

Revenue Summary

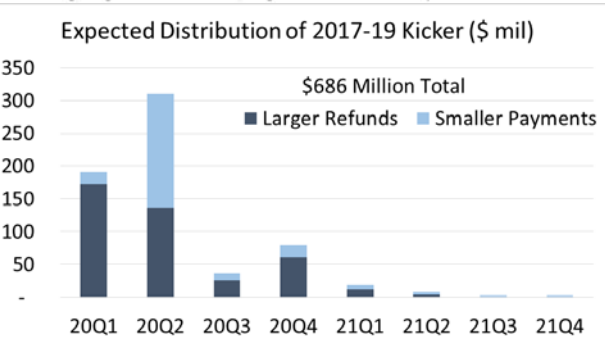
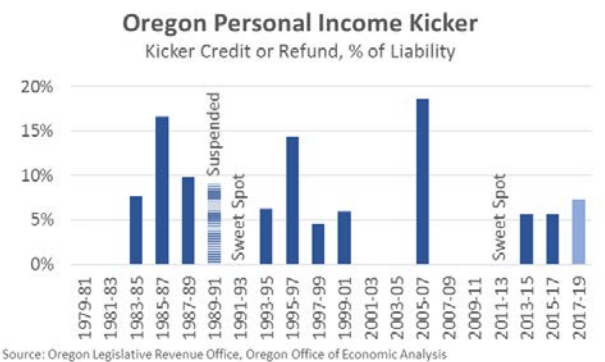
Oregon’s economic expansion has largely played out as expected in recent months, yet state revenue collections continue to outpace the forecast. Much of the strong revenue growth can be traced to temporary factors, including the response of Oregonians to federal tax law changes and a spike in estate tax collections. Together with the fleeting nature of recent tax collections, Oregon’s unique kicker law is acting to mute the budgetary impact of unexpected revenues. While more revenue is now expected to be collected during the current biennium, less will be available during the 2019-21 budget period.

Although it will take some time for all of the impacts of the federal tax law changes to be known, Oregon’s taxpayers have clearly been responding to the new environment. In the time since the federal changes were announced, advanced payments of personal income taxes are up 24% relative to last year. Advanced corporate tax payments are up more than 50% over the same period. Although state tax liability has been boosted somewhat in the near term due to the federal reforms, recent payments have been far larger than what could reasonably be expected due to the direct impact of the law changes. It is likely that collections will cool down going forward as households and businesses reconcile their annual tax bills.

Should the September forecast come to pass, Oregon’s taxpayers will easily trigger both the personal income tax kicker and corporate kicker laws during the 2017-19 biennium. At \$208 million, the corporate kicker would be the largest in dollar terms seen in more than a decade. However, the payment would still be smaller than most when measured as a share of corporate taxes. During both the tech and housing booms, the corporate kicker exceeded 50% of tax liability at its peak. Unlike those times, corporate kicker payments now flow to K-12 education spending rather than being returned as refunds to corporations. The current corporate kicker is largely the result of an expected \$245 million in additional revenue as a result of the new federal tax law that requires the repatriation of deferred foreign income. While the amount of this additional revenue is highly uncertain, most of it has been dedicated to the School District Unfunded Liability Fund in BI2019-21, in keeping with the spirit of the kicker law (SB 1529).

At \$686 million, the personal income tax kicker is also expected to be the largest in dollar terms seen in more than a decade. As with the corporate surplus, however, it is still expected to be smaller than most as a share of biennial collections. Since 1979, the “two percent kicker” law requires the state to return excess revenue to taxpayers when actual (non-corporate) General Fund revenues exceed the forecasted amount by more than two percent. According to the September forecast, these revenues will exceed the forecast by 3.7% at the end of the biennium.

The 2011 Legislature changed the return mechanism for the kicker from a refund check sent before the holidays back to a credit on the Oregon tax return. As a result, should a kicker be generated for the 2017-19 biennium as expected, most of it will be returned to taxpayers during



the first half of calendar year 2020. This corresponds with a period where the regional economy and underlying tax collections are expected to face significant headwinds.

Kicker credits are issued based upon Oregon income tax liability. As such, households that are required to pay more income taxes receive larger kicker credits. The variation across income levels is relatively pronounced, with filers who earn more than \$100,000 per year in AGI accounting for 60% of the overall kicker credits. A rough preliminary distribution is as follows:

Preliminary 2017-19 Kicker Payments by Income Group

Income Group	Adjusted Gross Income*	Rough Estimate of Kicker Size**
Bottom 20%	< \$11,200	\$13
Second 20%	\$11,200 - \$26,300	\$75
Middle 20%	\$26,300 - \$47,800	\$169
Fourth 20%	\$47,800 - \$87,400	\$311
Next 15%	\$87,400 - \$177,300	\$633
Next 4%	\$177,300 - \$401,200	\$1,484
Top 1%	> \$401,200	\$6,787
Average	\$61,600	\$336
Median	\$35,000-\$36,000	\$164

* Based on 2016 actual tax returns ** Based on 2016 actual tax returns, PIT kicker amount (\$586 million) and the Oregon Office of Economic Analysis' forecast for tax liability in 2018

2017-19 General Fund Revenues

General Fund revenues for the 2017-19 biennium are expected to reach \$20,446 million. This represents an increase of \$141.8 million from the March 2018 forecast, and an increase of \$1.9 billion relative to the 2015-17 biennium. This outlook is now tracking ahead of the assumptions used when crafting the budget. General Fund revenues for the 2017-19 biennium are expected to come in \$894 million ahead of the Close of Session forecast.

