



**B.I. Moody III College of
Business Administration**

Louisiana Economic Activity Forecast 2020:Q4

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The views expressed in this report are those of the author and do not necessarily represent the views of the University of Louisiana at Lafayette or the University of Louisiana System. Any errors are my own.

Executive Summary

The pace of economic activity accelerated sharply in the U.S. and Louisiana between the second and third quarters as coronavirus restrictions were relaxed. Payroll employment in Louisiana increased by 82,000, with every metro area in the state except Lake Charles experiencing solid growth. The Monroe metropolitan statistical area (MSA) witnessed the fastest job growth in state (7.5%), followed by New Orleans (5.7%) and Lafayette (4.8%). Despite the uptick in activity, jobs in Louisiana remain about 138,000 below (roughly 7%) the number we had in the fourth quarter of 2019. The unemployment rate in Louisiana also declined markedly, dropping from a high of 12.9% in the second quarter to its current level of 8.4%. This reduction overstates the strength of the economic recovery because a significant share of the reduction in the unemployment rate (in Louisiana and nationally) is due to unemployed workers dropping out of the labor force. Between April and October 2020, almost 10 million people in the U.S. more than normal have exited the labor force. Home price growth in the state continues to be strong as inventory levels remain well below historic norms. Growth is generally expected to exceed 3% through the end of 2021. With an improved national economic outlook over the next 18 months, Louisiana's outlook has improved as well. The state is now projected to regain all job losses since 2019:Q4 by the first quarter of 2022, with the Monroe, Lafayette, and Baton Rouge MSAs expected to lead the way.

Every forecasting model contains uncertainty. The results in this report are intended to provide broad guidance and should not be a direct cause for decision-making. This is particularly true now in light of the evolving global pandemic surrounding COVID-19.

2021 Report Release Schedule:

First Quarter: February 19, 2021
 Second Quarter: May 21, 2021
 Third Quarter: August 20, 2021
 Fourth Quarter: November 19, 2021

53.9%

Louisiana's current employment-to-population ratio (39th lowest in the nation).

+3.1%

Projected quarterly increase in home prices over the next 4 quarters.

9.97 million

Estimated number of people in the U.S. who have dropped out of the labor force because of the pandemic since April 2020.

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Introduction

Growth in the U.S. economy rebounded at a historic pace in the third quarter of 2020 following the sharp decline in economic activity associated with COVID-related stay-at-home orders earlier in the year. This research brief uses the latest projections for U.S. economic activity to present Baseline, Optimistic, and Pessimistic scenarios for key Louisiana economic indicators through the end of 2021. Although all indicators suggest that the economic recovery is currently underway, most economic indicators highlighted in this report are not projected to return to pre-recession levels until the second quarter of 2022. Given a more favorable outlook for the national economy over the next 18 months, the uncertainty for the future of Louisiana's GDP, employment, unemployment, tax collections, and home prices has diminished considerably from the previous quarterly report.

Forecasting models make projections on the most likely path of future variables based on historical data, past trends, and the expected future path of other critical variables. Because these relationships change over time, no model is able to perfectly incorporate unexpected changes in economic conditions, policy decisions at the federal or state level, or shifts in consumer or firm behavior. This means that every model is embedded with uncertainty. For this reason, the projection scenarios provided in this report should be interpreted as providing broad guidance on the most probable path for economic activity in Louisiana **if** the underlying assumptions of the model evolve as anticipated. For example, all of the scenarios in this report depend strongly on how the growth in U.S. gross domestic product (GDP) evolves over the next 3 to 18 months. If U.S. growth turns out to be much stronger *or* much weaker than is currently envisioned, then the expected accuracy of the Louisiana projections decrease. To simplify the presentation of multiple scenarios, the figures in this report do not show the confidence intervals around the scenario point estimates. One should always bear in mind that a point estimate of (say) 1.1% for employment growth in the next quarter is the mid-point of a range of potential values.

The Louisiana Forecast Model (LFM) projects employment, unemployment rate, home prices, gross domestic product, and tax collections using a Vector Autoregression (VAR) framework (see the Technical Appendix for more details). The model also takes other variables into account and assumes that their future values are given with certainty. These external variables include real U.S. gross domestic product, U.S. unemployment rate, oil prices, the state's real trade-weighted exchange rate, and the global prices of soybeans and rice.

Results from a regional employment model are also presented. The Louisiana Regional Employment Model (LREM) nests the Louisiana Forecast Model by adding statewide employment projections to the external variables in order to generate projections for each of the state's metropolitan statistical areas (MSAs). Employment in these nine metro areas account for approximately 90% of non-agricultural jobs in the state.

Alternative Economic Scenarios

Three alternative scenarios are considered in this report: Baseline, Optimistic, and Pessimistic. The scenarios differ only in how they treat the future values of selected variables external to the Louisiana Forecast Model, namely U.S. gross domestic product, U.S. unemployment rate, and oil prices. The projected future values of other external variables to the model - Louisiana's trade-weighted exchange rate and the prices of soybeans and rice - are identical across scenarios so they are omitted from the table below.

Table 1 shows the future expected values for U.S. GDP, unemployment rate, and oil prices under each scenario. 2020:Q3 values for the Baseline, Optimistic, and Pessimistic scenarios are identical because this quarter has already occurred. This row is shaded gray. Values for 2020:Q4 to 2021:Q4 have yet to be realized.

Table 1: Assumed Future Values of External Variables

Quarter	U.S. GDP (% SAAR)			U.S. Unemployment Rate (%)			Oil Prices (\$ per barrel)		
	Baseline	Optimistic	Pessimistic	Baseline	Optimistic	Pessimistic	Baseline	Optimistic	Pessimistic
2020:Q3	33.08	33.08	33.08	8.83	8.83	8.83	40.89	40.89	40.89
2020:Q4	4.00	4.55	-3.55	7.00	6.80	7.50	38.81	40.74	38.81
2021:Q1	3.20	4.13	1.25	6.70	6.50	7.20	40.22	42.84	40.22
2021:Q2	3.47	3.92	1.88	6.50	6.20	6.90	45.02	45.44	40.22
2021:Q3	3.51	4.07	2.16	6.10	5.80	6.30	45.50	48.54	38.21
2021:Q4	3.34	3.87	2.35	5.80	5.40	5.90	46.00	50.11	41.37

The Baseline scenario in Table 1 shows the most likely path for U.S. GDP, unemployment rate, and oil prices based on the most current information. The expected future path for U.S. GDP and the U.S. unemployment rate are the median projections from the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters outlook released on November 16, 2020. The Baseline expected path of oil prices are from the U.S. Energy Information Administration's Short-Term Economic Outlook released on November 10, 2020.

After contracting at a record annualized pace of -31.4% in the second quarter of 2020, U.S. GDP growth rebounded strongly in the third quarter with a record annualized growth rate of 33.1%. Despite this strong showing, GDP currently remains 3.5% *below* its pre-COVID recession level from 2019:Q4. Third quarter growth was fueled by robust consumer spending that largely reflected a reversal of the COVID-19 stay-at-home orders earlier in the year. Consumer

spending on residential housing and business spending on new equipment and machinery also rebounded strongly in Q3. The Baseline projection is more optimistic than in last quarter's report, with annualized U.S. GDP growth now expected to exceed 3% in each of the next 5 quarters.

