

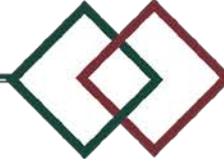
Revenue Forecast

JCA Presentation

February 12, 2020



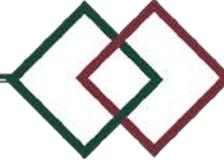
Methodology: Model 1



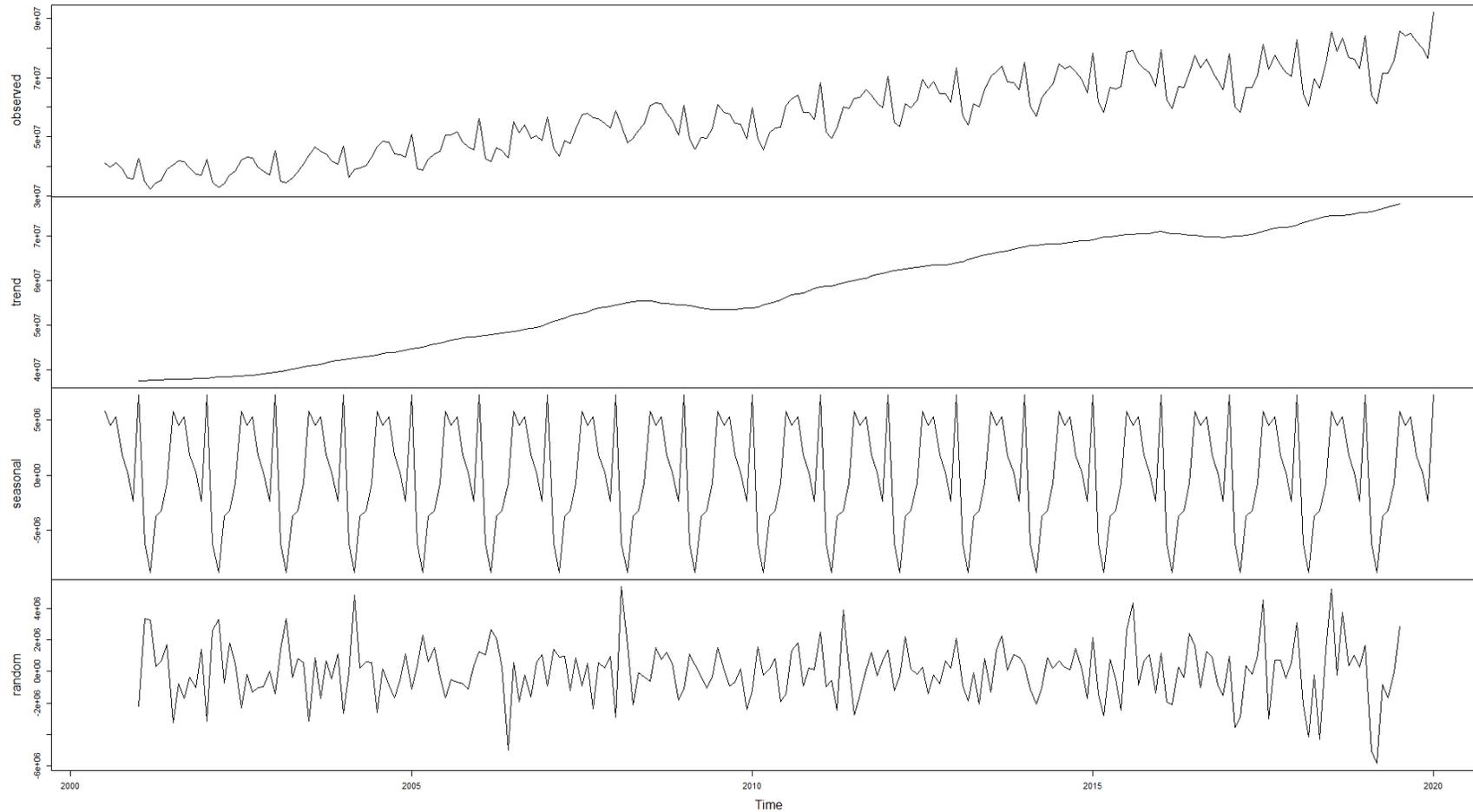
Holt-Winters Model

- A triple exponential smoothing model, known as the Holt-Winters model, is a statistical forecasting model the Legislative Research Council (LRC) utilizes for estimating revenues. The model utilizes historical revenue data and smooths the data with three parameters - level, trend, and seasonality and creates a model fitted to actuals based on historical data. The fitted model is then used to forecast future revenues. More recent values contribute to the forecast more than earlier values, meaning revenues in 2018 will be weighted more than revenues in 1999.

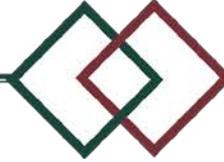
Methodology: Model 1



Decomposition of additive time series



Methodology: Model 2



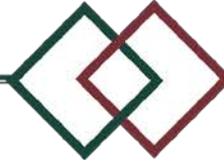
Auto-Regressive Integrated Moving Average (ARIMA) Model

- The statistical forecasting model of ARIMA is one of the most used approaches to analyzing time series. The LRC also utilizes this model to estimate revenues. ARIMA uses historical data to create a fitted model by adjusting the correlation, differential, and moving average components within the data. The fitted model is then used to forecast future revenues.

