



B.I. Moody III College of Business Administration

# Louisiana Economic Activity Forecast 2021:Q3

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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 outlook for the U.S. economy remains strong despite being recently downgraded by professional forecasters. Over the next year, forecasters expect the U.S. economy to grow at an average rate of 4.95%. As previously projected, U.S. GDP surpassed its pre-pandemic peak for the first time in the second quarter. GDP also exceeds pre-pandemic levels in 15 different states. In contrast to the nation, Louisiana's economic recovery slowed sharply between the first and second quarters. While home prices and GDP grew, the state gained zero (net) jobs between Q1 and Q2. Louisiana now ranks in the bottom five states in terms of the recovery, having regained only 39% of the 285,000 jobs lost in 2020 due to the pandemic. Although the unemployment rate fell from 7.5 to 7.1% between the first and second quarters, the **entire** reduction was the result of people dropping out of the labor force. Relative to the 12-months prior to COVID-19, an estimated 58,000 fewer people in Louisiana are either working or actively looking for work. Based on slowing activity and the downgrading of the national outlook, Louisiana is now projected to gain 29,000 jobs over the next four quarters. This is a 60% reduction from the previous report.

*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:

Third Quarter: August 20, 2021

Fourth Quarter: November 19, 2021

### 58,000

Estimated number of people in Louisiana who are no longer working or looking for work due to the pandemic.

### 29,000

Projected statewide job growth over the next 4 quarters.

### 46th

Ranking Louisiana's economic recovery relative to other states (based on GDP).



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## Introduction

The U.S. economy grew at a robust 6.5% annualized rate in the second quarter of 2021. This was the second consecutive quarter that growth exceeded 6%. While growth is expected to remain above historical normal rates for the next four quarters, the national outlook has softened since the last report. 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 third quarter of 2022. Given the downgraded outlook for the national economy, the Baseline projections for Louisiana's key indicators are also being revised down across the board. The current outlook is for the state to gain 29,000 jobs over the next four quarters, which is a 60% reduction from the 71,000 projected in last quarter's 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. 2021:Q2 values for the Baseline, Optimistic, and Pessimistic scenarios are identical because this quarter has already occurred. This row is shaded gray. Values for 2021:Q3 to 2022:Q3 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
2021:Q2	6.50	6.50	6.50	5.93	5.93	5.93	66.19	66.19	66.19
2021:Q3	6.81	7.83	4.61	5.30	5.20	5.50	70.51	70.51	70.51
2021:Q4	5.17	5.94	3.50	4.88	4.70	5.30	68.45	68.45	68.45
2022:Q1	4.46	5.13	3.02	4.60	4.50	5.10	65.13	65.13	65.13
2022:Q2	3.40	3.91	2.30	4.40	4.30	5.00	63.82	63.82	63.82
2022:Q3	2.68	3.08	1.81	4.18	4.10	4.80	61.32	61.32	61.32

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 August 13, 2021. The Baseline expected path of oil prices is from the U.S. Energy Information Administration's Short-Term Economic Outlook released on August 10, 2021.

Despite federal pandemic-related assistance payments to households declining in the second quarter, consumer spending remained strong and was responsible for the robust growth we observed. Purchases of food and beverages for off-premises consumption, and spending on transportation and recreation services (including gambling) were all well-above historical norms. Nationally, home sales and investment in new residential housing declined modestly in the second quarter, potentially signalling a slowdown in the (otherwise) hot housing market.

The rebalancing of business spending continued in the second quarter, with investments in equipment growing at a double-digit pace for the fourth consecutive quarter. Business expenditures on non-residential structures declined for the sixth time since the start of the pandemic, shrinking at an annualized rate of 7%. Investment in non-residential structures is now at its lowest point since 2011. Spending by state and local governments provided a small boost to Q2 growth, but this was more than offset by reductions in non-defense federal expenditures related to the administration of the Paycheck Protection Program (PPP).

Consumer prices, as measured by the personal consumption expenditures (PCE) index, increased 6.4% in Q2, after increasing 3.8% in Q1. This is well above the Federal Reserve's target inflation rate of 2%. The "core" PCE price index, which excludes food and energy, increased by 6.1% in the second quarter due to price increases in a broad range of goods and services.