Table R.1

2017-19 General Fund Forecast Summary					
(Millions)	2017 COS Forecast	June 2018 Forecast	September 2018 Forecast	Change from Prior Forecast	Change from COS Forecast
Structural Revenues					
Personal Income Tax	\$17,147.4	\$17,694.8	\$17,772.4	\$77.5	\$625.0
Corporate Income Tax	\$1,077.0	\$1,273.7	\$1,284.8	\$11.1	\$207.8
All Other Revenues	\$1,327.6	\$1,335.4	\$1,388.5	\$53.2	\$61.0
Gross GF Revenues	\$19,551.9	\$20,303.9	\$20,445.7	\$141.8	\$893.8
Offsets and Transfers	-\$75.5	-\$69.5	-\$71.1	-\$1.6	\$4.4
Administrative Actions ¹	-\$21.5	-\$21.5	-\$21.5	\$0.0	\$0.0
Legislative Actions	-\$180.1	-\$179.4	-\$179.4	\$0.0	\$0.7
Net Available Resources	\$20,055.7	\$21,033.8	\$21,174.1	\$140.3	\$1,118.4
Confidence Intervals					
67% Confidence	+/- 3.6%		\$742.4	\$19.70B to \$21.19B	
95% Confidence	+/- 7.3%		\$1,484.8	\$18.96B to \$21.93B	

1 Reflects cost of cashflow management actions, exclusive of internal borrowing.

Personal Income Tax

Personal income tax collections were \$2,546 million during the fourth quarter of fiscal year 2018, \$86 million (3.4%) above the latest forecast. Compared to the year-ago level, total personal income tax collections fell by 1.9% relative to a forecast that called for a 5.1% decline. Table B.8 in Appendix B presents a comparison of actual and projected personal income tax revenues for the April-June quarter. Strong growth is expected to persist throughout the biennium due in part to tax law changes. Non-corporate General Fund revenues are now expected to end 2017-19 3.7% above the Close of Session forecast, generating a \$686 million kicker payment.

Corporate Excise Tax

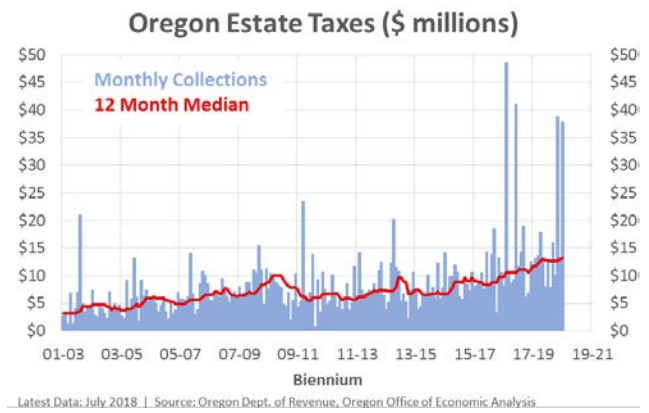
Corporate excise tax collections equaled \$337 million for the third quarter of fiscal year 2018, \$21.4 million (6.4%) above the June forecast. Compared to the year-ago level, net corporate excise tax collections rose by 63% relative to a forecast that called for an 53% increase.

Federal Tax Law Changes have injected a good deal of uncertainty into the outlook for corporate tax payments. Some employees, investors, partnerships, S-corps and sole proprietorships face a larger tax incentive to incorporate. Conversely, some C-corporations will benefit from becoming pass-through entities. Excluding these behavioral changes, under current law, the TJCA stands to significantly reduce Oregon's corporate tax collections in the near term, while boosting them in later years. Accelerated depreciation provisions contribute to this pattern, as does the repatriation of deferred income from multinational corporations. Some repatriation revenue is already being received. Following legislative action this year, Oregon is expected to take in \$245 in repatriation-related revenues, generating a large corporate kicker payment (\$209 million). As required by statute, this kicker will be distributed as spending on K-12 education.

Other Sources of Revenue

Estate tax collections continue to come in significantly above forecast due to a handful of very large estates. Estate tax collections for the 2017-19 biennium are raised an astonishing \$51 million relative to last quarter, due to two very strong months of collections. However, underlying revenue trends seen in months without a large estate or two, continue to be strong and generally above previous forecasts.

In examining estate tax collections two clear trends emerge. The first is that Oregon is seeing an increase in the number of estates impacted by the tax. Compared to other states and the federal government, Oregon has a relatively low threshold at \$1 million. Given home prices and asset markets, \$1 million estates, while still very rare, are somewhat more commonplace today than a decade ago. The second trend, which impacts the revenues to a larger degree, is a considerable increase in the size of estates for a few taxpayers. Oregon tends to see approximately 60 estate tax payers with estate valuations greater than \$5 million each year. However in the last decade, among these estates, the average size, and average tax payment has increased considerably. These trends are heavily influenced by a handful of estates. Moving forward, the outlook for estate tax collections remains strong. However not quite as strong as demographics and asset markets alone suggest due to tax planning.



All told, General Fund revenues excluding personal, corporate, and estate taxes are revised higher by \$2.4 million this forecast, relative to the previous forecast. Such revenues are \$2.8 million below the Close of Session outlook.

Extended General Fund Outlook

Table R.2 exhibits the long-run forecast for General Fund revenues through the 2025-27 biennium. Users should note that the potential for error in the forecast increases substantially the further ahead we look.

Revenue growth in Oregon and other states will face considerable downward pressure over the 10-year extended forecast horizon. As the baby boom population cohort works less and spends less, traditional state tax instruments such as personal income taxes and general sales taxes will become less effective, and revenue growth will fail to match the pace seen in the past.

