

REVENUE OUTLOOK

Revenue Summary

Oregon's primary sources of state tax revenues continue to outstrip expectations. Since the September forecast was released, daily collection records have been set for both personal income tax withholdings and corporate tax collections. In addition, Lottery sales continue to set records for this time of year.

Recent forecasts have called for tax collections to return to earth. Federal aid has expired, and economic activity is beginning to return to normal with workers reentering the labor force, returning to offices and spending more on services. Instead of normalizing, however, revenue growth has accelerated further.

The revenue boom is being supported by a wide range of income sources. Most importantly, healthy gains in labor income are generating personal income tax payments. Despite Oregon having lost more than 70,000 jobs relative to pre-pandemic levels, taxable wages and salaries are far above pre-pandemic trends. A persistently tight labor market is putting upward pressure on wages, leading to significant payroll growth despite the job losses.

The return of inflation after a 30-year hiatus is also generating additional revenue across a range of tax instruments. With demand so strong across the economy, businesses currently have a considerable amount of pricing power, and have been able to pass most of their cost increases along to consumers. As a result, profits and other taxable business incomes are booming. In addition to the direct boost to tax collections, healthy business earnings are supporting equity markets and other forms of investment income.

Inflation is also generating additional Corporate Activity Tax collections. Business sales are taxed by value, not by the quantity sold. As a result, tax liability has risen along with prices, and is expected to remain higher throughout the forecast horizon.

The recent revenue boom, together with an improving outlook for labor earnings, have led to a significant upward revision to the outlook for personal and corporate income tax collections. The current forecast now projects both a \$558 million personal income tax kicker, and a \$250 million corporate kicker as the forecasts have been raised more than 2 percent since the Close of Session. However, considerable uncertainty remains. Although the baseline outlook calls for continued growth, overheating remains a real possibility. Inflationary booms of the sort we are experiencing today traditionally do not end well, putting recent revenue gains at risk going forward.

Longer term, 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.

2019-21 General Fund Revenues

Gross General Fund revenues for the 2021-23 biennium are expected to reach \$24,134 million. This represents an increase of \$710 million from the September 2021 forecast, and an increase of \$807 million relative to the Close of Session forecast. Personal and corporate income tax collections continue to set records. Among non-General Fund sources, revenues tied to consumer spending including lottery sales and the new Corporate Activity Tax are outstripping expectations as well.

Personal Income Tax

Strong personal income tax collections have come from a range of sources, including a boom in withholdings. Personal income tax withholdings are driven primarily by wages and salaries in the labor market. Along with strong growth in employment and wages, withholdings are expanding at a double-digit rate. In addition to larger paychecks, growth in retirement income and the expanded unemployment insurance benefits have also supported withholdings.

In addition to withholdings, estimated tax payments and payments with returns are posting large gains as well. The extension filing season has just come to a close, and brought with it an unusual amount of tax collections. Although extension filers must pay their bill at the April deadline (July this year), this season extension filers discovered significantly more taxable income after their returns were complete.

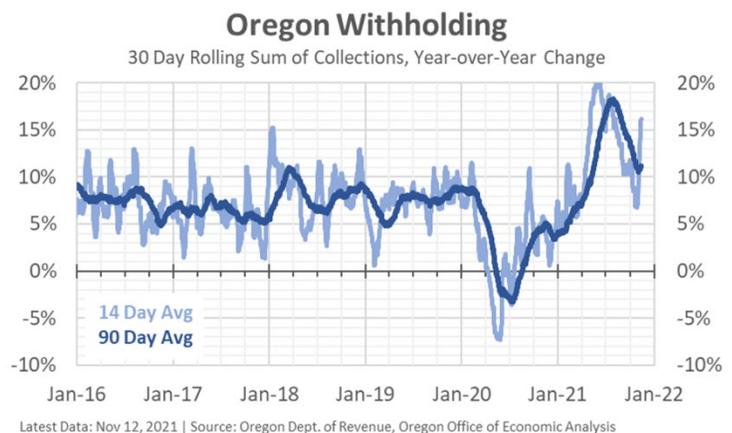
Extension filers include many of the most complicated tax returns, and those with the highest reported income. High-income filers did particularly well in 2020, with business and investment income strong despite the pandemic-related downturn. When high-income filers do well, the support to tax collections becomes supercharged. In this environment, aggregate tax liability grows even faster than underlying income gains. As a larger share of income is taxed at Oregon's top rate, the average tax rate increases. The opposite dynamic holds during periods when investments and business income lose value. During downturns, Oregon's revenues fall faster than underlying income levels.