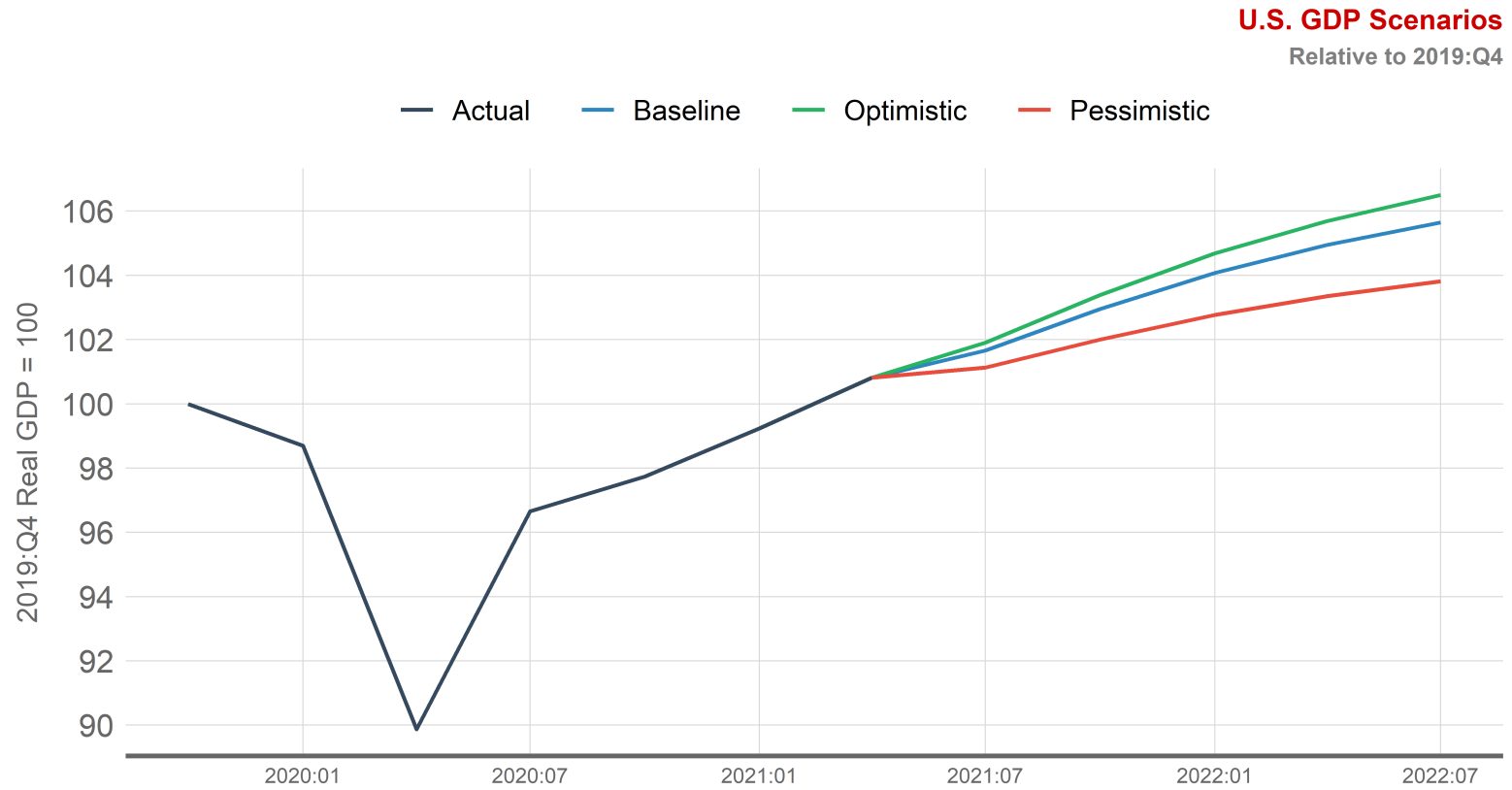
After gaining 736,000 jobs in the first quarter, the U.S. economy rebounded strongly in the second quarter with job gains of nearly 1.7 million (an annualized growth rate of 4.8%). This largely reflected the liberalization of pandemic-related mitigation measures. In contrast, job growth in Louisiana completely stalled in the second quarter. The state averaged 1.835 million jobs in the first quarter and gained zero (net) jobs in the second quarter. Presently, Louisiana has roughly 8% (or 158,000) fewer jobs than the state averaged in 2019.

The Optimistic and Pessimistic scenarios, which I would assign a 15% and 35% probability respectively, vary the severity and recovery time for oil prices, unemployment, and U.S. GDP growth. The Optimistic scenario assumes that U.S. GDP growth will be higher than the Baseline projection, while the Pessimistic scenario assumes that GDP growth will be slower than projected. Since the U.S. Energy Information Administration's short-term outlook for oil prices has stabilized in the \$60 per barrel range in the past six months, the Baseline, Optimistic, and Pessimistic scenarios for Louisiana all assume the same future path for oil prices. I would assign a 50% probability to the Baseline forecast. The largest downside risk is the re-introduction of COVID-19 mitigation measures associated with the rapid spread of the delta variant (or future variants).

Consistent with projections from last quarter's LEAF report, the U.S. economy ended the second quarter with real GDP exceeding its pre-pandemic level (from 2019:Q4) by 0.8%. In the states, GDP is now above pre-pandemic levels in 15 different states. Louisiana's GDP remains 3.5% below pre-pandemic levels, 46th worst in the nation.

Over the next four quarters, the Baseline scenario projects U.S. GDP to grow at an annual pace of 4.95%. 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.

