S. millions, Oregon thousands	Oregon	24.1	21.1	21.5	21.8	22.6	19.3	22.1	22.9	24.2	24.8
Unemployment Rate	U.S.	4.1	4.0	3.9	3.8	3.6	4.4	3.9	3.6	3.6	3.7
	Oregon	4.1	4.2	4.3	4.4	4.5	4.2	4.3	4.5	4.7	4.8
Total Nonfarm Employment	U.S.	1.9	1.7	1.9	2.0	1.9	1.6	1.7	1.7	1.0	0.5
% change	Oregon	2.9	2.3	2.5	2.3	2.2	2.1	2.1	2.1	1.2	0.7
Private Sector Employment	U.S.	2.2	2.0	2.1	2.2	2.1	1.8	2.0	1.9	1.0	0.5
% change	Oregon	7.5	2.5	2.6	2.4	2.4	2.3	3.5	2.2	1.2	0.7

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.

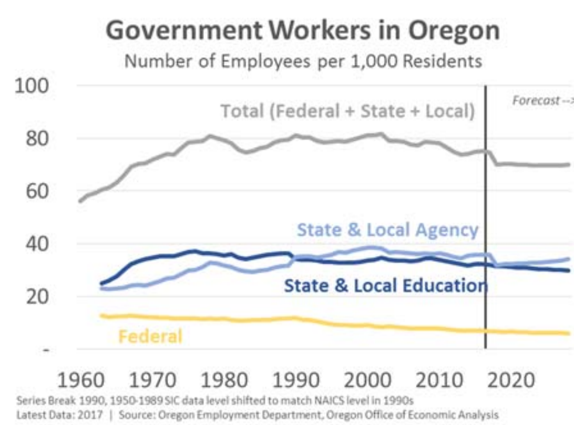
Nevertheless, goods-producing industries, while smaller, had previously been growing at above-average rates. Expectations in recent forecasts have been that these goods-producing industries would slow. Growth over the next few years would be considerably less than that seen in the past few years. Even 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. Additionally construction employment growth has far outpaced increases in new home construction.



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 less of a deceleration in employment growth in natural resources is merely a return to growth rates seen in past forecasts.

Additionally, manufacturing is expected to see slower 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 Oregon Supreme Court decision which reversed earlier PERS changes enacted by the Legislature. The extent to which PERS will impact hiring by local and state entities is unknown, but it is a risk to the outlook. Also note the reclassification of home health workers out of the public sector and into private health care employment in the outlook, beginning in 2018.



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 5.1 percent in 2018, 6.0 percent in 2019, before tapering off to 5.4 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 first quarter totaled 24,100 at an annual pace, driven in large part by a run-up in multifamily permit activity in recent quarters. Expectations are that this represents a one-time surge, with housing starts cooling in the coming quarters as they resume their long-run march higher. 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 22,000 in 2018, 22,900 in 2019 and 24,200 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[5].
- 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.

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.

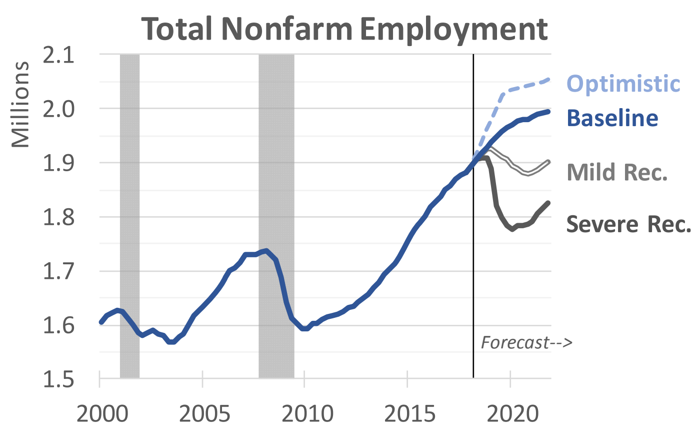
[5] http://oregoneconomicanalysis.wordpress.com/2012/01/23/historical-look-at-oregons-wood-product-industry
http://oregoneconomicanalysis.wordpress.com/2013/05/28/timber-counties/

Optimistic Scenario:

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.