Table R.1

2021-23 General Fund Forecast Summary

(Millions)	2021 COS Forecast	September 2021 Forecast	December 2021 Forecast	Change from Prior Forecast	Change from COS Forecast
Structural Revenues					
Personal Income Tax	\$20,628.1	\$20,657.0	\$21,159.1	\$502.1	\$531.1
Corporate Income Tax	\$1,344.0	\$1,410.0	\$1,594.2	\$184.3	\$250.3
All Other Revenues	\$1,353.5	\$1,357.4	\$1,380.7	\$23.3	\$27.3
Gross GF Revenues	\$23,325.5	\$23,424.4	\$24,134.1	\$709.7	\$808.6
Offsets and Transfers	-\$171.5	-\$174.2	-\$180.9	-\$6.7	-\$9.4
Administrative Actions ¹	-\$21.5	-\$21.5	-\$21.5	\$0.0	\$0.0
Legislative Actions	-\$224.6	-\$224.6	-\$224.6	\$0.0	\$0.0
Net Available Resources	\$26,008.4	\$26,783.3	\$27,486.3	\$703.0	\$1,477.9
Confidence Intervals					
67% Confidence	+/- 7.3%		\$1,763.6	\$22.37B to \$25.90B	
95% Confidence	+/- 14.6%		\$3,527.1	\$20.61B to \$27.66B	

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



Every 100 basis point change in Oregon’s average tax rate translates to roughly \$130 million in additional revenues. As such, if the average tax rate matched what we saw in 2015, annual revenues would be around \$1 billion lower.

This volatility is apparent in recent collections of personal income taxes and other General Fund sources. According to the December forecast, the outlook for the current biennium is now 2.5% higher than the Close of Session forecast, slightly above the kicker threshold. With two tax filing seasons left in the biennium, much uncertainty remains. However, if the current outlook holds, a kicker of \$558 million would be paid out when taxes are filed in 2024.

Corporate Excise Tax

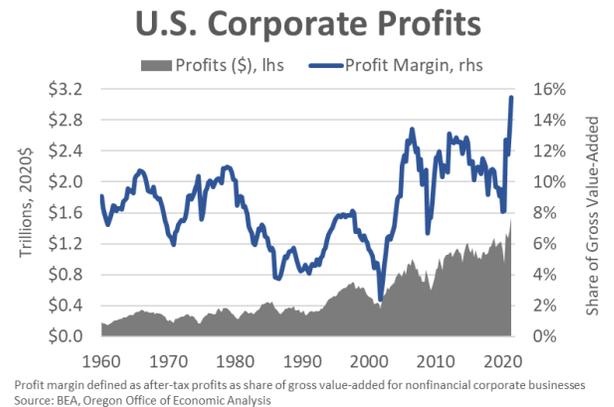
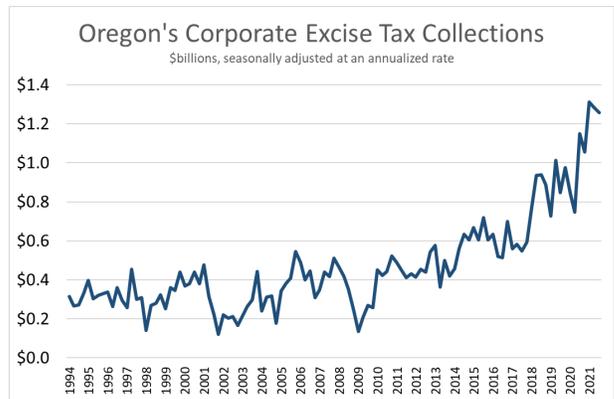
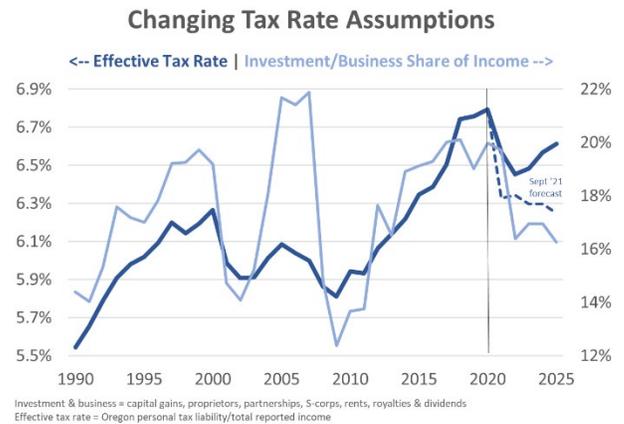
Corporate excise tax collections have yet to weaken at all. After a temporary drop at the beginning of the recession, corporate tax collections immediately bounced back and continue to set new records. This stands in stark contrast to the last two recessions when corporate tax collections were cut in half. In fiscal year 2021, corporate collections rose by 44%. When return data becomes available, it will be interesting to see if some of this growth has been fueled by new corporations. The number of C-corporations filing Oregon tax returns has been stuck around 30,000 for several years.