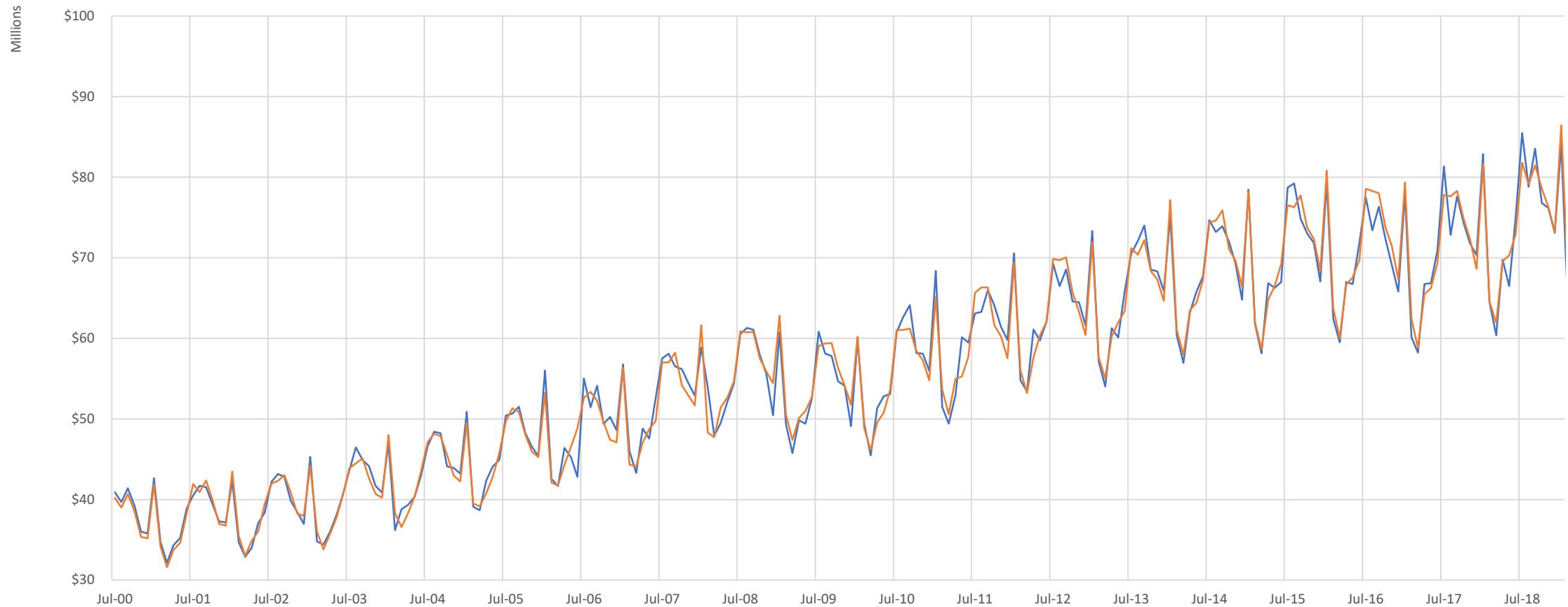
ARIMA(2,0,3)(0,1,0)[12]	with drift	: -854.9843
ARIMA(3,0,0)(0,1,0)[12]		: -827.8151
ARIMA(3,0,0)(0,1,0)[12]	with drift	: -836.7859
ARIMA(3,0,0)(0,1,1)[12]		: Inf
ARIMA(3,0,0)(0,1,1)[12]	with drift	: -907.5532
ARIMA(3,0,0)(0,1,2)[12]		: Inf
ARIMA(3,0,0)(0,1,2)[12]	with drift	: -907.9285
ARIMA(3,0,0)(1,1,0)[12]		: -866.9335
ARIMA(3,0,0)(1,1,0)[12]	with drift	: -874.0039
ARIMA(3,0,0)(1,1,1)[12]		: Inf
ARIMA(3,0,0)(1,1,1)[12]	with drift	: -908.2121
ARIMA(3,0,0)(2,1,0)[12]		: -875.8735
ARIMA(3,0,0)(2,1,0)[12]	with drift	: -883.3629
ARIMA(3,0,1)(0,1,0)[12]		: -838.7751
ARIMA(3,0,1)(0,1,0)[12]	with drift	: -843.0533
ARIMA(3,0,1)(0,1,1)[12]		: Inf
ARIMA(3,0,1)(0,1,1)[12]	with drift	: -917.9009
ARIMA(3,0,1)(1,1,0)[12]		: -877.8036
ARIMA(3,0,1)(1,1,0)[12]	with drift	: -881.2287
ARIMA(3,0,2)(0,1,0)[12]		: -845.4328
ARIMA(3,0,2)(0,1,0)[12]	with drift	: -854.9843
ARIMA(4,0,0)(0,1,0)[12]		: -840.9134
ARIMA(4,0,0)(0,1,0)[12]	with drift	: -845.9829
ARIMA(4,0,0)(0,1,1)[12]		: Inf
ARIMA(4,0,0)(0,1,1)[12]	with drift	: -918.4785
ARIMA(4,0,0)(1,1,0)[12]		: -879.6952
ARIMA(4,0,0)(1,1,0)[12]	with drift	: -883.6873
ARIMA(4,0,1)(0,1,0)[12]		: -839.7665
ARIMA(4,0,1)(0,1,0)[12]	with drift	: -844.1512
ARIMA(5,0,0)(0,1,0)[12]		: -839.6912
ARIMA(5,0,0)(0,1,0)[12]	with drift	: -844.1628