Table R.2

General Fund Revenue Forecast Summary (Millions of Dollars, Current Law)

Revenue Source	Forecast 2015-17		Forecast 2017-19		Forecast 2019-21		Forecast 2021-23		Forecast 2023-25		Forecast 2025-27	
	Biennium	% Chg	Biennium	% Chg	Biennium	% Chg	Biennium	% Chg	Biennium	% Chg	Biennium	% Chg
Personal Income Taxes	16,055.8	15.0%	17,772.4	10.7%	19,073.3	7.3%	21,977.5	15.2%	24,063.1	9.5%	26,225.4	9.0%
Corporate Income Taxes	1,210.7	8.4%	1,284.8	6.1%	1,118.9	-12.9%	1,281.9	14.6%	1,392.8	8.7%	1,568.4	12.6%
All Others	1,289.3	25.2%	1,388.5	7.7%	1,310.7	-5.6%	1,349.4	2.9%	1,417.6	5.1%	1,492.7	5.3%
Gross General Fund	18,555.9	15.2%	20,445.7	10.2%	21,502.9	5.2%	24,608.8	14.4%	26,873.4	9.2%	29,286.5	9.0%
<i>Offsets and Transfers</i>	<i>(32.9)</i>		<i>(71.1)</i>		<i>(221.8)</i>		<i>(81.2)</i>		<i>(83.5)</i>		<i>(87.6)</i>	
Net Revenue	18,523.0	15.5%	20,374.6	10.0%	21,281.2	4.4%	24,527.6	15.3%	26,789.9	9.2%	29,198.9	9.0%

Tax Law Assumptions

The revenue forecast is based on existing law, including measures and actions signed into law during the 2017 Oregon Legislative Session. OEA makes routine adjustments to the forecast to account for legislative and other actions not factored into the personal and corporate income tax models. These adjustments can include expected kicker refunds, when applicable, as well as any tax law changes not yet present in the historical data. A summary of actions taken during the 2017 Legislative Session can be found in Appendix B Table B.3. For a detailed treatment of the components of the 2017 Legislatively Enacted Budget, see: [LFO 2017-19 Budget Summary](#).

Although based on current law, many of the tax policies that impact the revenue forecast are not set in stone. In particular, sunset dates for many large tax credits have been scheduled. As credits are allowed to disappear, considerable support is lent to the revenue outlook in the outer years of the forecast. To the extent that tax credits are extended and not allowed to expire when their sunset dates arrive, the outlook for revenue growth will be reduced. The current forecast relies on estimates taken from the [Oregon Department of Revenue’s 2017-19 Tax Expenditure Report](#) together with more timely updates produced by the Legislative Revenue Office.

Alternative Scenarios

The latest revenue forecast for the current biennium represents the most probable outcome given available information. OEA feels that it is important that anyone using this forecast for decision-making purposes recognize the potential for actual revenues to depart significantly from this projection.

Currently, the overwhelming downside risk facing the revenue outlook is the threat that the U.S. economic recovery will lose steam in the near term. Such a scenario, however it played out, would result in drastic revenue losses. Two recessionary scenarios are displayed in table R.2b. In a severe recession, biennial revenues could come in as

TABLE R2b

September 2018

Alternative Cyclical Revenue Forecast (\$ millions)

	2017-19 BN		2019-21 BN		2021-23 BN		2023-25 BN		2025-27 BN	
	FY '18	FY '19	FY '20	FY '21	FY '22	FY '23	FY '24	FY '25	FY '26	FY '27
Baseline Case										
Personal Income										
Level	192.44	202.18	214.28	225.37	234.48	247.47	259.46	272.19	281.89	293.45
% change	3.6%	5.1%	6.0%	5.2%	4.0%	5.5%	4.8%	4.9%	3.6%	4.1%
Taxes										
Personal Income	8,871	8,901	9,061	10,013	10,755	11,223	11,726	12,337	12,891	13,335
Corporate Excise & Incom	737	548	544	575	621	661	683	710	764	804
Other General Fund	741	647	645	666	668	682	701	717	737	756
Total General Fund	10,349	10,096	10,249	11,254	12,044	12,565	13,110	13,764	14,392	14,895
% change	5.3%	-2.4%	1.5%	9.8%	7.0%	4.3%	4.3%	5.0%	4.6%	3.5%
Moderate Recession										
Personal Income										
Level	187.8	192.5	206.2	219.4	230.1	244.7	257.2	270.2	281.5	293.1
% change	1.0%	2.5%	7.1%	6.4%	4.9%	6.3%	5.1%	5.1%	4.2%	4.1%
Taxes										
Personal Income	8,569	8,303	8,582	9,640	10,475	11,045	11,571	12,194	12,838	13,280
<i>Deviation from baseline</i>	-303	-599	-478	-373	-280	-177	-155	-143	-53	-55
Corporate Excise & Incom	701	495	503	545	598	646	671	699	762	802
<i>Deviation from baseline</i>	-36	-53	-41	-31	-23	-15	-12	-10	-2	-3
Other General Fund	741	647	645	666	668	682	701	717	737	756
Total General Fund	10,011	9,445	9,730	10,850	11,740	12,373	12,943	13,610	14,336	14,837
% change	1.9%	-5.6%	3.0%	11.5%	8.2%	5.4%	4.6%	5.1%	5.3%	3.5%
<i>Deviation from baseline</i>	-339	-651	-519	-403	-303	-192	-167	-154	-55	-57
<i>Biennial Deviation</i>		-990		-923		-495		-320		-113
Severe Recession										
Personal Income										
Level	175.4	182.5	198.3	213.5	226.5	243.4	255.8	268.8	279.1	290.6
% change	-5.6%	4.1%	8.7%	7.7%	6.1%	7.4%	5.1%	5.1%	3.8%	4.1%
Taxes										
Personal Income	7,770	7,688	8,114	9,277	10,245	10,963	11,486	12,103	12,673	13,109
<i>Deviation from baseline</i>	-1,102	-1,213	-947	-736	-510	-259	-240	-234	-218	-225
Corporate Excise & Incom	606	441	462	515	579	639	664	692	746	785
<i>Deviation from baseline</i>	-131	-107	-81	-60	-42	-22	-19	-18	-18	-19
Other General Fund	741	647	645	666	668	682	701	717	737	756
Total General Fund	9,117	8,777	9,221	10,458	11,492	12,284	12,850	13,512	14,156	14,651
% change	-7.2%	-3.7%	5.1%	13.4%	9.9%	6.9%	4.6%	5.1%	4.8%	3.5%
<i>Deviation from baseline</i>	-1,232	-1,320	-1,028	-796	-552	-281	-260	-251	-236	-244
<i>Biennial Deviation</i>		-2,552		-1,824		-833		-511		-480

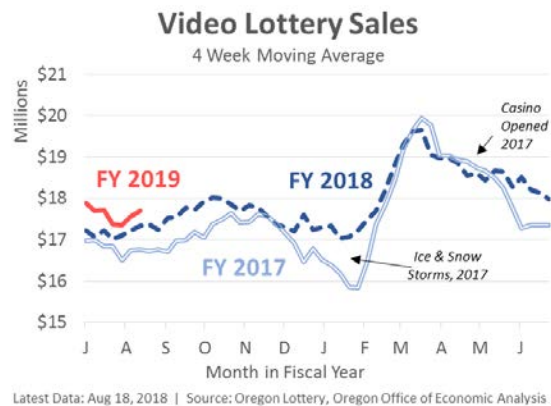
much as \$2.6 billion lower than predicted⁸.

