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Portland MSA Economic & Population Outlook April 2018

Portland State University, Northwest Economic Research Center

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Portland State University

Portland MSA

Economic & Population Outlook

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NeRC

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Mount Tabor Park, Portland OR
Opposite: Aerial view of a Portland neighborhood circa 1973

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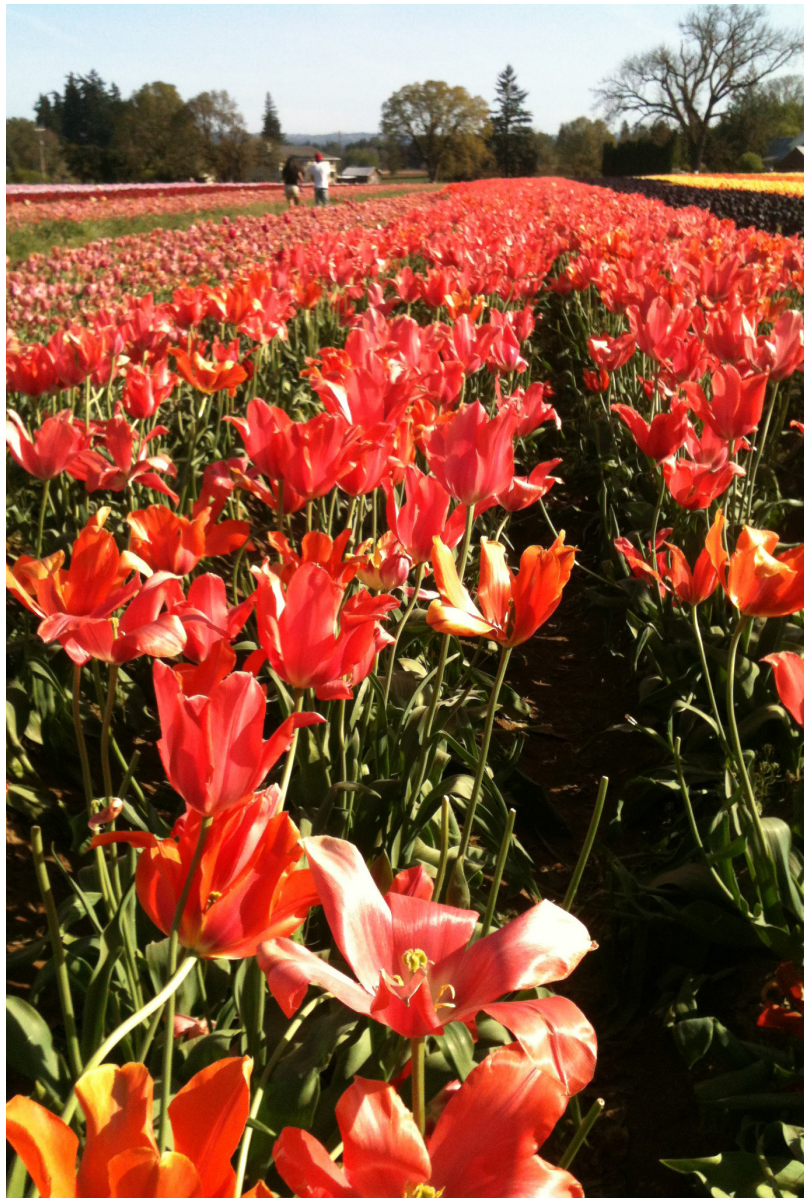


Tulip Farm, Oregon

Introduction

The Portland MSA is entering its ninth year of expansion. Nine years does not seem like a long time, but in terms of economic expansions, we might call it a senior citizen. The fact that the expansion is in its golden years alone does not necessitate a slowdown on the horizon. After all, at 33 LeBron James is one of the older players in the NBA, but he continues to outperform his peers and shows no signs of stopping. Nevertheless, when economic regions reach the promised land of full employment, the ability to grow quickly is constrained by the available resources. The Portland MSA is still growing at a good clip, registering 2.69% job growth year-over-year (YoY) in January 2018 and ranking 64th out of 399 metro areas nationwide. The consistent 3%-plus YoY job growth rates of 2014-16 (the strongest growth rates since the mid-1990s) have given way to mid- to low-2% growth. Not too shabby for a senior citizen.

The "full-belly" syndrome of full-employment is being felt across all aspects of the economy, and many sectors are pushing away from the table. We have seen most business sector job growth rates slow. Population growth, while still beating the national rate, has slowed compared to 2015 and 2016. Single family house prices are not rising as fast and rents may even be plateauing. While the physical side of growth is slowing, the financial side is showing signs of speeding up. Both inflation and wages are rising slightly faster than previously, and notably, wages are finally rising across most occupational groups. So far, the economy is not feasting beyond the "full-belly" as it did leading up to the financial crisis of 2008. As such, we see growth continuing in the Portland MSA at a slower rate but no recession on the horizon – at the very least, not in 2018.

This installment of our biannual forecast features two articles. *Windfall from Tax Cuts: What's a Business To Do?* looks into the actions that businesses may take given their newfound funds from the Tax Cut and Jobs Act of 2017. Although the impacts on the economy will depend on actions taken, the article drills down to the Portland MSA to assess possible impacts on our regional economy. *Millennials: Beyond the Headlines* assesses this demographic cohort and how their personal and social values may influence their spending behavior and thus shape our economy. Now, I'm sure Millennials do not like the characterization associated with that label, just as I don't like being called Baby or Boomer. However we describe this first computer-from-birth generation, which is now larger in numbers than the Baby Boomers, we need to be cognizant of how this group interacts with the economy.

We bid adieu to a regional measure of inflation. Traditionally, the closest measure we have for inflation for the Portland Metro is from the US Bureau of Labor Statistics (BLS): the Portland-Salem Consumer Price Index for All Items for All Urban Consumers (CPI-U). We won't have to worry about this unwieldy title anymore, as the BLS discontinued this series at the start of 2018, because the Portland MSA does not have the population size to justify the calculation. Apparently, our strong population growth did not impress the BLS. We have more details in our *The Portland MSA* section.

Contrary to popular belief, the slowing of job growth and population is not due to the cancellation of Portlandia, the last episode of which aired in March. We also discount the impact from the cancellation of Everything Sucks which featured Boring, Oregon, as its home base. Likewise, even if the rumors are true, don't look for an economic upswing from the series Beavertonville.

And lastly, we will be holding a contest in 3 years: the winner will be anyone in the downtown area of Portland who can throw a stone and not hit a hotel.

As always, we welcome your comments on the April 2018 forecast release as we strive for continual improvement.

Best Regards,

Tom Potiowsky

MACROECONOMIC TRENDS: U.S. AND OREGON

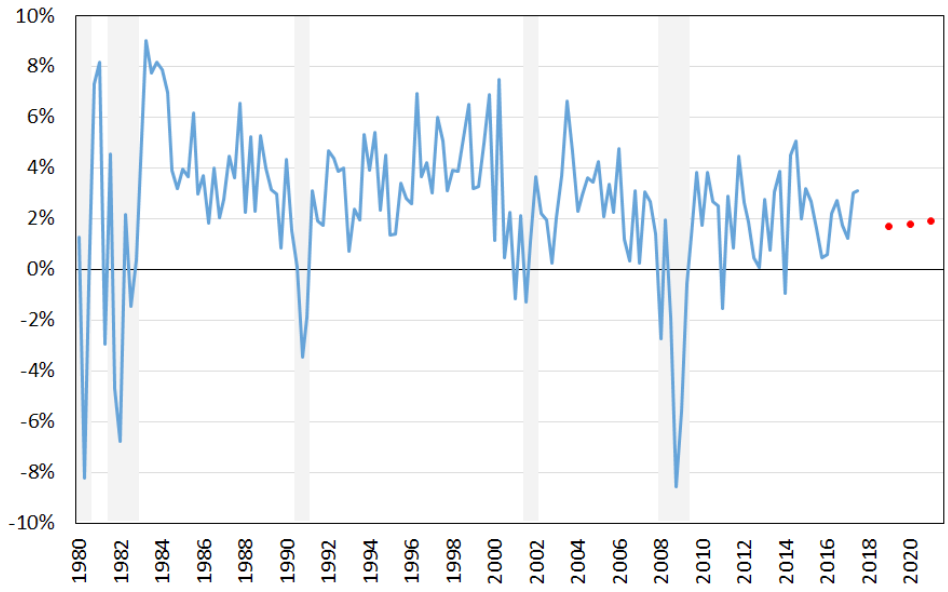
The U.S. expansion, which hit its 106th consecutive month of growth in April, is now tied for the second longest expansion since World War II. Likewise, minus the odd blip or two, Oregon is closing in on its 100th consecutive month of job growth. However, the older these expansions get the more fragile they seem—each economic stumble is scrutinized by experts and the press, who wonder if every new development or change of trend is the signal that the expansion is over at last.

Fortunately for forecasters, two potential sources of uncertainty have resolved since NERC's October 2017 outlook report. The first: Janet Yellen has been replaced by Jerome Powell as Federal Reserve Chairman. While some of the other candidates for the position held unorthodox views, the choice of Powell does not portend a philosophical sea-change for the nation's central bank. Although Powell is slightly more hawkish than his predecessor, early indications point towards a continuation of Yellen's essential approach.

The second source of uncertainty was the future of tax policy, as major changes were being discussed on Capitol Hill. The result of these discussions is now manifest as the Tax Cuts and Jobs Act, a substantial fiscal stimulus policy with the rare distinction of occurring during a lengthy expansion. This policy's timing, combined with the substantial changes it makes to the U.S. tax code, alter the outlook for many economic fundamentals.

Figure 1: Gross Domestic Product Growth, U.S.

Annualized Quarterly Percent Change, 1980Q1-2021Q1, dots indicate Federal Reserve forecasts



REAL GDP

While policymakers were forming the new tax act, there was considerable debate surrounding how much impact fiscal expansion can have at this point in the economic cycle. The crux of the argument for tax cut proponents was that the U.S. was falling behind other nations due to repressed domestic investment and that by cutting corporate taxes, reducing the cost of repatriating money from abroad, and letting firms fully write off investments, the U.S. could raise its potential Gross Domestic Product (GDP). In theory, reducing corporate barriers to profit could spur national income to the point that the tax cuts pay for themselves. However, historically this has not been the case with tax cuts. For more on what firms are doing with this tax windfall and how it affects the stock market, see *Tax Cut Windfalls: What's a Business to Do?* (pg. 18).

What happens to the components of GDP can indicate the early effects of the new policy. Keen eyes will watch the Bureau of Economic Analysis' (BEA) estimate of investment in particular, since this is the ultimate source of potential GDP growth. In the fourth quarter of 2017 nonresidential structures grew at a Seasonally Adjusted Annualized Rate (SAAR) of 7.2%, and the Atlanta Fed's April 10th forecast calls for growth of 6.4% in the first quarter of 2018. However, although residential investment had a strong last quarter of 2017 with a SAAR of 14.5%, it will likely act as a counterweight in the first quarter of 2018 with a forecasted growth of -1.0%.

The Atlanta Fed's April 10th forecast for real GDP growth over the first quarter of 2018—which is also the first quarter since the tax cuts were enacted—is for an SAAR of 2.0%. This matches the Congressional Budget Office's pre-tax cut expectation for potential GDP of 2%, and is below the previous quarter's growth of 2.85%, indicating that the economists who produce the forecast have dampened expectations. However, this is just a forecast, and one quarter does not indicate a trend. The Tax Cuts and Jobs Act makes many substantial changes to how much taxes individuals and businesses pay, but it will be years before the effects are fully known or felt.

HOUSING

The lagging residential investment mentioned above is a product of the housing supply problems that have plagued the recovery for the past several years, as shown by the plateauing of multifamily housing permits (see Figure 2). The problems of restricted land supply, local regulations, affordability, and difficulty in hiring laborers have yet to abate, and the housing shortage continues. The good news is that construction employment—discussed below—has continued to grow at a relatively rapid rate: a sign that some of these headwinds may be losing their force.

EMPLOYMENT

When the Tax Cuts and Jobs Act was enacted, many economists considered the U.S. to be at full employment, meaning that employment numbers couldn't substantially increase going forward because those who want jobs already have them. With only two months of data on which to base estimates it is too early to tell if this is in fact the case, but early estimates indicate that the new policy certainly hasn't harmed labor markets.

February saw a SAAR of 2.54% for total nonfarm employment growth—the largest since July of 2016. Construction, as mentioned above, had a strong month, accounting for 61,000 of the 313,000 new employees. This is hopefully a sign that this labor market is loosening and housing permits and residential

Figure 2: U.S. Housing Permits by Type

Thousands of units, Monthly annual rates, Seasonally Adjusted, January 1990-February 2018

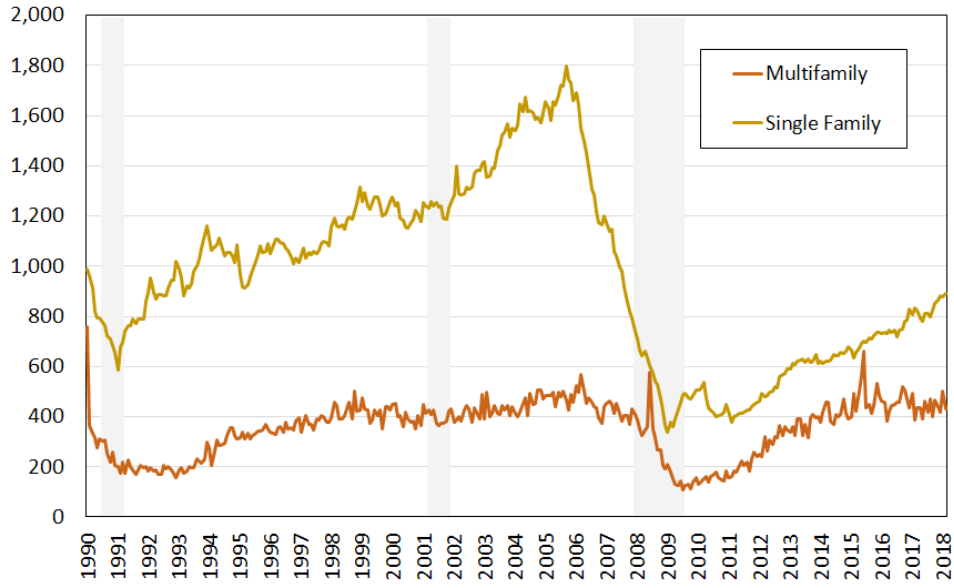


Figure 3: Broad Unemployment Rates

Percent, Monthly, Seasonally adjusted, January 1994-March 2018

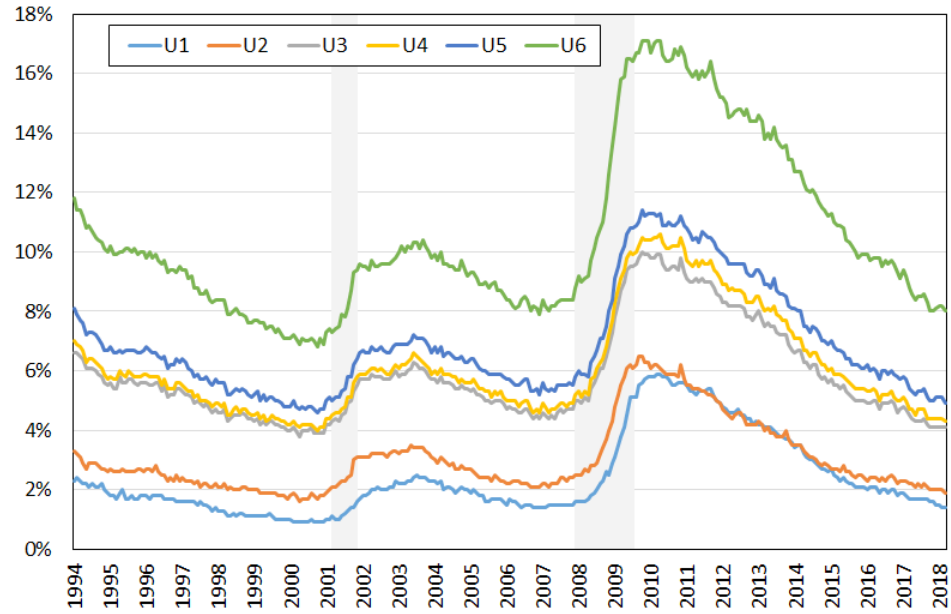
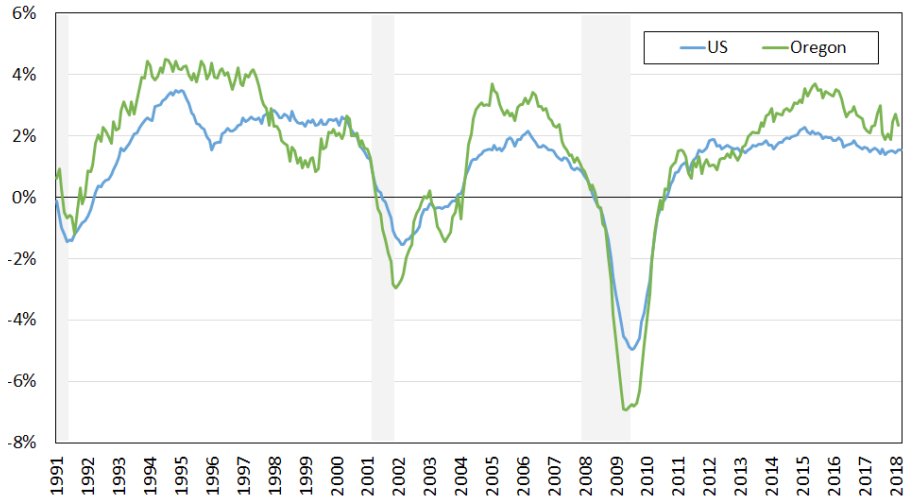


Figure 4: Total Nonfarm Employment in U.S. and Oregon

YoY Growth Rate, Monthly, January 1991-February 2018



investment will begin their long-awaited recovery. Making up for a late start after the recent recession, Oregon's labor market has grown faster than the nation's over the past several years, but state employment growth appears to finally be converging to the national rate. In February Oregon's growth was not as strong as the nation's: total nonfarm employment grew by 1.7%, which is more or less run-of-the-mill. Notably, 37% of the new jobs were in construction as compared to 19.5% for the nation as a whole. January's employment numbers were revised up to a strong SAAR of 3.1%. Similar to February, a good portion January's growth was driven by construction – which accounts for just over 22% of the new employment (as opposed to 16.7% for the nation).

Not to belabor a point, but one month does not make a trend. It will take months before economists can know if the new tax policy has delivered enough cash into the economy to push up wages sufficiently to draw in discouraged workers (those who have stopped looking for work not because they don't want it, but because they cannot find a position that meets their needs). Discouraged workers are not included in the standard unemployment rate (also called the U-3 rate). The broad unemployment rates—which account for these individuals—have held steady for months (see Figure 3). Interestingly, at 4.1% (for both the U.S. and Oregon), the U-3 measure for employment remains well below the Federal Reserve's long-term natural rate of 4.5%. If discouraged workers do not reenter the labor force, the effective injection of money into the private sector will spur wage and inflation growth in what is colloquially known as "overheating" the economy. But isn't a hot economy a good thing? Historically, not always, as the next section will describe.

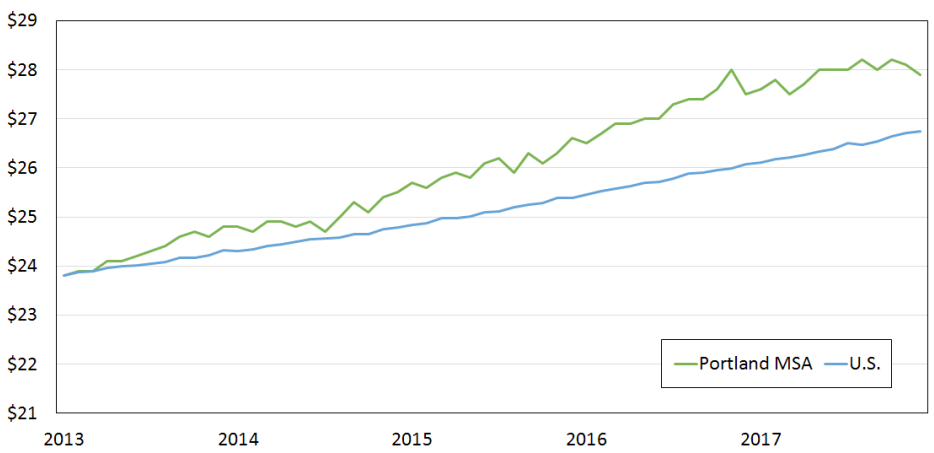
WAGES AND INFLATION

The Federal Reserve is keenly aware of the potential for overheating—in fact, it is one of the fundamental issues that the Reserve considers as it walks the money supply tightrope. Going forward, monetary policy needs to strike a balance: raising rates at the right speed and right amount so as not to stop economic growth, but simultaneously prevent the economy from overheating. This dual mandate of maximizing employment and keeping prices stable is further complicated by the massive fiscal expansion. It's likely that Jerome Powell has had easier jobs.

April is really too early to tell, but as it stands at the time of writing, the tax cuts appear to have exhibited little inflationary pressure. The Core CPI did rise to a SAAR of 4.19% in January, but this was followed by a February with a more typical Core CPI growth

Figure 5: Average Hourly Earnings in U.S. and Oregon

Dollars per hour, Monthly, Seasonally adjusted, March 2013-February 2018



rate of 2.18%. The Federal Reserve's preferred measure—the Personal Consumption Expenditure Implicit Price Deflator (see Figure 6)— will not be released until the GDP estimate comes out on April 27th, but the Atlanta Fed's April 10th forecast for the first quarter of 2018 is a SAAR of 1.1%, well below the 2% target (see Figure 6 for history).

A key reason inflation remains subdued is that wages have yet to pick up as expected. Average Hourly Earnings (see Figure 5) grew at a SAAR of 1.79% in February, and 2.11% over the last quarter of 2017. The Tax Cuts and Jobs Act's effect on wages is expected to take time, as real wage growth is dependent on productivity growth which, in turn, is dependent on investment (which the policy attempts to incentivize). For more information, see *Tax Cut Windfalls: What's a Business to Do?* (pg. 18).