Best model: ARIMA(1,0,3)(0,1,1)[12] with drift

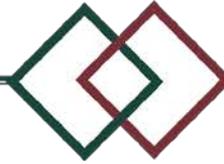
Methodology: GOAL



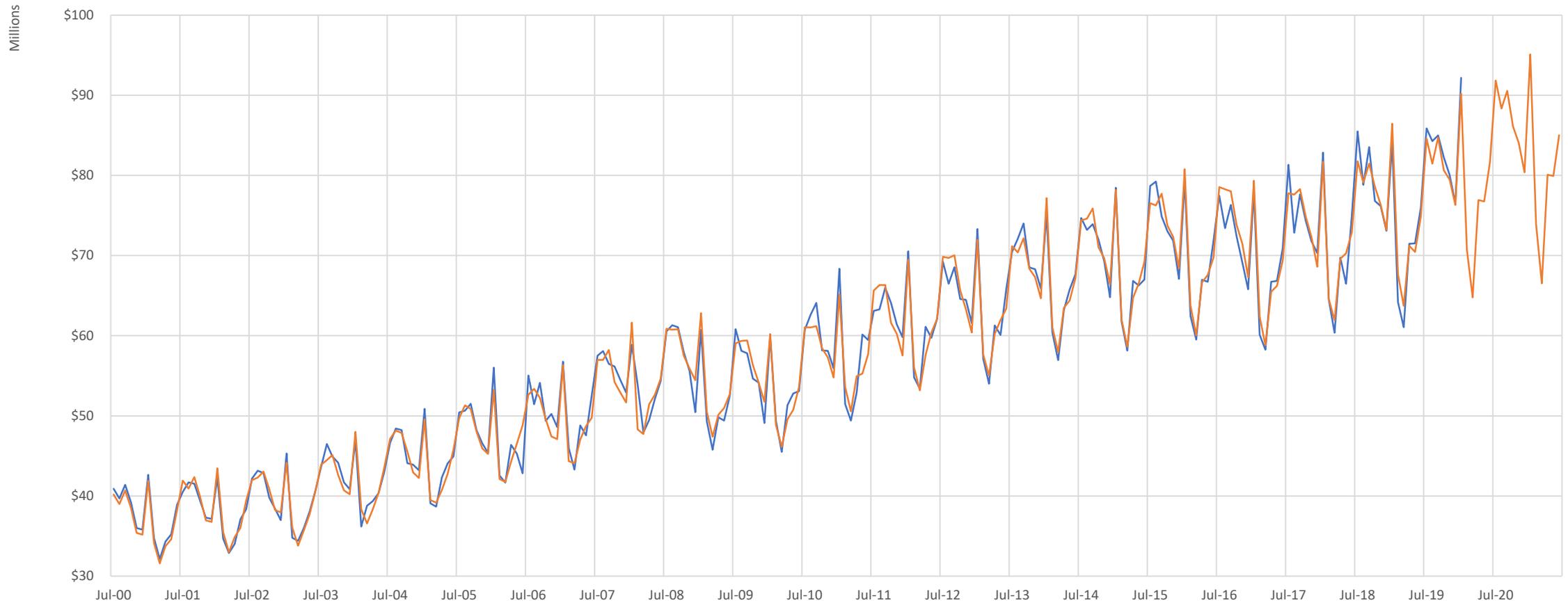
ARIMA Model Fitted to Base Sales & Use Tax