Alternative Scenarios **Jun 2018**



	2018	2019	2020	2021
Employment				
Baseline	2.1%	2.1%	1.2%	0.7%
Optimistic	3.0%	4.3%	1.4%	0.5%
Mild Recession	2.1%	0.2%	-1.6%	0.2%
Severe Recession	1.8%	-4.2%	-2.3%	1.5%
Personal Income				
Baseline	5.1%	6.0%	5.4%	5.1%
Optimistic	7.4%	8.7%	5.9%	4.8%
Mild Recession	5.1%	4.0%	2.9%	5.8%
Severe Recession	5.1%	-1.2%	1.9%	7.0%

Mild Recession Scenario:

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 48,000 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 9 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 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 seventh fastest among all states across the country in terms of growth with gains averaging 2.6 percent through 2023. Total employment is expected to be the eighth strongest among all states at an annualized 1.3 percent, while manufacturing employment will be the fourth fastest in the country at 1.1 percent. Total personal income growth is expected to be 4.8 percent per year, the thirteenth 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 1.2 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.

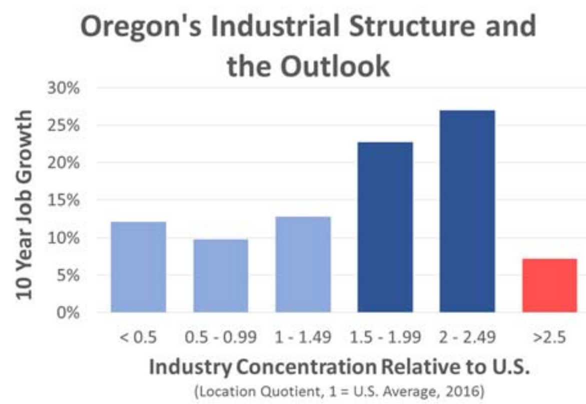
Oregon has typically benefited from an influx of households from other states, including an ample supply of skilled workers. Households continue to move to Oregon even when local jobs are scarce, as long as the economy is equally bad elsewhere, particularly in California. Relative housing prices also 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.

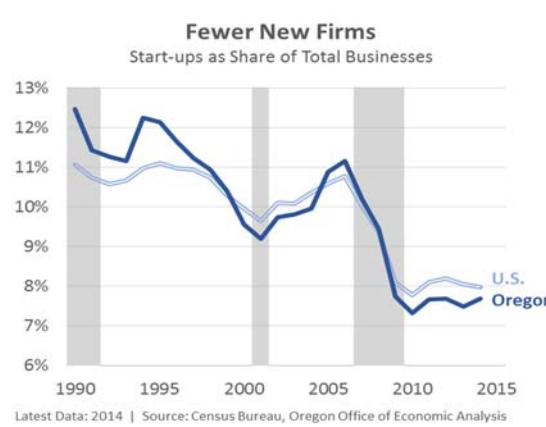
All told, our office's baseline outlook calls for some continued improvement in the near-term for both the labor force participation rate and the employment to population ratio. These gains are due to the shorter run cyclical rebound in the economy, before longer-run demographic trends will weigh on 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.

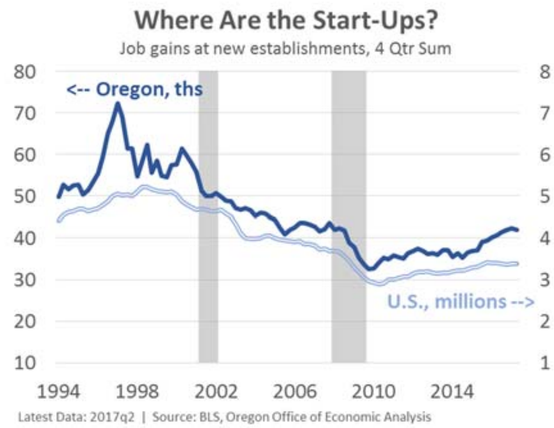


With that being said, certainly not all hope is lost. Those top industries in Oregon comprise approximately 7 percent of all statewide employment. And many industries in which Oregon has a larger concentration that then typical state are expected to perform quite well over the coming decade. These industries include management of companies, food and beverage manufacturing, published software along with some health care related firms.