THE OUTLOOK

While the outlook for U.S. housing, employment, and output remains moderate, policy risk has grown. If the Fed tightens the money supply too quickly, international trade agreements get flipped upside down, or a stock market crash tempers consumer confidence, the economy will suffer. The Portland MSA generally tracks with the U.S., but its unique combination of size, rate of growth, and industrial composition present different barriers and risks, discussed in *The Portland MSA* (pg. 18).

Of course, the national outlook depends in part upon the characteristics of the next generation—the millennials, who are poised to dominate the economy in the next decade. The article on the following pages, titled *Millennials: Beyond the Headlines*, seeks to explore the traits and economic attributes of those included in this group.

Figure 6: Implicit and Core Implicit Price Deflators
Annualized Quarterly Percent Change, Seasonally Adjusted, 2008-2017

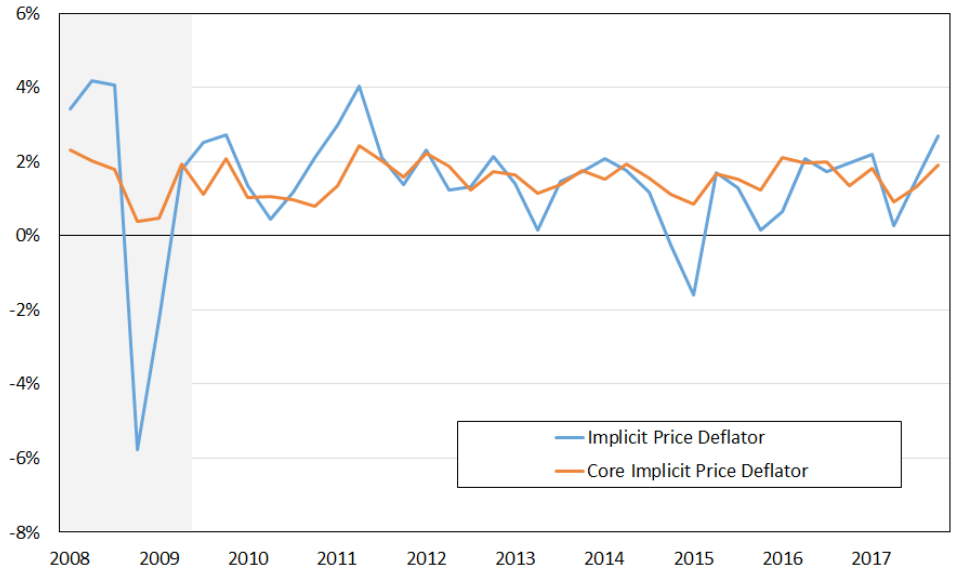
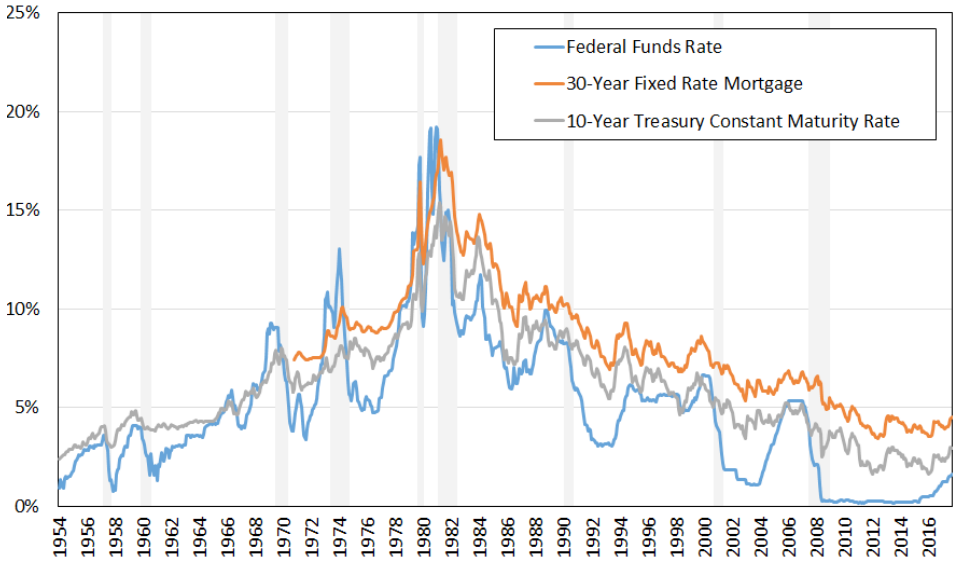


Figure 7: Various Interest Rates
Percent, Monthly, July 1954-March 2018



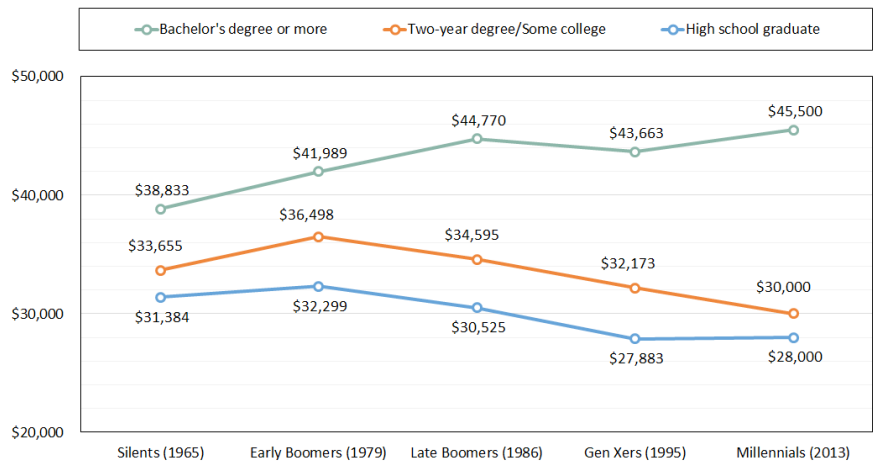
MILLENNIALS: BEYOND THE HEADLINES

In today's press, the generational cohort commonly referred to as "millennials"—those who came of age in the first decade of the 21st century—is the frequent subject of discussion, speculation, and even occasional derision. As the leading generation of "digital natives," they were the first to embrace social media, the rise of which has heralded a new era in politics, social relations, and the global economy—for better or for worse, depending on perspective. They are also the largest generation in U.S. history, surpassing the Baby Boomers' 77 million: according to the Brookings Institution, there are 92 million millennials, and by 2025 they will comprise 75% of the workforce.[1] While there is more diversity than commonality in every generation, it is also true that each has certain defining attributes. This essay explores a few of the ways in which millennials are similar, and different, from the generations that came before.

While headlines shout otherwise, if we look at spending data for millennials in comparison to other generations, most of the differences observed that do exist are explained by the lifecycle pattern. For example, a higher proportion of renters doesn't indicate that millennials prefer to rent, but rather that they have not yet entered the home-buying stage of life. Cross-generational income differences aren't relevant for a similar reason (peak earning occurs later in life), and the same goes for family size, cars per household, and so forth.[2] This phenomenon may be exacerbated by one very real difference: millennials are more likely to live with their parents for longer than previous generations, resulting in delays to many of the traditional hallmarks of adulthood.[3] In an analysis of US Census data, the Pew Research Center found that 15% of 25- to 35-year-olds live at home, which is an increase over the 10% of Generation X members (born 1965-1980) living with their parents in 2000, and almost double the 8% share of the Silent Generation (born 1928-1945) at the same age. Reasons for this prolonged time in the nest are discussed further below. This difference does not appear to be related to education, as it is concentrated among those with a high school education or less. If staying home for longer is one reason that millennials have been (somewhat derisively) termed the "Peter Pan" generation, perhaps another is that many of the usual benchmarks of adulthood are delayed in this group. Millennials wait longer to get married, settling down with a partner at 25-29 rather than the average of 20-24 observed in the 1970s.[4] Additionally, millennials are less prone to own automobiles, although as noted above, this difference disappears entirely when controlling for economic and demographic factors. Finally, millennials buy homes later in life—although again, evidence indicates that this is not a preference shift but an economic necessity.

American millennials do appear to be displaying some consumption decision shifts from previous generations. For example, a 2011 survey conducted by a partnership of advertising agencies found that in a variety of contexts, millennials value not only social media, but communication and research to a higher degree when choosing what products to buy.[5] Over 50% use a smart device to research products while shopping (compared to just over 20% of non-millennials), and they also are more likely to turn to company websites, professional and consumer reviews, and even friends and family members before deciding on a purchase. (Interestingly, while much has been made of the shifting commerce shares of online retailers and brick-and-mortar stores, most millennials still prefer to shop at a physical location.)[6] In comparison to non-millennials, they are very concerned with the opinions of their peers, expressing that they feel more confident in their decisions when they are supported by their friends (70% vs 48%). The same survey found that millennials express a stronger preference for novel experiences than previous generations (for example, 70% stated that they would like to visit every continent, in contrast to only 48% of non-millennials), and express greater concern with physical

Figure 8: Generational Earnings by Educational Achievement Level[7]



health and appearance than other generations. A silver lining to the concern with appearance is that it can result in positive behaviors performed with the goal of pleasing a group—41% of millennials state that they participate in cause programs for friends and family that they care about. The causes that receive the money raised are likely unconcerned about how many selfies were taken in the process. Similarly, nearly three out of four millennials say that they will pay a higher price for a good that is environmentally or socially conscious (compared to 51% of boomers).[8] Brands might do well to think about how they can build this reputation in a visible way, allowing young consumers to demonstrate their values through their purchases.

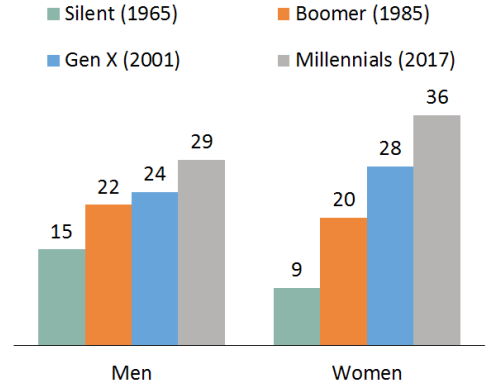
It is important to note that the nature of the survey method does not allow us to differentiate desires from actual behavior, and given a tendency to value others' opinions highly, it seems plausible that some of these survey responses reflect a desire to appear in a certain way. Only time will tell.

Speaking of education, this is another area of real difference. Millennials are more educated than previous generations, with 72% having attended at least some college (in contrast to 68% and 63% for Generation X and the boomers).[2] While rising college costs have led many to question whether or not such a substantial investment of time and money is still worth it, the answer is clear for millennials: the income disparity between those with a college education and those without has never been wider, as shown in Figure 8 from Pew Research Center. In 2013, nearly 22% of those aged 25-32 with no education past high school were living below the poverty line, compared with 5.8% of those who had completed a Bachelor's degree, and 14.7% of those who had completed a two year degree or some college. (For reference, in 2013 the overall poverty rate was 14.5%.)[9] If only completed degrees are considered, the difference is still pronounced: see Figure 9.

All of this education is not without consequence, however: the cost of education, and thus the associated debt, has been ballooning far beyond levels observed in previous generations. In only ten years, the average debt level at the time of graduation went from $20,000 in 2005 up to $34,000 in 2015: an increase of over 58%.[10] Those unlucky enough to graduate from college in the recent recession years found themselves competing for entry-level jobs against older applicants with years of experience, and the repercussions of entering the job market in a time of economic duress ripple into the future; a 2010 report by Yale economist Lisa Kahn found that individuals who graduated from college during the 1981-1982 recession earned an average of $100,000 less over the next twenty years.[11]

Is this income gap manifesting? One of the most frequent differences referenced in the media is the earnings difference between millennials and their parents at the same age. Many millennials feel that

Figure 9: Percent of Aged 21-36 with At Least a Four-Year College Degree[12]



they are working very hard for less reward, in a time of rising inequality. Wage stagnation has been well-documented (although recently the tight labor market appears to be exerting some upwards pressure, as mentioned in the national section of this report), and the "productivity gap," or difference between value produced by an earner and their wage, seems to be increasing.[13] So do millennials really face a situation where they are doomed to earn less than their parents did, or are they expecting success too early, comparing themselves to boomers at the peak of their earning years while fresh out of college?

The evidence appears to be mixed. One widely-cited 2017 report, produced by the nonprofit advocacy group Young Invincibles, compared the financial health of 25- to 34-year-olds in 1989 (the boomers) with those of the same age in 2013, using the Survey of Consumer Finances from the Federal Reserve Board of Governors.[14] The report finds that on average, millennials are making 20% less than boomers at the same age, and that a college-educated young adult in 2013 makes roughly the wage of a high school graduate in the earlier cohort. This analysis makes for catchy copy, but is very much weakened by the use of a single year of data; a series would provide more compelling evidence.

It appears that, as is usually the case, we find a more complex picture when we move past the headlines. There is evidence indicating that millennials are less financially secure in many ways than the generations that preceded them, but in a world where many commodities are less expensive than ever before and societal health is improving along almost every metric, their future is bright. And as always, there is difficulty in imposing arbitrary cutoff points—those born in the early years have more in common with the generation that preceded them, while those at the tail end, borne around the turn of the millennium, might identify more with the Post-Millennials. There are millennials who were too young to remember 9/11, and there are millennials who fought in the first Iraq invasion. There are millennials who graduated at the height of the recent recession, and millennials who are still pursuing their degrees. Differences based on geography and demographic are, as always, more pronounced than differences based on generation of birth.

What can we expect from this cohort? While much remains to be seen, a heightened emphasis on interconnectedness might translate to a shift towards urban living (although as mentioned in our last report, millennials express a desire for single-family housing over multifamily, in contrast to their current housing choices). By the same reasoning, it seems likely that digital news sources will continue on their rise, because of the ability of that medium to reach audiences instantaneously and facilitate discussion between readers in real time. If we listen to them, millennials tell us that they care about their community, their planet, and their bodies—and they are taking the reins, so let's hope that they walk the talk.

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Japanese Maple, Portland Japanese Garden

THE PORTLAND MSA

The Portland MSA is entering its ninth year of expansion. Nine years does not seem like a long time, but in terms of economic expansions, we might call it a senior citizen. The fact that the expansion is in its golden years alone does not necessitate a slowdown on the horizon. After all, at 33 LeBron James is one of the older players in the NBA, but he continues to outperform his peers and shows no signs of stopping. Nevertheless, when economic regions reach the promised land of full employment, the ability to grow quickly is constrained by the available resources. The Portland MSA is still growing at a good clip, registering 2.69% job growth year-over-year (YoY) in January 2018 and ranking 64th out of 399 metro areas nationwide. Consistent 3%-plus YoY job growth of 2014-16 (the strongest growth rates since the mid-1990s) has given way to mid- to low-2% growth. Not too shabby for a senior citizen.

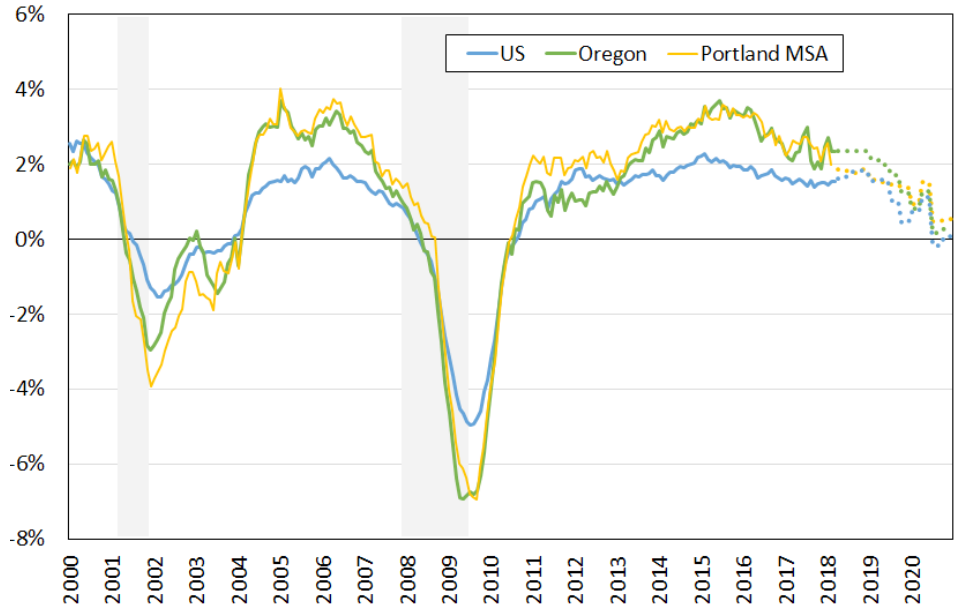
This section will discuss employment, income (along with wages and inflation), housing, and population dynamics for the most recent period, and provide a near term outlook. We will end with a comparison of the current forecast with the past two forecasts, and a summary of factors on our watch list that could impact our economic outlook.

EMPLOYMENT

As 2017 came to a close, most economic outlooks were facing a possible game changer. The Tax Cut and Jobs Act of 2017 was billed as an economic stimulus package that would increase the growth rate of the US economy. The impacts of this new tax bill are especially difficult to determine in states and metro areas. As mentioned in the U.S. and Oregon section, the estimated impacts on economic growth rates vary widely, and the timing of these impacts over the next ten years is similarly uncertain. However, a number of research organizations project minimal increases to the baseline growth forecast prior to 2020 (when many of the tax-cuts expire). Various forecasts for the US, Oregon, and the Portland MSA manifest this slight bump over the next couple of years. (See Figure 10. Forecasts as reported by OEA and NERC.) Historically, both Oregon and the local MSA have grown at a faster rate than the U.S during expansions. Essentially, our forecast for job growth in the Portland metro is slightly raised for the next two years, but the outer forecast years are unaltered, in keeping with the general perception.

Figure 10: Employment Growth in US, Oregon, and Portland MSA

YoY Growth Rate, Monthly, January 1991-March 2018, Forecast April 2018-December 2020



After a pickup to 3.5% in the seasonally adjusted annual rate (SAAR) of employment growth in the second quarter of 2107, the second half of 2017 brought a 2.0% SAAR and 1.0% SAAR for the third and fourth quarters, respectively. While the total nonfarm employment growth number slowed to a 1.0% SAAR, this is primarily due to a government sector decline of -4.2% SAAR in the fourth quarter (private nonfarm growth came in at a respectable 1.8% SAAR). As we have mentioned in our previous reports, these latest job numbers are subject to revisions and updates of seasonality factors, so we are cautious about reading too much into this decline in government employment. Overall, our view that job growth overall has been generally slowing since mid-2016, and will continue to do so in the near term future, remains unchanged.

Setting aside public employment and drilling down into the private sector nonfarm employment numbers, notable strong finishes to 2017 include Other Services, Nondurable Manufacturing, Transportation, Warehousing, and Utilities (TWU), and Health Services and Education. On the slow side, we have Information—which includes software publishers and the TV and film industry—closing out the second half of 2017 with two quarterly drops in job growth. Figures 11a, 11b, and 11c show the historical and projected employment growth rates for various industries relative to 2005. Note that the categories of fast, medium, and slow growth industries reflect relative forecast growth compared with other industries, as opposed to past performance.

Construction in the Portland MSA has been strong throughout 2017 with year-over-year (YoY) growth above 6.0% for every quarter. At the county level, Clark County continues to have the strongest construction job growth, coming in at 10.1% YoY in 2017Q4. In fact, all the counties experienced YoY construction employment growth above 5% throughout most of 2017. We see this growth rate slowing down as the housing market cools—moreso for multifamily than single family housing. The completion of a number of hotels and other buildings in and around the downtown Portland area also puts a ceiling on the amount of new construction employment that can reasonably be expected. However, there are pockets of new construction: continued expansion of housing around Cooper Mountain and South Hillsboro in Washington County, the future spending from the $5.3 billion Oregon transportation bill, and the 5-year PDXNext $1.3 billion renovation/expansion at Portland

Figure 11a: Employment in Fast-Growth Industries, Portland MSA
Index (2005 = 100), 2005-2027

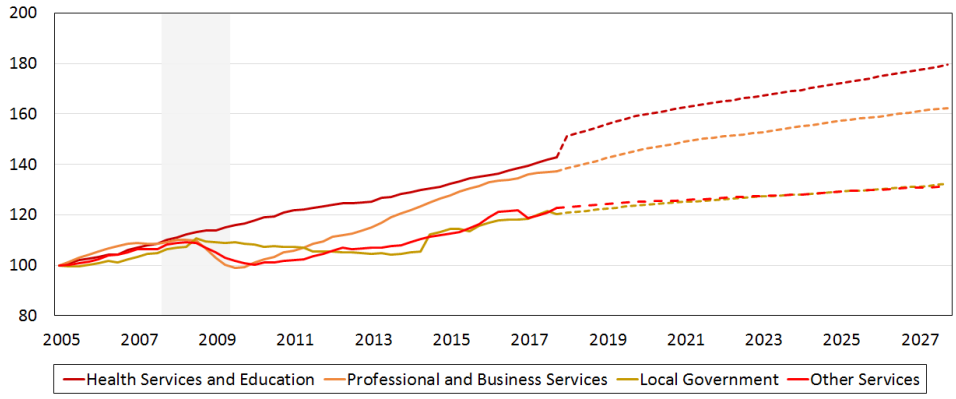


Figure 11b: Employment in Medium-Growth Industries, Portland MSA
Index (2005 = 100), 2005-2027

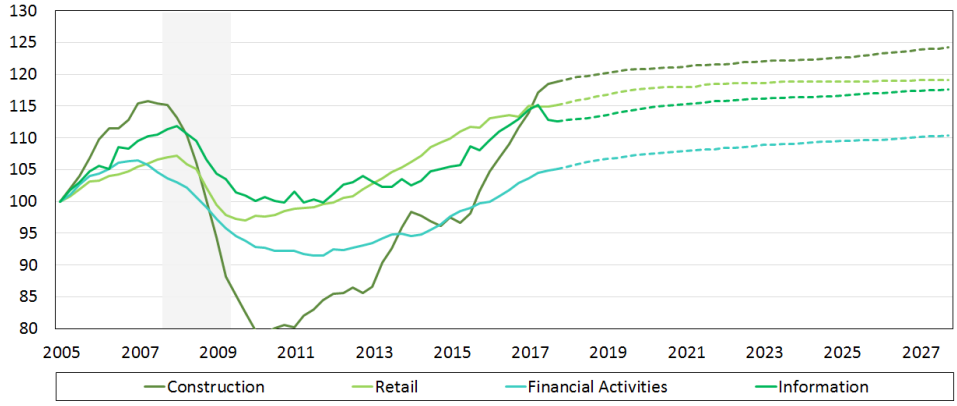
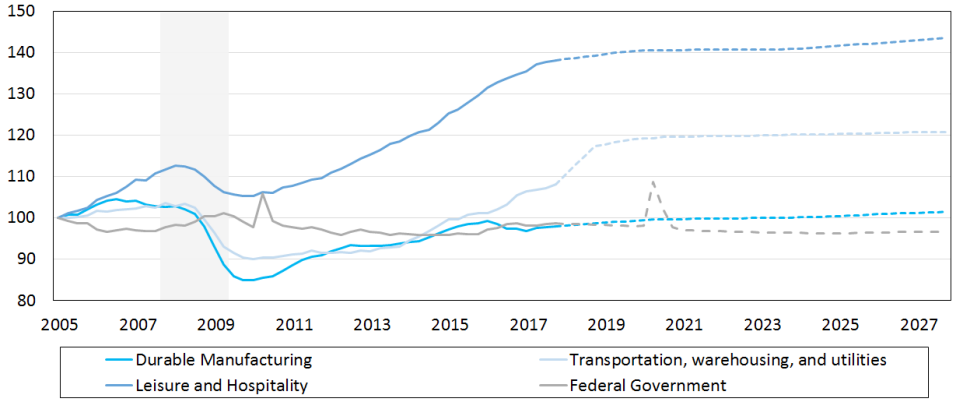


Figure 11c: Employment in Slow-Growth Industries, Portland MSA
Index (2005 = 100), 2005-2027



NOTABLE EMPLOYMENT EVENTS:

- ***Microsoft Surface Hub Plant in Wilsonville:*** *In July 2017 Microsoft announced that this facility will be shut down, resulting in a loss of 124 jobs in Clackamas County. The layoffs began on January 5th of this year, and are now likley complete.*
- ***AWS Elemental:*** *This Amazon affiliate will lease space in the Broadway Tower in Portland in the Fall of 2018. Employment could increase by 400-600 in the Professional and Business Services sector for Multnomah County.*
- ***Adidas:*** *Construction plans are underway to expand the campus in North Portland. Employment could increase by 1,100, also in the Professional and Business Services sector for Multnomah County.*
- ***West Linn Paper Mill:*** *After 128 years of operation, the mill started closing down at the end of 2017. The last of the 250 jobs at that site in Clackamas County will be lost.*

International Airport can all be expected to help bolster construction employment over the forecast period.