Lottery Earnings

Available lottery resources for the 2017-19 biennium are revised upward significantly relative to the previous forecast. The overall increase of \$26.5 million is in large part due to \$15.4 million in administrative savings from the Oregon Lottery that will be transferred this quarter. Recent sales of both traditional games and video lottery did come in above forecast, and their longer-term outlooks are raised modestly. Available resources in 2019-21 are raised \$9.6 million (+0.7%) relative to last quarter, while the outer biennia are revised higher by \$12-13 million (+0.8%).

Cowlitz Tribe's ilani Casino Resort Impact

Over the past two years our office has incorporated a lower video lottery sales forecast due to the opening of the ilani Casino Resort in southwest Washington. The casino has now been open for more than a year and there has been a noticeable impact on Oregon video lottery sales. However the impact is considerably smaller than was initially expected. This is why available Lottery resources in 2017-19 are now \$146 million higher than at the Close of Session forecast. The majority of these increases, \$96 million, is due to stronger than expected video lottery sales (+8.6% compared to 2017 COS forecast).



Even as video lottery sales have come in above forecast, the outlook remains uncertain. In analyzing casino trends elsewhere in the country, sales increase for a year or two after a new casino opens. Furthermore expectations are that opening the gaming floor is just phase one for the ilani Resort Casino. Future expansions may include a buffet, and a hotel to attract overnight guests and make it more of a destination and not a day trip activity. In the event any of these options materialized, our office would reassess the impact on video lottery sales. Our office will continue to work with the Oregon Lottery, particularly the research team, the Legislative Fiscal Office and Legislative Revenue Office to monitor sales and discuss the outlook.

Lottery Sales and Distributions

The robust gains seen in video lottery sales following the first wave of terminal replacements have slowed. This was expected. The second wave of replacements are nearing



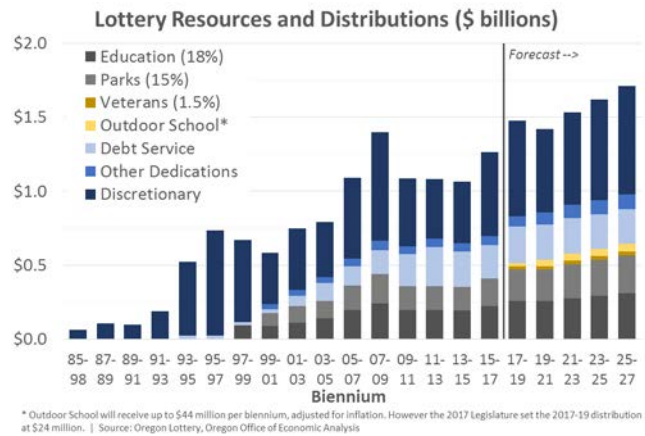
⁸ The methodology for computing alternative scenarios has been changed to reflect recent work done by the Legislative Revenue Office. Assumptions: Recessions begin in 2019 and return to baseline income by 2026. The moderate recession scenario assumes personal income growth will be reduced by one-half relative to the baseline in 2019 and 2020. The severe recession scenario assumes personal income will decline in 2019 by as much as it did in 2009. The percentage deviation in personal income taxes is 1.4 times the deviation in personal income. The percentage deviation in corporate income taxes is 2.0 times the deviation in personal income.

completion today, however their impact on sales is less, even as the upgrade in new technology and underlying infrastructure is important.

Issues to watch include broader national trends in gaming markets, demographic preferences for recreational activities, and to what extent consumers increase the share of their incomes spent on gaming. In much of the past 8 years, consumers have remained cautious with their disposable income.

Finally, in recent years Oregon voters approved two new amendments for where lottery resources are to be spent. The Outdoor School Education Fund is set to receive the lesser of 4 percent of net proceeds or \$5.5 million per quarter (\$44 million per biennium), adjusted for inflation. The Veterans’ Services Fund is set to receive 1.5 percent of net proceeds.

The full extended outlook for lottery earnings can be found in Table B.9 in Appendix B.



Budgetary Reserves

The state currently administers two general reserve accounts, the Oregon Rainy Day Fund⁹ (ORDF) and the Education Stability Fund¹⁰ (ESF). This section updates balances and recalculates the outlook for these funds based on the September revenue forecast.

As of this forecast, the two reserve funds currently total a combined \$1.1 billion.

The forecast for the ORDF includes two deposits for this biennium. One relates to the General Fund ending balance from last biennium (2015-17). A deposit of \$179.4 million occurred in January 2018 after the accountants closed the book on the biennium. The other one related to increased corporate taxes from Measure 67 during the 2015-17 biennium. A \$16.2 million transfer occurred in September 2017. These bring the projected ORDF ending balance at the end of 2017-19 to \$595.7 million.

The forecast calls for \$230.5 million in deposits into the ESF in 2017-19 based on the current Lottery forecast. This would bring the ESF balance to \$614.2 million at the end of the current biennium.