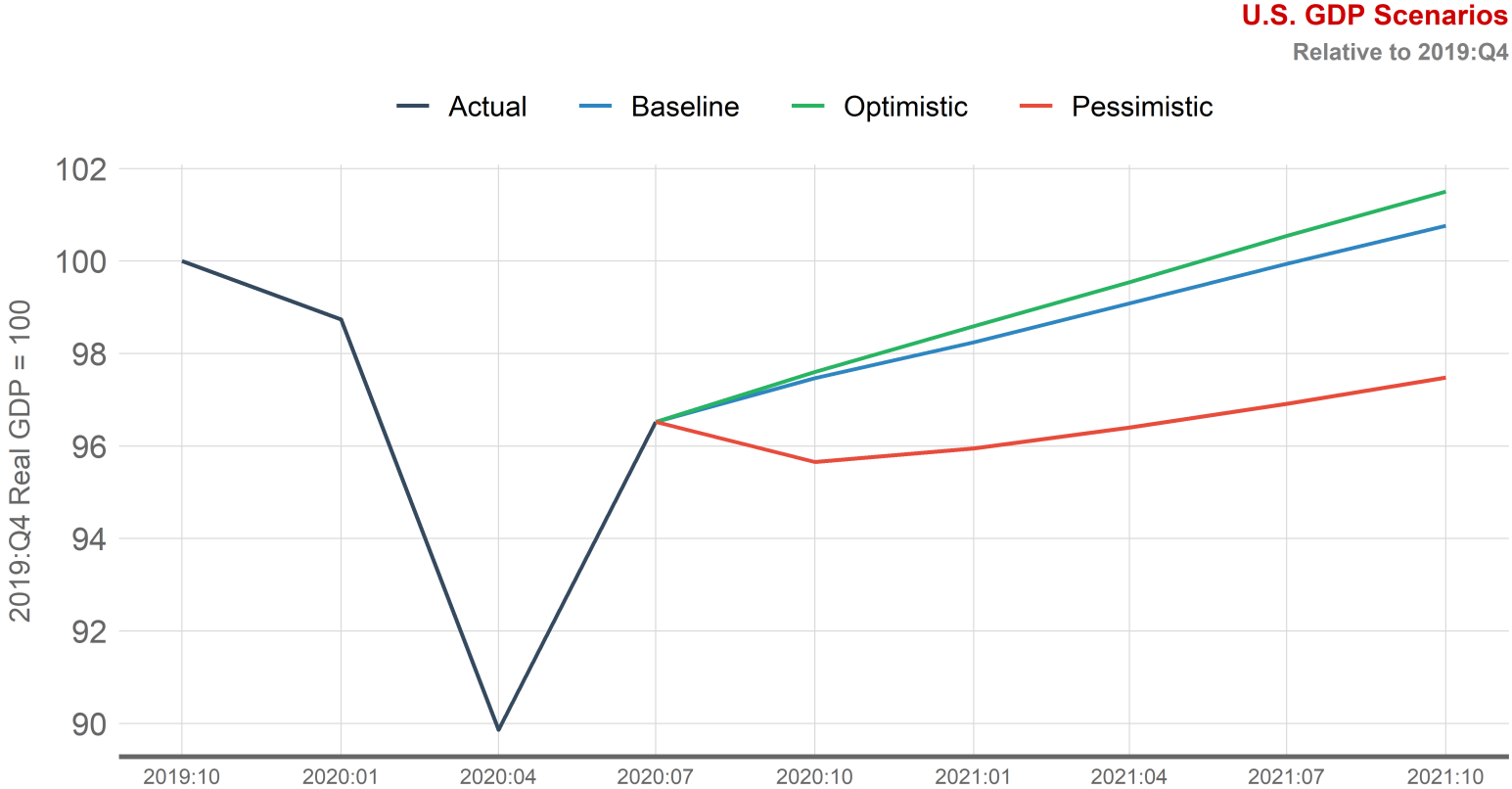
The unemployment rate, which averaged above 13% in the second quarter, declined more than expected in Q3 and is now below 9%. However, this reduction is not all good news; an estimated 9.97 million people have dropped out of the labor force since April 2020 because of the pandemic, which also has the effect of lowering the unemployment rate (more on this issue later). Oil prices, which ended the second quarter averaging less than \$30 per barrel, rebounded some in Q3 because of adjustments on the supply side of the market. Demand for oil remains relatively weak by historical standards. The U.S. Energy Information Administration's latest projections continue to have oil prices increasing to the mid-\$40s by the end of 2021. Prior to the pandemic, oil prices were projected to be in the range of \$60 a barrel throughout 2020 and into 2021. The Baseline scenario assumes the national COVID-19 recession is over. I would assign a 65% probability to the Baseline forecast.

The Optimistic and Pessimistic scenarios, which I would assign a 10% and 25% probability respectively, vary the severity and recovery time for oil prices, unemployment, and GDP growth. The Optimistic scenario assumes that U.S. GDP growth and oil prices will be higher than the Baseline projection, while the Pessimistic scenario assumes stagnant oil prices and a short economic contraction in 2020:Q4. This is a "worst-case" scenario if additional stay-at-home orders are required on a widespread basis because of growing COVID-19 cases. Figure 1 plots the three scenarios to make these differences more concrete.

Given the higher than expected growth in the national economy between Q2 and Q3, the current Baseline projection now shows the national economy fully recovering by the third quarter of 2021. Recovery in this context means that we return to the 2019:Q4 level of GDP. Figure 1 on the next page shows U.S. GDP under the three scenarios considered. The chart is indexed so that each scenario begins relative to 2019:Q4 and is assigned a base value of 100.

The current Baseline scenario leaves the economy at 99.94 at the end of 2021, or 0.06% *below* where we were in 2019:Q4. Under the Pessimistic scenario, which assumes a short economic contraction in the last quarter of 2020, U.S. GDP would be 2.5% below 2019:Q4 levels at the end of 2021. Under either the Baseline or Pessimistic scenarios, the economic recovery is now expected to occur 6 to 9 months (or 2 to 3 quarters) *faster* than the pace projected in the Louisiana Economic Activity Forecast (LEAF) 2020:Q3 report.