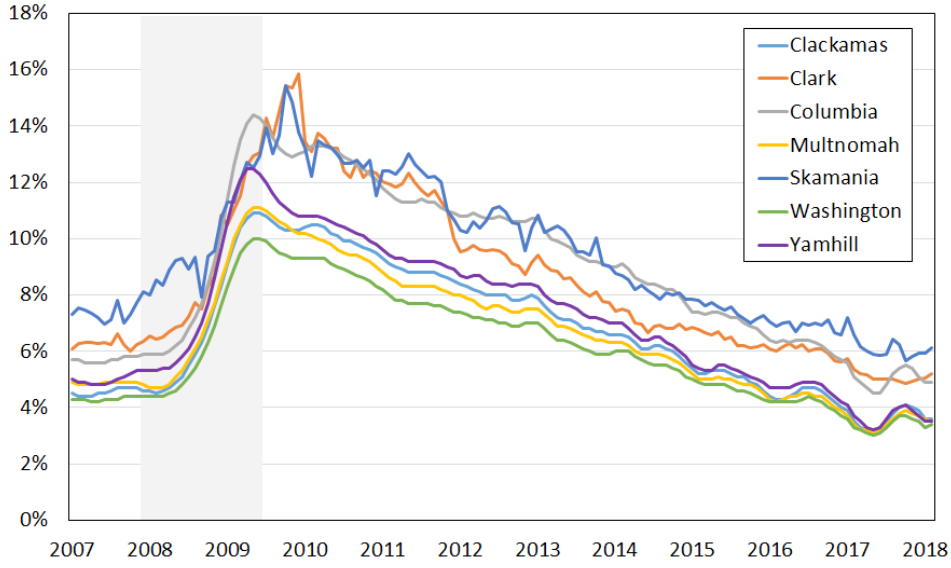
Manufacturing job growth slowed towards the end of last year, but still closed with relatively high YoY growth of 2.9% in 2017Q4. Nondurables led the way with Food Processing, which constituted about 40% of Nondurables. At the same time, Paper Manufacturing in Nondurables lost around 250 jobs with the closure of the West Linn Paper Company during 2017Q4. Durable Manufacturing continued to see some softness in Primary Metals and Transportation Equipment, but also a small recovery in Semiconductor and Electronic Components following the 2016 Intel restructuring. We continue to project slower growth for manufacturing in comparison to other industrial sectors, but have slightly raised our longer term outlook for Nondurables job growth.

Among our "Fast-Growth" employment industries, private Health Services and Education will see a structural boost in the first quarter of 2018, due to a category change (recall that fast-growth refers to the forecast period and is relative to other industries, not necessarily a statement that these industries are growing "fast" in an absolute sense). Health workers that are state supported will be recategorized from State Government to their functional home of Health Services. Our quarterly outlook through 2019 has this sector growing at 3.0% SAAR. Professional and Business Services job growth slowed a bit in 2017, not helped by the layoffs at Jive. But this sector should continue to be one of the fastest-growing, assisted with the expansions of Adidas and AWS Elemental in Multnomah County.

Among the service sectors in our "Medium-Growth" category,

Figure 12: Unemployment Rates by County, Portland MSA

Percent, Monthly, January 2007-February 2018 (WA counties seasonally adjusted by NERC)



RIP: The Portland-Salem Consumer Price Index is Discontinued

In the spy movies, when a source is thought to have outlived their usefulness, they might face "termination." In the world of statistics, a series that does the same is "discontinued." This is the case for our own metro area's Portland-Salem All Items CPI-U, the last value for which was issued in the second half of 2017. With that demise, most financial analysts are switching over to the West CPI-U (which aggregates all states to the west of a north-south boundary from New Mexico to Montana). For comparison, the table below converts both indexes into annual inflationary measures. Both are relatively similar except in the case of 2017, where the higher-priced housing component is likely lifting the Portland-Salem CPI-U above the West CPI-U.

At the same time, a newcomer has been added to the set of regional purchase measures by the US Bureau of Labor Statistics (BLS): the Pacific CPI-U. This series is a subset of the West CPI-U, and includes the Pacific coastal states plus Alaska, Hawaii, and Guam. We only have two months of data for the Pacific CPI-U right now, and the inflation measures are quite similar to the West CPI-U. As the BLS says on its web site: "…the choice of the most suitable index, is up to the user."

Average Annual Rates of Change

Year	Portland-Salem CPI-U	West CPI-U
2014	2.4%	1.9%
2015	1.2%	1.2%
2016	2.1%	1.9%
2017	4.2%	2.8%

Average Annual Rates of Change from Monthly Averages

Year	Pacific CPI-U	West CPI-U
Jan. 2018	6.4%	6.2%
Feb. 2018	6.8%	6.4%

Information and Financial Activities both slowed in the second half of 2017 and the expectation is for lower growth rates in the near term of around 1.0% SAAR. These sectors are under constant structural change from digital media and fintech.

Our "Slow-Growth" group consists of Durable Manufacturing (discussed above), Trade, Transportation, and Utilities (TTU), Leisure and Hospitality, and Federal Government. As reported in previous forecasts, the impact of higher minimum wages will slightly dampen job growth in Retail and Leisure and Hospitality. In addition, we continue to watch the impact of e-commerce on retail. Still, we have worked into the very near term forecast the increased jobs in Transportation Services generated by the airport expansion (PDXNext), and jobs in the Warehousing subsector generated by the new Amazon fulfillment centers in Troutdale and North Portland (both subsectors are part of Transportation, Warehousing, and Utilities). Nevertheless, job growth for TWU is expected to be near or below 0.5% SAAR from 2020 through 2027.

The government sector is spread out between our three growth categories. Local government will be influenced by population and continued economic growth, and is therefore added to our "Fast-Growth" group. State government will be jumping around due to the aforementioned movement of health workers out of this sector (and into Health Services), and with continued budgetary challenges is designated as "Medium-Growth." Federal Government jobs may see an increase of military-related employment in other parts of the nation, but not likely in the Portland MSA, so despite a bump up in federal jobs in 2020 due to the decennial Census, we predict slow growth going forwards.

Income, Wages, and Inflation

For the Portland MSA, personal income growth picked up in 2014 with a rate of 7.3%, with 2015 and 2016 coming in with growth rates of 7.6%

and 4.3% respectively. (This measure from the U.S. Bureau of Economic Analysis lags a bit, so 2016 is the most recent year reported.) Wages and salaries, which are the largest component of personal income, show the same pattern with annual growth rates of 7.4% and 5.0% for 2015 and 2016. Our outlook (in Figure 13) pegs 2017 as similar to 2016, with growth rates for personal income at 4.4% and wages and salaries at 4.7%. With tighter labor markets and the stimulus from the Tax Cut and Jobs Act, we raise growth for personal income in 2018 to 6.2% and in 2019 to 6.3%. These higher growth rates include a slight rise in interest income due to rising interest rates. Our longer term outlook has personal income growth settling down to just over 5%.

With an economy that is basically at full employment, meaning tighter labor markets, the question of rising prices comes up. The Portland-Salem CPI-U measure of inflation did jump up to 4.2% in 2017 from 2.1% in 2016. Unfortunately, we will not be able to follow Portland-Salem CPI-U in the future as this series has been discontinued.

Figure 14 takes a historic look as to how the Portland Metro's per capita income has performed relative to the average per capita income for all Metros in the U.S. When the measure is 1.0, the Portland Metro has the same measure of per capita income as the average for all US metropolitan areas. The last time the Portland Metro had a higher per capita income relative to the nation's cities was in the late 1990s, after which it fell below the average following the Asian Financial Crisis and the 2001 recession. Only during the recent recovery from the Great Recession has Portland Metro per capita income started to climb back up toward the U.S. average.

Figure 13: Historic and Forecast Total Personal Income Growth
Annual Percent Change, 2005-2027

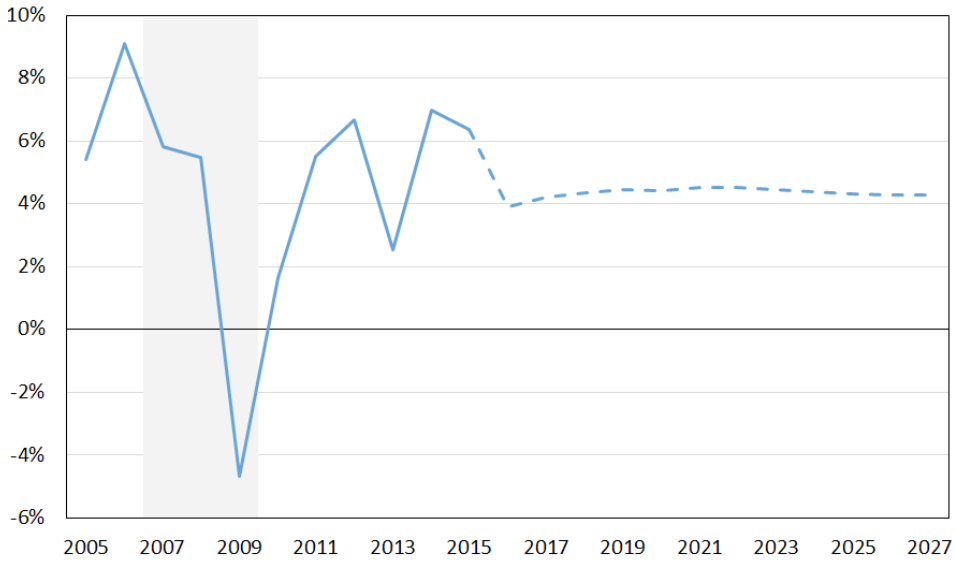
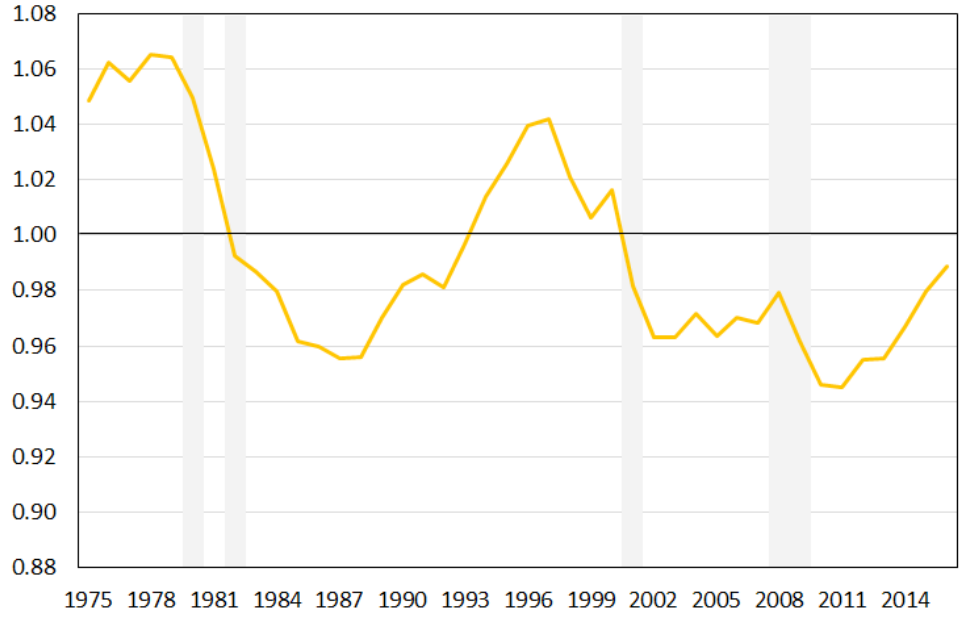


Figure 14: Portland Per Capita Income's Relation to Other Metro Areas
Ratio of Portland Metro Per Capita Income to US Metro Per Capita Income, 1975-2016



In the boxed item on the CPI (pg. 13), the Portland-Salem CPI-U measures of annual inflation are listed alongside the West CPI-U. With the demise of the Portland-Salem CPI-U, many unions, governments, and forecasters (including yours truly) are moving to the BLS's All Items in the West CPI-U. When comparing the annual rates of inflation given in the two CPI measures, it's clear that the two measures are fairly similar except for

in 2017, when the Portland-Salem CPI-U is slightly higher. This reflects the fact that housing costs are rising rapidly in the Portland metro area, and that rise is diluted by the inclusion of all western states in the West CPI-U. A new measure from the BLS has recently become available: the Pacific CPI-U, which is a subset of the West CPI-U. We only have 2 months of data for this measure, but we can see that it matches up closely with the West CPI-U in terms of annualized measures of inflation. Further history and investigation is needed as to which of these two CPI measures should be used as more reflective of inflation rates in the Portland MSA. Two months of data does not make a trend, but these annualized rates in the 6% range give one pause. With the more narrow focus on the west coast and Alaska and Hawaii, the rapid rise in housing prices is likely pushing up the Pacific CPI-U measure of inflation compared to the West CPI-U. With projections of slowing population growth and decelerating house prices, the outlook for inflation will subside from the 2017 rates but still remain higher than the inflation average (2.1%) of the 7 years leading up to 2017.

Figure 15: Case-Shiller Index for Select Areas

YoY Percent Change, Monthly, January 2000-January 2018

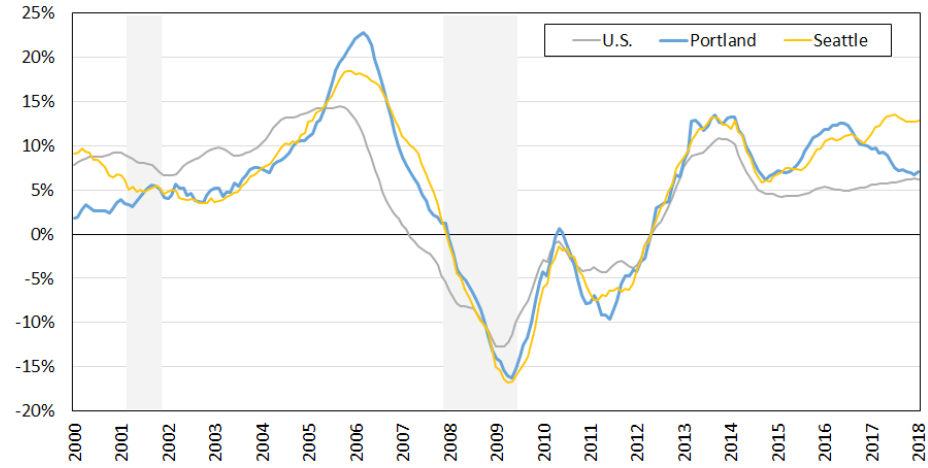
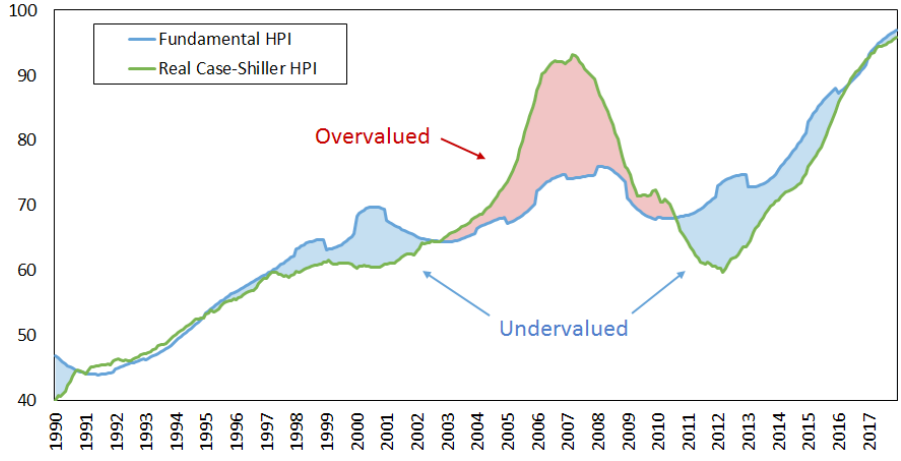


Figure 16: Fundamental House Price Index, Portland MSA

Index, Monthly, January 1990-December 2017

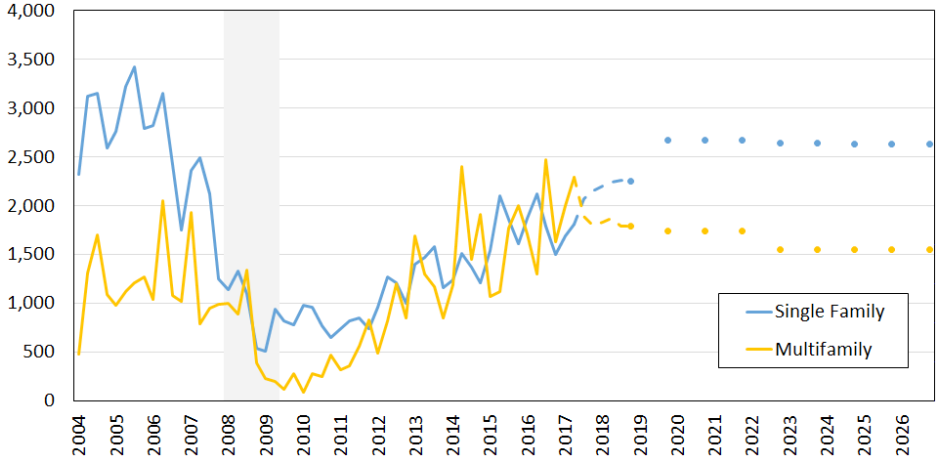


UGB: 2018

In 2018, Portland's Metro Council will be evaluating the decision to expand the Urban Growth Boundary (UGB), with a decision due by the end of the year (December 13th, specifically). If the available land for residential use grows as a result of this decision, it is possible that housing permits will exceed the currently forecast level.

Figure 17: Portland MSA Housing Permits, Historical and Forecast

Total Permits, Quarterly, 2004Q1-2026Q4



HOUSING

We are still projecting that the red-hot Portland metro housing market will continue to cool. Rather than being ranked first or second in the Case-Shiller 20-metro housing price growth index as in recent years, Portland is now in the middle of the pack, with a YoY increase of around 7%. "Cooling" is of course a relative term, and 7% price appreciation is still strong given that inflation for all goods and services besides shelter is running around 2.2% (as measured by the Portland-Salem CPI-U for 2017). Taking this price growth together with a projected slowing of population growth, affordability issues both in single and multifamily housing, a dearth of inventory, and rising mortgage rates, NERC predicts a slowing of growth in the housing market.

NERC's Fundamental Housing Price Index (Figure 16) shows a shrinking in perceived over-valuation as the slowing in housing price growth is met by growing incomes and population from the strong economy. In other words, the fundamentals that can support housing prices are becoming more in line with actual housing prices. There still is a degree of error associated with this measure, but the trend is headed in a desired direction.

Housing permits (Figure 17) will continue to grow and the data associated with multifamily dwellings will continue to be difficult to assess. Inclusionary zoning, as we reported in October 2017, was expected to cause a bunching of permits submitted before the deadline and thus a dramatic drop after the building requirement took effect. While permit submissions certainly increased, the delay between submission and processing resulted in a wider temporal spread than might have been expected, rendering analysis of the real impact of the measure difficult. (Of course, this problem is limited to Multnomah County permit data, where the measure was implemented.) Our two year outlook has housing permits still increasing, albeit at a slower rate, with Multnomah County seeing the slowest increases.

Figure 18: Current and Previous Employment Forecast Comparison
Quarterly Seasonally Adjusted Annual Rates and Year-over-Year Percent Change

	Apr 2018	Oct 2017	Apr 2017
SAAR			
2017Q4	**1.00%**	1.68%	1.84%
2018Q1	**1.97%**	1.79%	2.08%
2018Q2	**1.83%**	1.81%	1.81%
2018Q3	**1.79%**	1.72%	1.83%
2018Q4	**1.85%**	1.74%	1.87%
YoY			
2017	**2.71%**	2.43%	1.82%
2018	**1.83%**	1.93%	1.88%
2019	**1.63%**	1.38%	1.43%
2020	**1.12%**	0.99%	1.04%

POPULATION

Population prospects can be found in *Comparing Across the Counties* (pg. 22) and the individual county profiles (pgs. 24-37). Population increases were a bit stronger than first projected for 2017, due to a greater-than-anticipated migration influx (also in *Comparing Across the Counties*).

