



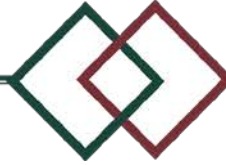
Revenue Forecast

JCA Presentation

February 12, 2020



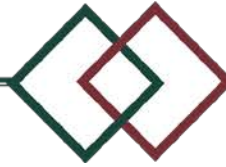
Methodology: Model 1



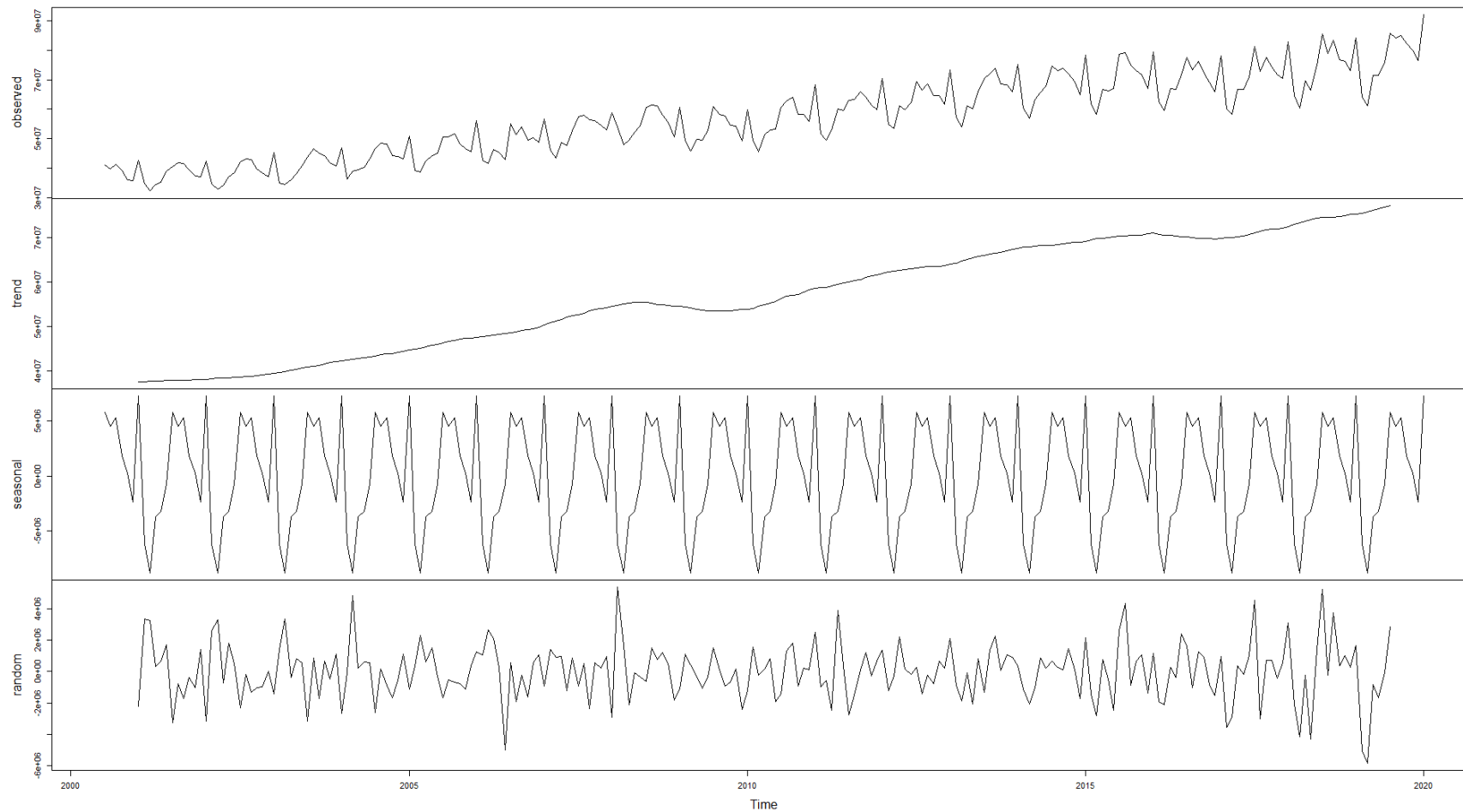
Holt-Winters Model

- 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



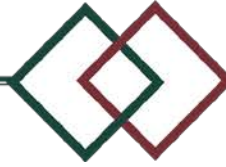
Auto-Regressive Integrated Moving Average (ARIMA) Model

- 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.