The strong performance of corporate taxes is particularly surprising given that they were expected to come back down to earth even before the recession began. The subtraction for taxes paid under Oregon’s new Corporate Activity Tax is reducing traditional liability, as is the subtraction for expenditures funded by forgiven Payroll Protection Program loans. Even so, collections have doubled over the last two budget periods.

The current inflationary environment is one factor supporting corporate tax collections. With underlying demand so strong, businesses have largely been able to pass cost increases along to their customers. As a result, profits and earnings have skyrocketed.

While some of this increase likely reflects a permanent increase in the tax base, a significant amount of the growth is expected to be temporary. As with business and investment income on personal tax returns, corporate taxpayers are pulling income forward in advance of possible federal tax legislation.

Although there is a very long way to go, a \$250 million kicker is currently estimated for the next biennium. According to statute, this would lead to additional funding for K-12 education during the 2023-25 budget period.



Other Sources of Revenue

Non-personal and non-corporate revenues in the General Fund usually account for approximately 6 or 7 percent of the total. The largest such source are estate taxes, followed by liquor revenues, and judicial revenues.

Relative to the previous forecast, the current outlook for these revenues in 2021-23 is raised by \$23.3 million (+1.8%). The increases are primarily due to estate taxes (+\$13 million) and interest earnings (+\$10 million) coming in above expectations. Additional changes are made to the insurance taxes (+\$0.1 million), and securities fees (-\$0.3 million) forecasts, with a slight upward revision to tobacco revenues (+\$0.6 million). Total tobacco revenues are increased by a larger \$12.9 million however most of these revenues are not in the General Fund. In particular inhalant delivery revenues, a new tax in 2021, continue to come in significantly above initial expectations. The current 2021-23 forecast is raised \$5.9 million due to recent collections, while no longer-term forecast adjustments have been made yet given the newness of the tax. Our office will continue to monitor these revenues and quarterly tax returns filed by Oregon businesses and adjust the forecast as we learn more. See Table B.6 in Appendix B for the full details on tobacco revenue distributions.

Extended General Fund Outlook

Table R.2 exhibits the long-run forecast for General Fund revenues through the 2029-31 biennium. Users should note that the potential for error in the forecast increases substantially the further ahead we look.

Table R.2

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

Revenue Source	Forecast 2019-21		Forecast 2021-23		Forecast 2023-25		Forecast 2025-27		Forecast 2027-29		Forecast 2029-31	
	Biennium	% Chg										
Personal Income Taxes	20,047.0	6.5%	20,657.0	3.0%	24,408.9	18.2%	26,596.6	9.0%	29,610.9	11.3%	33,216.3	12.2%
Corporate Income Taxes	2,041.4	16.5%	1,410.0	-30.9%	1,622.4	15.1%	2,004.4	23.5%	2,228.0	11.2%	2,497.9	12.1%
All Others	1,681.1	25.5%	1,432.3	-14.8%	1,433.8	0.1%	1,505.1	5.0%	1,613.5	7.2%	1,686.8	4.5%
Gross General Fund	23,769.5	8.5%	23,499.3	-1.1%	27,465.1	16.9%	30,106.2	9.6%	33,452.4	11.1%	37,401.1	11.8%
Offsets and Transfers	(114.8)		(174.2)		(106.7)		(83.4)		(92.7)		(103.9)	
Net Revenue	23,654.7	8.6%	23,325.0	-1.4%	27,358.5	17.3%	30,022.8	9.7%	33,359.7	11.1%	37,297.2	11.8%

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.

Tax Law Assumptions

The revenue forecast is based on existing law, including measures and actions signed into law during the 2021 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 2021 Legislative Session can be found in Appendix B Table B.3. For a detailed treatment of the components of the 2021 Legislatively Enacted Budget, see:

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 2021-23 Tax Expenditure Report](#) together with more timely updates produced by the Legislative Revenue Office.

General Fund Alternative Scenarios

The latest revenue forecast for the current biennium represents the most probable outcome given available information. Our office 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.