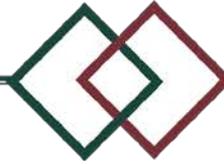
Methodology: OUTCOME



ARIMA Model Fitted to Base Sales & Use Tax with forecast



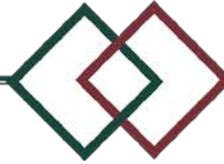
Sales and Use Tax



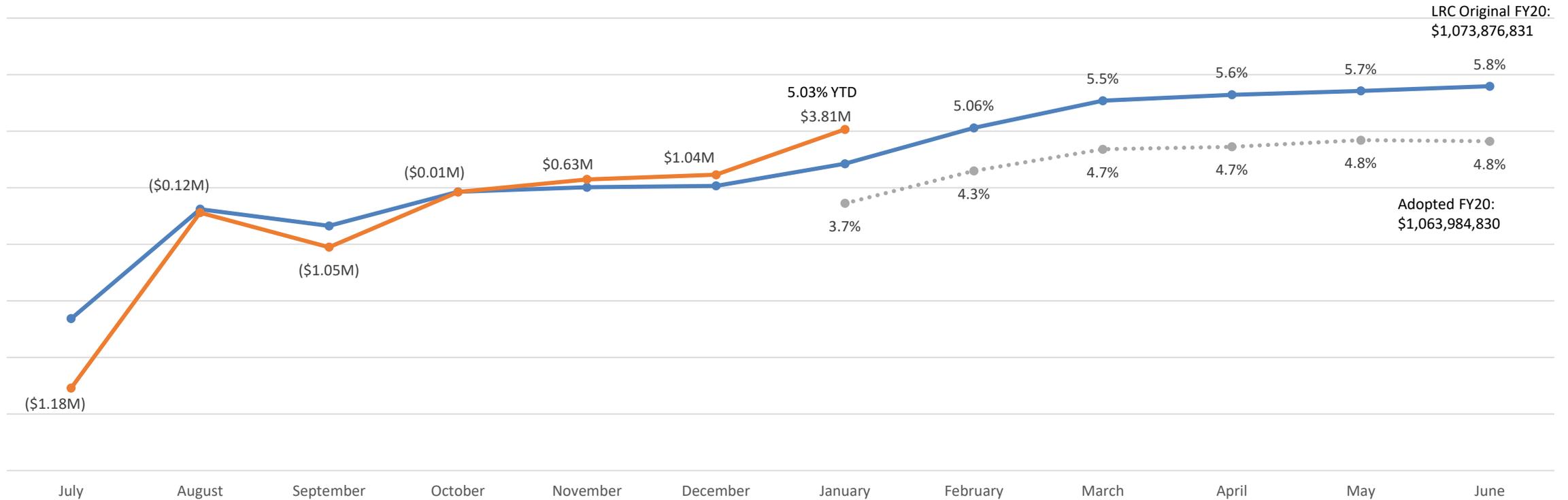
	Actual FY2018	Actual FY2019	LRC Original FY2020	LRC Revised FY2020	LRC FY2021
Total Revenues	988,823,603	1,025,401,209	1,085,218,900	1,087,729,168	1,112,541,909
Dollar Change	37,600,522	36,577,606	59,817,691	62,327,959	24,812,741
Percent Change	3.95%	3.70%	5.83%	6.08%	2.3%

- FY2021 includes \$20M reduction for Internet Tax Freedom Act
- YTD collections are 5.03% above the same point in FY2019
- YTD collections of 670,171,201 while the LRC Original Forecast is 666,879,425
- LRC Original forecast is lower by \$3,291,776 of actual FY20 YTD. Within 0.49% of actual YTD.
- Increased revenues from remote sellers and marketplace providers. \$17.5M increase in calendar year 2019.

Base Sales Tax: YTD



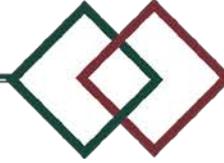
Actual YTD Base Sales Tax vs Forecasted



*Base year FY19 actual = 1.0
*Excludes cost of administration

—●— LRC Original FY20 Forecast —●— Actual FY20 ...●... Adopted FY20

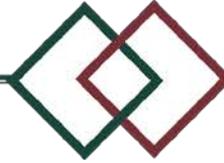
Lottery



	Actual FY2018	Actual FY2019	LRC Original FY2020	LRC Revised FY2020	LRC FY2021
Total Revenues	116,675,440	123,815,501	127,336,136	127,061,394	133,059,888
Dollar Change	4,848,184	7,140,061	3,520,635	3,245,893	5,998,494
Percent Change	4.34%	6.12%	2.84%	2.62%	4.7%

- YTD collections are 2.83% above the same point in FY2019
- YTD collections of 68,096,111 while LRC Original forecast is 68,804,161.
- LRC Original forecast is higher by \$708,050 of actual FY20 YTD. Within 1.04% of actual YTD.