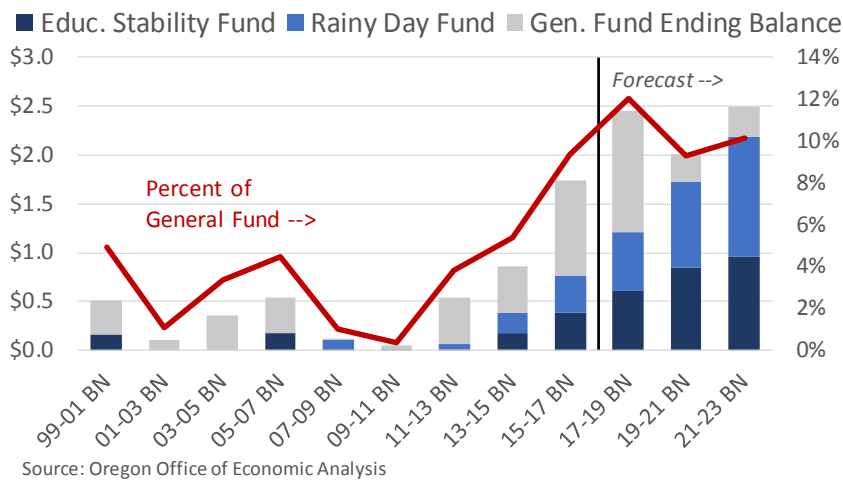
⁹ The ORDF is funded from ending balances each biennium, up to one percent of appropriations. The Legislature can deposit additional funds, as it did in first populating the ORDF with surplus corporate income tax revenues from the 2005-07 biennium. The ORDF also retains interest earnings. Withdrawals from the ORDF require one of three triggers, including a decline in employment, a projected budgetary shortfall, or declaration of a state of emergency, plus a three-fifths vote. Withdrawals are capped at two-thirds of the balance as of the beginning of the biennium in question. Fund balances are capped at 7.5 percent of General Fund revenues in the prior biennium.

¹⁰ The ESF gained its current reserve structure and mechanics via constitutional amendment in 2002. The ESF receives 18 percent of lottery earnings, deposited on a quarterly basis – 5% of which are deposited in the Oregon Growth sub-account. The ESF does not retain interest earnings. The ESF has similar triggers as the ORDF, but does not have the two-thirds cap on withdrawals. The ESF balance is capped at five percent of General Fund revenues collected in the prior biennium.

Together, the ORDF and ESF are projected to have a combined balance of \$1.2 billion at the close of the 2017-19 biennium. Provided the General Fund ending balance remains unallocated, total effective reserves at the end of 2017-19 would total nearly \$2.5 billion, or 12 percent of current revenues. That said, the ending balance figure includes the projected \$686 million personal income tax kicker to be paid out in the 2019-21 biennium. As such, the true level of effective reserves is closer to \$1.8 billion, or nearly 9 percent of the current biennium’s revenues.

Such levels of reserve balances are bigger than Oregon has ever been able to accumulate, at least in the state’s recent history. However, such reserves would barely be sufficient to withstand a typical recession’s impact on state revenues, let alone account for the increase in public services and programs during downturns. That said, reserves of approximately 7 percent are generally accepted to withstand a medium sized recession.

Oregon Budgetary Reserves (billions)



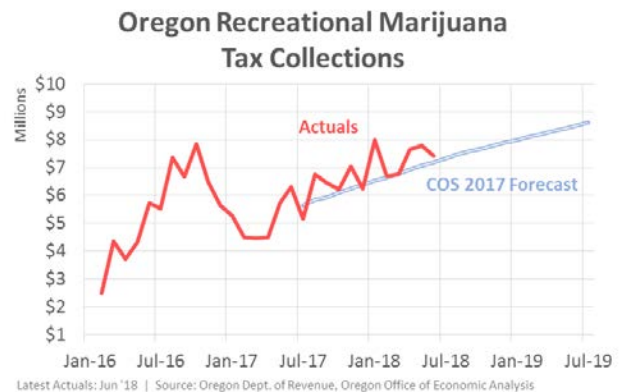
Effective Reserves (\$ millions)

	Jul 2018	End 2017-19
ESF	\$502.3	\$614.2
RDF	\$581.4	\$595.7
Reserves	\$1,083.7	\$1,209.9
Ending Balance	\$1,248.4	\$1,248.4
Total	\$2,332.1	\$2,458.3
% of GF	11.4%	12.0%

B.10 in Appendix B provides more details for Oregon’s budgetary reserves.

Recreational Marijuana Tax Collections

During the 2017 legislative session, [HB 3470](#) officially gave our office the responsibilities for forecasting recreational marijuana taxes. Overall our office’s baseline outlook remains essentially unchanged given it has tracked well since our very first such forecast back in May 2017. Available resources for the 2017-19 biennium are raised \$2.9 million relative to the previous outlook, while the outer biennia remain unchanged. Approximately \$2 million of the increase is due to lower administrative costs while the remaining \$900,000 is due to sales tracking slightly higher than expectations.



Recreational Marijuana Forecast Process

In developing the marijuana outlook, our office has held two preliminary forecast meetings with stakeholders from state agencies, local governments and industry professionals over the past year. Our office also spoke again with our counterparts in both Colorado and Washington to better understand what their experiences and

to discuss marketplace trends. Moving forward, our office will continue to work with stakeholders and those who can advise us on industry and consumer trends, regulatory impacts, issues to watch, and the like.

Currently the outlook for recreational marijuana sales and tax collections remains highly uncertain. While Oregon has now collected two years' worth of taxes, there have been substantial changes during this time that complicate any analysis. These changes include early start sales, differing tax rates, changes in product testing requirements and Mother Nature. Thankfully, Oregon is not alone. Both Colorado and Washington are two years ahead of Oregon in terms of recreational sales. Both states have seen tremendous growth in sales and tax collections, which serves as a guide for where Oregon is likely headed in the near-term. Over time, as the market matures, future growth will follow trends in the economy and consumer spending. However the coming few years will see reasonably strong growth as the product becomes more widely available, more socially acceptable, and more black and gray market sales are realized in the legal market.