Figure 1: U.S. Economic Recovery Scenarios

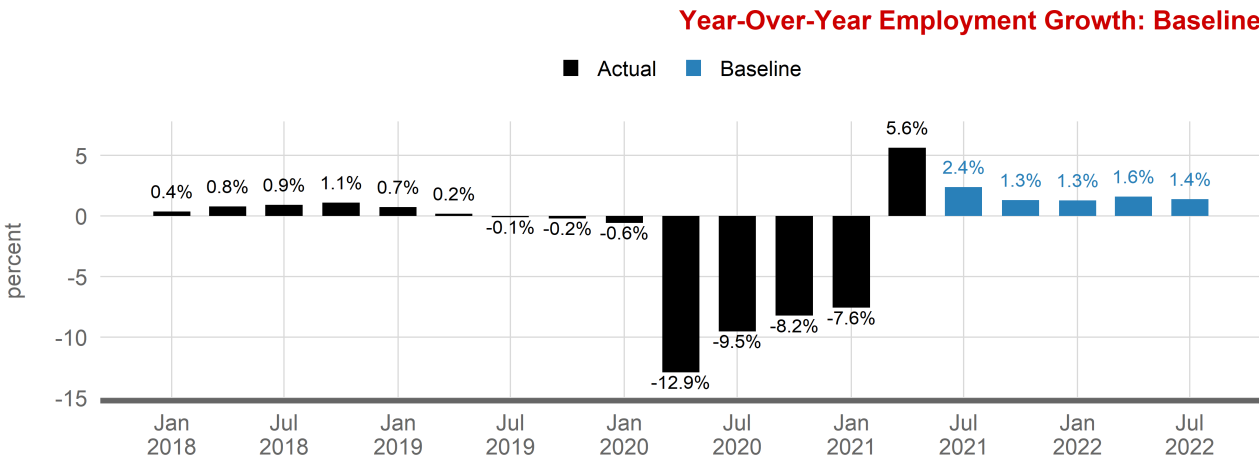
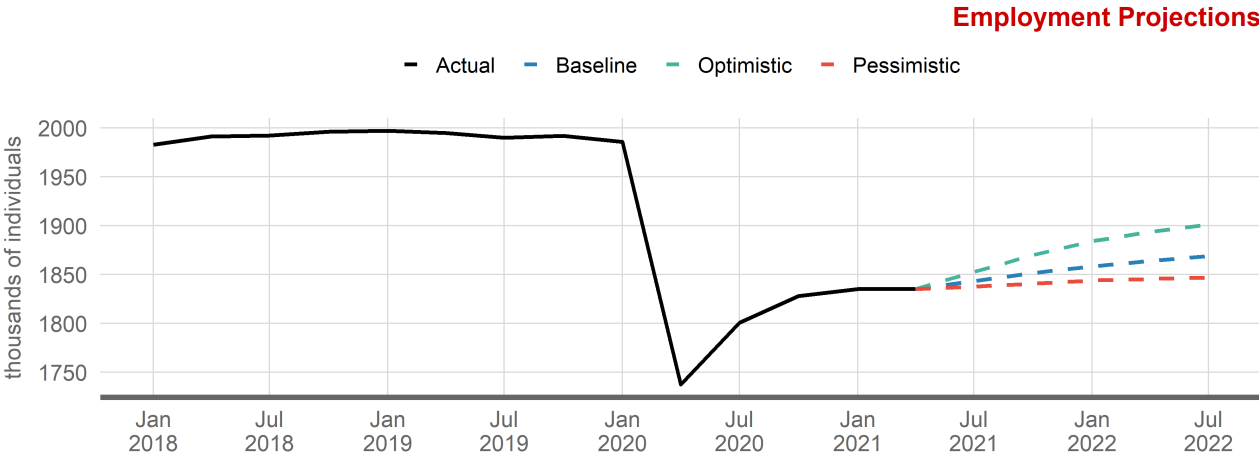


# Louisiana Employment Projections

Figure 2: Louisiana Employment Projections

Despite gaining zero (net) jobs between the first and second quarter of 2021, year-over-year job growth from 2020:Q2 to 2021:Q1 increased at a rate of 5.6%. Job growth is now expected to slow in the coming year relative to previous projections. Current projections point to job gains of 29,000 over the next four quarters, which is a 60% reduction from the 71,000 projected in the previous report. The state lost 248,000 jobs between the first and second quarters of 2020. To date, Louisiana has regained 97,500 of those jobs (or 39% of the total lost). Five states have regained all of their pandemic-related job losses. Louisiana currently ranks 45th in the nation in terms of job recovery.

The employment forecast error from the previous report was 1.36%. See Table 2 for forecast errors from the previous report.