Figure 19 shows the population growth rates from 2016 to 2017. As it often does, Washington County came in with the fastest growth rate. Clark County also had a strong year,

Figure 19: Population Growth in Portland MSA by County
Percent change, 2016-2017

Clackamas	1.56%
Clark	1.65%
Columbia	0.75%
Multnomah	1.31%
Skamania	0.73%
Washington	1.91%
Yamhill	1.28%

growing at a rate of 1.65%. This is largely due to strong employment growth and the ability to expand. Given this performance, NERC continues to forecast these as the strongest two counties for population growth. Clackamas County likewise had a strong year with 1.56% growth, but this was not accompanied by simultaneous employment growth and is therefore less sustainable over the long run. It should be noted that 1.31% population growth for Multnomah County is impressive as

the existing population is already so large – despite having a significantly lower growth rate than the fastest growing county (Washington), both saw an increase of just over 10,000 people.

Headwinds and Tailwinds

Figure 18 compares employment projections for the Portland MSA in our previous three forecasts to this one. Although there will be revisions to the job numbers for the 4th quarter of 2017, the slowdown in the fourth quarter of 2017 is reflected going into the first quarter 2018 and we maintain the growth pattern of slightly higher growth through the rest of 2018. While the job numbers since our October 2017 forecast are the primary source of forecast adjustments, here is a brief sample of special events, data releases, and factors to track that have influenced our forecast over the ensuing months, taken from research and expert consultations:

- World and US economic performance, and the passage of the Tax Cuts and Jobs Act in December.
- Oregon Economic Outlook report from the Oregon Office of Economic Analysis
- Adidas expansion, AWS Elemental layoffs, PDXNext airport expansion and renovation
- Past policies at the state and local levels, especially transportation and housing, that continue to play out their full impact on the region

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

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

Longer-term issues include climate change, income inequality, and cyber security, all of which are likely already shaping current trends but may intensify over the coming years.

The next featured article in this edition of the forecast, on the following pages, deals with the first topic mentioned above: the changes to the tax code implemented in 2017, and how they might impact the economy depending on what businesses choose to do with the extra revenue now at their disposal.

Bridge over Washougal River, WA

TAX CUT WINDFALLS: WHAT'S A BUSINESS TO DO?

Everyone loves receiving a windfall, especially businesses. By reducing the tax burden, the Tax Cuts and Jobs Act is undeniably increasing corporate incomes in the U.S. The real question that matters to the populace is: What are businesses doing with their newfound wealth? Theoretically, they have three options for spending their increased profits: 1) return value to shareholders through stock-buybacks and dividends; 2) directly raise employee wages; or 3) increase investment. The options that businesses choose, and the frequency and volume at which they choose them, will have long-term implications for the real economy, the stock market, and the Portland MSA.

If businesses return value to their shareholders, this means that the money is not being used to increase wages or hire new employees. However, since stocks will either pay better dividends or decrease in overall quantity (since businesses would be buying them off the market) the value of the whole market should rise – with minimal effect on the economy (see sidebar on next page). During the first quarter of 2018 stock buybacks reached an all-time high, with an excess of $200 billion spent on the repurchases.[1] This is expected to increase to $800 billion over the span of 2018.[2]

Businesses going the route of stock buybacks and increased dividends likely would not have much of an effect on the Portland MSA. The City of Roses is not as dependent on the finance sector for employment as other large cities (see Figure 20). Additionally, Portland is a slightly younger city. A smaller elderly population than the U.S. as a whole also implies a smaller impact (see Figure 21). Retirees, who depend more upon investment income, are particularly vulnerable to market fluctuations, and less of them means less dependency on investment income, and therefore a smaller impact on discretionary spending.

The second way firms can spend the windfall is by directly giving it to their employees. However, a onetime raise is the least dynamic way firms can go about spending this money. Increases in employee pay lead to an increase in consumption spending, but these increases do not compound over time in the way that increasing investment would.[3] Nothing suggests that Portland would be disproportionately affected by a onetime increase to labor income.

Figure 20: Finance Sector Share in Select MSAs (labeled with largest city)
Percent of Total Employment, Monthly, Seasonally adjusted, January 1990-February 2018

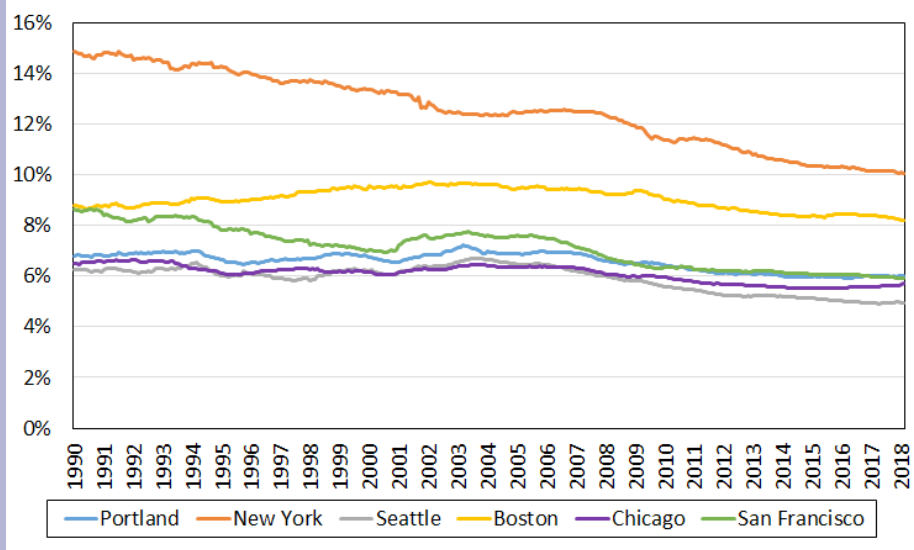
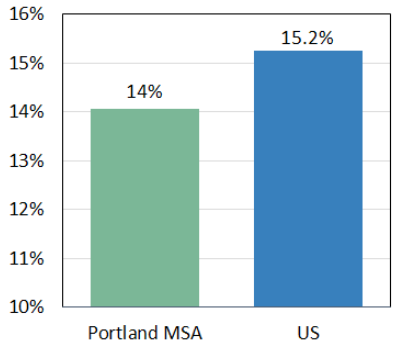


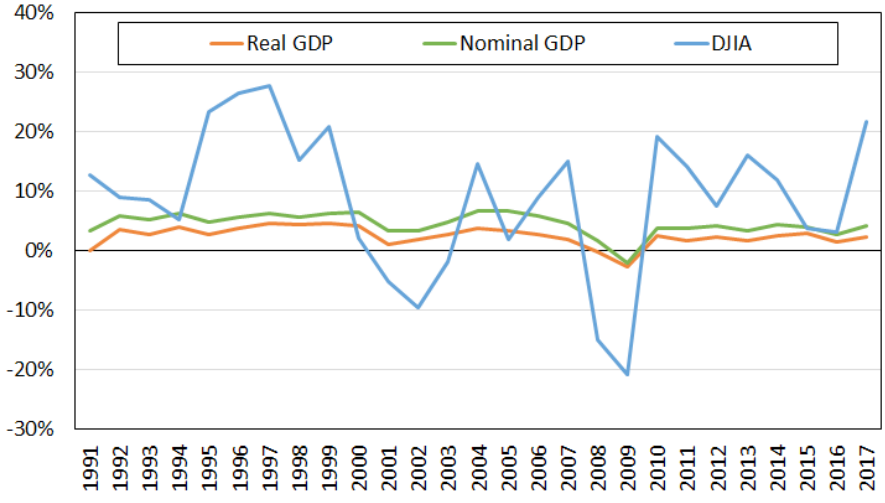
Figure 21: Share of Population 65+
Percent of total



An increase in the rate of investment is the most promising outcome in terms of economic growth. Investment leads to new technology and increased labor productivity, which eventually leads to greater GDP growth and higher wages. Unlike a onetime raise for employees, investment should lead to steady wage growth, as it is backed by actual increases in production.[4] Unfortunately, the fruits of increased investment do not manifest for years, and not enough time has passed yet to determine whether or not investment has significantly increased as a result of these tax cuts. BEA data releases will likely be scrutinized carefully over the next couple of years, as economists and other interested parties search for evidence of increased investment. The Portland MSA could potentially receive an outsized share of new investment, as large firms look to use this new money to expand (think Intel, Nike, or OHSU) or new firms pop up. However, this is speculation and the changes are too recent to tell if there will be a large uptick in investment in the area.

It is too early to tell what this new tax policy will bring for the nation or for the Portland MSA. The economist's best guess is a little bit of everything – firms will dole out small raises, buy back shares, pay out larger dividends, and push more money into investments. Policy success will ultimately be determined by what firms do with their windfall but, importantly, not the size of the windfall. That is, the degree of economic stimulation will depend upon the spending decisions made by firms, and the amount of money that they now retain is ultimately less significant than the allocation between options described above.

Figure 21: Real and Nominal GDP with Dow Jones Industrial Average
Percent Change, Annual, 1990-2017



SIDEBAR: WHEN STOCKS RISE, WHAT ELSE DOES?

The stock market is often assumed to be a good barometer of the national economy. Pundits and politicians alike look to the Dow Jones and S&P 500 to gauge policy success.[5] But how indicative of nation-wide prosperity is the stock market, really? As of 2016, only 52% of American adults owned a single stock—matching the record low since Gallup began asking this question in polls in 1999—so can we be sure that the same successes that raise stock prices benefit Americans en masse?[6] Even that 52% overstates the impact of stock prices alone for the average citizen, because the richest 10% of stock-owning households own 84% of the total market value.[7] So, disregarding all other factors, when the stock market rises there is little effect on the average American (or even most public companies—money from the sale of stocks only goes to a business if they issue new stock). Figure 21 shows the relationship between real GDP growth and fluctuations of the Dow Jones Index.

This is not to say there is no effect on the economy when the stock market rises. When people's investments grow they (rightfully) feel they have more money and, therefore, spend more freely. Economists refer to this as the Wealth Effect, and normally it culminates in a rise in consumption that does help buoy the economy – though certainly not to a degree proportionate to the amount of airtime dedicated to discussions of Bulls and Bears.

[1] Otani, Akane et. Al. (March 1 2018). Boom in share buybacks renews question of who wins from tax cuts. Wall Street Journal. Retrieved from WSJ.com

[2] Linnane, Ciara. (March 6 2018). S&P 500 companies expected to buy back $800 billion of their own shares this year. MarketWatch. Retrieved from MarketWatch.com.

[3] A potential second order outcome is that businesses react to the increase in consumption by increasing their investment (see the following paragraph for those potential effects). The other second order outcome is prices rise with no increase in real output – a scenario that the Federal Reserve is keeping a watchful eye out for.

[4] Assuming investment leads to technology that increases the productivity of labor (labor-augmenting) and not technology that leaves productivity the same but reduces the amount of labor needed (labor-saving). Historically, technology has been labor-augmenting across all industries.

[5] Oddly enough, U.S. congressmen are one of the few groups that beat the overall stock market in returns (besting even professional stock-pickers). Source: Ziobrowski Alan J. et Al. (2011.) Abnormal returns from the common stock investments of members of the U.S. House of Representatives. Business and Politics 13(1). Retrieved from EconPapers.repec.org.

[6] McCarthy, Justin. (April 20 2016). Just over half of Americans own stocks, matching record low. Gallup. Retrieved from News.Gallup.com.

[7] Wolff, Edward N. (November 2017). Household wealth trends in the United States, 1962 to 2016: Has middle class wealth recovered? January 2018 NBER Digest. Retrieved from NBER.com.

Stock certificate for Oregon and Transcontinental Company, issued to Henry Villard in 1883

Old Scotch Church, Hillsboro OR

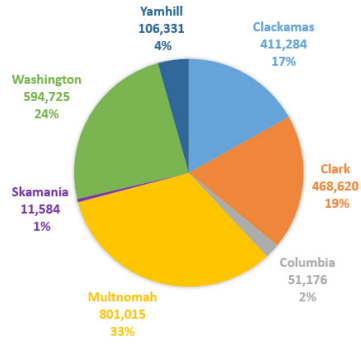
COMPARING ACROSS THE COUNTIES

POPULATION

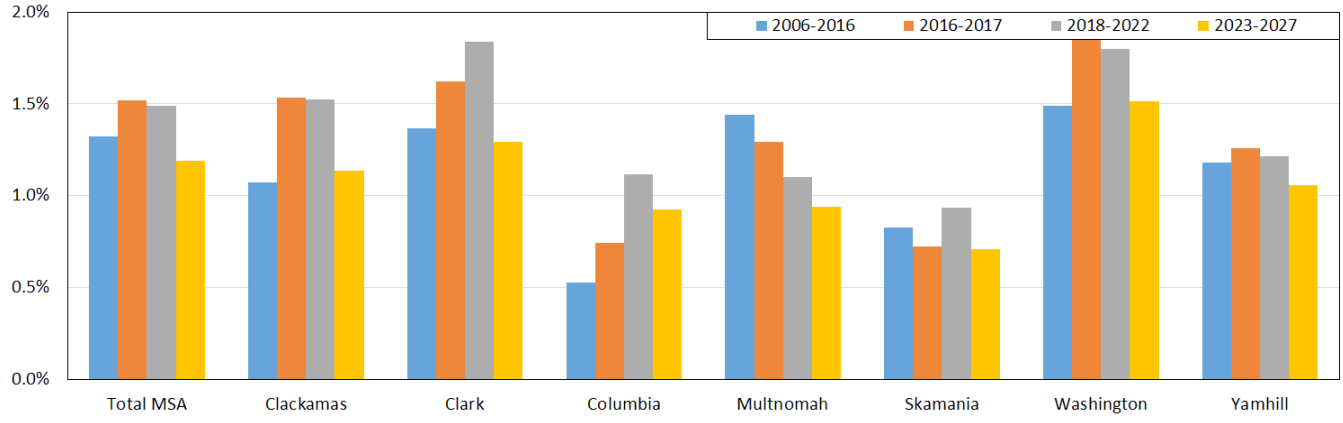
TOTAL POPULATION (2017)

Clackamas	411,284
Clark	468,620
Columbia	51,176
Multnomah	801,015
Skamania	11,584
Washington	594,725
Yamhill	106,331

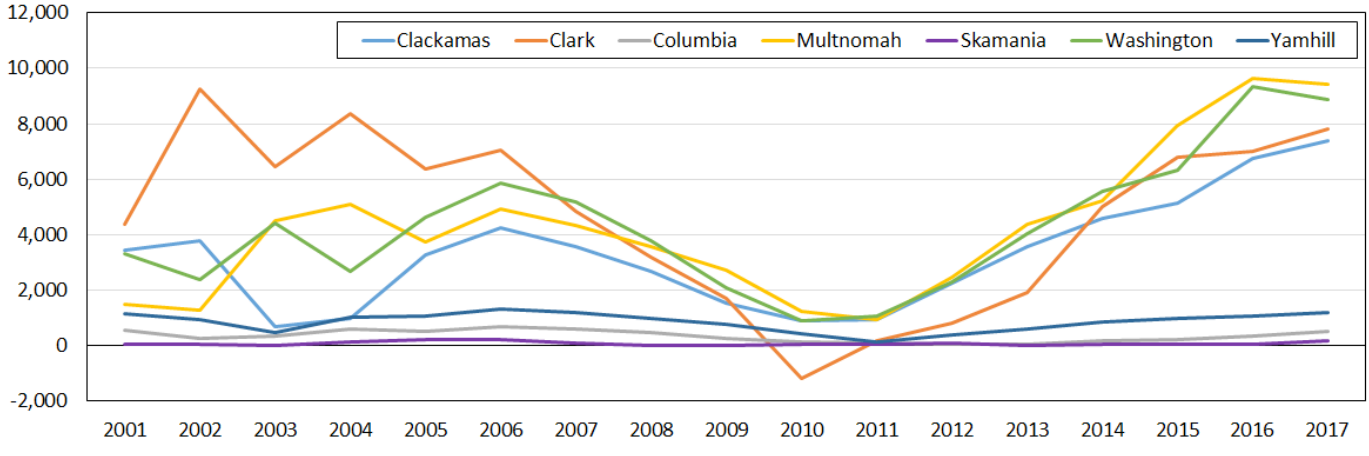
SHARE OF PORTLAND MSA (2017)



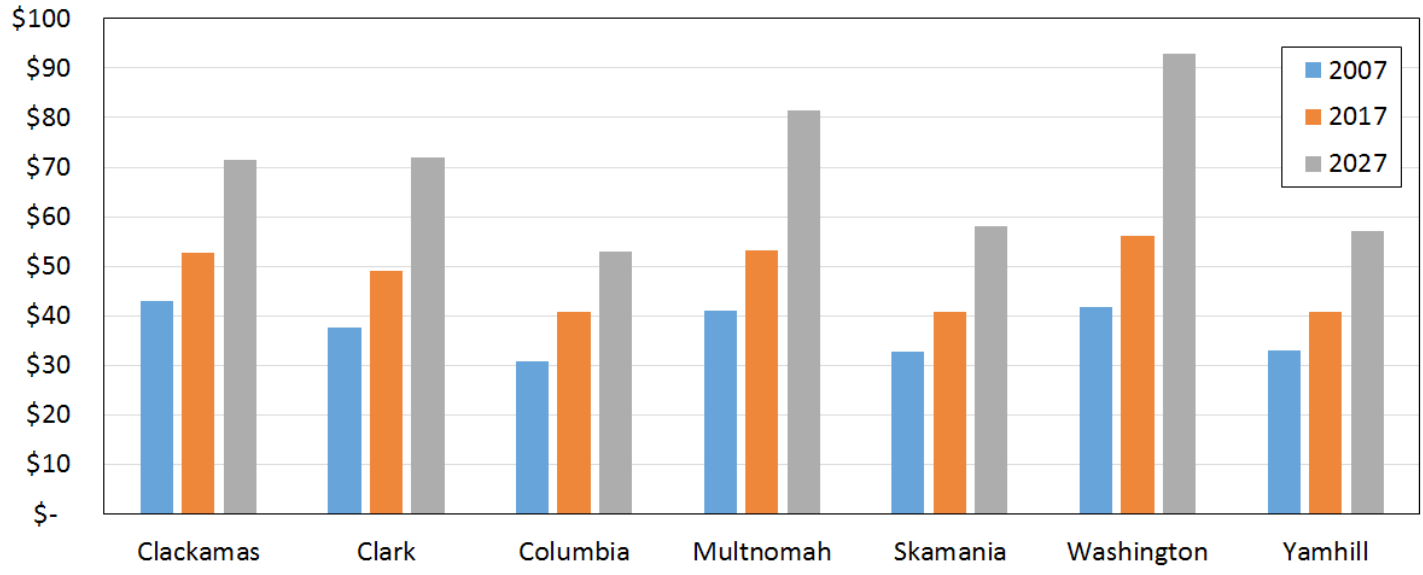
CURRENT AND FORECAST POPULATION GROWTH RATE



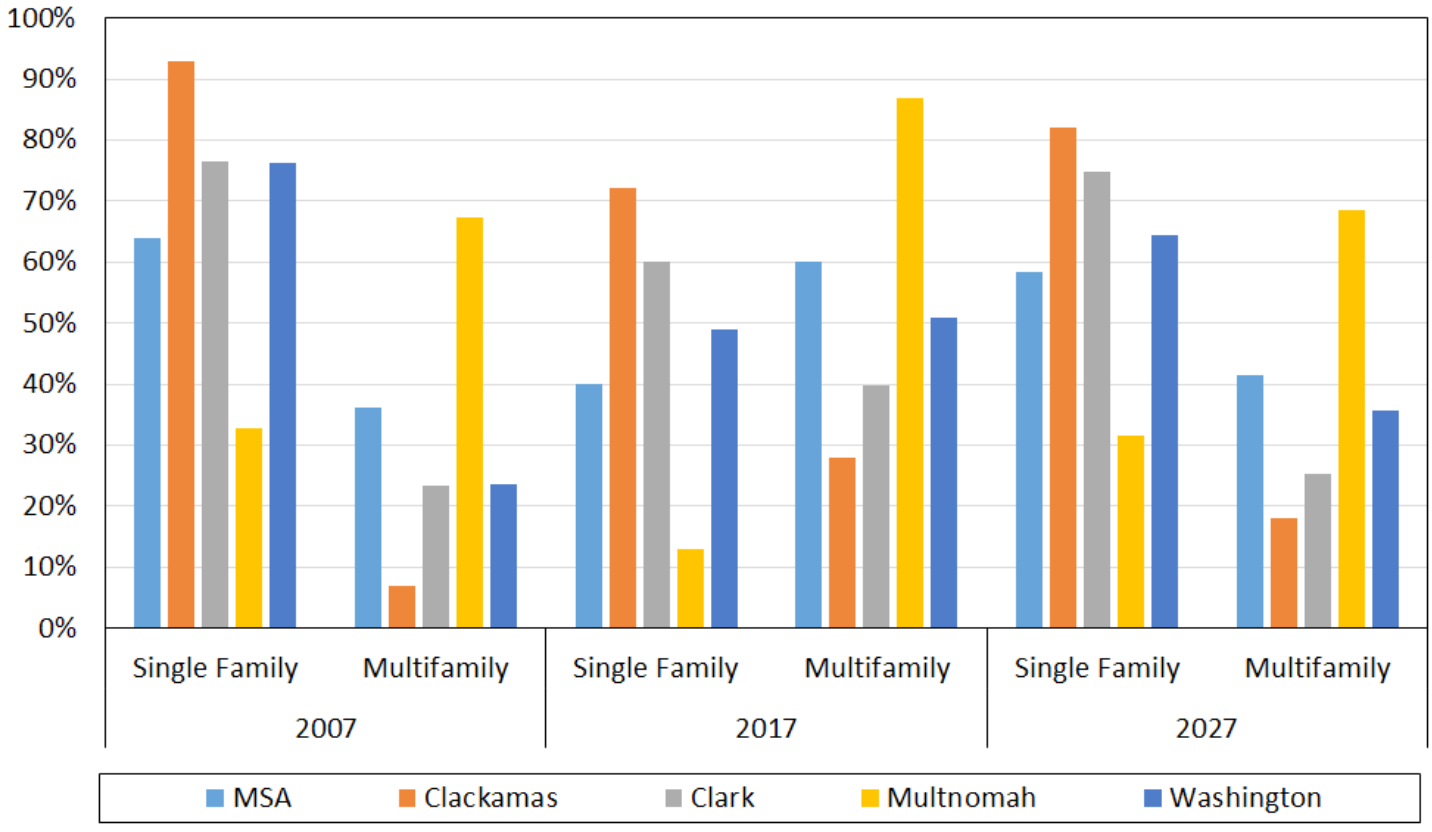
HISTORIC NET MIGRATION BY COUNTY



HISTORIC AND FORECAST INCOME PER CAPITA (THOUSANDS OF DOLLARS)



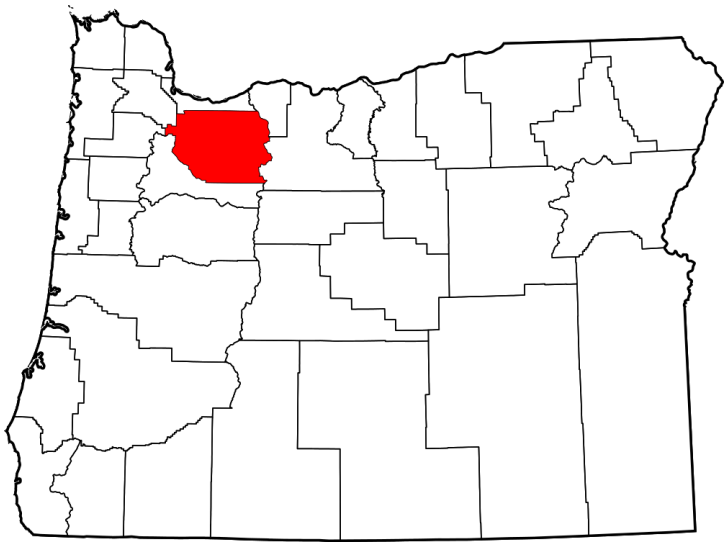
SINGLE FAMILY/MULTIFAMILY SPLIT IN HOUSING CONSTRUCTION

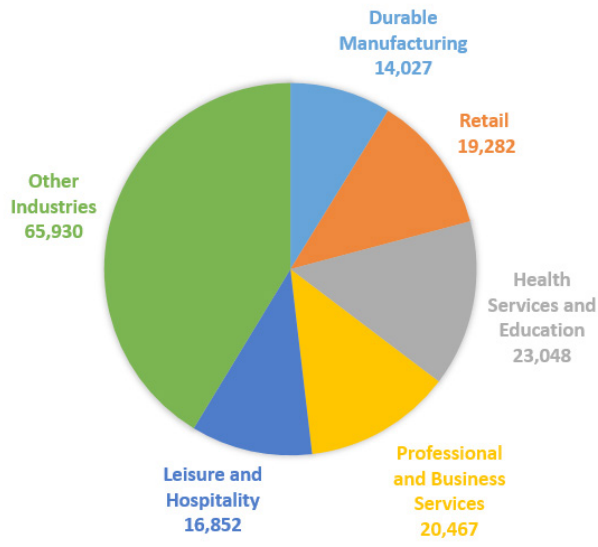


Note: Columbia, Skamania, and Yamhill Counties do not have consistent multifamily construction.