The state's real challenges and opportunities will come in industries in which Oregon does not have a relatively large concentration. 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.

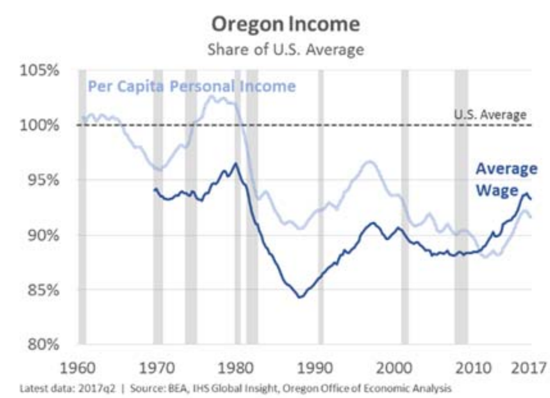


Another area of potential concern that may impact longer term economic growth is that of new business formation. Over the past few years, the number of new business license applications with the Oregon Secretary of State have begun to grow again and even accelerate. However data available from the U.S.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

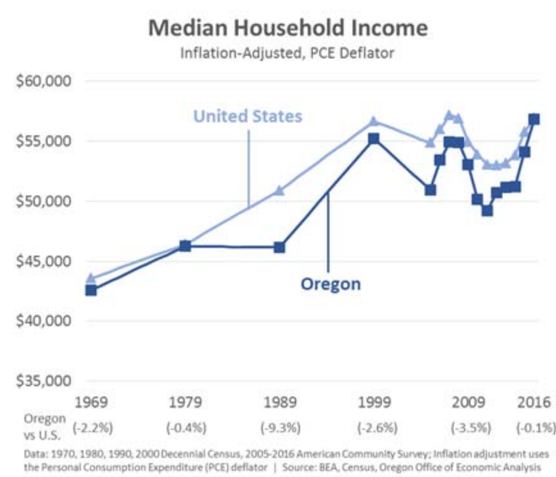


The share of all businesses that are start-ups, either in Oregon or across the nation, is effectively at an all-time low, with data starting in the late 1970s. Associated start-up employment follows a similar pattern. The concern is that new businesses are generally considered the source of innovation 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[6] a detailed look at Oregon's per capita income.



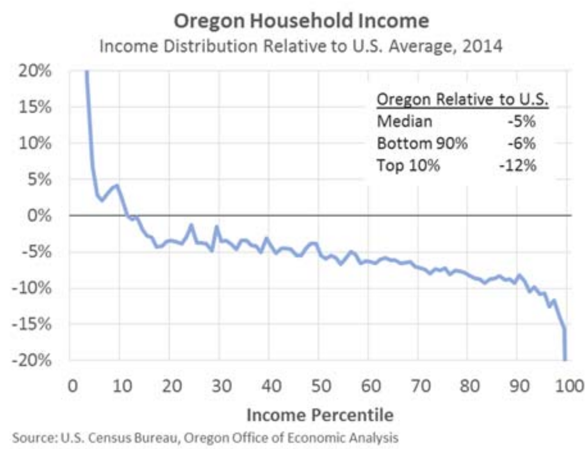
Today, Oregon's average wage relative to the nation is at its highest point since the mills closed in the 1980s. While some industries are seeing stronger growth, these gains are broad-based across regions and industries in Oregon. Similarly, Oregon's per capita personal income is at its highest relative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

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

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.