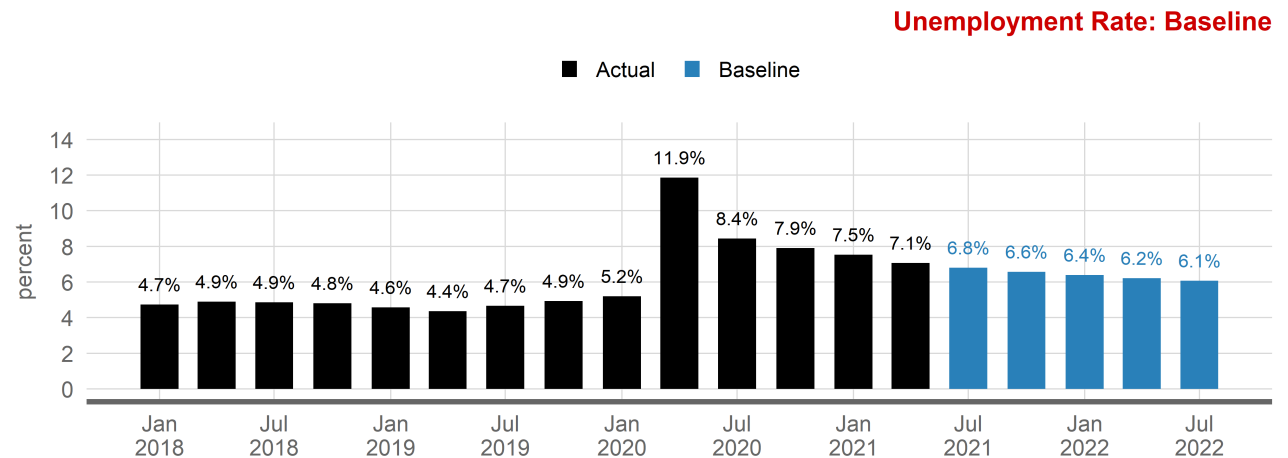
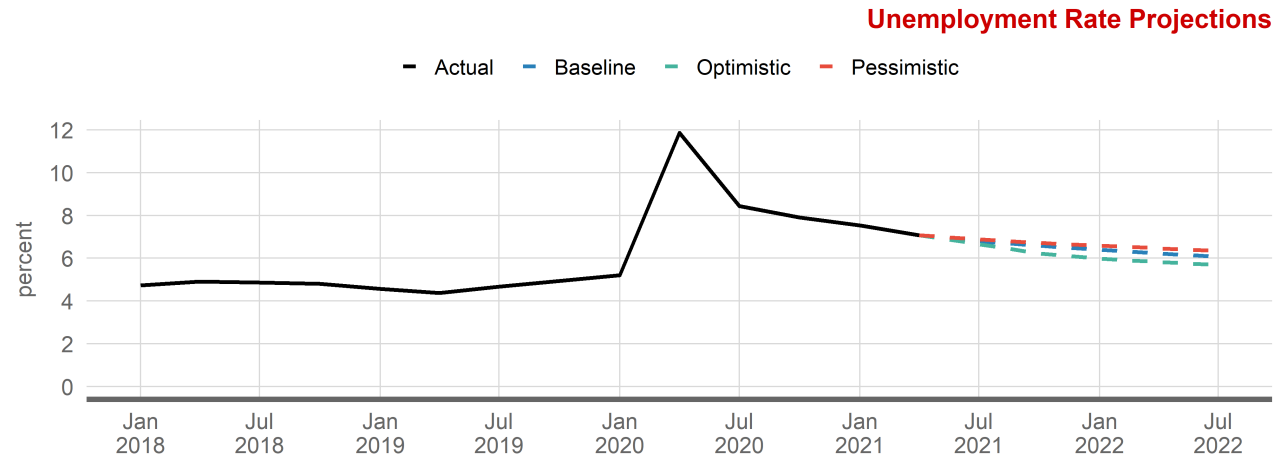


## Louisiana Unemployment Rate Projections

Louisiana’s unemployment rate declined from an average of 7.5% in the first quarter to 7.1% in the second quarter. Given that zero (net) jobs were gained over this period using payroll or household employment measures, the **entire** reduction in the unemployment rate was due to people exiting the labor force. The unemployment rate is projected to decline more slowly in the coming year as there are few signs (to date) of a recovery in the size of the state’s labor force (the sum of people who are employed and those looking for work). Figure 8 shows the percentage reduction in each metro area’s labor force relative to the 12-month pre-COVID period. As of June 2021 (the most recent data), an estimated 58,000 people have dropped out of the labor force. Excluding Lake Charles, 43,000 have dropped out of the labor force, with roughly half of those individuals living in the New Orleans MSA.

The Baseline projection shows the unemployment rate falling to 6.6% by the end of 2021. The unemployment rate forecast error from the previous report was 2.82%. See Table 2 for forecast errors from the previous report.