Table R.2b shows the revenue implications of the Boom/Bust economic scenario described on page 15. In this scenario, revenues continue to boom this biennium, resulting in a larger projected kicker. The ensuing recession after the Federal Reserve hikes interest rates to head off inflation takes a toll on state resources. Revenues in both 2023-25 and 2025-27 are considerably below the baseline outlook. ‘

Table R.2b - General Fund Forecast (December 2021) - BoomBust Scenario

Personal Income Tax	2021-23	2023-25	2025-27	2027-29	2029-31
Baseline	\$21,159.1	\$24,889.8	\$27,564.3	\$30,992.9	\$35,165.7
BoomBust	\$21,484.9	\$24,369.0	\$26,794.1	\$31,046.6	\$35,693.5
<i>Difference</i>	\$325.8	-\$520.8	-\$770.2	\$53.7	\$527.8
Corporate Income Tax	2021-23	2023-25	2025-27	2027-29	2029-31
Baseline	\$1,594.2	\$1,601.8	\$1,934.9	\$2,168.1	\$2,478.0
BoomBust	\$1,568.8	\$1,521.4	\$1,826.1	\$2,108.4	\$2,441.6
<i>Difference</i>	-\$25.4	-\$80.4	-\$108.8	-\$59.8	-\$36.4
Other General Fund	2021-23	2023-25	2025-27	2027-29	2029-31
Baseline	\$1,455.6	\$1,447.9	\$1,529.7	\$1,617.0	\$1,686.5
BoomBust	\$1,434.1	\$1,375.8	\$1,443.3	\$1,572.2	\$1,661.7
<i>Difference</i>	-\$21.6	-\$72.1	-\$86.4	-\$44.7	-\$24.9
Total General Fund	2021-23	2023-25	2025-27	2027-29	2029-31
Baseline	\$24,209.0	\$27,939.5	\$31,028.9	\$34,778.0	\$39,330.2
BoomBust	\$24,487.8	\$27,266.3	\$30,063.5	\$34,727.2	\$39,796.8
<i>Difference</i>	\$278.8	-\$673.3	-\$965.4	-\$50.8	\$466.6

Corporate Activity Tax

HB 3427 (2019) created a new state revenue source by implementing a corporate activity tax (CAT) that went into effect January 2020. Collections related to the 2020 tax year are now expected to total approximately \$1,054.0 million, which is somewhat lower than projected at the September forecast due to greater-than-expected refunds in October. At the same time, significantly higher estimated payments for the third quarter of tax year 2021 than previously predicted have increased the projection for collections related to this tax year. As a result, the forecast for revenues in the 2021-23 biennium have risen to \$2,392.7 million. Given little change in the economic outlook, the forecast for CAT revenues in future biennia has also increase substantially.

These revenues are dedicated to spending on education. The legislation also included personal income tax rate reductions, reducing General Fund revenues. The net impact of HB 3427 was designed to generate approximately \$1 billion per year in new state resources, or \$2 billion per biennium.

In terms the macroeconomic effects of a major new tax, the Office of Economic Analysis starts with the Legislative Revenue Office's (LRO) impact statement and any Oregon Tax Incidence Model (OTIM) results LRO found. At the top line, OTIM results find minimal macroeconomic impacts across Oregon due to the new tax. Personal income, employment, population, investment and the like are less than one-tenth of a percent different under the new tax relative to the baseline. The model results also show that price levels (inflation) will

increase above the baseline as some of the CAT is pushed forward onto consumers. Of course these top line, statewide numbers mask the varying experiences that individual firms and different industries will experience. There are likely to be some businesses or sectors that experience large impacts from the CAT, or where pyramiding increases prices to a larger degree, while other businesses or sectors see relatively few impacts.

Table B.12 in Appendix B has details on 10 year forecast and the allocation of resources, while the personal income tax reductions are built into the General Fund forecasts shown in Tables B.1 and B.2.

Lottery Earnings

Video lottery sales continue to be strong. Sales have slowed some since the summer, as expected, but remain considerably higher than at any other point in history for this time of year. This strength is now expected to continue through the fall and into the winter, as sales slowly taper to be in line with their pre-pandemic share of income and consumer spending.

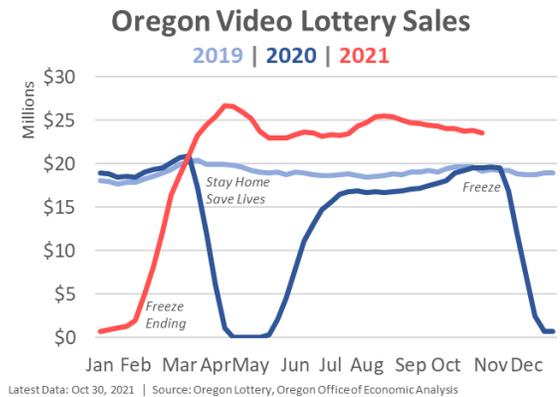
The upshot is lottery revenues for the current 2021-23 biennium are raised \$22.4 million (+1.3%) compared to the previous forecast. 2021-23 revenues are now \$70.9 million (+4.3%) above Close of Session estimates. Longer-term forecasts are adjusted somewhat higher due to a stronger economic outlook. Revenues for each biennium from 2023-25 through 2029-31 are increased by about 0.5 percent, or \$8-9 million.