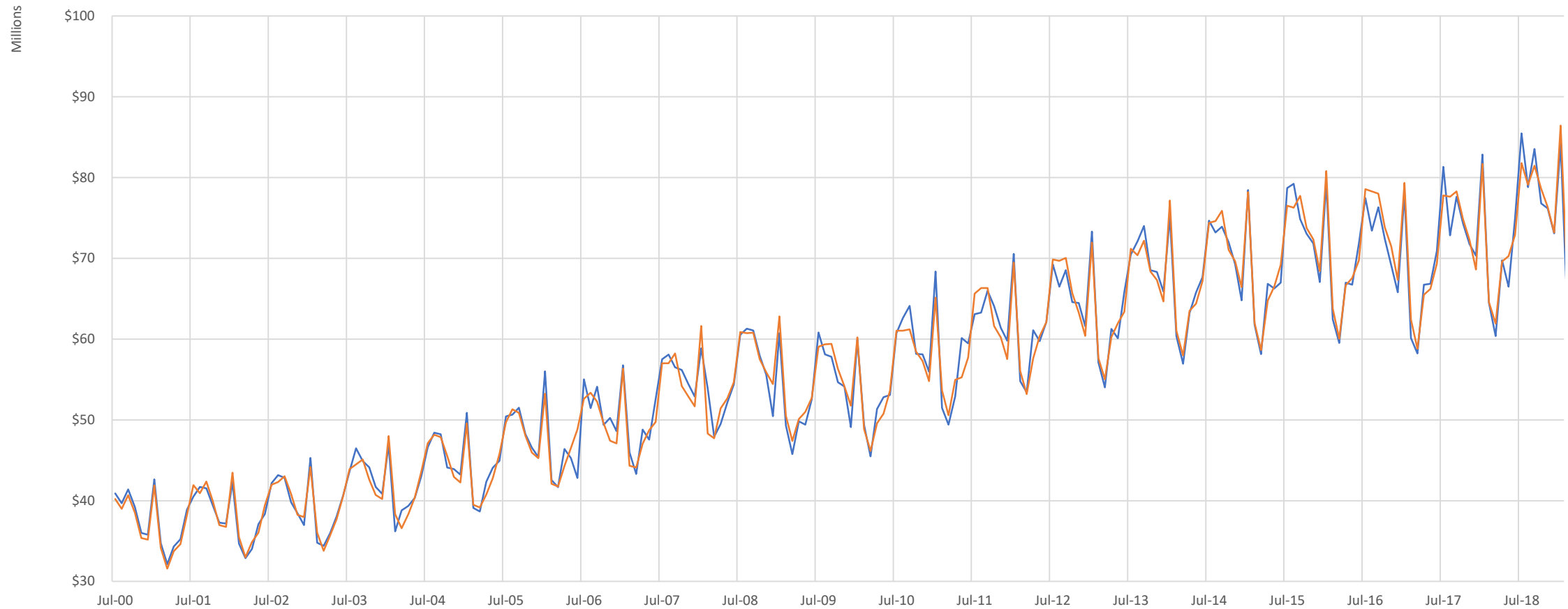
| | | |
|-------------------------|------------|-------------|
| ARIMA(2,0,3)(0,1,0)[12] | with drift | : -854.9843 |
| ARIMA(3,0,0)(0,1,0)[12] | | : -827.8151 |
| ARIMA(3,0,0)(0,1,0)[12] | with drift | : -836.7859 |
| ARIMA(3,0,0)(0,1,1)[12] | | : Inf |
| ARIMA(3,0,0)(0,1,1)[12] | with drift | : -907.5532 |
| 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