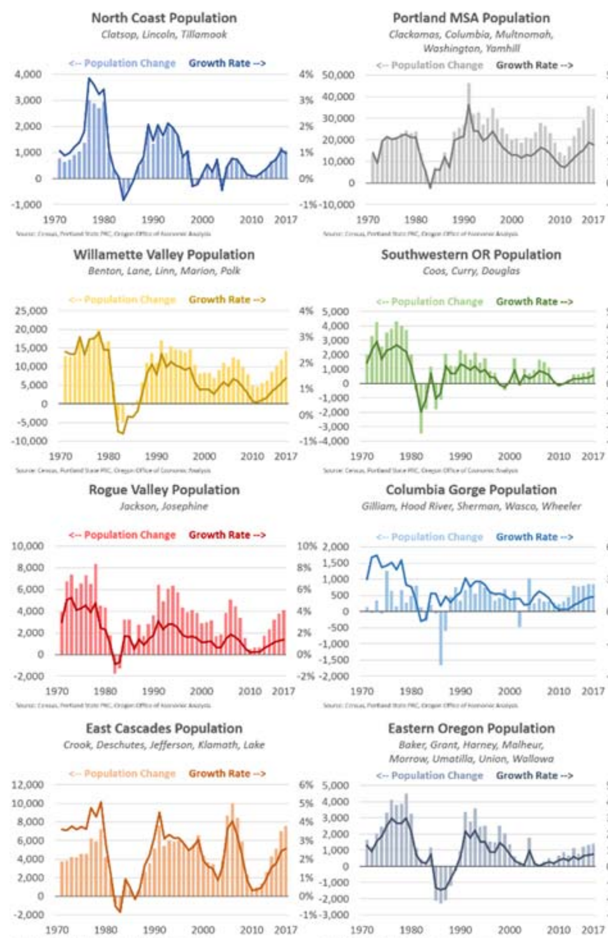
As for the per capita personal income outlook, expectations are that some progress will continue to be made. One major factor influencing these trends is the relative incomes at the very top of the distribution. Make no mistake, Oregon's highest-income households have done well financially. However incomes at the top of the national distribution have increased even further. This gap 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

A common refrain heard across Oregon in recent years is that the population growth is unprecedented. This is usually in the context of the housing market and explaining away the fundamental lack of supply and only pointing toward demand as the reason for rising prices. However, population growth in recent years for the vast majority of the state is very precendented. Yes, growth is generally faster than what was experienced in the mid-2000s, but is on par with the growth experienced in the 1970s and 1990s. Individuals and families have been moving to the Pacific Northwest since before Lewis & Clark. Population growth and migration is nothing new.

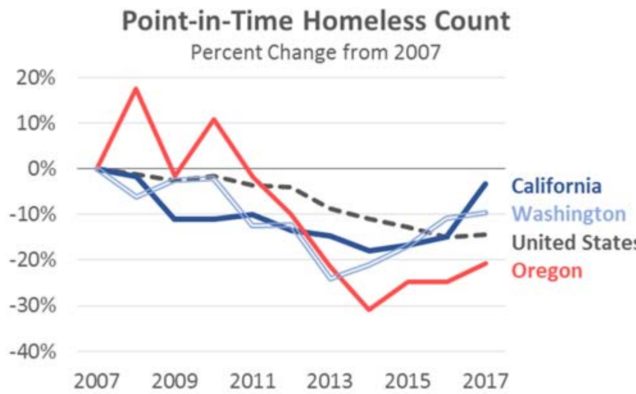


That said, there are a few exceptions where growth in recent years really is about as fast as it ever has been. In particular the City of Portland is truly seeing unprecedented growth in its modern history. One has to go back to the early 1900s to see growth like this in the City itself. However the rest of the Portland MSA certainly is not growth that fast, leaving the region overall seeing similar patterns to the state. Other areas experiencing near historic gains in population include Baker, Clatsop, Hood River, and Deschutes counties.

State Comparisons

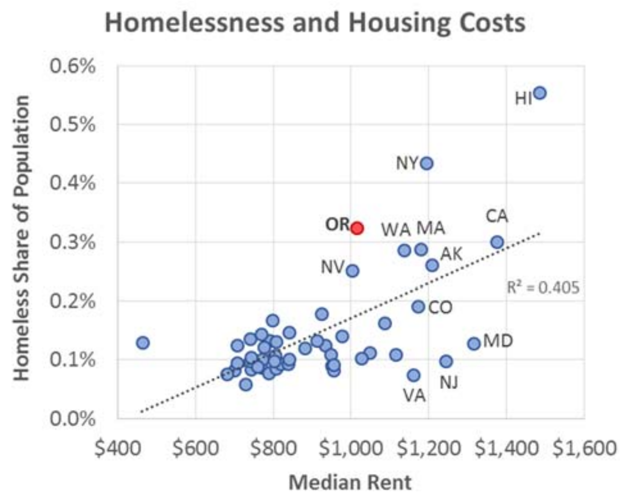
Homelessness is a real societal issue that can be hard to address, at least in part due to the transient nature of some of these individuals and families. As such it difficult to get good data and information on the homeless population and trends over time. The best available information comes from the U.S. Department of Housing and Urban Development's annual point-in-time estimates. These efforts represent a count of both the sheltered and unsheltered populations on one specific night each year, usually in January. The sheltered population includes those in emergency shelters and in transitional housing. Such figures likely represent an undercount of the true homeless population. They also do not include those that are housing insecure, or live in crowded housing situations, where a housing unit has more people than it does non-bathroom rooms.