In terms of the near-term video lottery sales outlook, the key question is whether sales more closely follow current income, or track cumulative changes since the start of the pandemic. The answer matters considerably for just how long record-setting sales are likely to last.

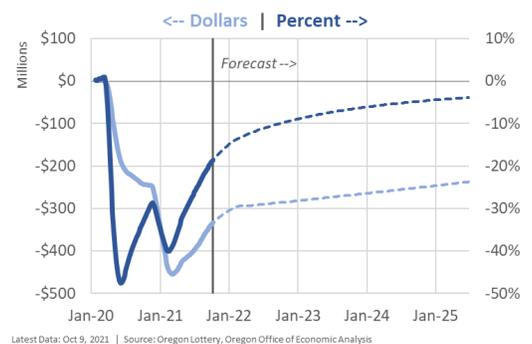
On the one hand, current income growth is slowing as the federal aid is gone. Labor income is booming, but that is essentially offsetting the fading federal impacts. The nature of our previous forecast was sales would slow this fall as a result, that some or much of the record sales was due to households having extra money and limited entertainment options. It remains our office’s view that current spending is predominantly determined by current income.

However, on the other hand, cumulative video lottery sales since the start of the pandemic are \$334 million (-19%) below pre-pandemic expectations. Record sales in recent weeks are not yet enough to offset the revenue declines during the two rounds of shutdowns. Conversely, incomes are noticeably higher than pre-pandemic expectations. Households have considerable excess savings they can use to spend, if they want to.

Today, both factors – current income and cumulative effects of the pandemic – are likely impacting sales. Pent-up demand is real given players were unable to game during the shutdown periods, and some were more hesitant to venture out during a global pandemic.



Cumulative Video Lottery Gap
Cumulative sales relative to March 2020 Forecast



However, the forecast expects some normalization in the months ahead for at least three key reasons. First, given the limited, available information it is more likely that the current level of sales is existing players gaming more, than it is an underlying increase in the number of Oregonians playing. Second, following this is the likely fading impact of both federal aid on incomes, and pent-up demand from shutdowns that are now nearly one and two years ago. Spending will become increasingly reliant on current incomes moving forward. Third, there will be increased competition for entertainment dollars as Oregonians go on vacations, to sporting events, movie theaters and the like in greater numbers moving forward.

All told the outlook for video lottery is raised in the near-term. Record-setting sales, while tapering in the months ahead, are expected to continue into the beginning of next year. Risks to the outlook are slightly weighted toward the upside, and especially so in sales or dollar terms. First, on the downside, the adjustment of sales to current income growth may prove quicker than anticipated. Such a development would reduce current 2021-23 revenues a little – likely half of the increase this forecast is raised – but leave the longer-run forecast unchanged.

However, on the upside, given we are now nearly two years into the pandemic, it is likely some permanent behavioral changes have been made. One of those could be permanently higher video lottery sales. To the extent that sales are a permanently higher share of income, or that the excess savings maintains these level of sales for years to come, the current outlook is noticeably conservative.

Big picture changes, like permanently higher sales will take time to fully realize. This is especially true today given the unprecedented public health and economic times we find ourselves in. Furthermore, the ultimate impact of unprecedented federal policy is also not fully understood today. Our office will continue to analyze gaming trends here in Oregon and across the country, and to what extent there are permanent shifts once the economy, and society more broadly return to something more approaching the pre-pandemic normal.

Finally, one additional risk to the outlook is the potential for increased gaming competition within Oregon. Specifically a new gaming facility in Grants Pass in southern Oregon would result in lower video lottery sales in the region. For example, a study from ECONorthwest² found that the impact of facility could be a \$13 million reduction in video lottery sales. One broader issue raised is the potential for other such gaming facilities at the other three horse betting tracks in the state. No decisions have been in granting or denying the proposal, as such no impact is built into the outlook.

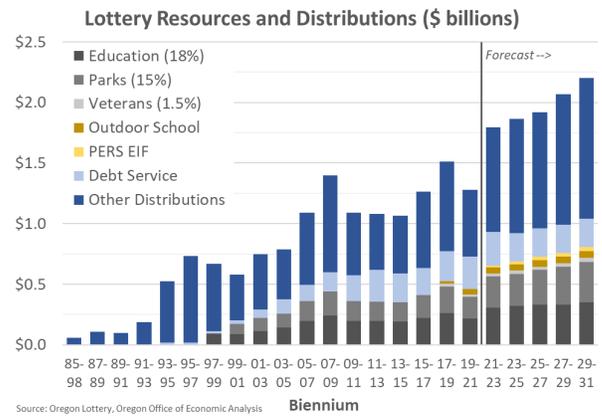
Lottery Outlook and Distributions

Big picture issues to watch include broader national trends in gaming markets, demographic preferences for recreational activities, and to what extent consumers decrease the share of their incomes spent on gaming. Last expansion consumers remained cautious with their disposable income until late in the cycle. Increases in spending on gaming had largely matched income growth.