Figure 1: U.S. Economic Recovery Scenarios

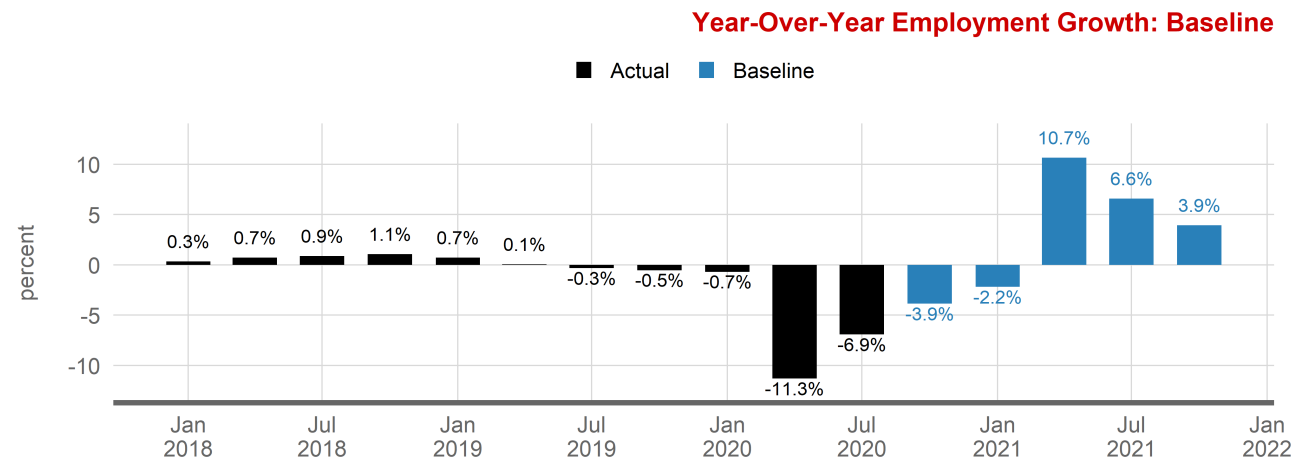
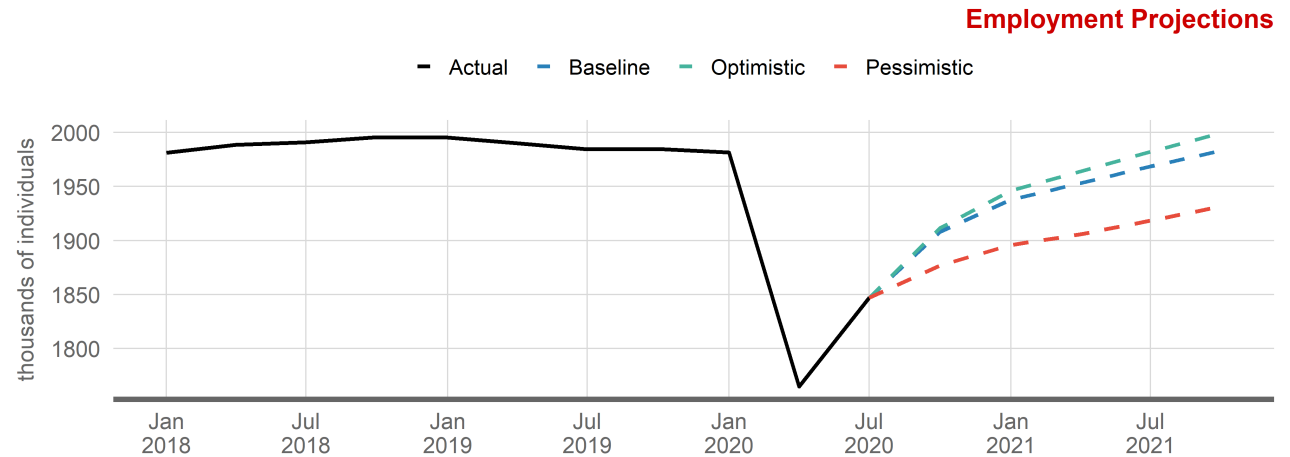


Louisiana Employment Projections

Louisiana gained more than 82,000 payroll jobs between the second and third quarters of 2020. This is the highest quarter-to-quarter increase in this particular data series, which dates back to 1990. Unfortunately, however, the 82,000 jobs gained were only enough to offset 38% of the jobs that were lost in the second quarter. Through the end of October 2020, the number of jobs in Louisiana is 138,000 lower (or 7% less) than the number of jobs the state averaged in the fourth quarter of 2019. Louisiana's employment-population ratio also dropped between August and September, and currently sits at 53.9% (see Figure 8). These are the lowest levels observed in the state since the late 1980s.

Year-over-year job growth is expected to remain negative until the first quarter of 2021. Under the Baseline scenario, the state is projected to fully regain all jobs losses in the first quarter of 2022. Employment in 2020:Q3 was under-forecasted in the previous report by 0.7%.

Figure 2: Louisiana Employment Projections

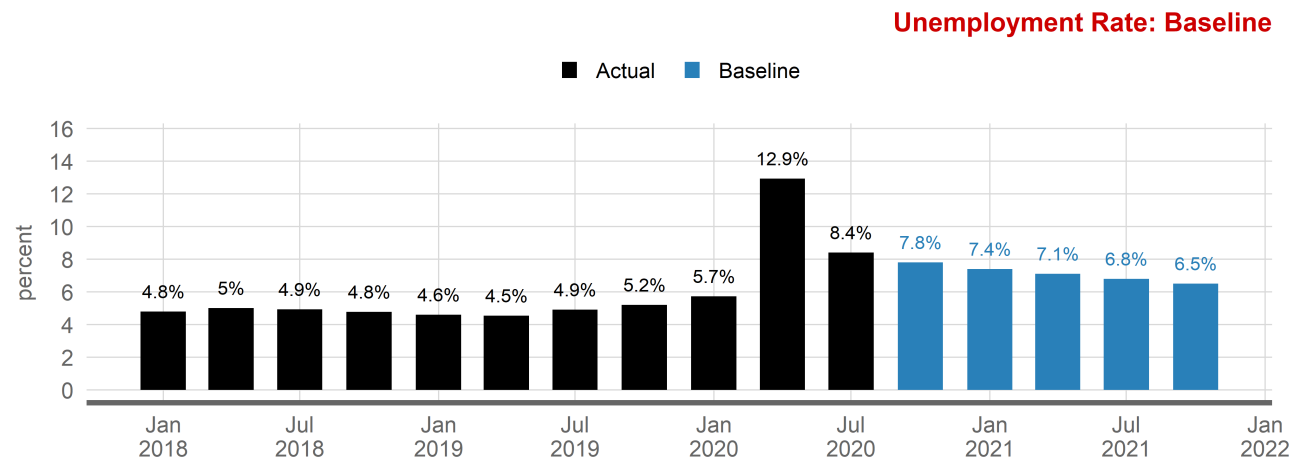
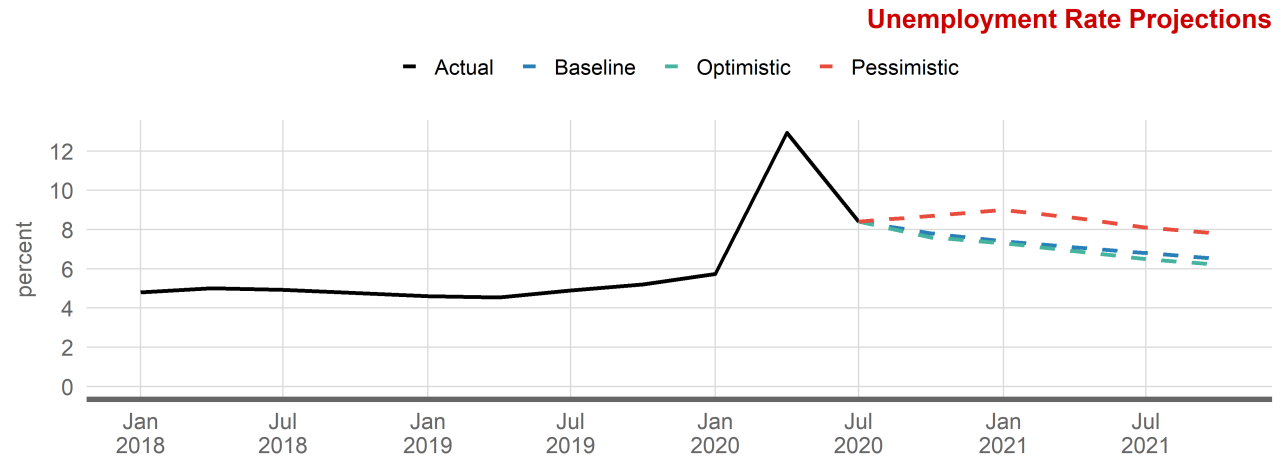