Figure 3: Louisiana Unemployment Rate Projections

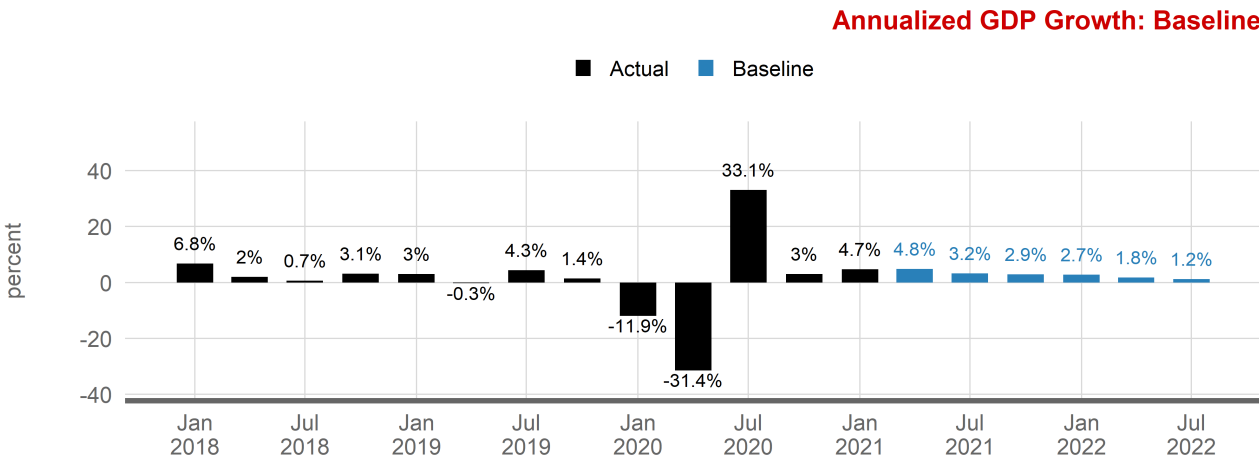
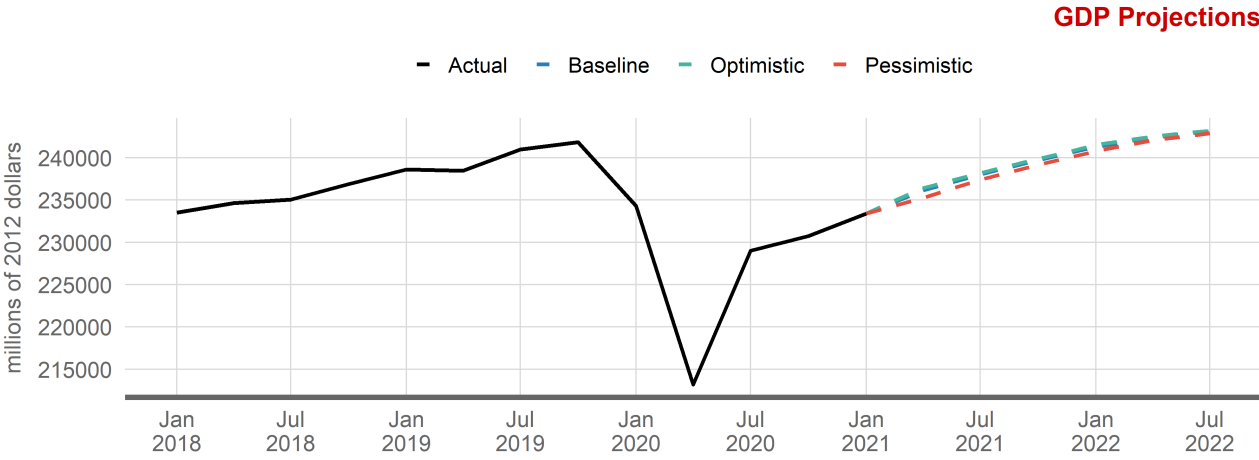


# Louisiana GDP Projections

Louisiana’s GDP expanded at an annualized rate of 4.7% in the first quarter of 2021. Despite a downgraded outlook, GDP is expected to grow at 4.8% in Q2 and 3.2% in Q3. Over the next four quarters, the Baseline scenario points to annual growth at 3.4%. As noted earlier, (real) GDP in Louisiana remains 3.5% below pre-pandemic levels, which ranks the state in the bottom five in terms of its economic recovery.

At the current pace of recovery, statewide GDP is expected to surpass pre-COVID-19 levels (2019:Q4) in the second half of 2022. The GDP forecast error from the previous report was 0.05%. See Table 2 for forecast errors from the previous report.

Figure 4: Louisiana GDP Projections

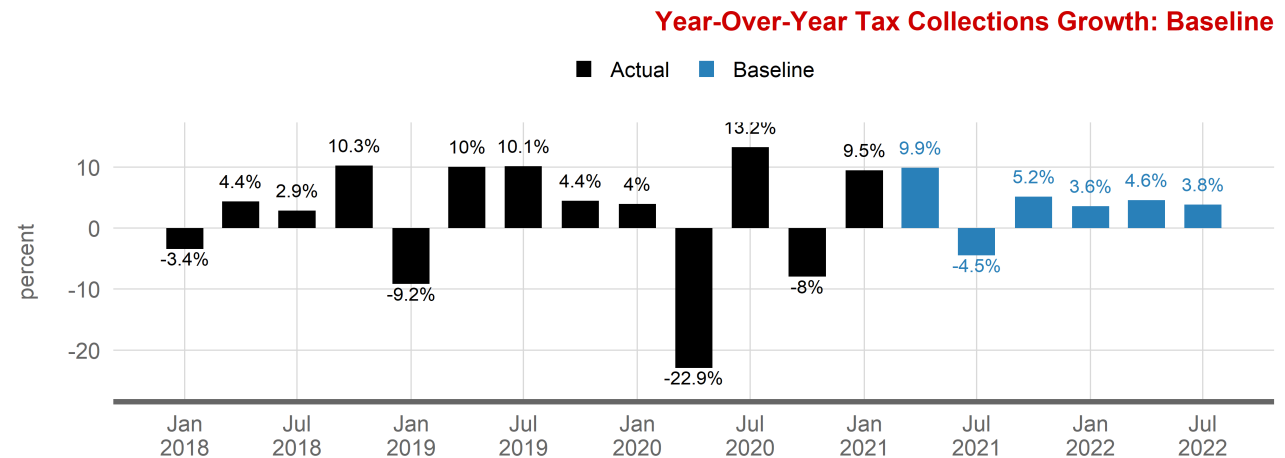
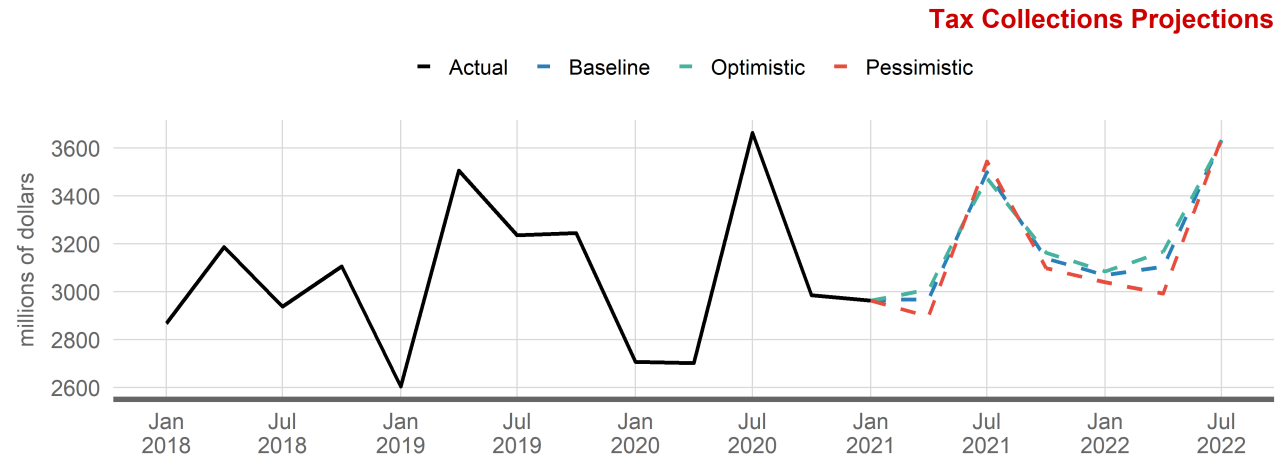