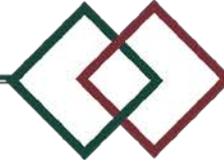
Contractor's Excise Tax



	Actual FY2018	Actual FY2019	LRC Original FY2020	LRC Revised FY2020	LRC FY2021
Total Revenues	107,626,628	113,163,617	124,058,310	124,492,747	131,864,059
Dollar Change	798,091	5,536,989	10,894,693	11,329,130	7,371,312
Percent Change	0.75%	5.14%	9.63%	10.01%	5.9%

- YTD collections are 8.60% above the same point in FY2019
- YTD collections of 85,692,764 while LRC Original forecast is 85,051,547 YTD.
- LRC Original forecast is lower by \$641,216 of actual FY20 YTD. Within 0.75% of actual YTD.

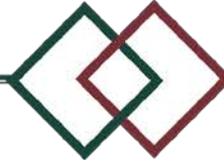
Insurance Company Tax



	Actual FY2018	Actual FY2019	LRC Original FY2020	LRC Revised FY2020	LRC FY2021
Total Revenues	91,021,843	90,347,541	91,697,393	89,236,155	88,161,662
Dollar Change	7,750,311	(674,302)	1,349,852	(1,111,386)	(1,074,493)
Percent Change	9.31%	-0.74%	1.49%	-1.23%	-1.2%

- YTD collections are (2.71)% below the same point in FY2019
- YTD collections of 53,217,632 while LRC Original forecast is 58,076,871 YTD.
- LRC Original forecast is higher by \$4,859,238 of actual FY20 YTD. Within 9.13% of actual YTD.
- The difference is mainly related to weaker than anticipated life insurance policies and annuity contracts.

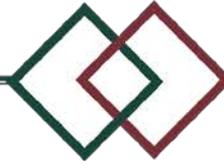
Unclaimed Property



	Actual FY2018	Actual FY2019	LRC Original FY2020	LRC Revised FY2020	LRC FY2021
Total Revenues	52,766,031	48,573,600	48,695,177	45,442,027	49,138,681
Dollar Change	8,379,811	(4,192,431)	121,577	(3,131,573)	3,696,654
Percent Change	18.88%	-7.95%	0.25%	-6.45%	8.1%

- YTD collections are (8.49)% below the same point in FY2019
- YTD collections of 51,266,724 while LRC Original forecast is 57,467,421 YTD.
- LRC Original forecast is lower by \$6,200,697 of actual FY20 YTD. Within 12.1% of actual YTD.
- The difference is mainly related to lower receipts than anticipated.

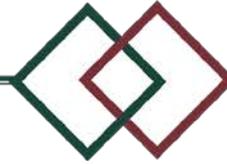
Licenses, Permits, Fees



	Actual FY2018	Actual FY2019	LRC Original FY2020	LRC Revised FY2020	LRC FY2021
Total Revenues	67,492,051	68,758,069	69,655,180	69,806,081	71,117,117
Dollar Change	2,761,876	1,266,018	897,111	1,048,012	1,311,036
Percent Change	4.27%	1.88%	1.30%	1.52%	1.9%

- YTD collections are 59.65% above the same point in FY2019
- YTD collections of 38,361,370 while LRC Original forecast is 24,790,630 YTD.
- The difference is mainly related to a timing issue YTD with collections.