Louisiana Unemployment Rate Projections

Consistent with the national trend, Louisiana’s quarterly unemployment rate dropped from 12.9% in the second quarter to 8.4% in the third quarter. While this reduction is partially due to job growth, it also reflects changes in the state’s labor force, which is the sum of the number of employed and unemployed workers. If someone stops looking for work and drops out of the labor force, then the labor force, number of unemployed workers, and the unemployment rate are all affected. As Figure 9 shows, after taking into account the average number of people in the U.S. who leave the labor force in a given month (about 1.5 million), nearly 10 million *additional* people have dropped out of the labor force since April 2020. This is a primary reason why the unemployment rate in Louisiana and the U.S. fell more than expected between the second and third quarters. This is also a reason why the unemployment rate is a relatively poor economic indicator to track.

The Baseline projection now shows the unemployment rate remaining above 7% through the end of 2020.

Figure 3: Louisiana Unemployment Rate Projections

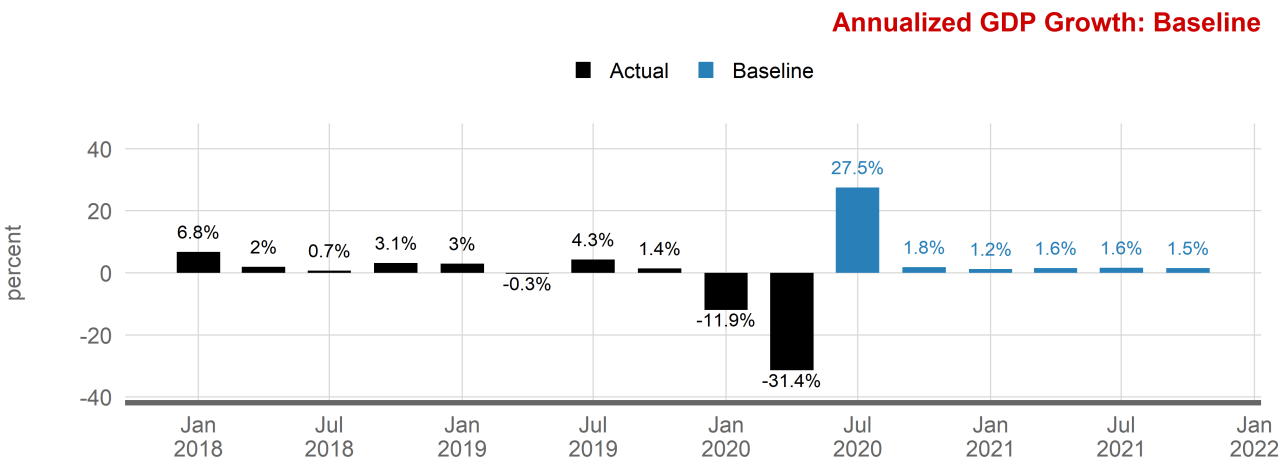
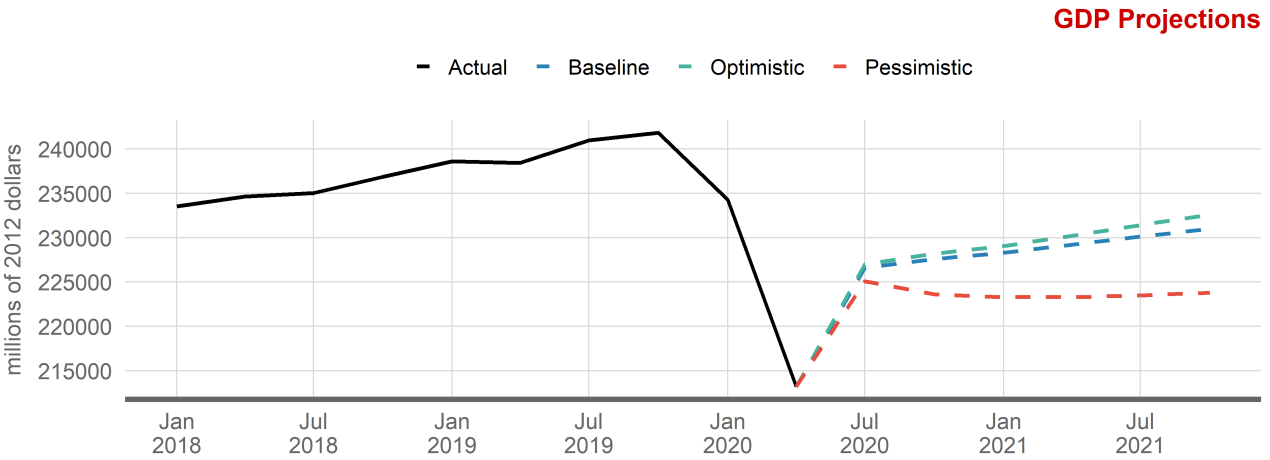


Louisiana GDP Projections

Exactly matching the severity of the national downturn, Louisiana’s inflation-adjusted GDP contracted by 31.4% in the second quarter of 2020. This placed the state in the “middle of the pack,” with Delaware experiencing the smallest contraction at 21.9% and Hawaii experiencing the largest contraction at 42.2%. Second quarter GDP for Louisiana was 2.6% higher than projected in the previous report.

Similar to the nation, the Baseline projection is pointing to a strong Q3 for the state with GDP growth expected to be 27.5%. After the rebound, annualized quarterly growth in the state is expected to average around 1.5% for the next 5 quarters. This is a more favorable outlook than has been projected in prior reports.