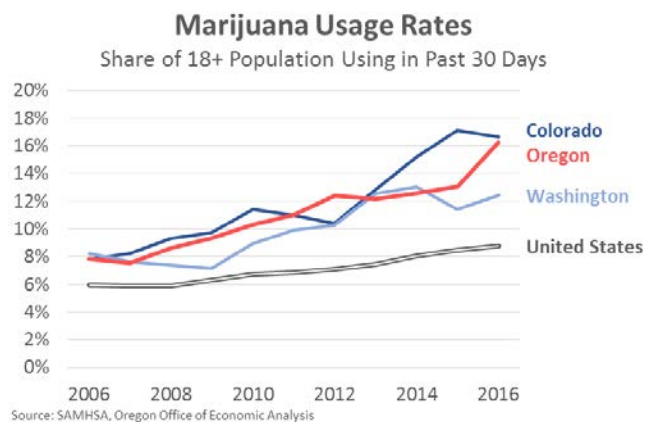
Two years' worth of tax collections, and a couple sets of quarterly tax returns filed by dispensaries is certainly more valuable than no data. Our office's forecasting responsibilities are made considerably easier than what faced those estimating the potential impact of Measure 91 (2014) which legalized recreational sales. That said, two years' worth of data is not enough to build a full-fledged forecasting model, particularly when it is a brand new legal market. Over time, as we accumulate more data, a longer history of sales, and detailed breakdowns of consumer purchases and consumer demographics, our office will build an econometric model. Until then, in consultation with our advisory group, and using Colorado and Washington as a guide, our office is relying on trends for the short-term outlook.

Recent Market Trends and State Comparisons

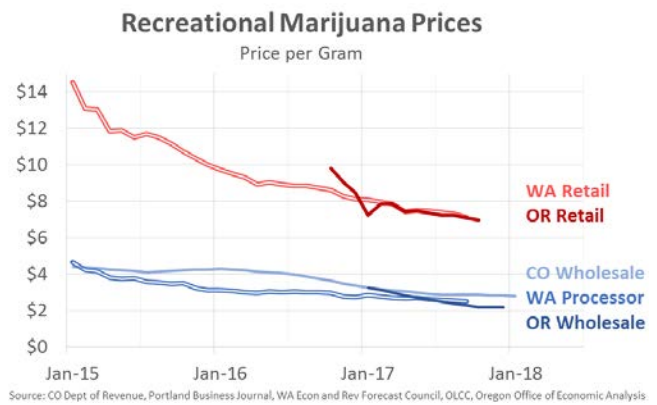
So far, Oregon's first two years of recreational sales closely tracks Colorado's first two years and outpaces Washington's, after controlling for the fact both states have larger populations than Oregon. There are at least four likely reasons for this pattern.

First, Oregon's marijuana usage rates are higher than those seen in Washington. In fact, in the most recent survey data from 2015-2016, Oregon saw a large increase in reported usage. As such, Oregon is more likely to see larger sales than in Washington, when adjusting for population size. While usage rates are not the only metric that matters, it does make sense that Oregon and Colorado are seeing similar sales figures, given they have similar usage rates.

Second, prices and taxes matter. Oregon has a significantly lower tax rate than does Washington, which helps keep final consumer prices lower. Even as Colorado and Washington have two additional years to build their industry in the newly legalized world, Oregon's prices are very competitive with those seen in the other states. A lower price, everything else equal, should bring more consumers into the market and also induce more black market conversions.

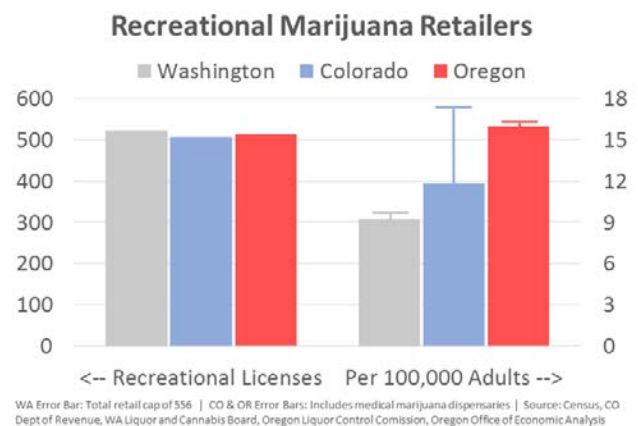


Third, the cross-border effect with legal sales beginning earlier in Washington likely had an impact on Oregon's first year of sales. Counties in southwest Washington saw sales fall by nearly 40 percent once Oregon's early sales began. Clearly there was plenty of cross-border activity. Effectively this meant Oregon had somewhat of a built-in customer base who were used to going to dispensaries and retailers and purchasing in the legal market. Thus Oregon's initial sales were larger than in Washington, but this may, at least in part, have some to do with social acceptance and being used to the new system rather than fundamentally stronger sales.



Fourth, both Colorado and Washington initially had relatively few retail outlets in major population centers. In Colorado, Denver had retailers but Boulder did not initially. In Washington, Seattle had only a few retailers at first, but have added quite a few in recent years. Some of each state's strong growth in the first two years was simply due to market access and product availability, particularly in places where lots of people live. It is unlikely this is a similar issue in Oregon, with our major population centers having dispensaries at first, and retailers now.

In fact, today each state has just over 500 licensed recreational marijuana dispensaries or retailers. However once you account for the adult population size differences, Oregon has more stores than either Colorado or Washington. This does not necessarily mean that Oregon is overstored. That may be the case, however the other states may be understored. For example, while Colorado has a bit more than 500 recreational licenses issued, the state supports 700+ marijuana businesses that sell recreational and/or medical marijuana. At the least, the vast majority of Oregon consumers do not lack for access to recreational marijuana.