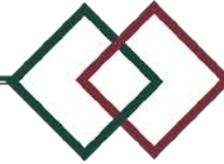
Total On-Going Revenue



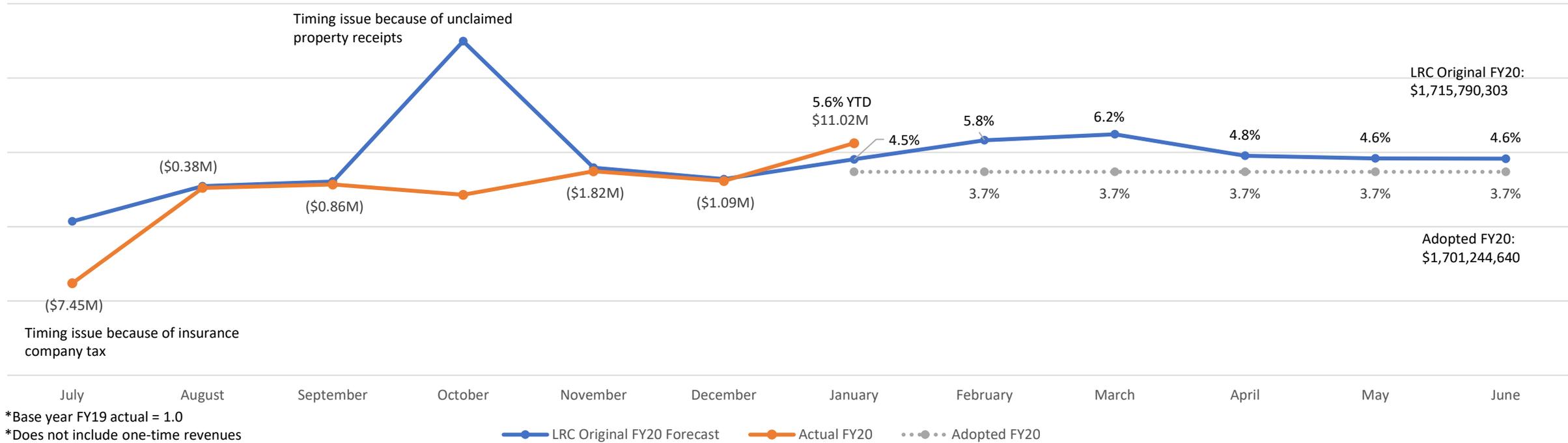
	Actual FY2018	Actual FY2019	LRC Original FY2020	LRC Revised FY2020	LRC FY2021
Total Revenues	1,593,405,861	1,641,203,288	1,715,790,303	1,717,263,764	1,756,660,260
Dollar Change	52,611,888	47,797,427	74,587,015	76,060,476	39,396,496
Percent Change	3.41%	3.00%	4.54%	4.63%	2.3%

- YTD collections are 5.61% above the same point in FY2019
- Even adjusting for a possible timing issue in the January report, YTD collections are still 5%+.

Total On-Going Revenues: YTD



Total YTD Actual On-Going Revenues vs Forecasted



FY2020 General Fund Revenues

February 12, 2020

On-going Receipts	Legislature Adopted FY20	LRC Original FY20 2/13/2019	Governor's Dec. Revised FY20	LRC Revised FY20	\$ Change from Governor's Revised	\$ Change from Legislature Adopted FY20	% Growth over FY19 Actual
Sales & Use Tax	1,075,218,900	1,085,218,900	1,071,609,815	1,087,729,168	16,119,353	12,510,268	6.1%
Lottery	126,020,257	127,336,136	127,352,534	127,061,394	(291,140)	1,041,137	2.6%
Contractor's Excise Tax	121,485,109	124,058,310	117,811,978	124,492,747	6,680,769	3,007,638	10.0%
Insurance Company Tax	92,808,766	91,697,393	91,127,918	89,236,155	(1,891,763)	(3,572,611)	-1.2%
Unclaimed Property	47,751,933	48,695,177	47,167,962	45,442,027	(1,725,935)	(2,309,906)	-6.4%
Licenses, Permits, and Fees	69,648,771	69,655,180	68,969,723	69,806,081	836,358	157,310	1.5%