Figure 4: Louisiana GDP Projections

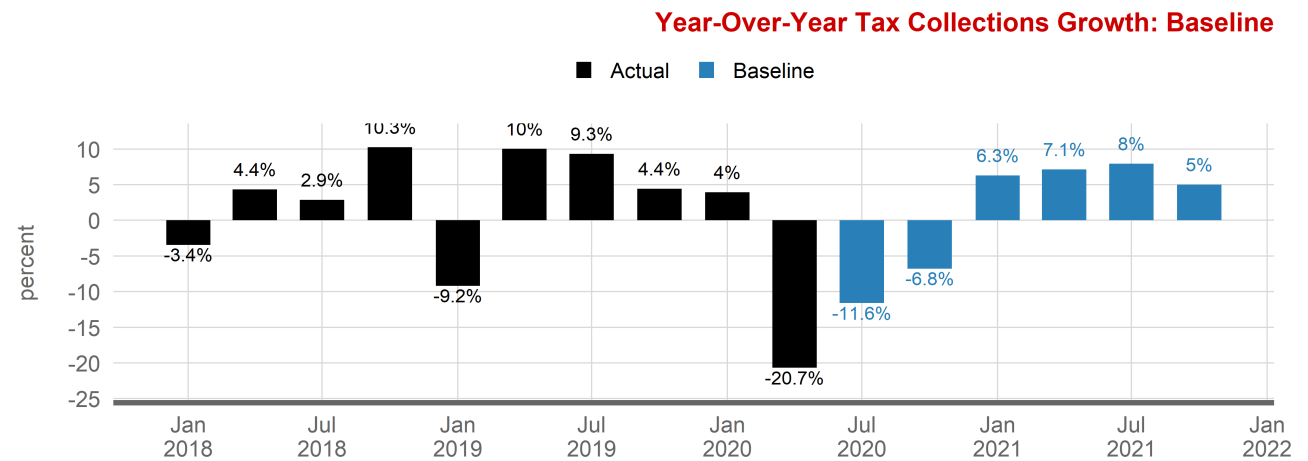
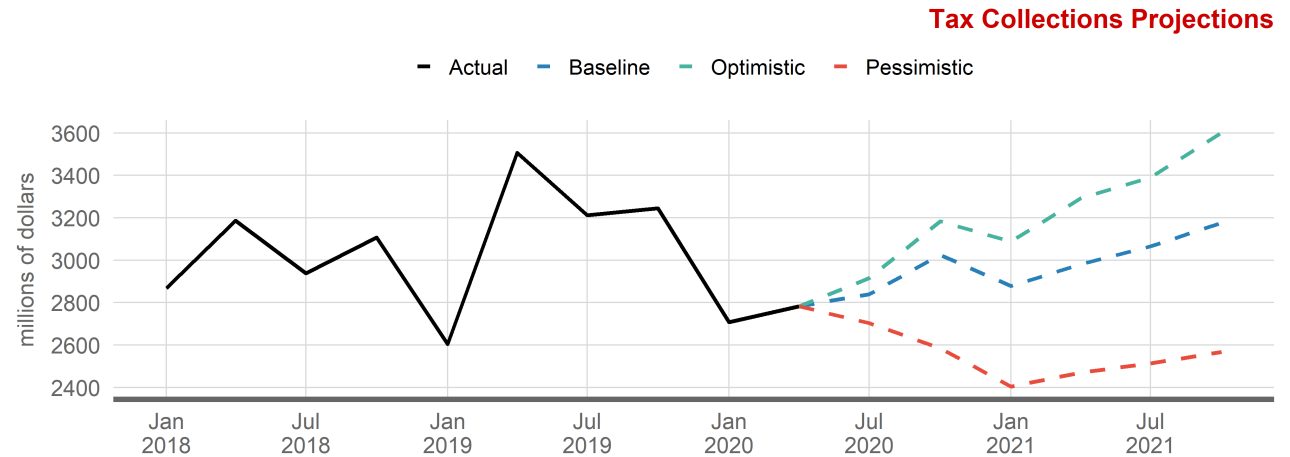


Louisiana Tax Collections Projections

Projections for quarterly tax collections have also improved some from the previous forecast. Following anticipated year-over-year declines in collections in the second half of 2020, tax collections are projected to be in the 5 to 8% range in 2021. Year-over-year quarterly collections in Louisiana contracted by 20% in the second quarter, placing the state at the midpoint of what other states experienced. Idaho experienced the best second quarter tax collections growth at 5%, while year-over-year collections contracted more than 50% in Alaska.

Federal stimulus in the form of the Coronavirus Aid, Relief, and Economic Security (CARES) Act provided direct income and unemployment benefits to households that helped to boost tax collections in the middle and second-half of 2020 above what was anticipated earlier in the year. This is why quarterly tax collections for the second quarter in Louisiana were more than 10% higher than was projected in the previous report. All projections for tax collections in this report assume that no additional federal stimulus will be provided.

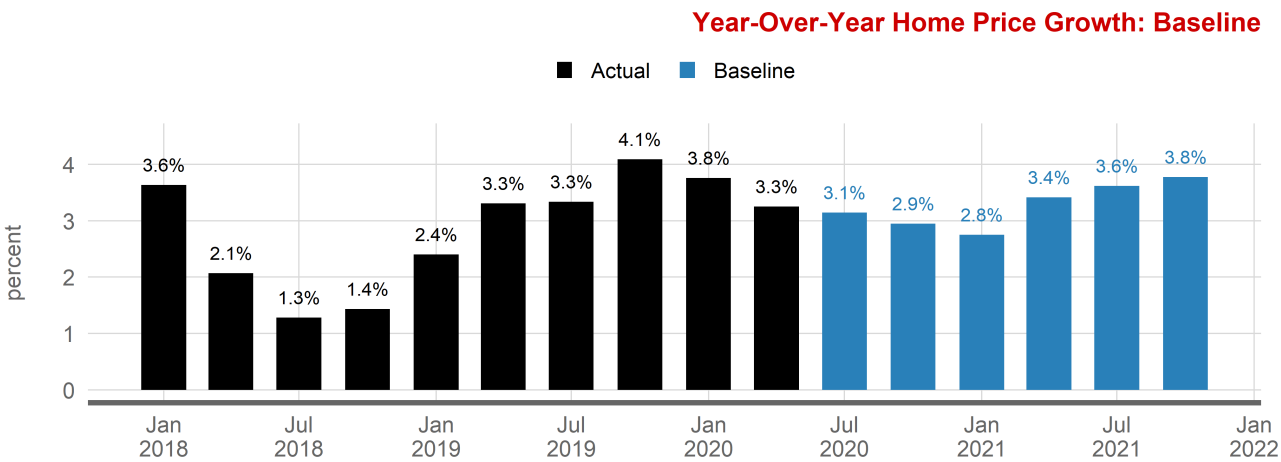
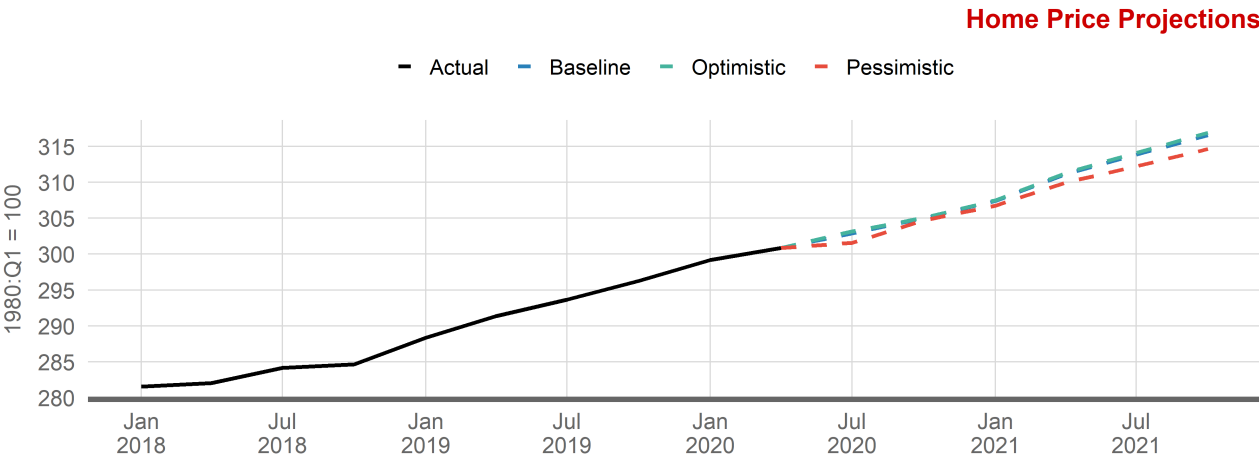
Figure 5: Louisiana Tax Collections Projections