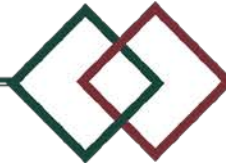
Methodology: GOAL



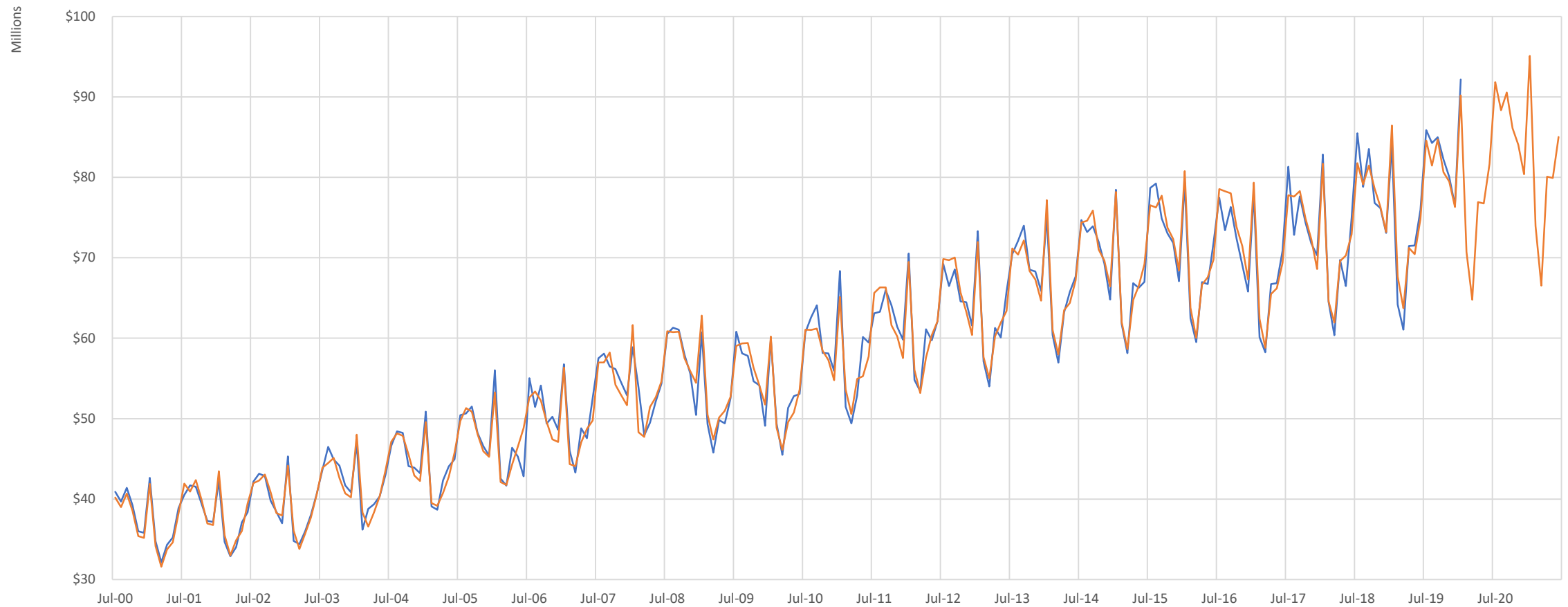
ARIMA Model Fitted to Base Sales & Use Tax



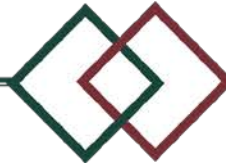
Methodology: OUTCOME



ARIMA Model Fitted to Base Sales & Use Tax with forecast



Sales and Use Tax



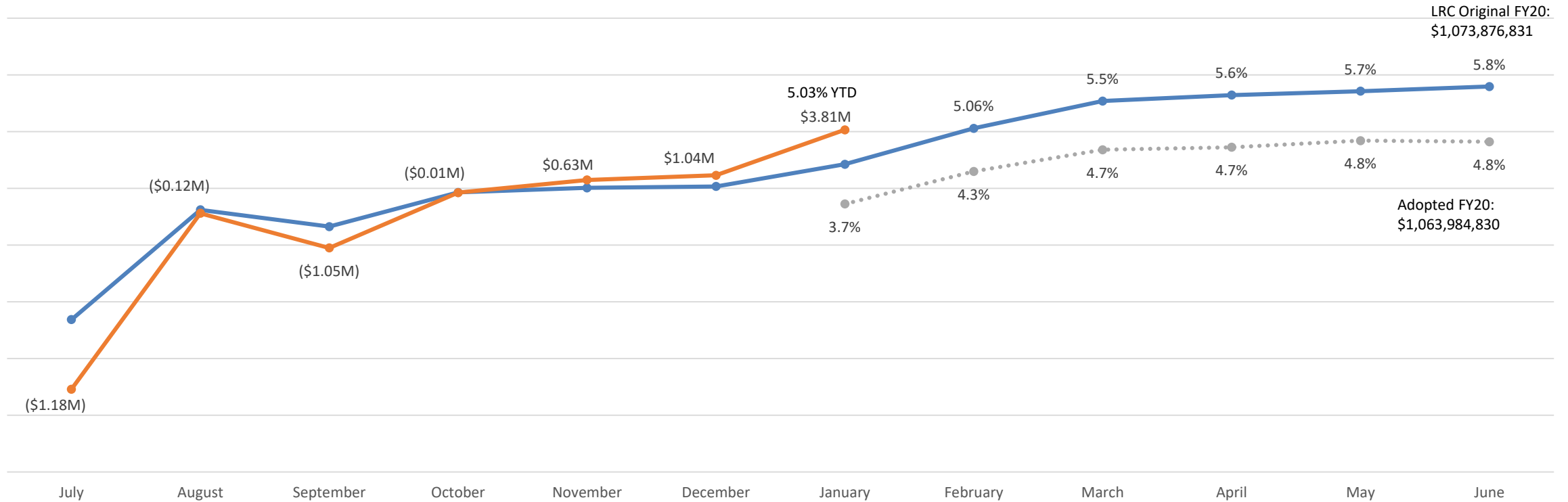
| | Actual FY2018 | Actual FY2019 | LRC Original FY2020 | LRC Revised FY2020 | LRC FY2021 |
|----------------|------------------|------------------|------------------------|-----------------------|---------------|
| Total Revenues | 988,823,603 | 1,025,401,209 | 1,085,218,900 | 1,087,729,168 | 1,112,541,909 |
| 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.