Tobacco Taxes	50,058,950	49,352,847	49,043,485	48,927,890	(115,595)	(1,131,060)	-2.1%
Trust Funds	39,737,666	39,737,666	39,875,032	39,859,256	(15,776)	121,590	3.5%
Net Transfers In	21,562,412	21,562,412	21,005,164	21,005,164	-	(557,248)	-11.8%
Alcohol Beverage Tax	7,882,160	8,177,651	8,001,015	7,898,350	(102,665)	16,190	0.7%
Bank Franchise Tax	14,471,640	14,860,945	14,375,530	13,769,009	(606,521)	(702,631)	-20.2%
Charges for Goods & Services	16,333,139	16,333,139	16,212,862	17,087,879	875,017	754,740	6.7%
Telecommunications Tax	5,480,666	5,635,717	4,711,089	4,727,026	15,937	(753,640)	-7.1%
Mineral Severance Taxes	4,566,042	5,041,168	4,794,138	6,786,721	1,992,583	2,220,679	60.3%
Interest Income & Interest	6,015,500	6,176,651	11,058,713	11,117,374	58,661	5,101,874	78.5%
Alcohol Bev. 2% Wholesale Tax	2,202,729	2,251,011	2,191,736	2,317,523	125,787	114,794	7.8%
Subtotal On-going Receipts	1,701,244,640	1,715,790,303	1,695,308,694	1,717,263,764	21,955,070	16,019,124	4.6%
One-Time Receipts							
Obligated Cash Carried Forward			19,354,553	19,354,553	-		
Transfer from Budget Reserve Fund			16,778,512	-	(16,778,512)		
Transfer from Other Funds*			120,000	-	(120,000)		
Refinancing Gains/Transfer from SDBA			7,082,539	7,082,539	-		
Subtotal One-Time Receipts			43,335,604	26,437,092	(16,898,512)		
GRAND TOTAL	1,701,244,640		1,738,644,298	1,743,700,856	5,056,558	42,456,216	