Louisiana Home Price Projections

Figure 6: Louisiana Home Price Projections

Realized and projected home price growth continue to be strong under the Baseline, Pessimistic, and Optimistic scenarios. Year-over-year inventory levels in most of the state’s metropolitan statistical areas are down roughly 40%, which is contributing to the strong price growth. The Baseline scenario is projecting year-over-year home price growth to exceed 3% in the 4 of the 6 next quarters and approach 4% by the end of 2021. Home price growth in the second quarter was 1.9% higher than projected in the previous quarter’s report.



Metro Area Employment Projections

Figure 7: Metro Employment Projections

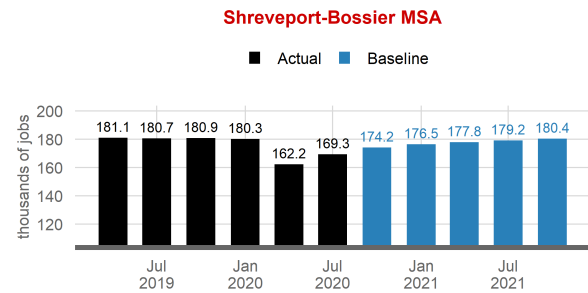
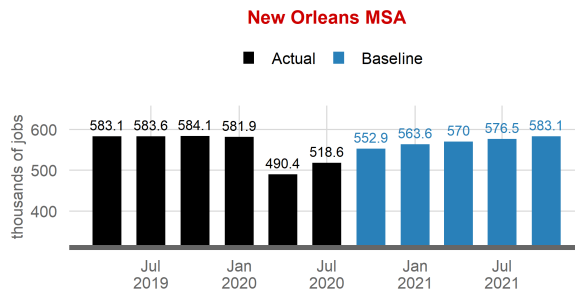
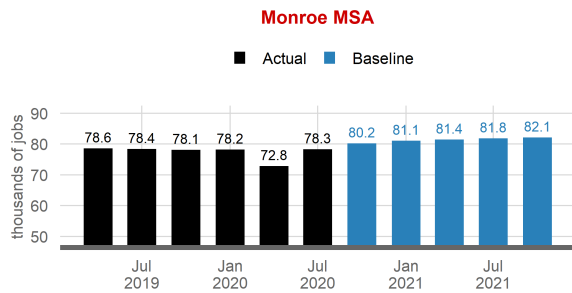