² <https://cdn.kobi5.com/wp-content/uploads/2021/10/Historical-Horse-Race-Impacts-FINAL-Sept-17-2021-.pdf?x47684>

Over the long run our office expects increased competition for household entertainment dollars, increased competition within the gaming industry, and potentially shifts in generational preferences and tastes when it comes to gaming. As such, our outlook for video lottery sales is continued growth, however at a rate that is slightly slower than overall personal income growth. Lottery sales will continue to increase as Oregon’s population and economy grows, however video lottery sales will likely be a slightly smaller slice of the overall pie.



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 Fund³ (ORDF) and the Education Stability Fund⁴ (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 \$1.42 billion. At the end of the current 2021-23 biennium, they will total \$1.96 billion. Including the currently projected \$2.04 billion ending balance in the General Fund, the total effective reserves at the end of the current 2021-23 biennium are projected to be \$4.0 billion, or 16.5% of current revenues.

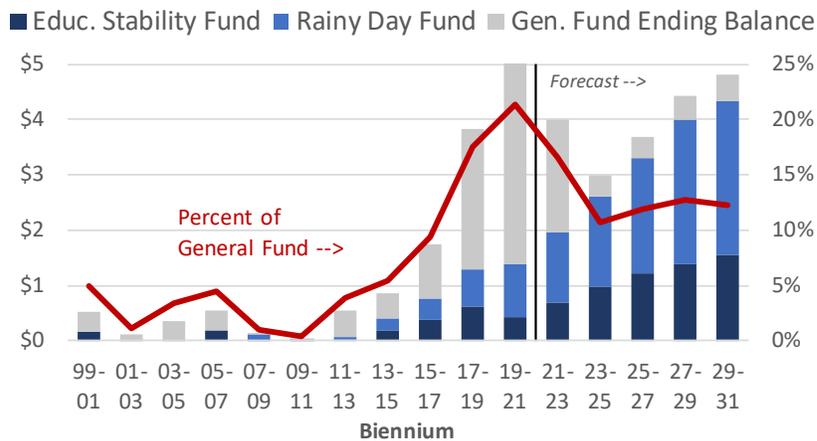
The forecast for the ORDF includes two deposits for this biennium relating to the General Fund ending balance from the previous biennium (2019-21). A deposit of \$224.6 million is expected to be made in early 2022 after the accountants close the books. Additionally a \$64.9 million deposit relating to the increased corporate taxes from Measure 67 is expected at the end of the biennium in June 2023. This exact transfer amount is subject to some revision as corporate filings are processed, however the transfer itself will occur. At the end of 2021-23 the ORDF will total \$1.27 billion.

Looking ahead to the 2023-25 biennium, the ORDF is expected to receive two transfers as well. This includes a projected \$254.5 million related to the General Fund ending balance from 2021-23, and \$66.6 million related to the increase in corporate taxes. The ORDF is not projected to hit its cap of 7.5% of revenues until FY2029.

³ 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.

⁴ 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 – 10% 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.

Oregon Budgetary Reserves (billions)



Source: Oregon Office of Economic Analysis

Effective Reserves (\$ millions)

	Current Nov-21	End 2021-23
ESF	\$451	\$693
RDF	\$964	\$1,265
Reserves	\$1,415	\$1,958
Ending Balance	\$2,040	\$2,040
Total	\$3,456	\$3,999
% of GF	14.5%	16.5%

The ESF will receive an expected \$279 million in deposits in the current 2021-23 biennium based on the current lottery forecast. At the end of current 2021-23 biennium the ESF will stand at \$693.4 million. The ESF is not projected to hit its cap of 5% of revenues until FY2027, when the deposits will then accrue to the Capital Matching Account.

Together, the ORDF and ESF are projected to have a combined balance of \$1.96 billion at the close of the 2021-23 biennium, or 8.2 percent of current revenues. At the close of 2023-25 the combined balance will be \$2.61 billion, or 9.4 percent of revenues. Such levels of reserve balances are larger than Oregon has been able to accumulate in past cycles, and should help stabilize the budget when the next recession hits.

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

Recreational Marijuana Tax Collections

Marijuana sales continue to track the forecast closely. No fundamental changes are made to the outlook, other than updating for the most recent few months of sales, which are \$3.1 million (+0.3%) above expectations.

In the near-term, sales are expected to slow as the pandemic improves and Oregonians continue to return to their pre-COVID lives. This includes white collar workers returning to the office a bit more, and other entertainment options opening up and being frequented more often. Some of the pandemic-related increase in marijuana sales is likely to come off, even as most sticks.