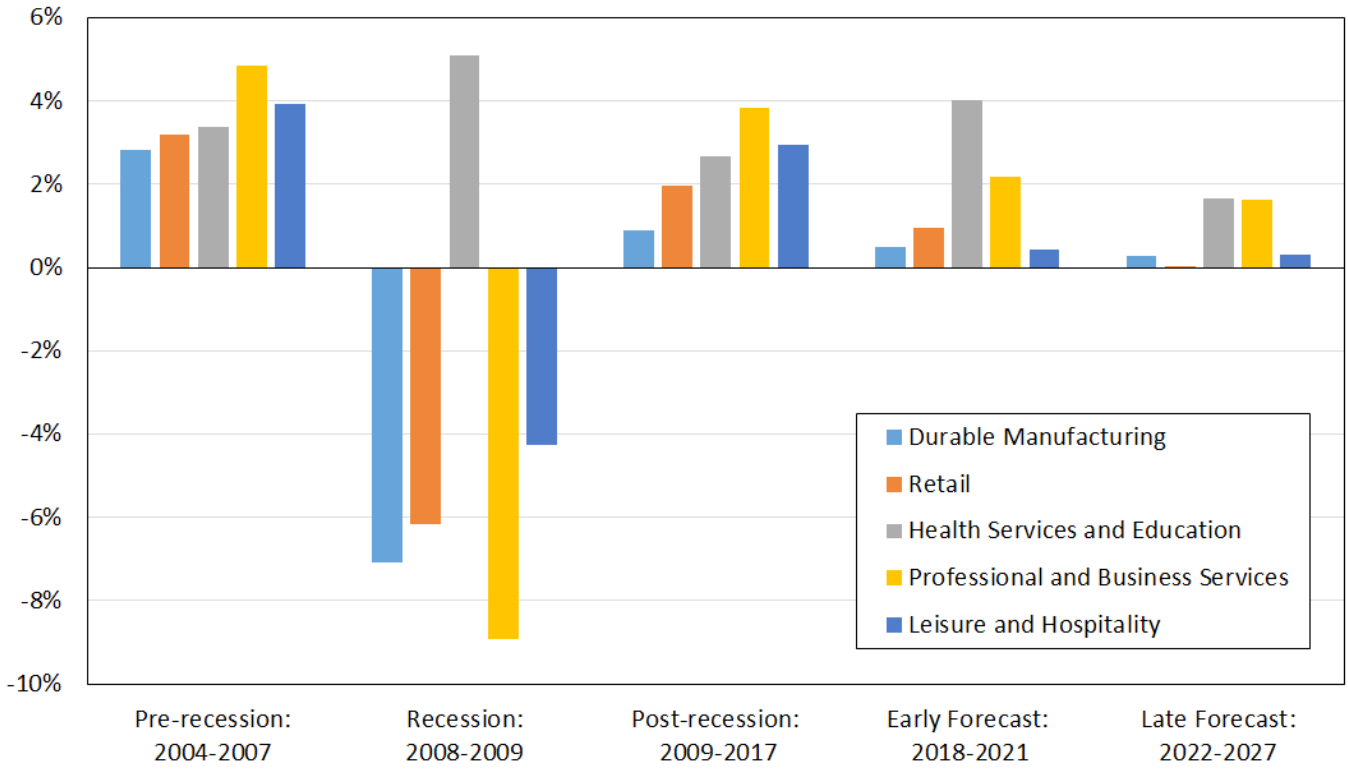
CLACKAMAS COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2017Q4

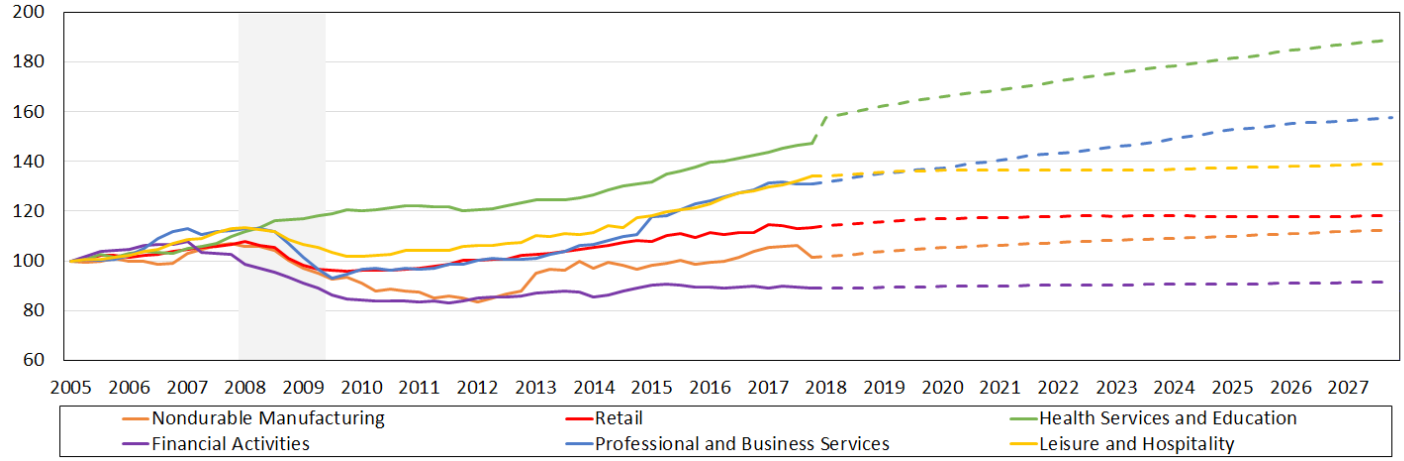




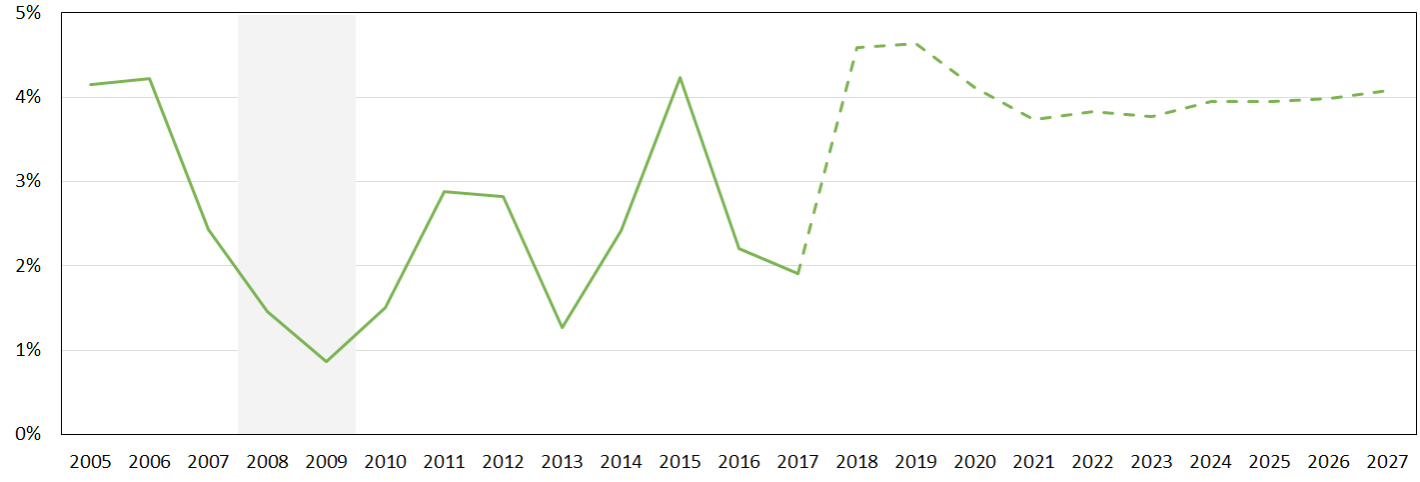
AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES



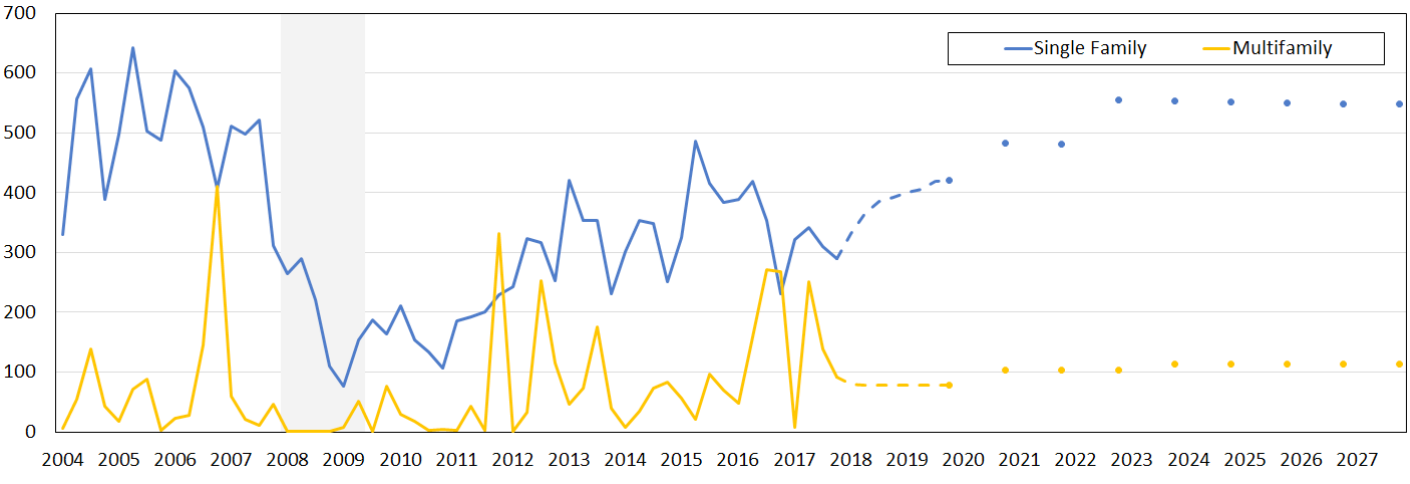
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1



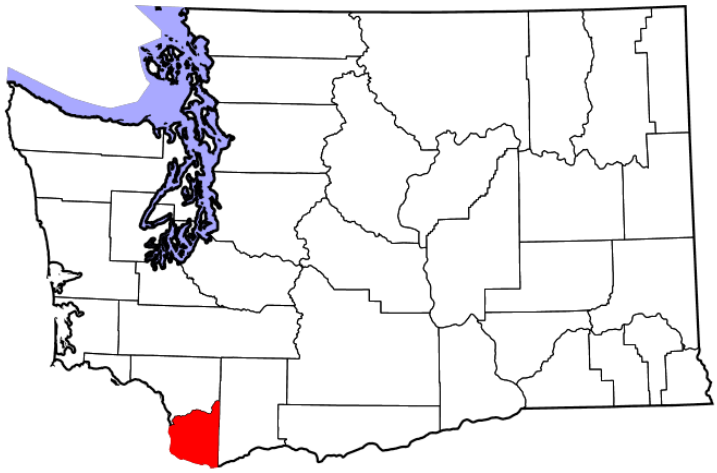
HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH



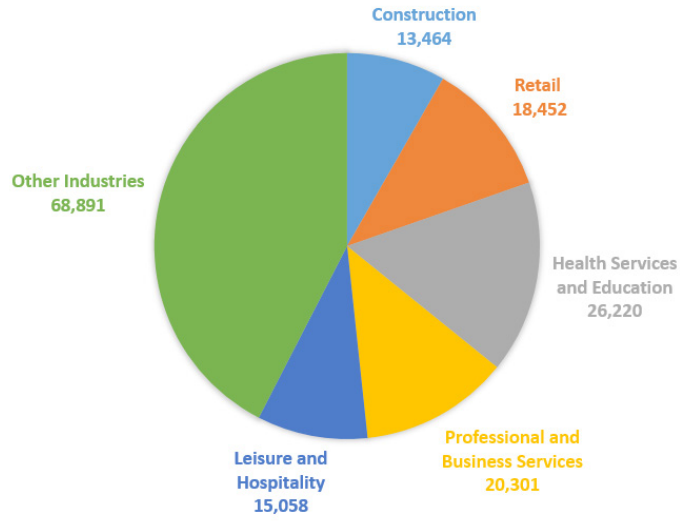
HISTORIC AND FORECAST HOUSING PERMITS, SINGLE FAMILY AND MULTIFAMILY



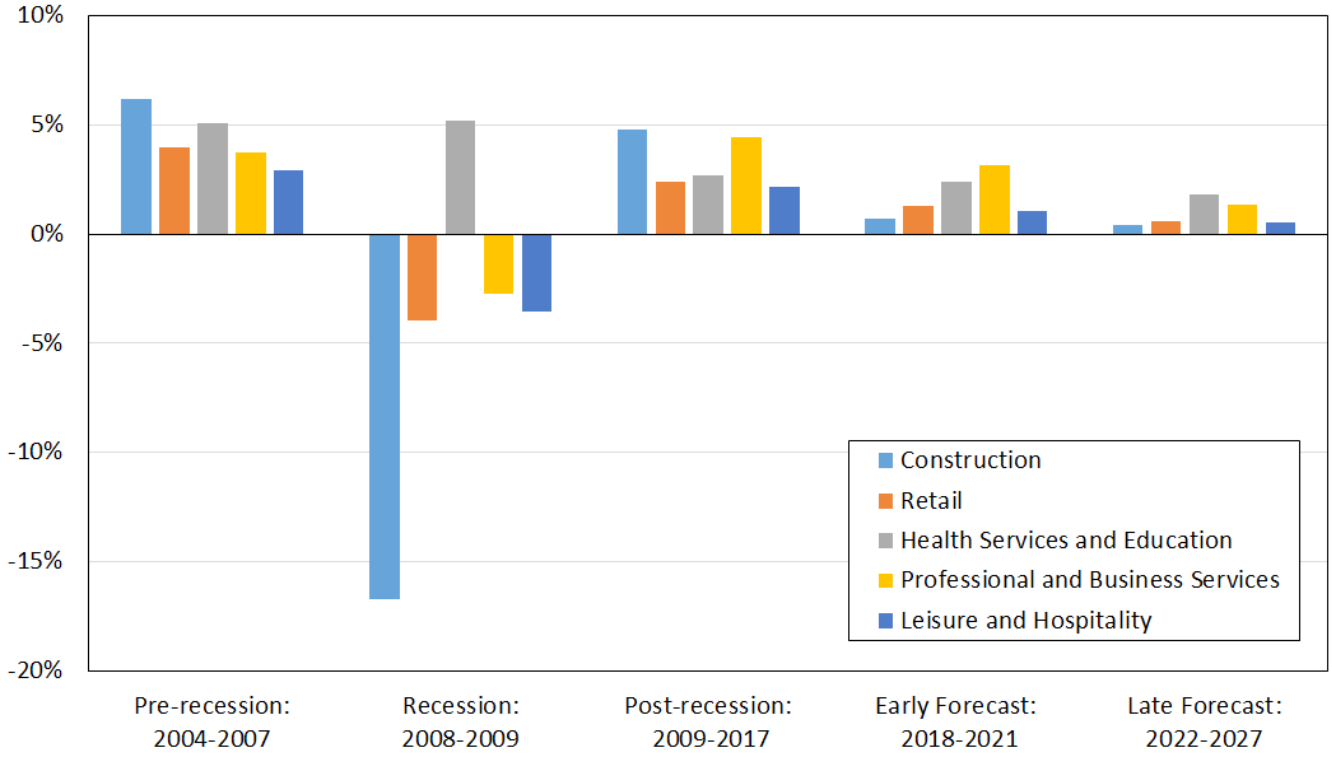
CLARK COUNTY



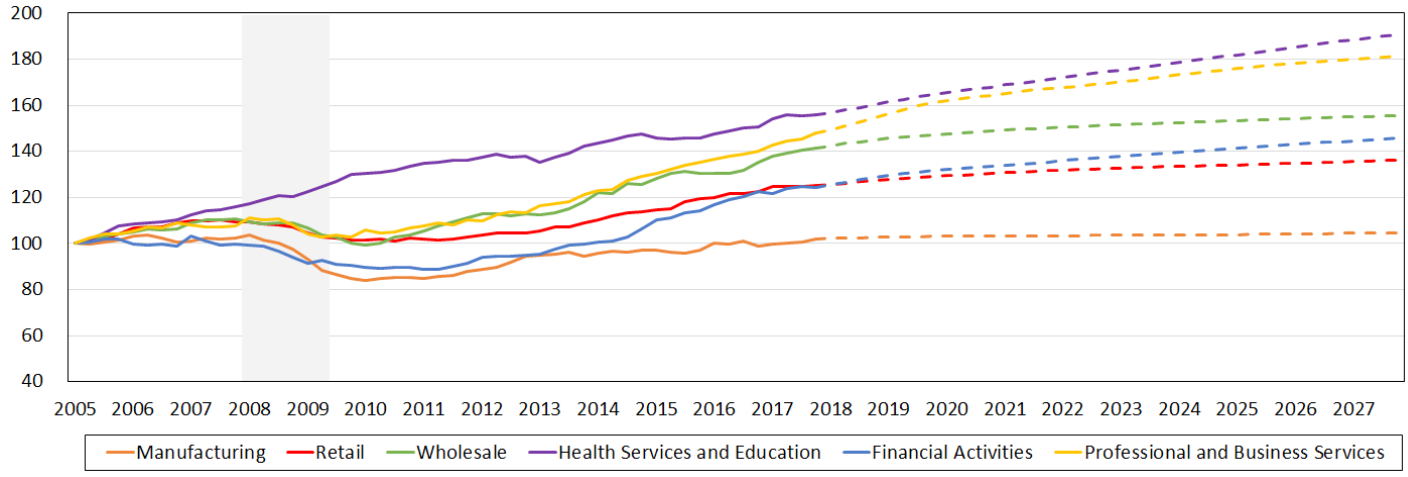
MAJOR INDUSTRIES: TOTAL JOBS 2017Q4



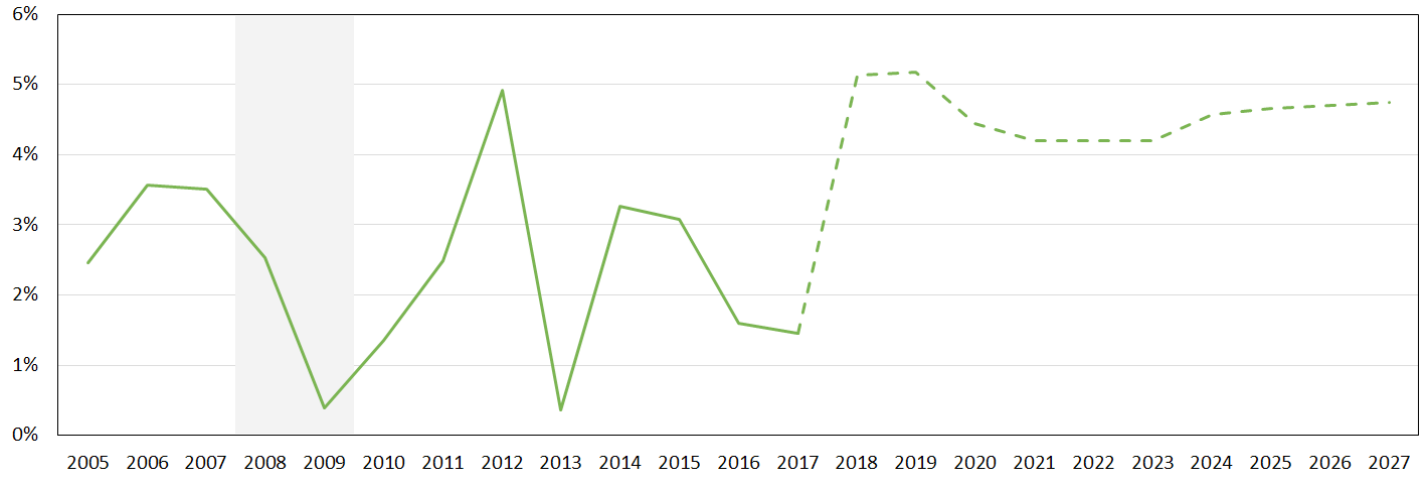
AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES



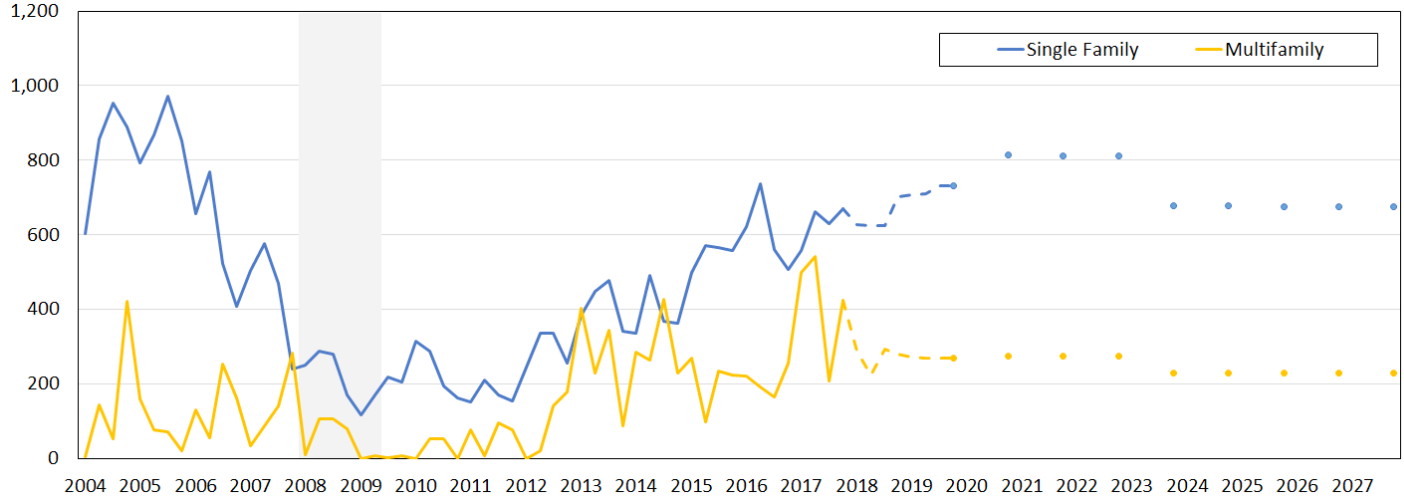
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1



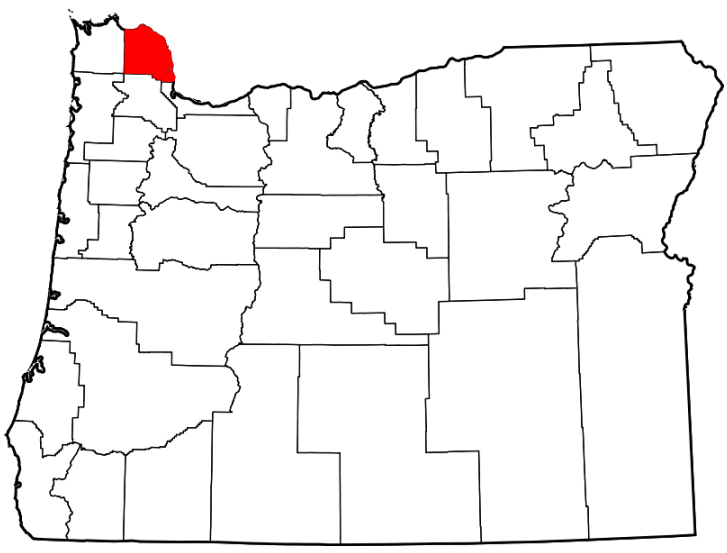
HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH



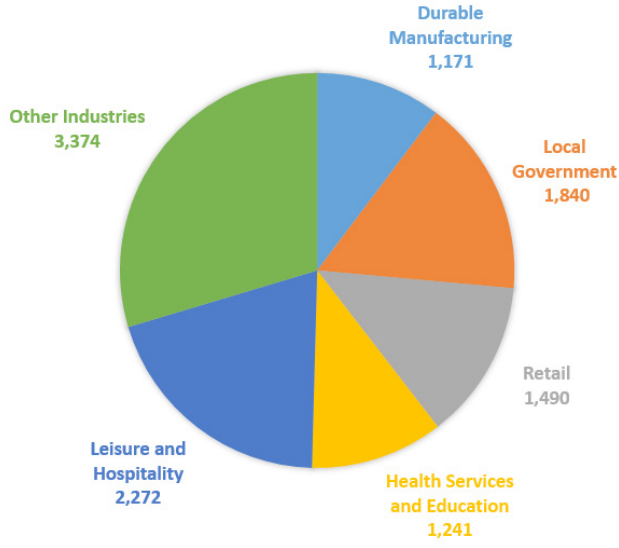
HISTORIC AND FORECAST HOUSING PERMITS, SINGLE FAMILY AND MULTIFAMILY



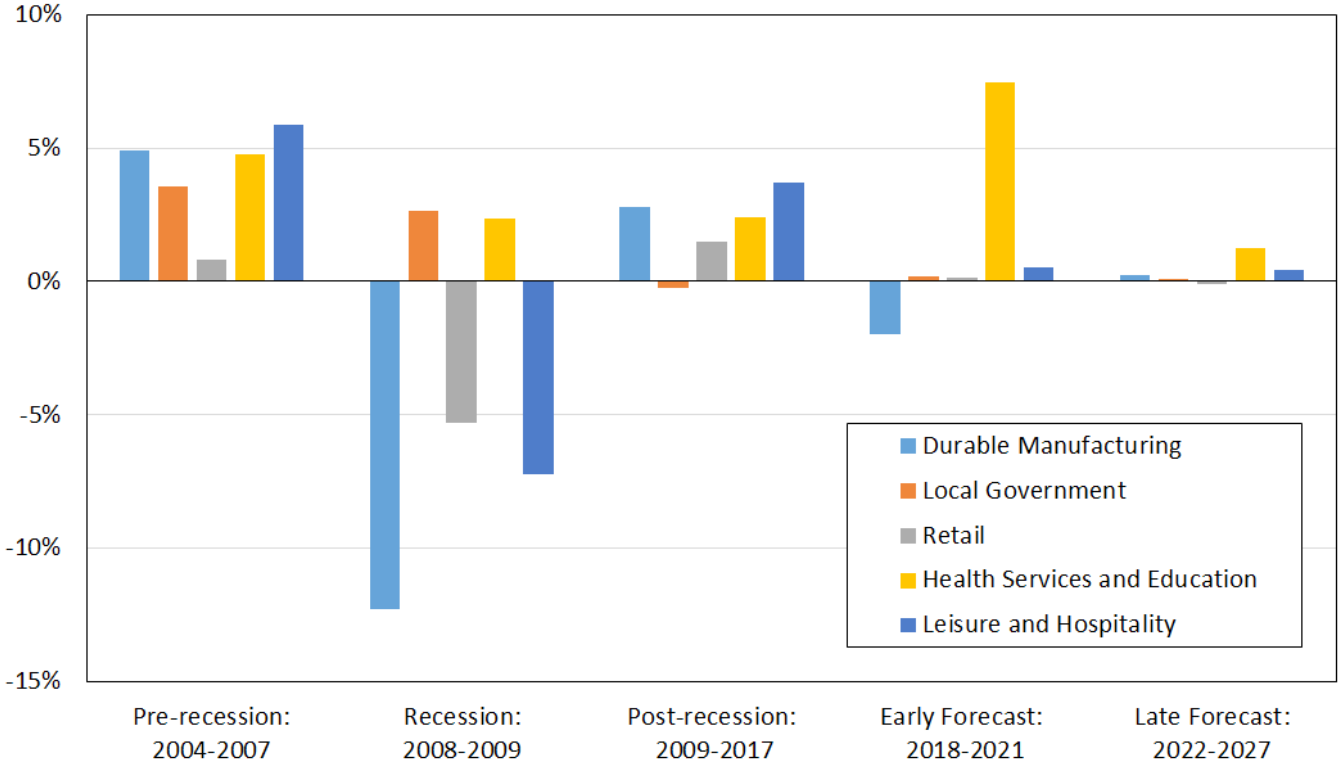
COLUMBIA COUNTY



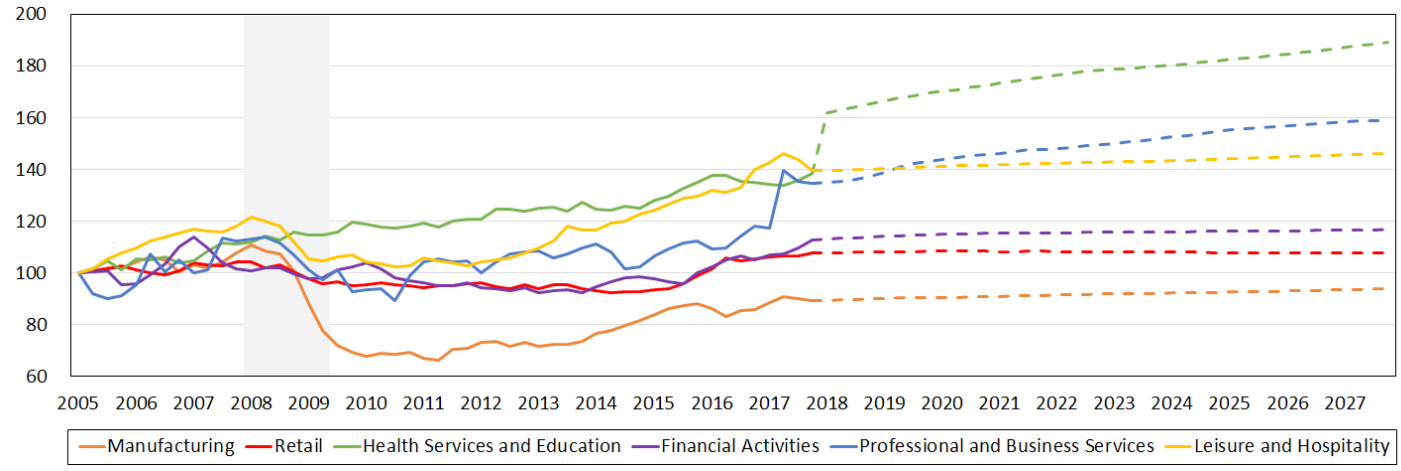
MAJOR INDUSTRIES: TOTAL JOBS 2017Q4



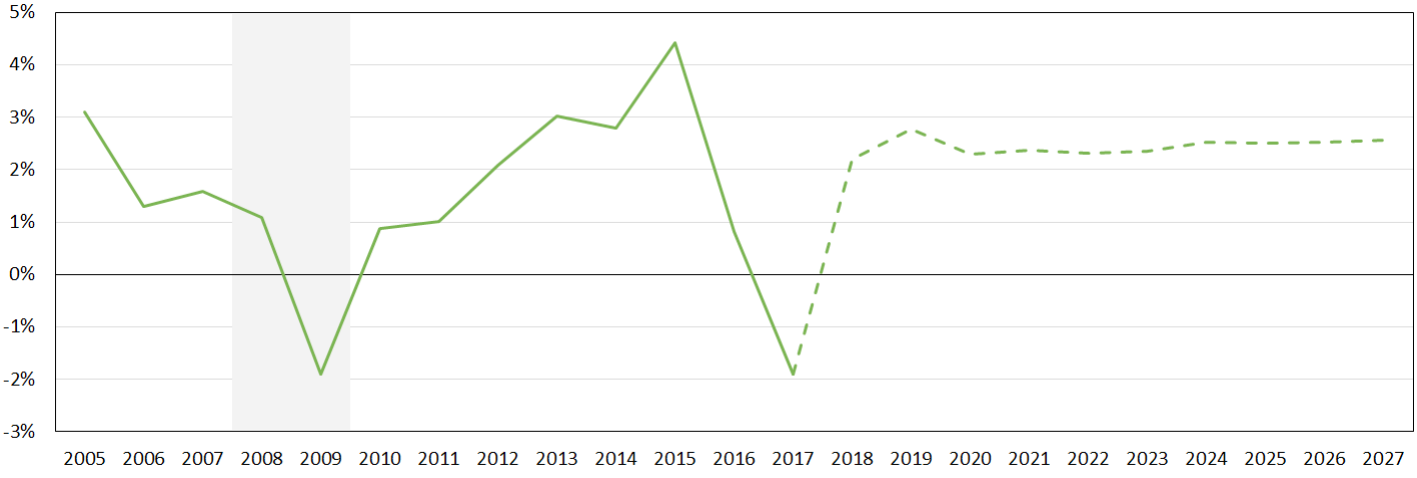
AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES



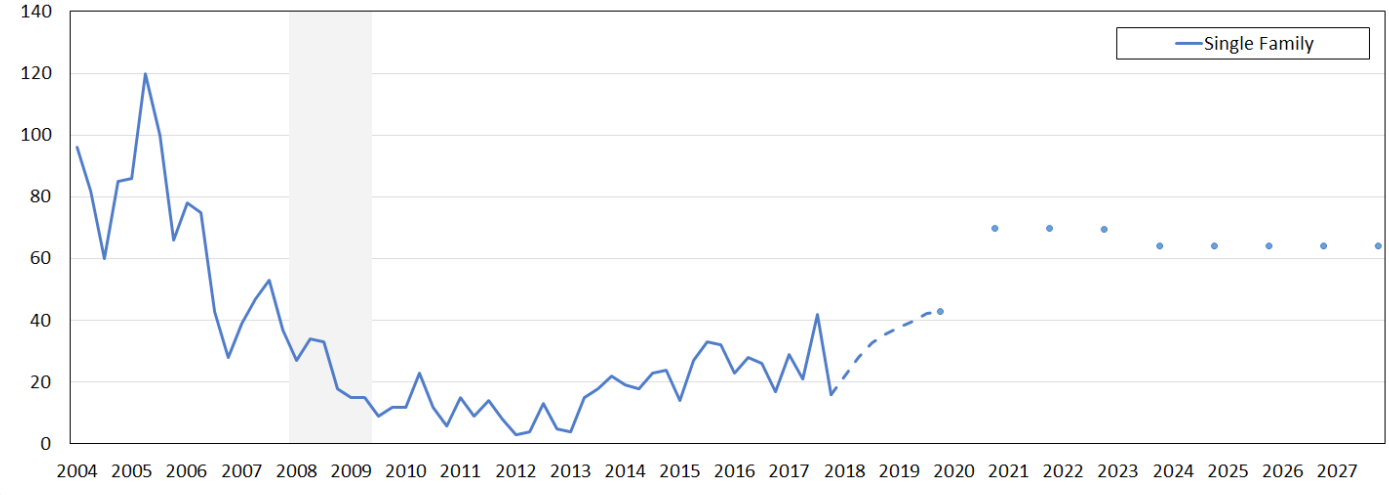
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1



HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH

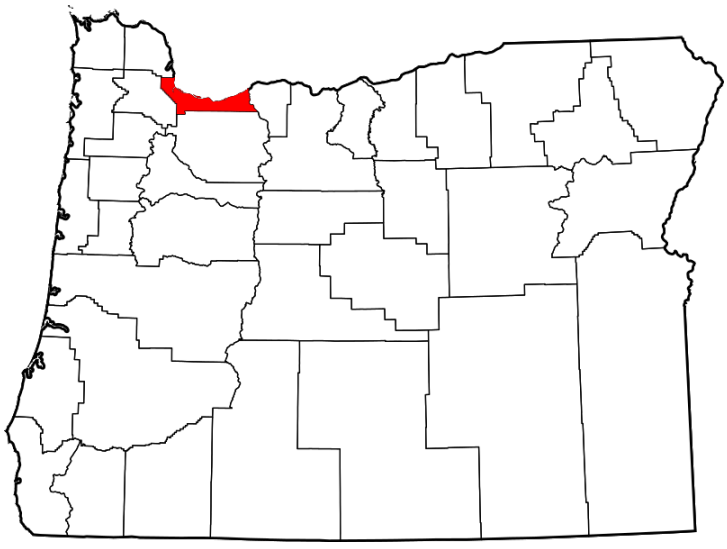


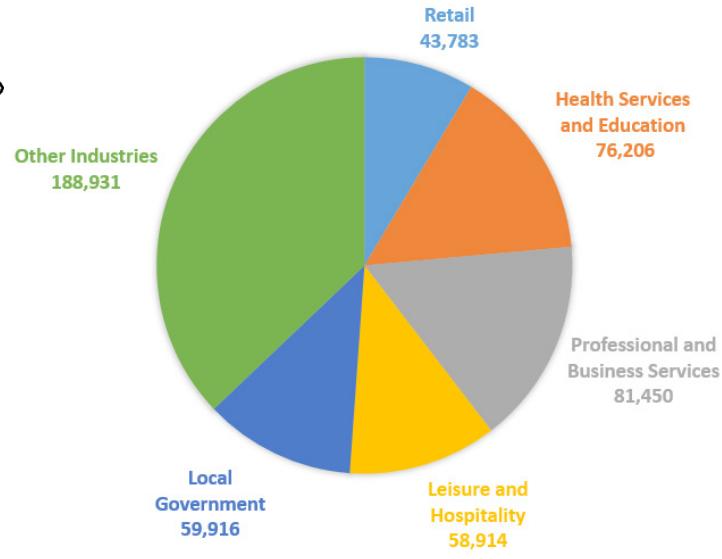
HISTORIC AND FORECAST HOUSING PERMITS, SINGLE FAMILY AND MULTIFAMILY



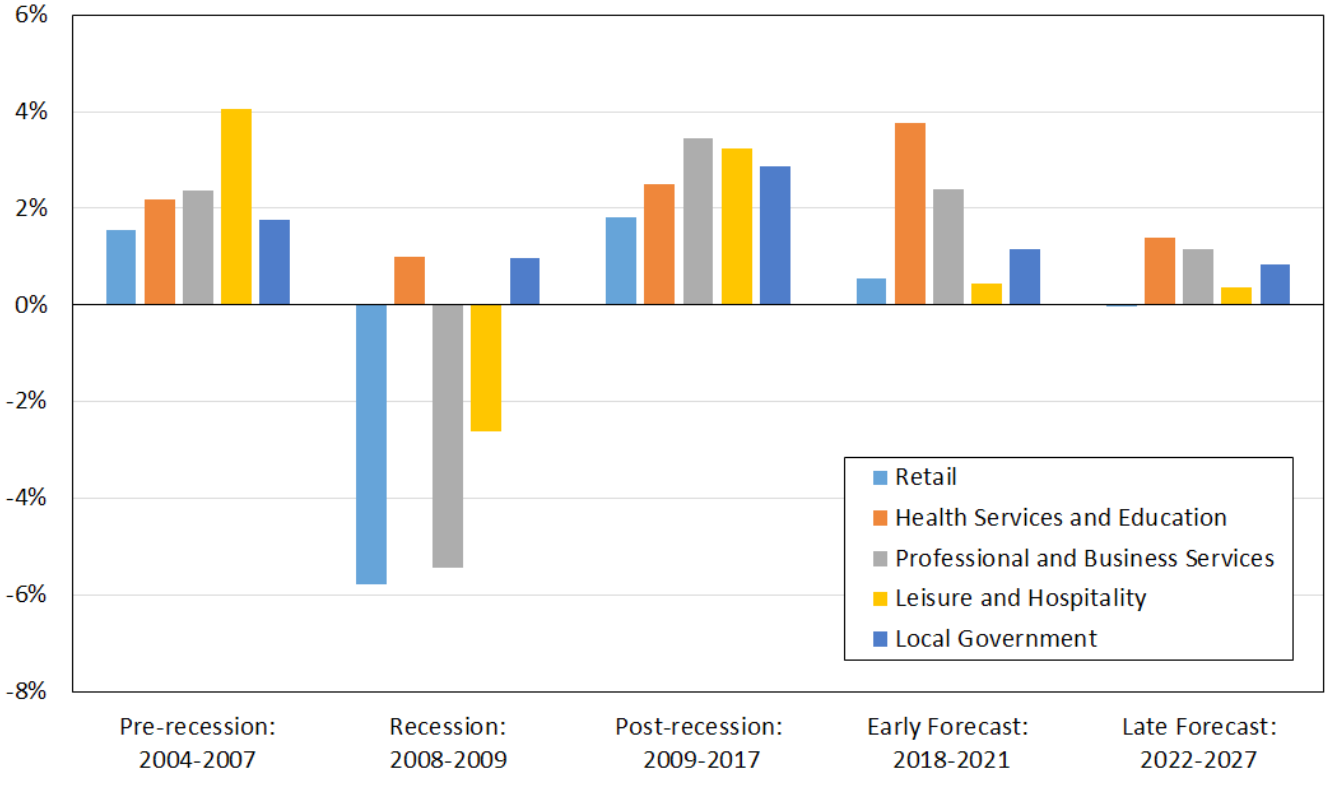
MULTNOMAH COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2017Q4