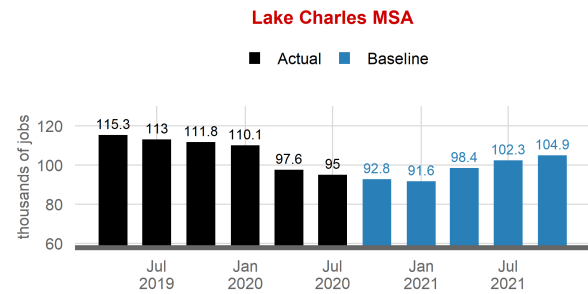
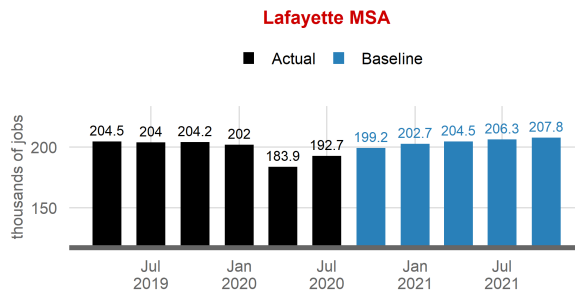
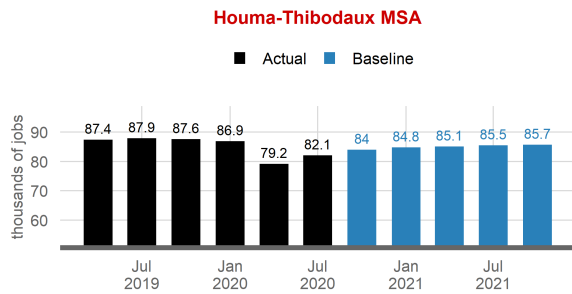
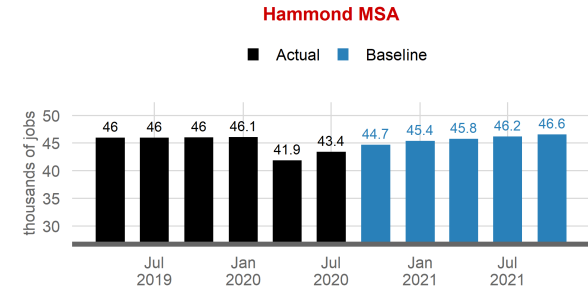
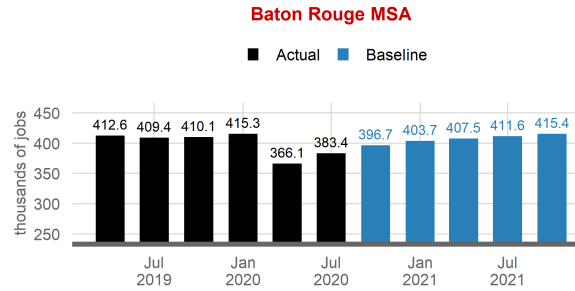
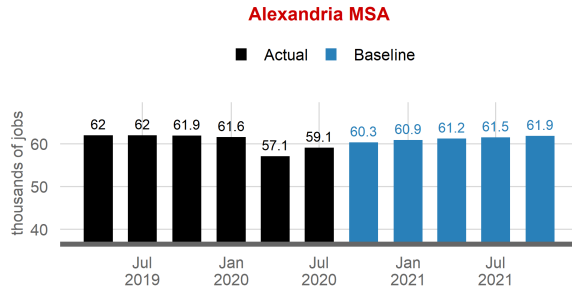
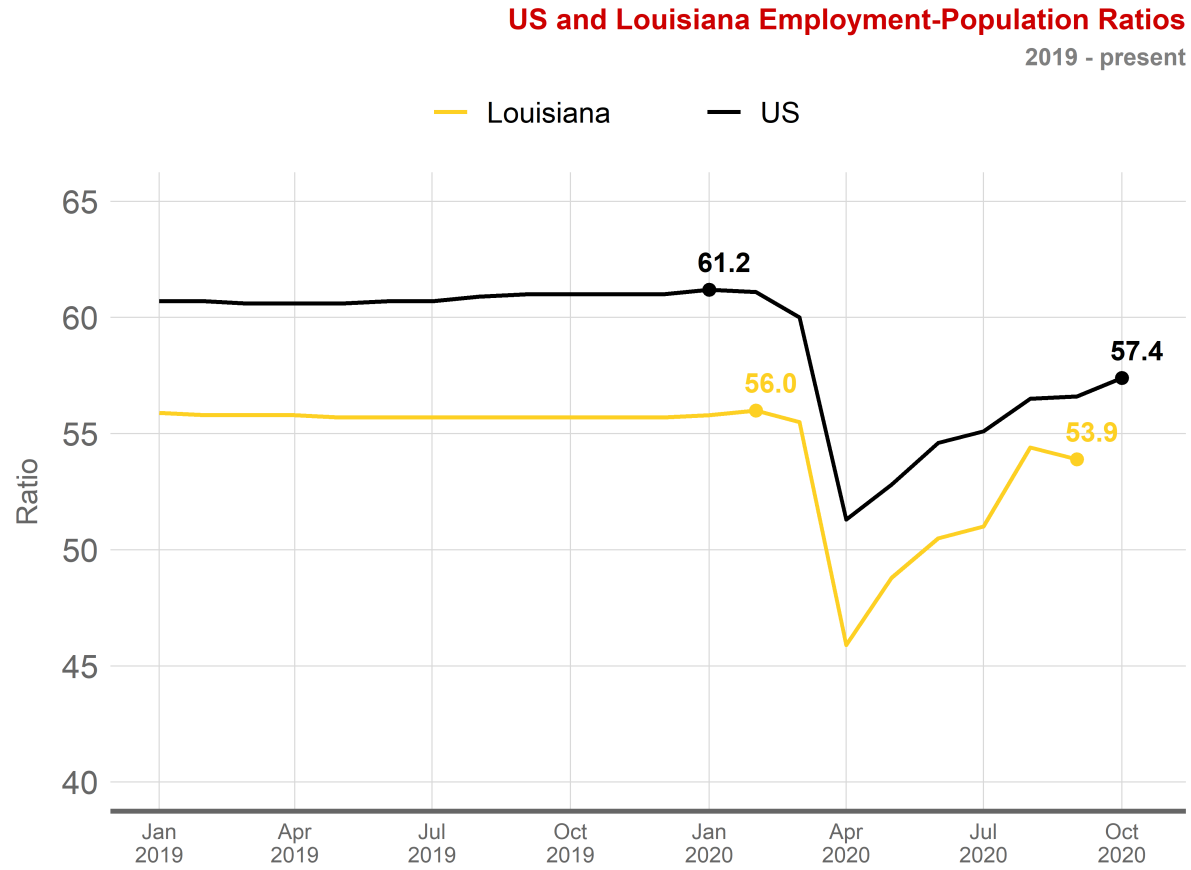
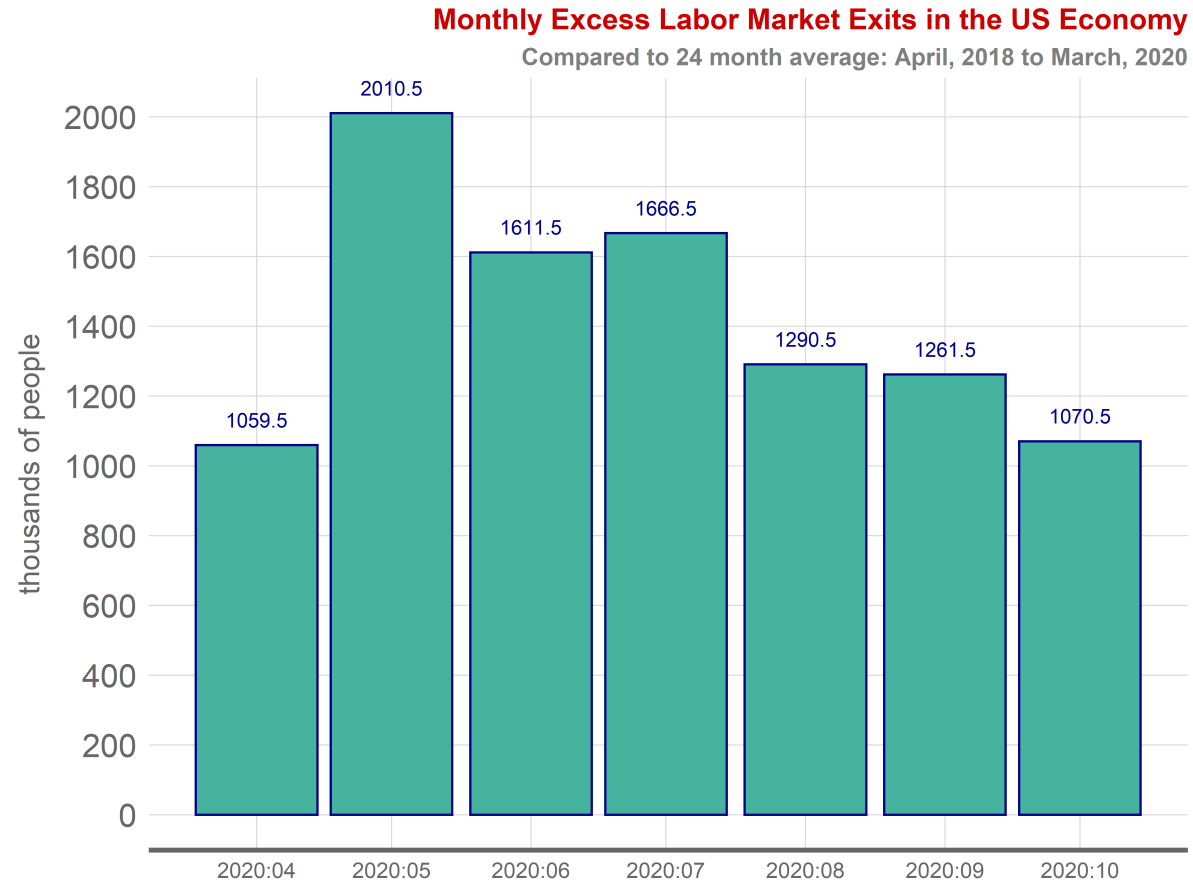


Figure 8: Employment-Population Ratios



Source: Bureau of Labor Statistics.
 Months plotted: Jan 2019 to Oct 2020 (US) and Sep 2020 (Louisiana).

Figure 9: Labor Market Flows in the United States: Unemployed to Out of the Labor Force



Source: Author's calculations using data from the Bureau of Labor Statistics.
Figures are the number of people who transition from unemployment to out of the labor force by month in excess of the 24 month average.