*Note: Transfers from Other Funds includes: \$120,000 from the Commission on Gaming. The \$120,000 is what remains of a special appropriation for horse racing.

FY2021 General Fund Revenues

February 12, 2020

	Governor's Dec. FY21	LRC Revised FY20	LRC FY21 Estimate	\$ Change from Governor's Revised	\$ Change from LRC Revised FY20	% Change from LRC Revised FY20
On-going Receipts						
Sales & Use Tax	1,088,181,339	1,087,729,168	1,112,541,909	24,360,570	24,812,741	2.3%
Lottery	130,994,054	127,061,394	133,059,888	2,065,834	5,998,494	4.7%
Contractor's Excise Tax	121,800,414	124,492,747	131,864,059	10,063,645	7,371,312	5.9%
Insurance Company Tax	95,704,260	89,236,155	88,161,662	(7,542,598)	(1,074,493)	-1.2%
Unclaimed Property	47,167,962	45,442,027	49,138,681	1,970,719	3,696,654	8.1%
Licenses, Permits, and Fees	69,106,076	69,806,081	71,117,117	2,011,041	1,311,036	1.9%
Tobacco Taxes	47,232,519	48,927,890	46,038,469	(1,194,050)	(2,889,421)	-5.9%
Trust Funds	41,577,763	39,859,256	41,692,176	114,413	1,832,920	4.6%
Net Transfers In	21,311,678	21,005,164	21,311,678	-	306,514	1.5%
Alcohol Beverage Tax	8,140,374	7,898,350	8,186,365	45,991	288,015	3.6%
Bank Franchise Tax	14,889,195	13,769,009	12,867,852	(2,021,343)	(901,157)	-6.5%
Charges for Goods & Services	16,240,927	17,087,879	17,838,406	1,597,479	750,527	4.4%
Telecommunications Tax	4,360,584	4,727,026	4,677,328	316,744	(49,698)	-1.1%
Mineral Severance Taxes	5,304,110	6,786,721	6,817,205	1,513,095	30,484	0.4%
Interest Income & Interest	9,074,529	11,117,374	8,963,975	(110,554)	(2,153,399)	-19.4%
Alcohol Bev. 2% Wholesale Tax	2,303,823	2,317,523	2,383,490	79,667	65,967	2.8%
Subtotal On-going Receipts	1,723,389,607	1,717,263,764	1,756,660,260	33,270,653	39,396,496	2.3%
One-Time Receipts						
GRAND TOTAL	1,723,389,607		1,756,660,260	33,270,653	39,396,496	2.29%