# Louisiana Tax Collections Projections

Figure 5: Louisiana Tax Collections Projections

Quarterly tax collections in the first quarter of 2021 were 9.5% higher than collections in the first quarter of 2020. With the exception of the third quarter of this year, year-over-year projected tax collections are expected to remain positive in the coming year. With the downgraded national outlook, weaker job outlook for the state, and pandemic-related assistance on the decline, year-over-year quarterly collections are projected to be in the 5% range in the coming year. The projected year-over-year decline in 2021:Q3 is the result of delayed tax payments and federal stimulus that artificially inflated collections figures in 2020:Q3.

The tax collections forecast error from the previous report was 0.56%. See Table 2 for forecast errors from the previous report.

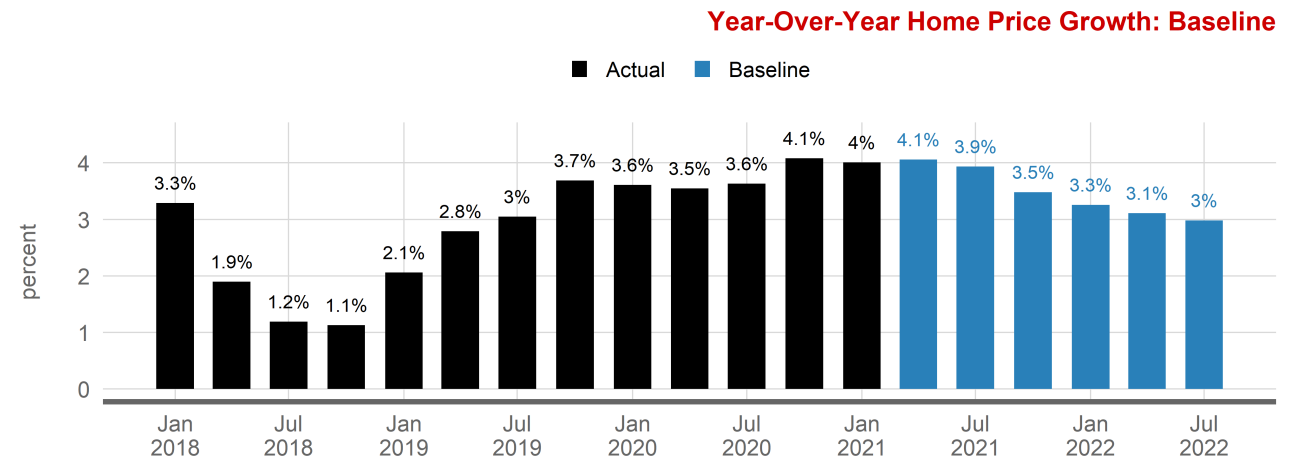
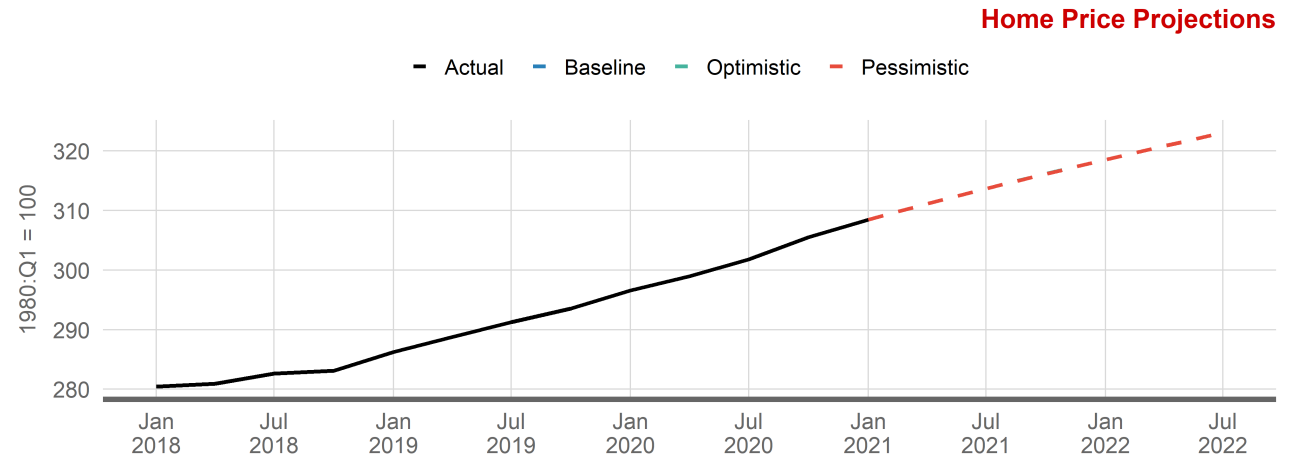