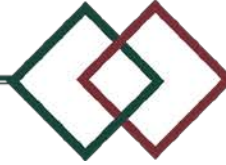
Contractor's Excise Tax



| | 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.

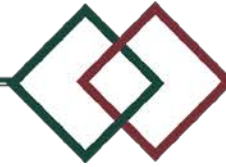
Unclaimed Property



| | 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.

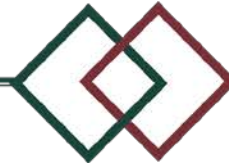
Licenses, Permits, Fees



| | 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.

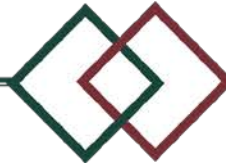
Total On-Going Revenue



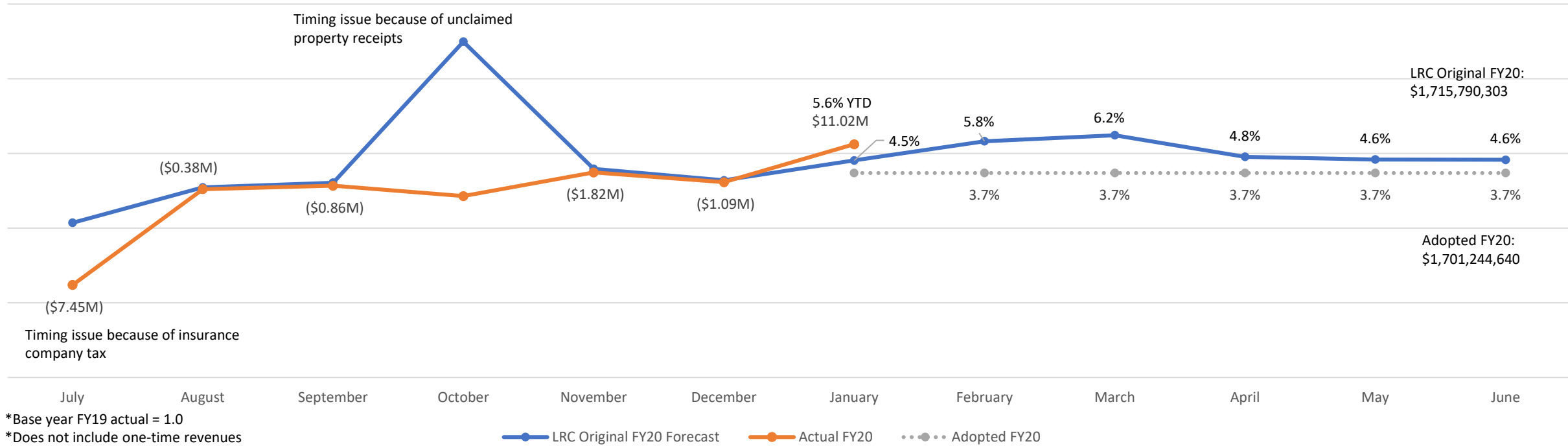
| | Actual FY2018 | Actual FY2019 | LRC Original FY2020 | LRC Revised FY2020 | LRC FY2021 |
|----------------|------------------|------------------|------------------------|-----------------------|---------------|
| Total Revenues | 1,593,405,861 | 1,641,203,288 | 1,715,790,303 | 1,717,263,764 | 1,756,660,260 |
| 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% |