Technical Appendix

The Louisiana Forecast Model (LFM) is based on a Vector Autoregression (VAR) system of equations. VAR models can be used to generate forecasts of the future values of multiple variables simultaneously (called endogenous variables) based on the past behavior of these variables and on the behavior of other variables whose values are taken as given (called exogenous variables). Endogenous variables (or the variables ones wishes to forecast) in the LFM include gross domestic product (or total production), non-farm payroll employment, unemployment rate, home prices, and state tax collections. Exogenous variables in the current version of the LFM include U.S. gross domestic product, U.S. unemployment rate, oil prices, the state's real trade-weighted exchange rate, and the global prices of soybeans and rice. Hence, the forecast or projection of each endogenous variable is based on the historical relationship with its own past values, the past values of every other endogenous variable, and the values of every exogenous variable. The Louisiana Regional Employment Model (LREM) is a nested Vector Autoregression (VAR) of total payroll employment in the state's nine MSAs. In addition to the exogenous variables used in the LFM, the Louisiana Regional Employment Model incorporates statewide employment projections and statewide GDP projections as additional external variables.

The VAR methodology is a widely-accepted approach for generating economic and business forecasts. Academic studies have repeatedly shown that small-scale VAR models perform well in terms of prediction errors relative to alternative forecasting models. VAR systems also model the underlying dynamics of economic relationships in the system without imposing behavioral assumptions about the relationships between the variables or how they evolve over time.

The model is estimated using quarterly data beginning in 1994:Q1. Quarterly average values are used for data series that are available at a weekly or monthly frequency. All variables enter the model in log difference form. Real quarterly Louisiana gross domestic product, which the Bureau of Economic Analysis did not begin reporting until 2005, is backcasted using the estimated relationship between the observable data on state GDP and real U.S. quarterly gross domestic product and real quarterly state personal income.

Future values of the exogenous variables are required to make projections for the endogenous variables. The future growth rate in real U.S. GDP and the future level of the U.S. unemployment rate are the median median projections from the Survey of Professional Forecasters. Future projections for oil prices are from the U.S. Energy Information Administration. Future trade-weighted exchange rates and the prices of soybeans and rice were estimated using an Akaike Information Criterion (AIC) weighted average of univariate autoregressive moving-average (ARMA) models that range from (0,0) to (4,4). The data appendices provide complete documentation for all underlying source data used in the model.

Data Appendix: Endogenous Variables

- **Employment (statewide)**

Total seasonally adjusted non-farm payroll employment. Source: Bureau of Labor Statistics via the Federal Reserve Bank of St. Louis FRED database (mnemonic = LANA). Units: thousands of individuals.

- **Unemployment rate**

Seasonally adjusted unemployment rate. Source: Bureau of Labor Statistics via the Federal Reserve Bank of St. Louis FRED database (mnemonic = LAUR). Units: percent.

- **Home prices**

All-transactions home price index. Source: U.S. Federal Housing Finance Agency via the Federal Reserve Bank of St. Louis FRED database (mnemonic = LASTHPI). Units: 1980:Q1 = 100. Seasonally adjusted prior to estimation.

- **GDP**

Total Real Gross Domestic Product for Louisiana (seasonally adjusted annual rate). Source: U.S. Bureau of Economic Analysis via the Federal Reserve Bank of St. Louis FRED database (mnemonic = LARQGSP). Units: Millions of chained 2012 dollars. Pre-2005 figures were backcasted following the approach described in the Technical Appendix.

- **Tax collections**

Total state tax collections for Louisiana. Source: U.S. Census Bureau via the Federal Reserve Bank of St. Louis FRED database (mnemonic = QTAXTOTALQTAXCAT3LANO). Units: Millions of dollars. Seasonally adjusted prior to estimation.

- **Employment (metro area)**

Total seasonally adjusted non-farm payroll employment. Source: Bureau of Labor Statistics via the Federal Reserve Bank of St. Louis FRED database. Units: thousands of individuals. Alexandria (ALEX722NA), Baton Rouge (BATO922NA), Hammond (SMU2225220000000001SA), Houma (HOUM322NA), Lafayette (Lafa122NA), Lake Charles (LAKE322NA), Monroe (MONR722NA), New Orleans (NEWO322NA), and Shreveport (SHRE322NA).

Data Appendix: Exogenous Variables

- **U.S. GDP**

Total Real Gross Domestic Product for the U.S. (seasonally adjusted annual rate). Source: U.S. Bureau of Economic Analysis via the Federal Reserve Bank of St. Louis FRED database (mnemonic = GDPC1). Units: Millions of chained 2012 dollars. Future values are from the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters.

- **Oil prices**

West Texas intermediate crude oil price. Source: U.S. Energy Information Administration via the Federal Reserve Bank of St. Louis FRED database (mnemonic = DCOILWTICO). Units: dollars per barrel. Future values are from the U.S. Energy Information Administration Short-Term Energy Outlook. Seasonally adjusted prior to estimation.

- **Trade-weighted exchange rate**

Real trade-weighted exchange rate for Louisiana's major trading partners relative to the U.S. dollar. Source: Federal Reserve Bank of Dallas. Units: January 1988 = 100.

- **Price of rice**

Global price of rice. Source: International Monetary Fund via the Federal Reserve Bank of St. Louis FRED database (mnemonic = PRICENPQUSDM). Units: U.S. dollars per metric ton. Seasonally adjusted prior to estimation.

- **Price of soybeans**

Global price of soybeans. Source: International Monetary Fund via the Federal Reserve Bank of St. Louis FRED database (mnemonic = PSOYBUSDM). Units: U.S. dollars per metric ton. Seasonally adjusted prior to estimation.

- **Unemployment rate**

U.S. unemployment rate (seasonally adjusted). Source: U.S. Bureau of Economic Analysis via the Federal Reserve Bank of St. Louis FRED database (mnemonic = UNRATE). Units: Percent. Future values are from the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters.

About the Author

Dr. Gary A. Wagner currently holds the Acadiana Business Economist Endowed Chair at the University of Louisiana at Lafayette. In this role, he monitors the region's economic environment, conducts research and analysis, and engages with external stakeholders on behalf of the Moody College of Business and University.

His research interests range from regional economics to state and local public finance issues, with a particular focus on tax structures and economic development, borrowing costs, and pension systems. He has authored or coauthored more than 60 professional articles and reports, and has delivered more than 300 presentations to public audiences on national and regional economic conditions. Dr. Wagner served on the Governor's Council of Economic Advisors in Arkansas from 2008-2011, and he is a quarterly participant in the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters projecting national economic conditions.

Dr. Wagner holds a Ph.D. in Economics from West Virginia University. His professional research has appeared in many leading economics journals including *The Journal of Law and Economics*, *National Tax Journal*, *Economics and Politics*, *Regional Science and Urban Economics*, *Papers in Regional Science*, *Public Choice*, and *Public Finance Review*. Prior to joining the University of Louisiana at Lafayette, he was Vice-President & Senior Regional Officer for the Federal Reserve Bank of Cleveland.

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