## Louisiana Home Price Projections

Year-over-year home price growth in Louisiana was 4.0% in the second quarter. This was the first time since 2007 that growth exceeded 4% for two consecutive quarters. The current projections have home prices slowing to 3% annual growth by the middle of 2022. However, several recent threats have emerged that could weaken the market sooner. The number of building permits issued is well above average in every metro area except Shreveport, which will ease some of the inventory constraints. In addition, survey data from the Federal Reserve Bank of New York show that expectations of home price growth now exceeds 7% (a recent record). This will likely discourage some buyers and ease demand-side pressure on the market. Year-over-year median list prices also slowed in five of the state's nine metro areas in the second quarter.

The Baseline scenario is projecting year-over-year home price growth to now exceed 3% for the next six quarters. The previous LEAF report's forecast error for home prices was 0.06%. See Table 2 for forecast errors from the previous report.

Figure 6: Louisiana Home Price Projections



# Metro Area Employment Projections

Figure 7: Metro Employment Projections

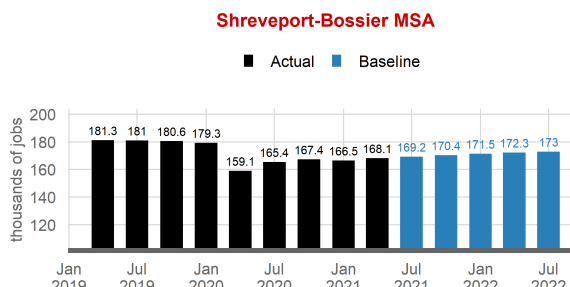
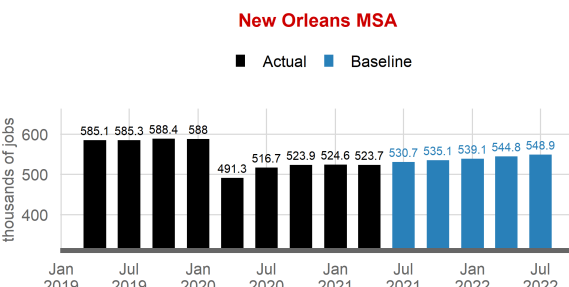
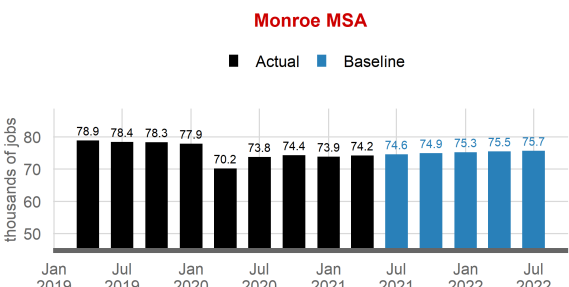
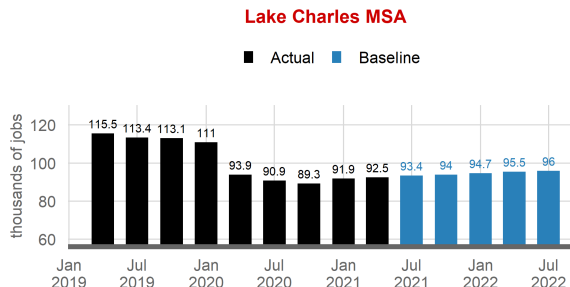
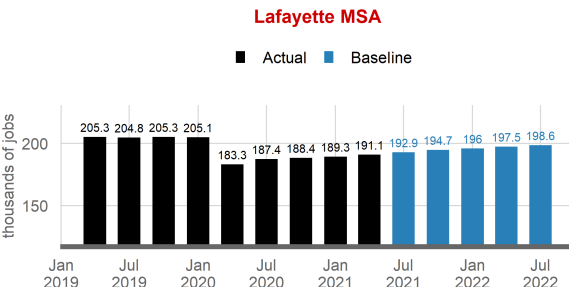
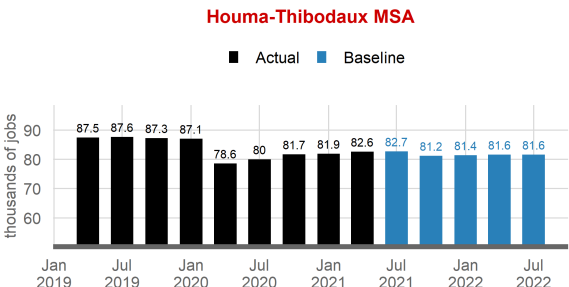
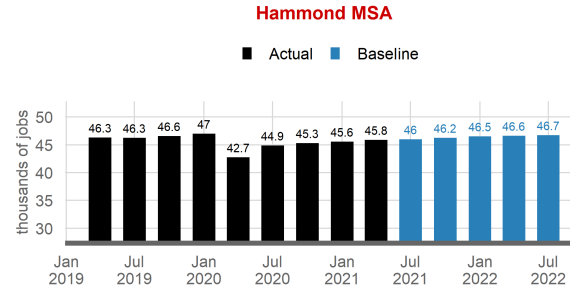
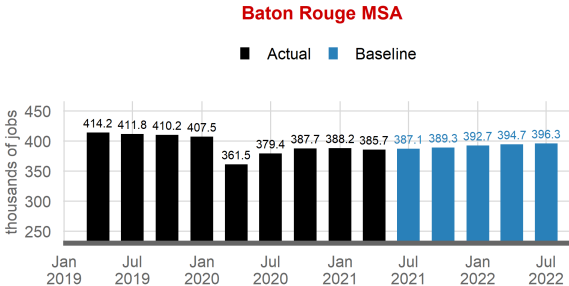
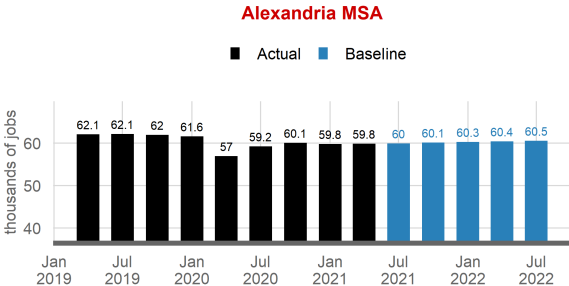