Over the medium- and long-term, sales are expected to increase as Oregon's population, income, and spending grow. However at this point our office does not have a further increase in marijuana usage rates built into the outlook. As such, the risks lie primarily to the upside should usage and broader social acceptance continue to increase. The next National Survey on Drug Use and Health should be released in early 2022 providing an update on usage trends by age and across states in the past year. In consultation with our

Monthly Oregon Marijuana Sales



Latest Data: 2021q3 | Source: OLCC, Oregon Dept of Revenue, Oregon Office of Economic Analysis

advisors, should we expect usage rates to increase further in the years ahead, the longer-run forecast would be adjusted accordingly.

See Table B.11 in Appendix B for a full breakdown of revenues, including the newly added medical marijuana revenue, and associated distributions to recipient programs.

POPULATION AND DEMOGRAPHIC OUTLOOK

Population and Demographic Summary

Oregon's resident population count on April 1, 2020 was 4,237,256. This is from the newly released decennial census data administered by the U.S. Census Bureau. During the past decade, Oregon gained 406,182 residents or 10.6 percent. The gain was substantial enough that yielded one additional congressional seat for the state. Oregon will have a total of six members in the House of Representatives. We have been predicting this rare gain for a long time. This is rare because only five states gained one additional seat each and Texas gained two seats.

In historical context, Oregon's population growth between 2010 and 2020 censuses was the second lowest since the first census count in Oregon in 1850. The lowest growth rate was recorded between the 1980 and 1990 censuses, a decade characterized by a major recession. Oregon's population increased by 441 percent in a century. The gain of 406,182 persons in the last decade alone was nearly the same as the total population count of Oregon in the year 1900 when state's population was 403,536. Oregon's population growth of 10.6 percent in the last decade was 11th highest in the nation, excluding Washington D.C. Still, our growth rate for the decade lagged behind all our neighboring states, except California. The prior decade between 2000 and 2010, Oregon's population growth rate ranked 18th highest in the nation when Oregon was hit hard by the double recessions during the decade. As a result of such economic downturn during the Great Recession and sluggish recovery that followed, Oregon's population increased at a slow pace between 2000 and 2010 decade. However, Oregon's population was showing moderately strong growth as a consequence of state's strong economic recovery. The current COVID-19 pandemic has caused dire economic and employment situations and has caused slow population growth. The population growth is expected to rebound after 2021. Based on the current forecast, Oregon's population is expected to reach 4.589 million in the year 2029 with an annual rate of growth of 0.81 percent between 2021 and 2029. The projected population of 2029 is 59,600 less than our March 2020 forecast released just before the COVID hit. The lower projection is due to the lingering COVID-19 effect resulting in higher deaths, lower births, and fewer net-migration, and 2020 Census count coming lower than expected based on the estimates by Population Research Center, Portland State University.

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 well below the replacement level and number of deaths continue to rise due to aging population, long-term growth comes mainly from net in-migration. The COVID-19 pandemic has left noticeable impact on demographic processes. Due to the declining births and rising deaths, we were expecting natural increase (births minus deaths) to turn negative after the year 2025. However, Oregon's natural increase has already turned negative because of the COVID effect. Even during this pandemic, Oregon has gained people through net-migration as the worker are able to work from home in many sectors. Working-age adults come to Oregon as long as we have favorable economic conditions and offers better quality of life. During the 1980s,

which included 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 of the economic cycle, 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 as a result of economic recession, lowest since early 1980s when we actually had negative net migration for several years. As a sign of slow to modest economic gain and declining natural increase (births minus deaths), the ratio of net migration-to-population change has registered at 89 percent in 2020. As a result of sudden rise in the number of deaths and fall in the number of births due to the COVID-19 pandemic, the natural increase will turn negative beyond the year 2020 through 2029 and beyond. So, in the future, all of Oregon's population growth and more will come from the net migration due to the combination of continued positive net migration, well below replacement level fertility, and the rise in the number of deaths associated with the increase in the elderly population. Thus, migration will be solely responsible for Oregon's population growth.