Recreational Marijuana Outlook

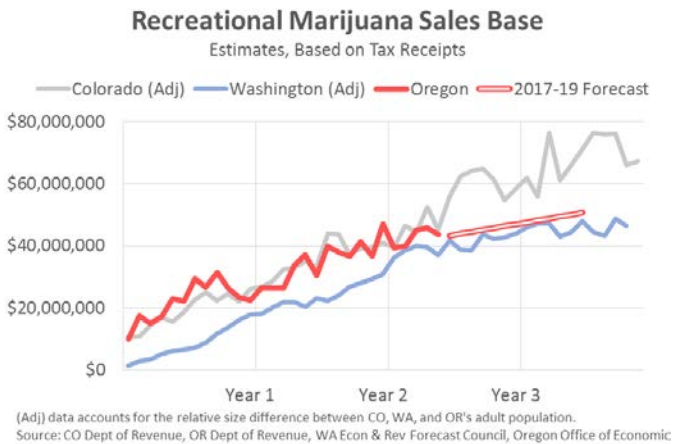
In terms of the outlook, Oregon is poised for strong growth in the coming years. However, it remains highly uncertain with substantial upside and downside risks.

On the downside, supply constraints that keep products and inventory low will result in fewer sales, and tax collections. Such constraints could be regulatory changes that impact grower, processors or retailers, or regulatory bottlenecks where companies in the industry are unable to get their licenses, renewals or tests completed or approved in a timely manner. Another downside risk for tax collections are prices, given Oregon levies the tax based on the sales price. Recent data shows retail marijuana prices declining between 10 and 20 percent in Colorado, Washington, and Oregon. Marijuana is a commodity and eventually will be commoditized. How far and how quickly prices decline is a risk to the outlook for tax collections. Offsetting this risk somewhat is the fact that lower prices should result in larger sales. Finally, the one risk that looms large over the entire forecast is the federal government, which recently rescinded the so-called Cole memos, and the U.S. attorney for the District of Oregon announced updated guidelines on how they will enforce black market grow operations

and leakages of product to other states. While there has yet to be any real action taken, there is a non-zero chance the federal government could step in and eliminate, or severely restrict recreational marijuana sales. In this event, taxes collected would be considerably less than forecasted.

On the upside, consumers overall could get more comfortable with legalized recreational marijuana and the industry gains broader social acceptance, resulting in larger sales. As the earlier chart shows, reported usage rates have doubled in the past decade. Furthermore, a faster rate of black market conversion would also result in more legal sales. Similarly, conversions from the medical marijuana market to the recreational market would result in more sales and taxes collections. The impact of the seed-to-sale tracking system may also increase activity within the legal market, resulting in fewer black or grey market sales, provided enforcement is effective.

Long-term the real economic impact from recreational marijuana will come not from the growing and retailing, which are low-wage and low value-added market segments. It will come from higher value-added products like oils, creams, and edibles, in addition to niche, specialty strains. These developments, as economist Beau Whitney points out, would be quite similar to the emergence and growth of craft beer in recent decades. Here, among the value-added manufacturing processes in addition to the building up of a broader cluster of suppliers and ancillary industries that Oregon will see the real economic impacts. Furthermore, the long-term potential of exporting Oregon products and business know-how to the rest of the country remains large, at least once marijuana is legalized nationwide.



The other market development will be mass-produced and lower priced products. This is the end result of the commodification of marijuana. Margins will be low, but due to scale, businesses remain viable. These are more likely to be outdoor grows, due to costs. Even a world of legalized marijuana nationwide, it is plausible that Oregon, along with California, would remain a national leader in this market due to agricultural and growing conditions in the Emerald Triangle.

See Table B.11 in Appendix B for a full breakdown of distributions for recreational marijuana tax collections. Note that these distributions are based on current law.

POPULATION AND DEMOGRAPHIC OUTLOOK

Population and Demographic Summary

Oregon's population count on April 1, 2010 was 3,831,074. Oregon gained 409,550 persons between the years 2000 and 2010. The population growth during the decade of 2000 to 2010 was 12.0 percent, down from 20.4 percent growth from the previous decade. Oregon's rankings in terms of decennial growth rate dropped from 11th between 1990-2000 to 18th between 2000 and 2010. Oregon's national ranking, including D.C., in population growth rate was 12th between 2010 and 2017 lagging behind all of the neighboring states, except California. Slow population growth during the decade preceding the 2010 Census characterized by double recessions probably cost Oregon one additional seat in the U.S. House of Representatives. Actually, Oregon's decennial population growth rate during the most recent census decade was the second lowest since 1900. As a result of economic downturn and sluggish recovery that followed, Oregon's population increased at a slow pace in the recent past. However, Oregon's current population is showing very strong growth as a consequence of state's strong economic recovery. Population growth between 2016 and 2017 was 10th fastest in the nation. Based on the current forecast, Oregon's population of 4.14 million in 2017 will reach 4.63 million in the year 2026 with an annual rate of growth of 1.2 percent between 2017 and 2026.

Oregon's economic condition heavily influences the state's population growth. Its economy determines the ability to retain existing work force as well as attract job seekers from national and international labor market. As Oregon's total fertility rate remains below the replacement level and number of deaths continue to rise due to ageing population, long-term growth comes mainly from net in-migration. Working-age adults come to Oregon as long as we have favorable economic and employment environments. During the 1980s, which include a major recession and a net loss of population during the early years, net migration contributed to 22 percent of the population change. On the other extreme, net migration accounted for 76 percent of the population change during the booming economy of early 1990s. This share of migration to population change declined to 32 percent in 2010, lowest since early 1980s when we actually had negative net migration for several years. As a sign of slow to modest economic gain, the ratio of net migration-to-population change has registered at 88 percent in 2017 and will continue to rise throughout the forecast horizon. By 2026, nearly all population growth in Oregon will come from net migration due largely to the combination of continued high net migration, decline in the number of births, and the rise in the number of deaths among elderly population associated with increasing number of elderly population. With Oregon's favorable economic and environmental conditions, high level of net migration into Oregon will continue.