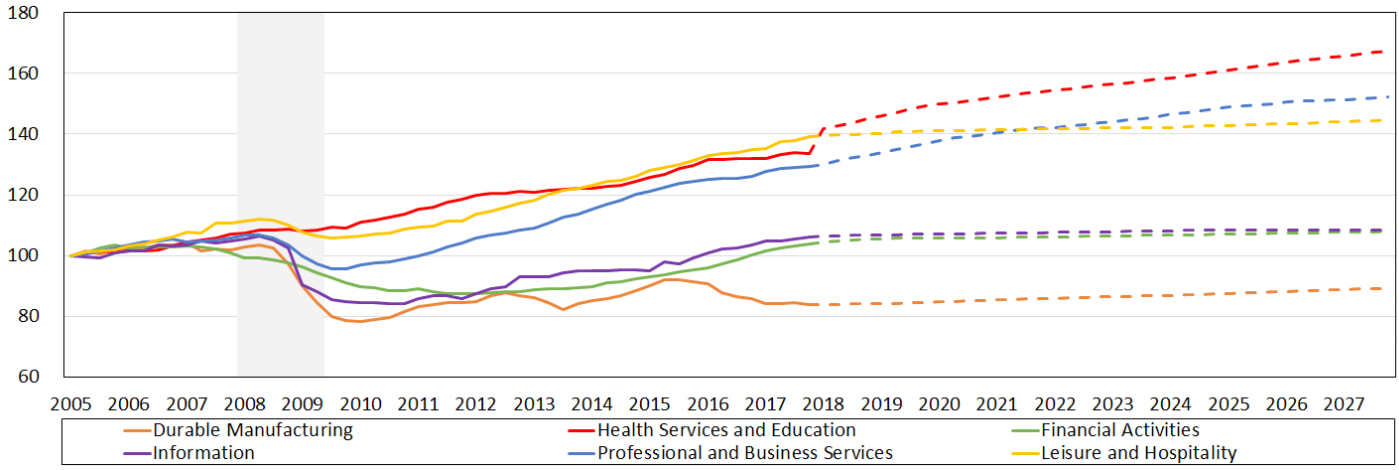




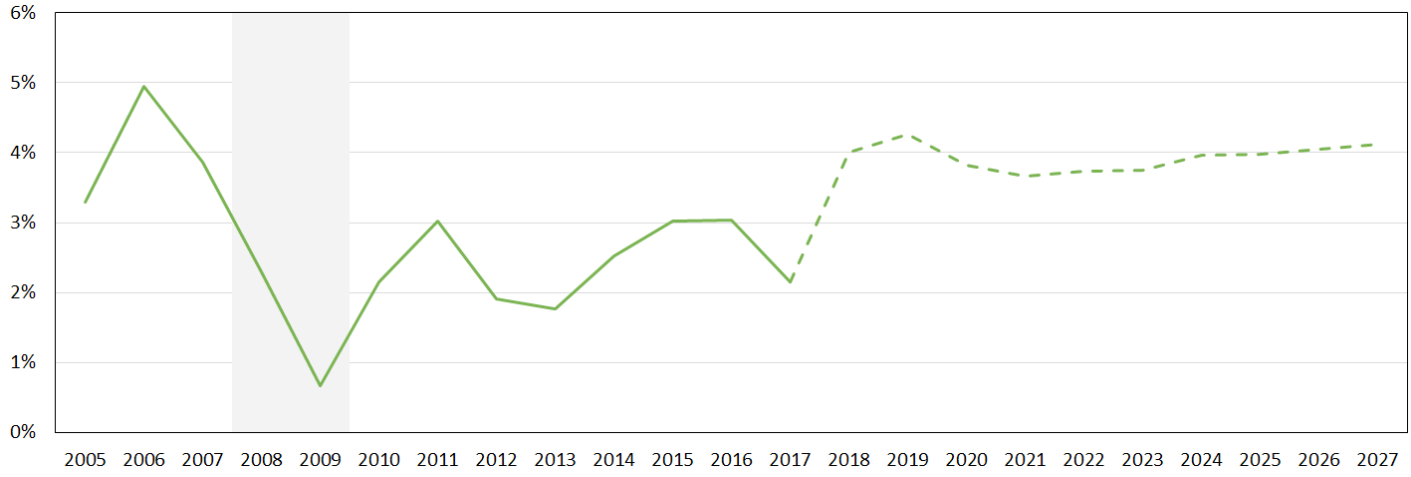
AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES



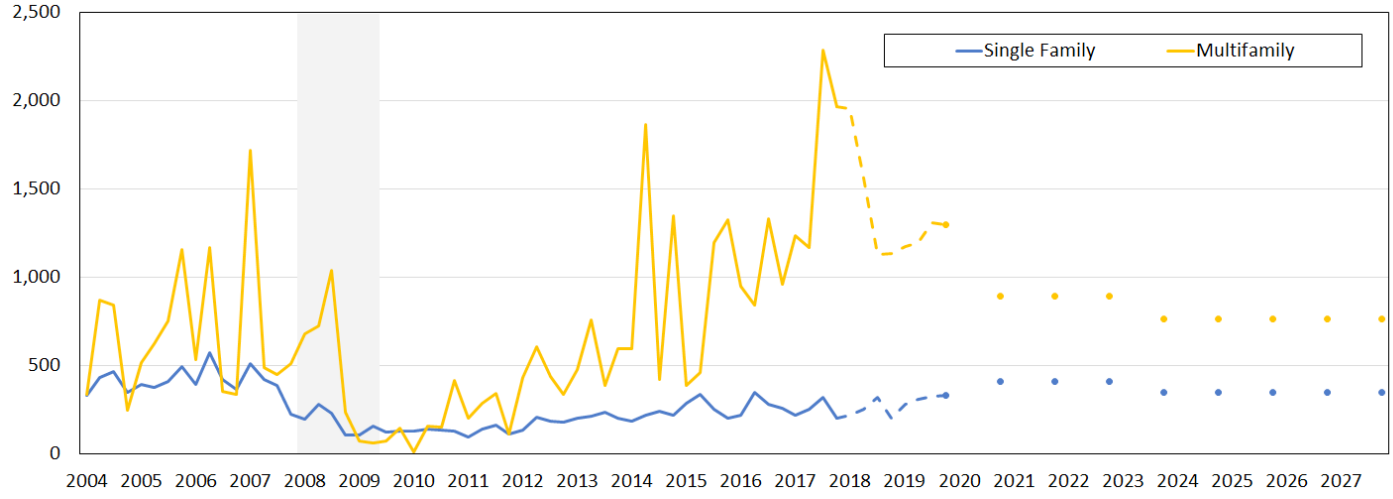
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1



HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH

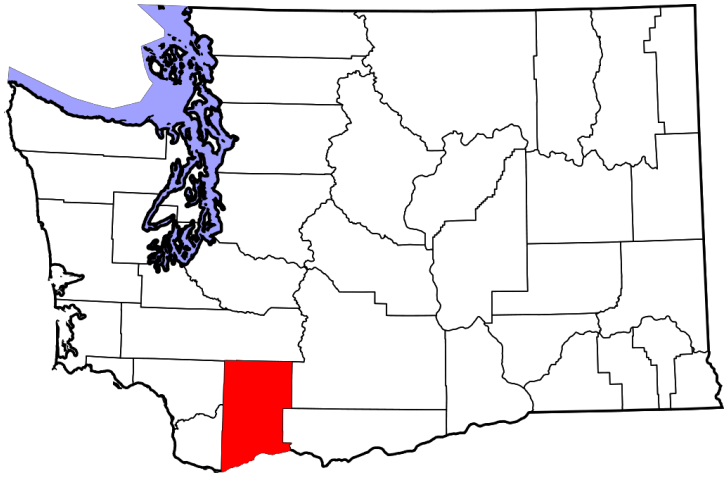


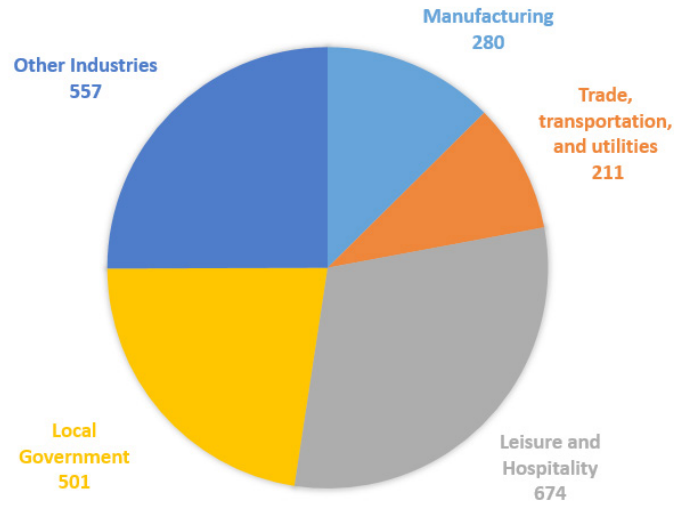
HISTORIC AND FORECAST HOUSING PERMITS, SINGLE FAMILY AND MULTIFAMILY



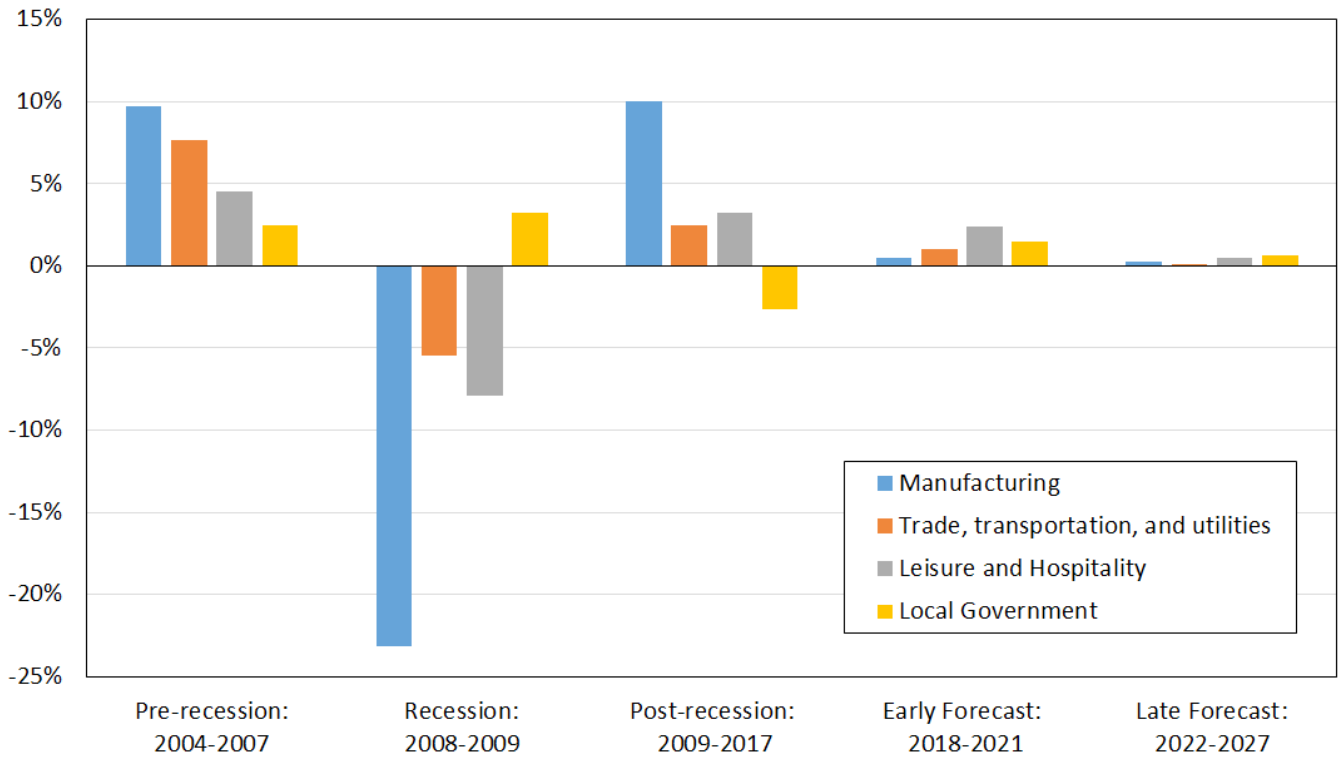
SKAMANIA COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2017Q4

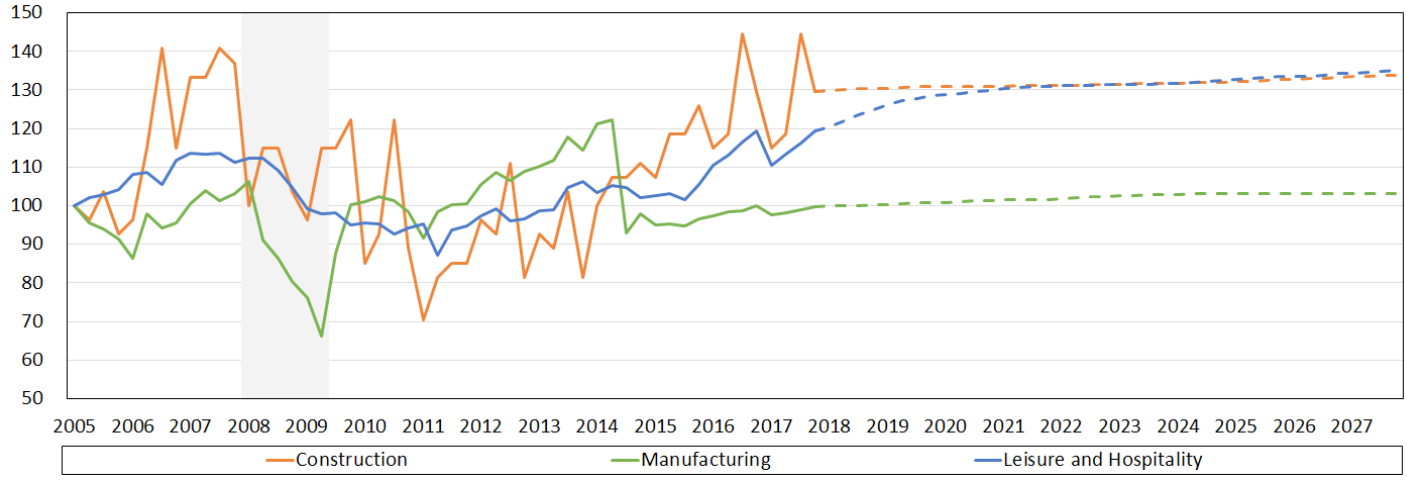




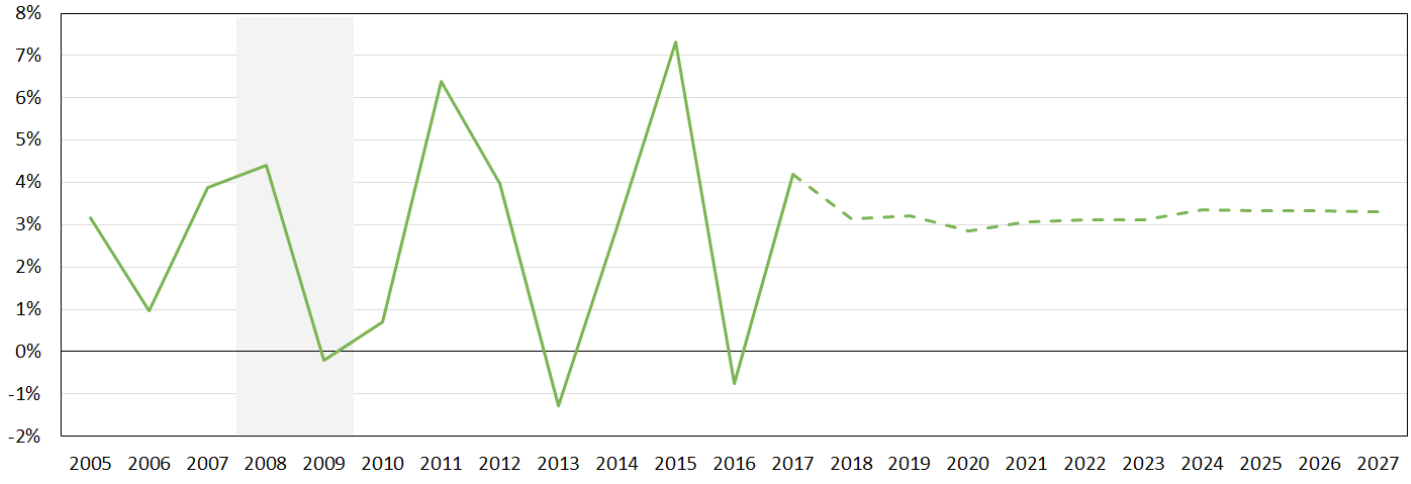
AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES



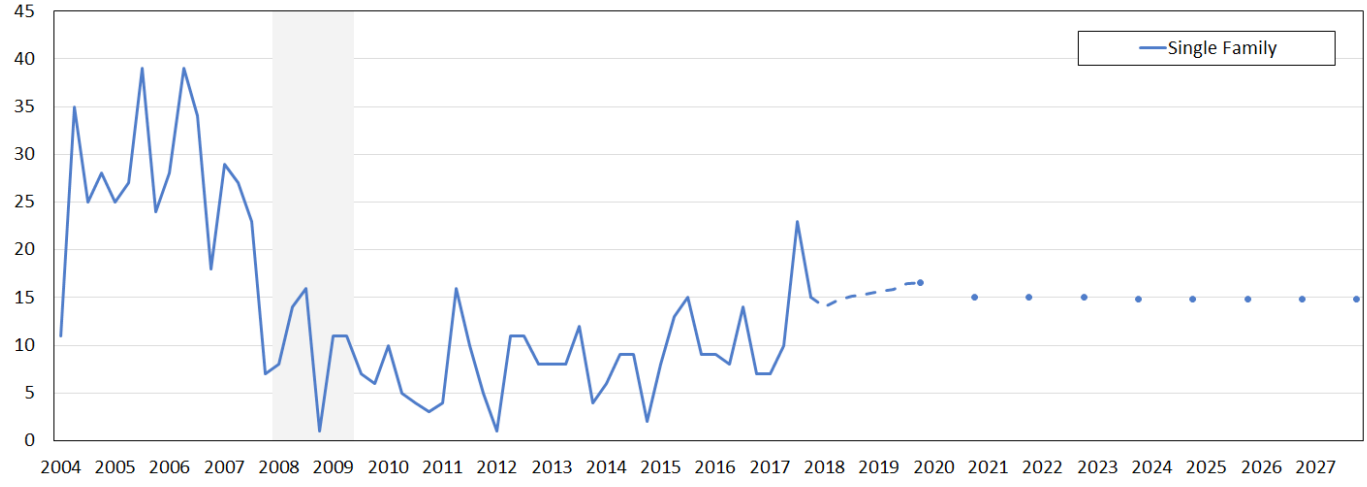
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1



HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH

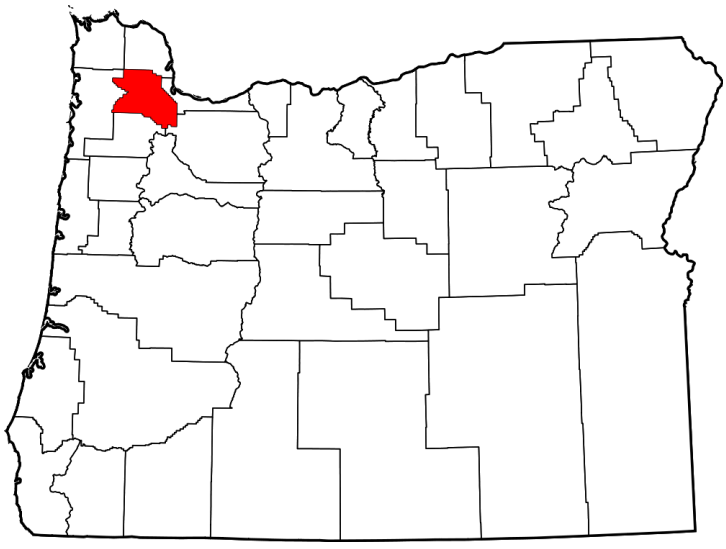


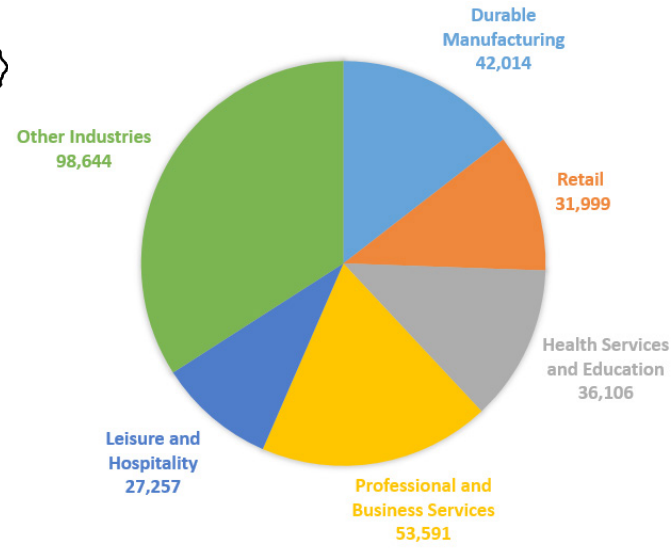
HISTORIC AND FORECAST HOUSING PERMITS, SINGLE FAMILY AND MULTIFAMILY



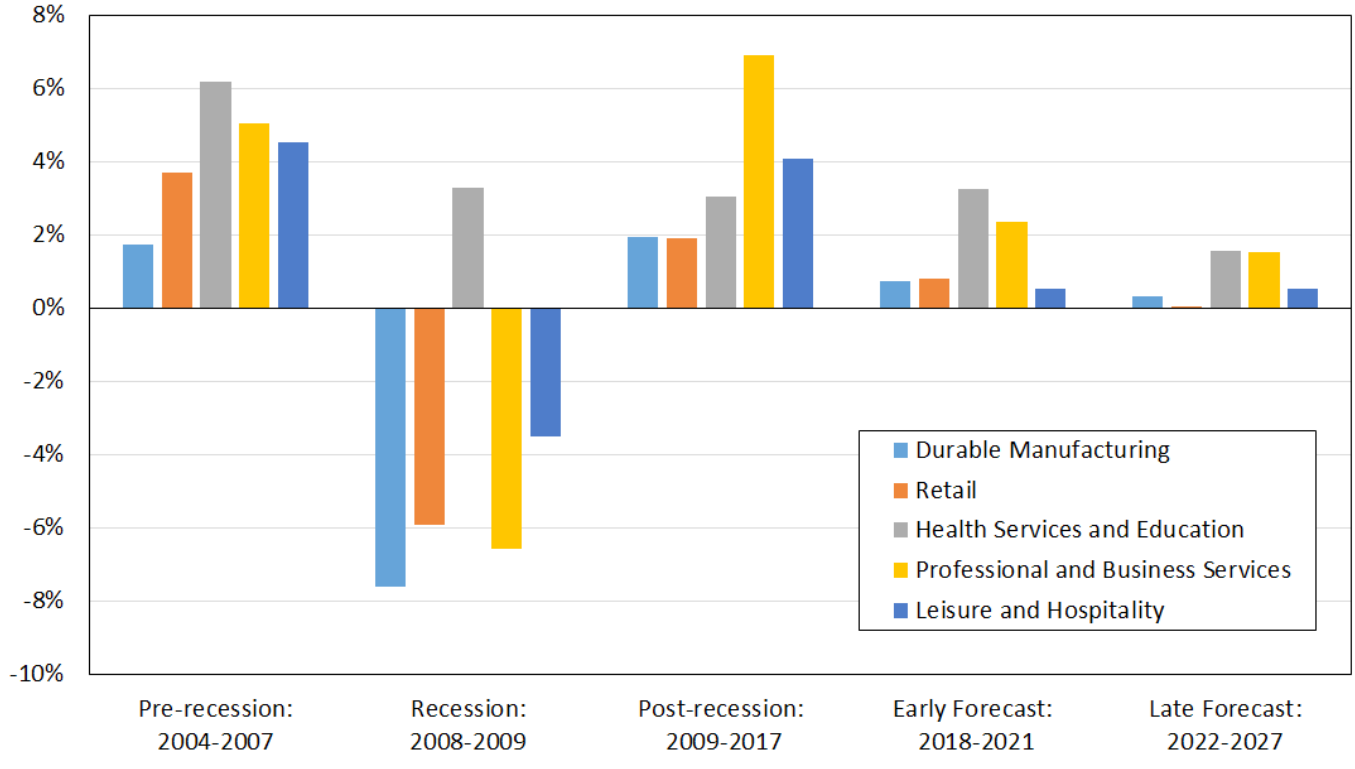
WASHINGTON COUNTY

MAJOR INDUSTRIES: TOTAL JOBS 2017Q4

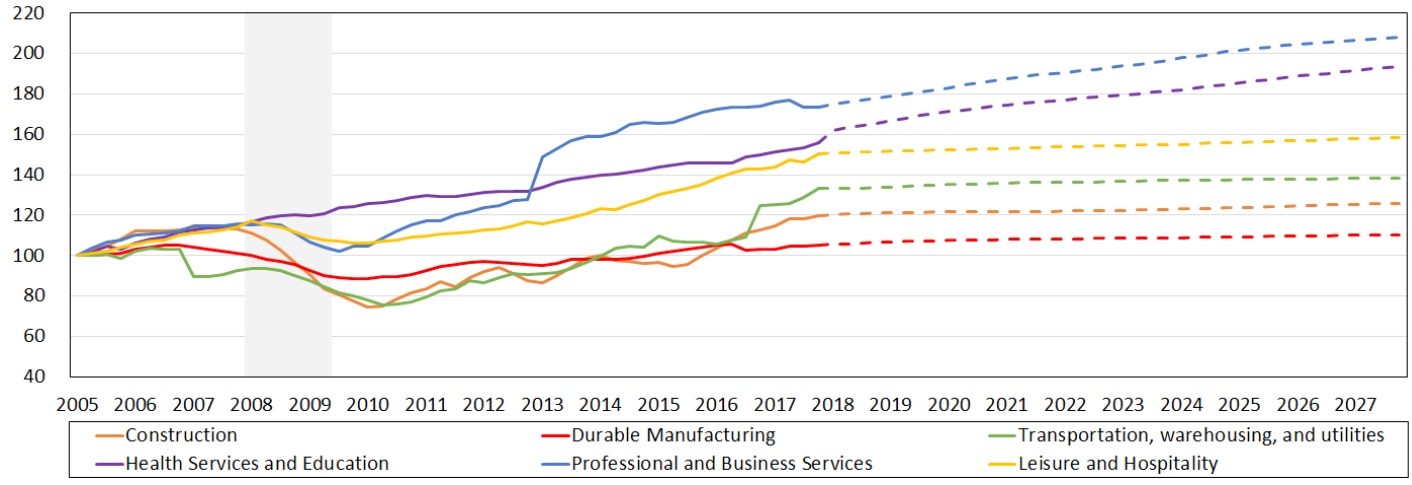




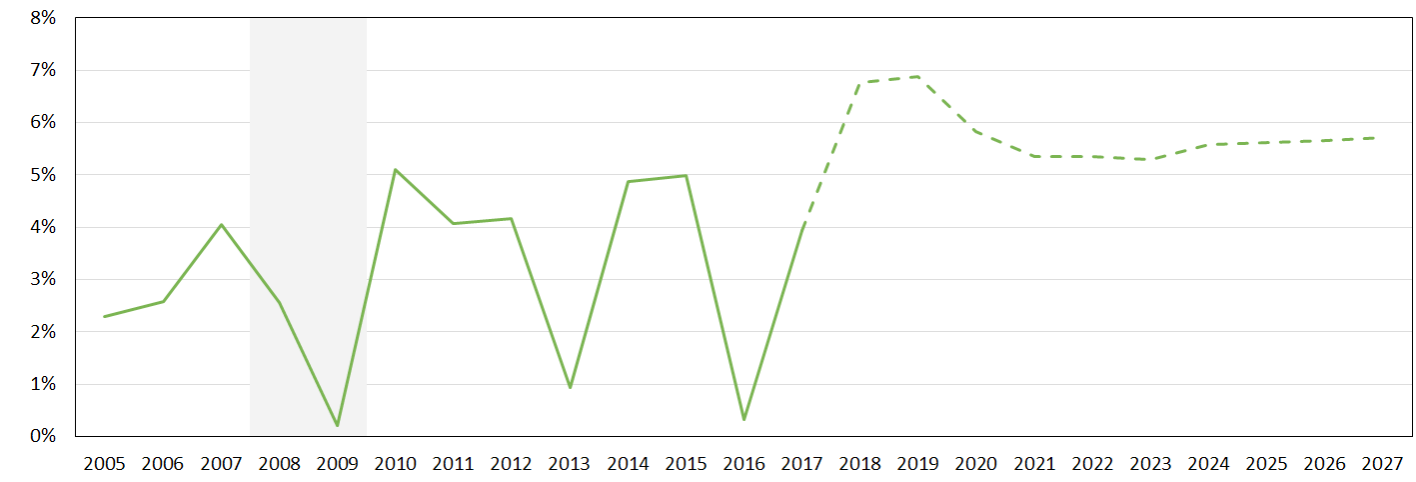
AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES



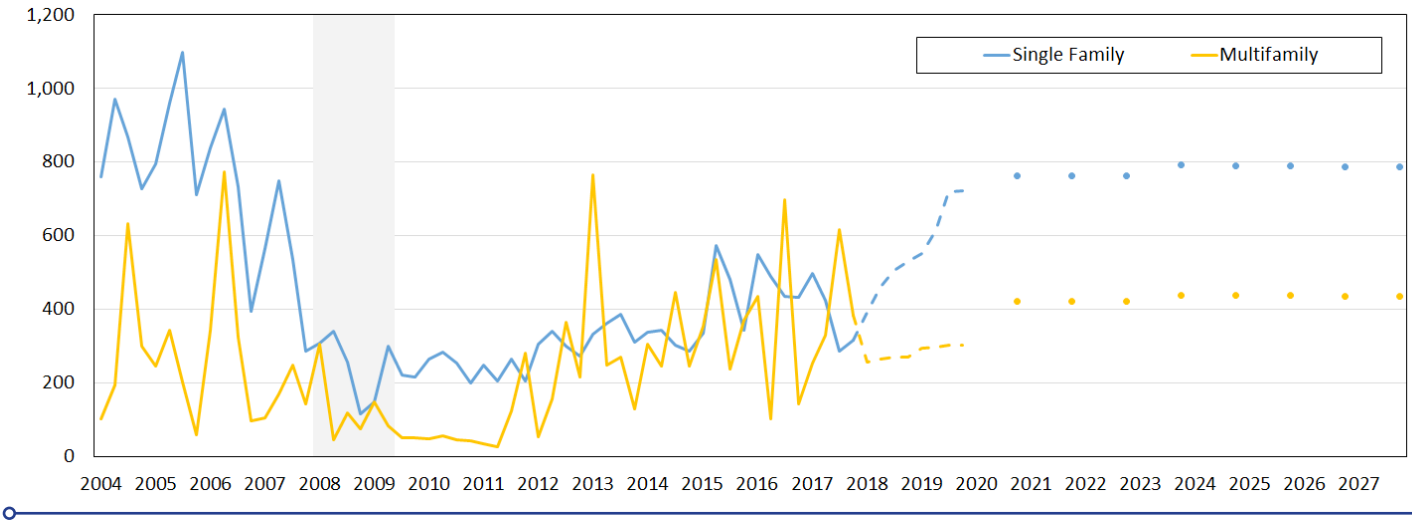
EMPLOYMENT IN NOTABLE FAST- AND SLOW-GROWTH INDUSTRIES, INDEXED TO 2005Q1



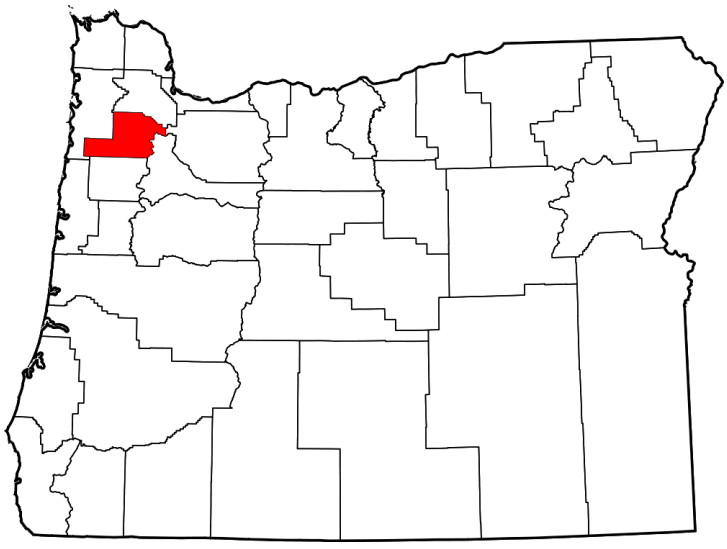
HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH



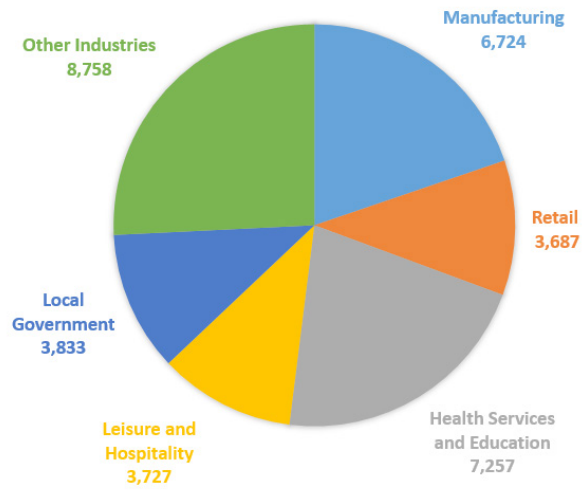
HISTORIC AND FORECAST HOUSING PERMITS, SINGLE FAMILY AND MULTIFAMILY



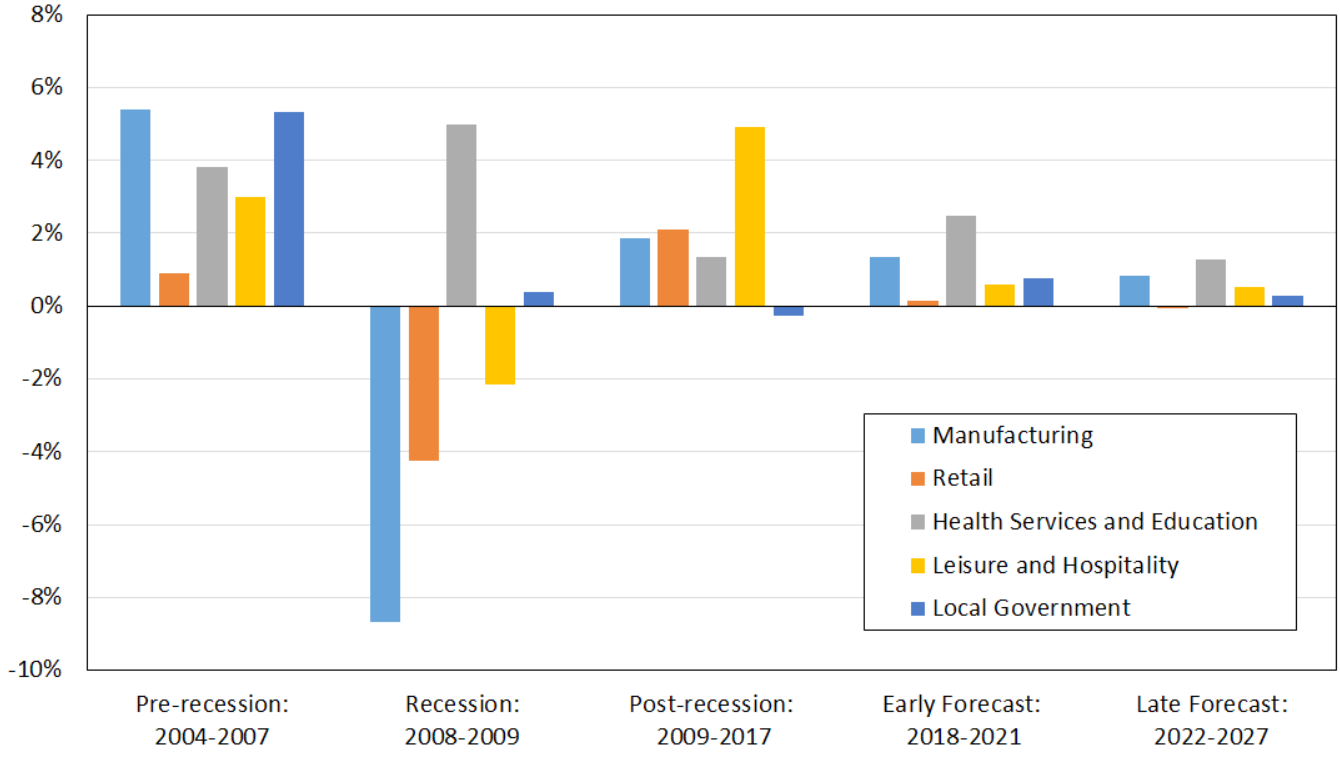
YAMHILL COUNTY



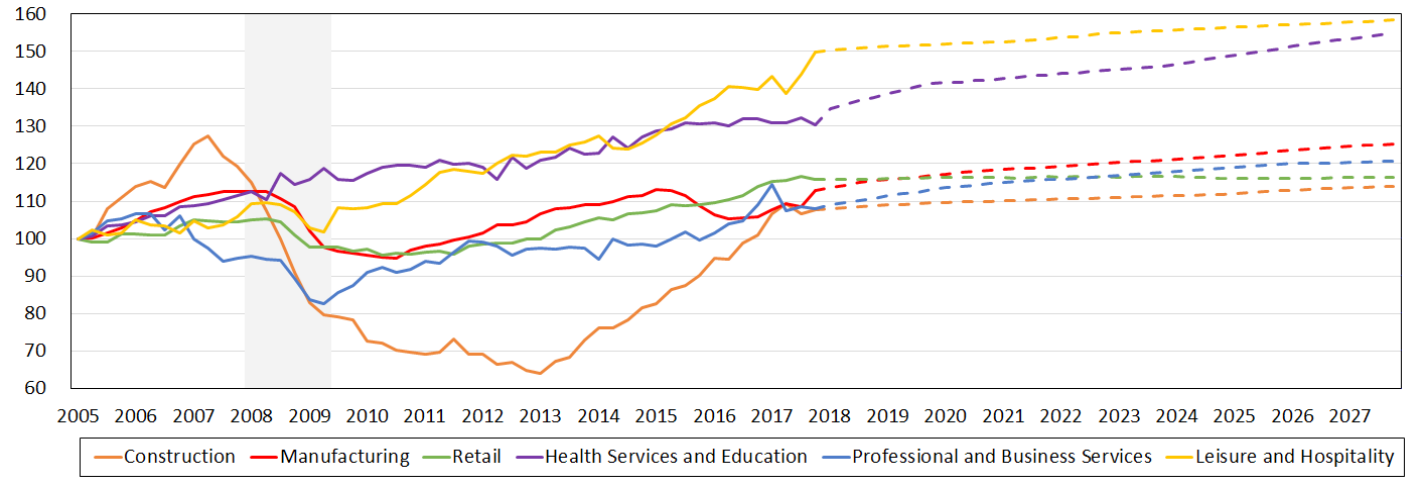
MAJOR INDUSTRIES: TOTAL JOBS 2017Q4



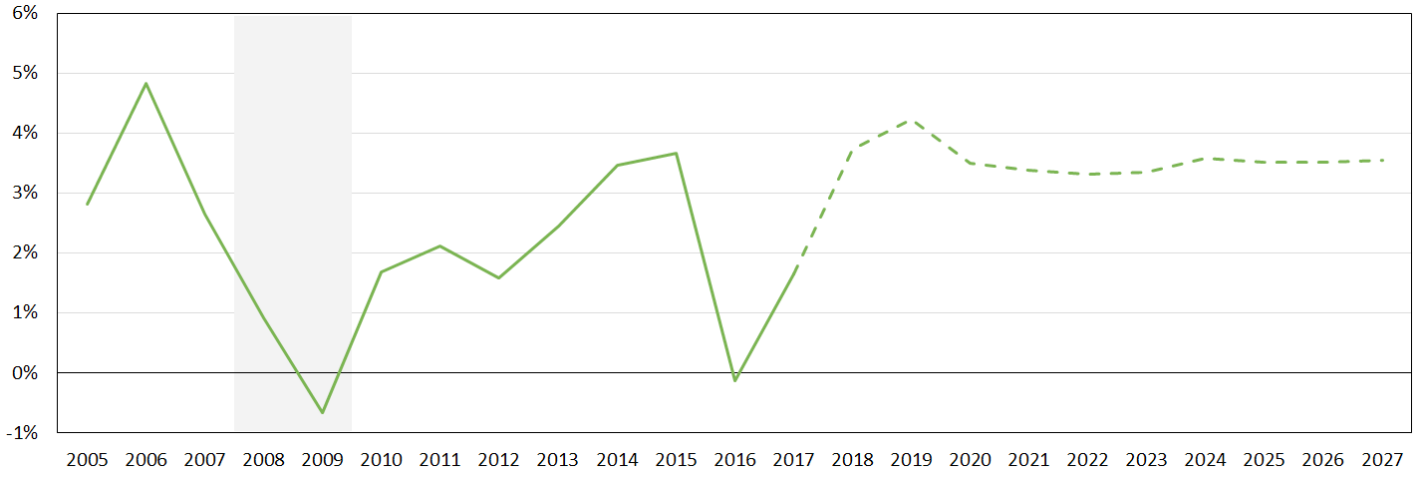
AVERAGE ANNUALIZED EMPLOYMENT GROWTH IN MAJOR INDUSTRIES



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



HISTORIC AND FORECAST AVERAGE ANNUALIZED NONFARM WAGE GROWTH



HISTORIC AND FORECAST HOUSING PERMITS, SINGLE FAMILY AND MULTIFAMILY

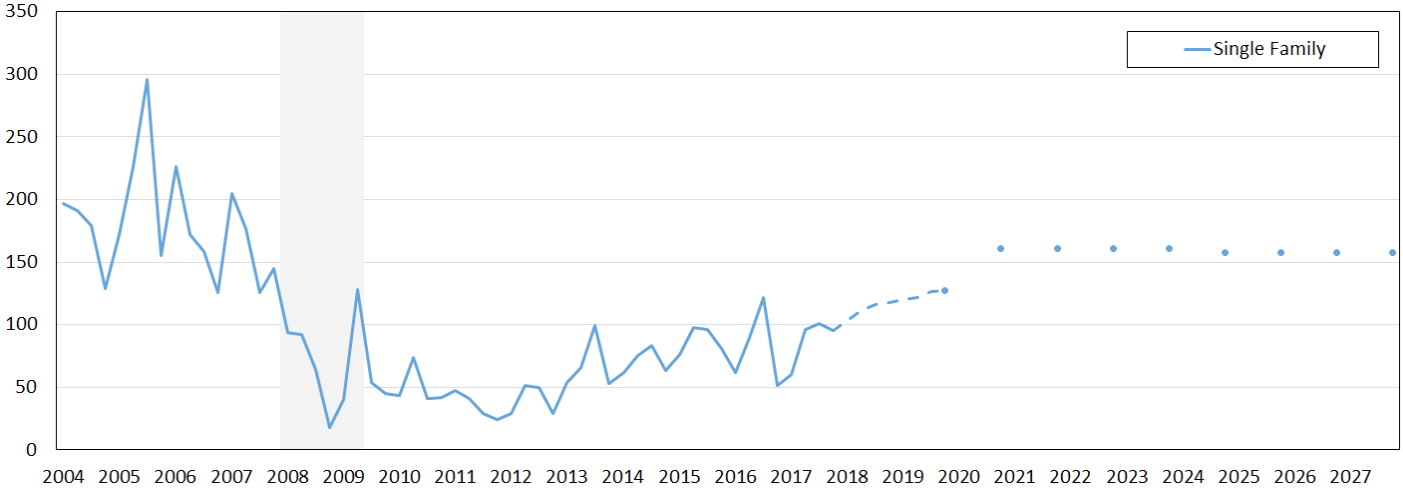


IMAGE & DATA SOURCES

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Pg 1, facing:

Tulip farm, unknown location, OR: By Teacherjourney [CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0)], from Wikimedia Commons

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Japanese maple, Portland Japanese Garden, Portland, OR: By Jeremy Reding from Seattle, USA (Portland Japanese Garden 2010) [CC BY-SA 2.0 (https://creativecommons.org/licenses/by-sa/2.0)], via Wikimedia Commons

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All county locator maps from Wikimedia Commons.

Pg. 39:

Chinatown Gate, Portland OR: By Ian Sane from Oregon, USA (China Town) [CC BY 2.0 (https://creativecommons.org/licenses/by/2.0)], via Wikimedia Commons

Data Sources:

Income and GDP – BEA

CPI and Wages - BLS

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

Population – PSU Population Research Center, Washington State Office of Financial Management, U.S. Census

Interest Rates – U.S. Treasury and Freddie Mac

Housing Permits - U.S. Census


NeRC