Over the past decade, homelessness, at least when measured by this imperfect HUD estimate, has declined by 10 to 20 percent across much of the nation. The same is true here in Oregon as well. Some researchers point toward federal policies around Housing First, and Rapid Re-Housing for some of these long-run improvements in homelessness. The goal of these programs is to find permanent housing as quickly as possible for the homeless, and then provide wraparound services for their other needs.



Source: HUD, Oregon Office of Economic Analysis

However, in recent years homelessness is again on the rise along the West Coast. California, Oregon, and Washington have experienced 3 of the 5 largest increases since 2014, with New York and Wyoming rounding out the Top 5.

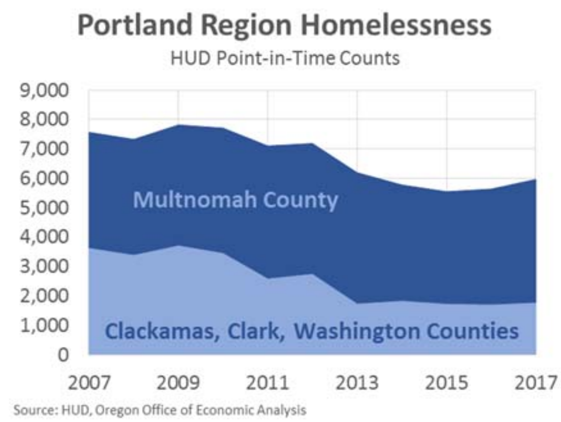


Data: 2016 | Source: Census, HUD, Oregon Office of Economic Analysis

Research shows there are a number of reasons and factors for why individuals and families experience homelessness. Some are more societal in nature, like domestic violence, mental health issues, and drug addictions. Some are more economic in nature including insufficient income due to unemployment, low-wage or part-time work and the like.

However, at its root, homelessness is fundamentally about housing costs. These individuals and families literally cannot afford a roof over their heads, even as other issues complicate their lives. There is a relationship across states and metropolitan regions between rents and the share of the population experiencing homelessness. High housing costs do not fully explain patterns of homelessness, but they are clearly a factor. And given that we have underbuilt housing in the past decade, the lack of supply is one of the factors as well.

As Portland State's Northwest Economic Research Center details[7] for Washington County here in Oregon, providing emergency support is important, but unlikely to address the root causes of homelessness. This emergency support is costly with about 70% of these service costs spent on medical, 16% spent on shelter, 12% on mental health, and 2% on law enforcement. In fact, half of homeless individuals accessed at least one hospital service during their period of homelessness with many of these visits being to the emergency room.



Overall, while the long-term trends in homelessness are largely encouraging – the numbers have fallen in the past decade – these changes are uneven across geographies. For example, in both the Portland and Seattle metro regions the largest county, Multnomah and King respectively, have seen increases, while the suburban counties have seen declines.

Some of these changes likely reflect homeless individuals and families locating to be closer to resources like shelters, addiction clinics, and counseling services. Given the ability of the homeless to move around, funding for programs and services is likely best addressed at the federal and not the local level. Allowing for local governments to draw upon sufficient federal resources would better allow for local services to match the local needs, which will shift over time as the trends in overall homelessness and the types of individuals and families who find themselves homeless likewise shift. To date, local governments are largely left with a patchwork system of federal programs, nonprofits, and community support to try and address homelessness in their communities.

[7] https://www.pdx.edu/nerc/sites/www.pdx.edu.nerc/files/Homeless%20Cost%20Study_NERC%20Report_1.pdf