Age structure and its change affect employment, state revenue, and expenditure. Demographics are the major budget drivers, which are modified by policy choices on service coverage and delivery. Growth in many age groups will show the effects of the baby-boom and their echo generations during the forecast period of 2017-2026. It will also reflect demographics impacted by the depression era birth cohort combined with changing migration of working age population and elderly retirees through history. After a period of slow growth during the 1990s and early 2000s, the elderly population (65+) has picked up a faster pace of growth and will surge to the record high levels as the baby-boom generation continue to enter this age group and attrition of small depression era cohort due to death. The average annual growth of the elderly population will be 3.4 percent during the 2017-2026 forecast period. However, the youngest elderly (aged 65-74) has been growing at an extremely fast pace in the recent past and will continue the trend in the near future exceeding 4 percent annual rate of growth due to the direct impact of the baby-boom generation entering the retirement age and smaller

pre-baby boom cohort exiting the 65-74 age group. This fast paced growth rate will taper off to one percent by the end of the forecast period as a sign of end of the baby-boom generation transitioning to elderly age group. Reversing several years of slow growth and shrinking population, the elderly aged 75-84 started to show a positive growth as the effect of depression era birth-cohort has dissipated. An unprecedented fast pace of growth of population in this age group has started as the baby-boom generation starts to mature into 75-84 age group. Annual growth rate during the forecast period is expected to be unusually high 5.7 percent. The oldest elderly (aged 85+) will continue to grow at a slow but steady rate in the near future due to the combination of cohort change, continued positive net migration, and improving longevity. The average annual rate of growth for this oldest elderly over the forecast horizon will be 2.0 percent. An unprecedented growth in oldest elderly will commence near the end of the forecast horizon.

As the baby-boom generation matures out of oldest working-age cohort combined with slowing net migration, the once fast-paced growth of population aged 45-64 has gradually tapered off to below zero percent rate of growth by 2012 and will remain at slow or below zero growth phase for several years. The size of this older working-age population will remain virtually unchanged at the beginning to the end of the forecast period. The 25-44 age group population is recovering from several years of declining and slow growing trend. The decline was mainly due to the exiting baby-boom cohort. This age group has seen positive growth starting in the year 2004 and will increase by 1.7 percent annual average rate during the forecast horizon mainly because of the exiting smaller birth (baby-bust) cohort being replaced by baby-boom echo cohort. The young adult population (aged 18-24) will remain nearly unchanged over the forecast period. Although the slow or stagnant growth of college-age population (age 18-24), in general, tend to ease the pressure on public spending on higher education, college enrollment typically goes up during the time of very competitive job market, high unemployment, and scarcity of well-paying jobs when even the older people flock back to colleges to better position themselves in a tough job market. The growth in K-12 population (aged 5-17) will remain very low which will translate into slow growth in school enrollments. This school-age population has actually declined in size in recent past years and will grow in the future at well below the overall state average. The growth rate for children under the age of five has remained below or near zero percent in the recent past due to the sharp decline in the number of births. This cohort of children will see steady positive growth after 2016. Although the number of children under the age of five declined in the recent years, the demand for child care services and pre-Kindergarten program will be additionally determined by the labor force participation and poverty rates of the parents. Overall, elderly population over age 65 will increase rapidly whereas population groups under age 65 will experience slow growth in the coming years. Hence, based solely on demographics of Oregon, demand for public services geared towards children and young adults will likely to increase at a slower pace, whereas demand for elderly care and services will increase rapidly.

Procedure and Assumptions

Population forecasts by age and sex are developed using the cohort-component projection procedure. The population by single year of age and sex is projected based on the specific assumptions of vital events and migrations. Oregon's estimated population of July 1, 2010 based on the most recent decennial census is the base for the forecast. To explain the cohort-component projection procedure very briefly, the forecasting model "survives" the initial population distribution by age and sex to the next age-sex category in the following year, and then applies age-sex-specific birth and migration rates to the mid-period population. Further iterations subject the in-and-out migrants to the same mortality and fertility rates.

Populations by age-sex detail for the years 2000 through 2009, called intercensal estimates, in the following tables are developed by OEA based on 2000 and 2010 censuses. Post-censal population totals for the years 2010 through 2015 are from the Population Research Center, Portland State University. The numbers of births and deaths through 2015 are from Oregon's Center for Health Statistics. All other numbers and age-sex detail are generated by OEA.

Annual numbers of births are determined from the age-specific fertility rates projected based on Oregon's past trends and past and projected national trends. Oregon's total fertility rate is assumed to be 1.7 per woman in 2017 and this rate is projected to remain below the replacement level of 2.1 children per woman during the forecast period, tracking below the national rate.

Life Table survival rates are developed for the year 2010. Male and female life expectancies for the 2010-202 period are projected based on the past three decades of trends and national projected life expectancies. Gradual improvements in life expectancies are expected over the forecast period. At the same time, the difference between the male and female life expectancies will continue to shrink. The male life expectancy at births of 77.4 and the female life expectancy of 81.8 in 2010 are projected to improve to 79.0 years for males and 83.2 years for females by the year 2026.

Estimates and forecasts of the number of net migrations are based on the residuals from the difference between population change and natural increase (births minus deaths) in a given forecast period. The migration forecasting model uses Oregon's employment, unemployment rates, income/wage data from Oregon and neighboring states, and past trends. Distribution of migrants by age and sex is based on detailed data from the American Community Survey. The annual net migration between 2017 and 2026 is expected to remain in the range of 47,300 to 55,200, averaging 50,200 persons annually. In the recent past, slowdown in Oregon's economy resulted in smaller net migration and slow population growth. Estimated population growth and net migration rates in 2010 and 2011 were the lowest in over two decades. Oregon's population growth has already rebounded and will continue higher than national rate of growth in the near future. Migration is intrinsically related to economy and employment situation of the state. Still, high unemployment and job loss in the recent past have impacted net migration and population growth, but not to the extent in the early 1980s. Main reason for this is the fact that other states of potential destination for Oregon out-migrants were not faring any better either. Hence the potential out-migrants had very limited destination choices. The future growth will not look like high growth period of early 1990s. The role of net migration in Oregon's population growth will get more prominence as the natural increase will decline considerably due to rapid increase in the number of deaths associated with ageing population and decline in the number of births largely due to the decline in fertility rate.