Age structure and its change affect employment, state revenue, and expenditure as the demand for services varies by age groups. Demographics are the major budget drivers, which are modified by policy choices on service coverage and delivery. Births, deaths, and migration history of over 100 years do impact the current age-sex structure. Growth in many age groups will show the effects of the baby-boom and their echo generations during the forecast period of 2021-2029. 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 relatively slow growth during the 1990s and early 2000s, the elderly population (65+) has picked up a faster pace of growth since 2005. This population group will maintain the high growth as the second half of the baby-boom generation continue to enter this age group combined with the attrition of small depression era birth cohort due to death. This age cohort, however, has hit the plateau of high growth rates exceeding 4 percent annually between 2011 and 2019. The group will experience continued high but diminishing rate of growth. The average annual growth of the elderly population will be 2.5 percent during the 2021-2029 forecast period. Different age groups among the elderly population show quite varied and fascinating growth trends. The youngest elderly (aged 65-74), which has been growing at an extremely fast pace in the recent past averaging 5.1 percent annually between 2010 and 2020 due to the direct impact of the baby-boom generation entering and smaller pre-baby boom cohort exiting this 65-74 age group. This fast paced growth rate will taper off to negative growth by the end of the forecast period as a sign of the end of the baby-boom generation transitioning to elderly age group. This high growth transitioning into a net loss of this youngest elderly population result in 0.5 percent annual average growth rate in the next eight years. The next older generation of population aged 75-84 has seen reversal of several years of slow growth and a period of shrinking years. 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 is starting to mature from the youngest elderly into this 75-84 age group. Annual growth rate during the forecast period of 2021-2029 is expected to be unusually high 5.5 percent. After a period of slow growth, the oldest elderly (aged 85+) will continue to grow at a strong rate but steadily gaining growth momentum 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 3.6 percent. An unprecedented growth in oldest elderly will commence near the end of the forecast horizon as the fast growing 75-84 age group population transition into this oldest elderly age cohort. As a sign of massive demographic structural change of Oregon's population, starting in 2023 the number of elderly population will exceed the number of children

under the age of 18. To illustrate the contrast, in 1980 elderly population numbered less than half of the number of children in Oregon.

The oldest working age population aged 45-64 also has seen the dramatic demographic impact as the baby-boom generation matures out of oldest working-age cohort which is replaced by smaller baby-bust cohort or Gen X. As the effect of this demographic transition 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 has remained and will remain at slow or below zero growth phase for several years. The size of this older working-age population will see only a small increase by the end of the forecast period. The younger working-age population of 25-44 age group has recovered 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 but slow growth starting in the year 2004 and has gained steam since 2013. This group will increase by 1.0 percent annual average rate during the forecast horizon mainly because of the exiting smaller birth (baby-bust) cohort being replaced by larger baby-boom echo cohort. The young adult population (aged 18-24) will see only a small change 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, but 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) has been very slow or negative in the past and is expected to decline through the forecast years. This will translate into slow growth or even decline in the school enrollments. On average for the forecast period, this school-age population will decline by -0.8 percent annually. The growth rate for children under the age of five has remained near or below zero percent in the recent past and will continue to decline in the near future due to the sharp decline in the number of births. 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 the number of children will actually decline over the forecast horizon. The number of working-age adults in general will show slow growth during the forecast horizon. Hence, based solely on demographics of Oregon, demand for public services geared towards children and young adults will likely to decline or increase only 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, 2020 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.

The U.S. Census Bureau just released apportionment and resident population count of April 1, 2020 for the states. This is the crucial information as the base for all future postcensal population estimates and projections. Also, this 2020 census population is used to determine the error of closure, which is the difference between the actual census enumeration and the estimate based on the previous census of 2010. Again, the error of closure is

used to correct and adjust all previous annual postcensal estimates for the time between 2010 and 2020. Since the Bureau has released only the total population, OEA has estimated only the total intercensal population for Oregon based on 2010 and 2020 census counts and postcensal estimates of Population Research Center, Portland State University. Therefore Oregon's intercensal population estimates for the years 2011 through 2020 in this forecast shown in Appendix C are different from prior postcensal numbers. Once the Bureau releases age-sex detail of the census population, OEA will produce readjusted intercensal estimates by age and sex for each of the years from 2011 through 2020. The numbers of births and deaths through 2020 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 1.4 per woman in 2020 and this rate is projected to remain at similar level through the forecast period which is well below the replacement level of 2.1 children per woman. Oregon's fertility level is tracking below the national level.

Life Table survival rates are developed for the year 2010 and a new life table for 2020 will be developed when all necessary data becomes available. Male and female life expectancies for the 2010-2029 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 79.4 years for males and 83.5 years for females by the year 2029. Life expectancy at birth declined during the current pandemic. However, it is expected to recover after 2021.

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. 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. 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, limiting the potential destination choices. The role of net migration in Oregon's population growth will get more prominence as the natural increase has begun to turn negative. The increasing excess of deaths over births will continue due to the rapid increase in the number of deaths associated with the aging population and decline in the number of births largely due to the decline in fertility rate associated with life-style choices. Such a trend was expected, but the COVID-19 has hastened the process. The annual net migration is expected to be low in the short run due to the COVID-19 effect. However, the migration is expected to recover after 2021. Between 2021 and 2029 net migration is expected to be in the range of 27,732 to 40,128, averaging 37,234 persons annually.