Figure 8: Labor Force Recovery in Louisiana's Metro Areas

**Metro Area Labor Force Size: Relative to 12 Month Pre-Covid Average**  
As of June, 2021

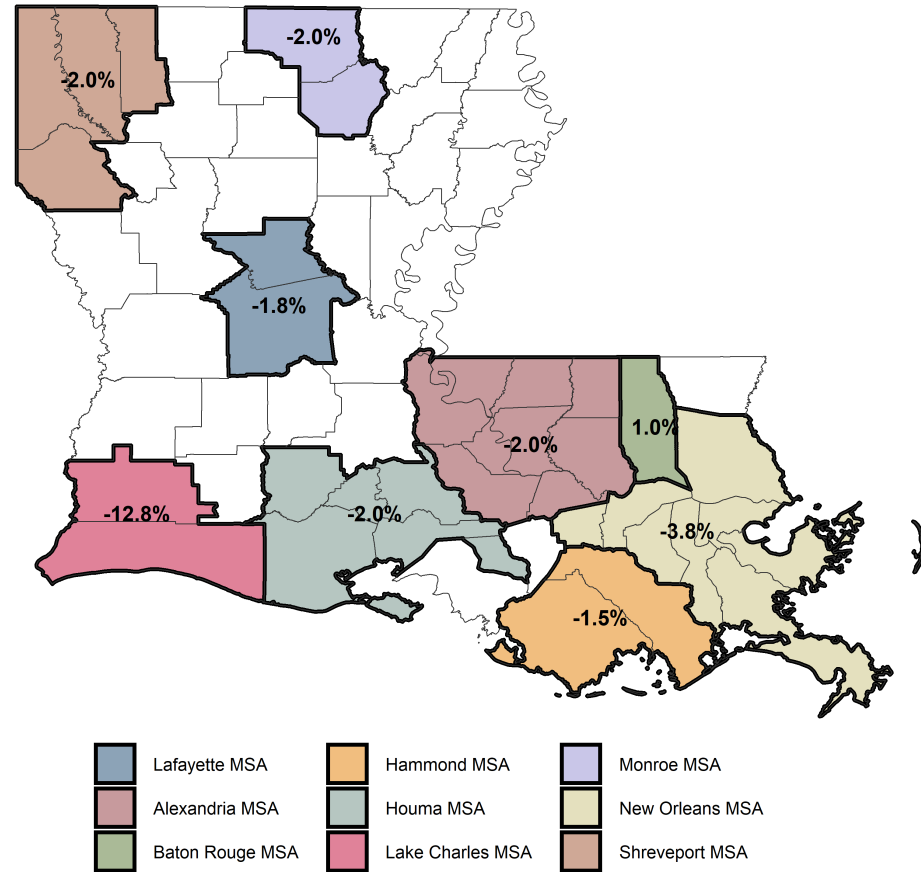


Table 2: One-Quarter Ahead Projection Errors: 2021:Q1 Projections for 2021:Q2

<b>Variable</b>	<b>Baseline Projection</b>	<b>Actual Value</b>	<b>Absolute % Error</b>
employment (statewide)	1859.90	1835.00	1.36
unemployment rate	7.30	7.10	2.82
GDP	233506.10	233383.30	0.05
quarterly tax collections	2980.50	2964.00	0.56
FHFA home price index	308.70	308.50	0.06
Alexandria MSA employment	60.10	59.80	0.50
Baton Rouge MSA employment	392.30	385.70	1.71
Hammond MSA employment	46.10	45.80	0.66
Houma-Thibodaux MSA employment	80.70	82.60	2.30
Lafayette MSA employment	191.20	191.10	0.05
Lake Charles MSA employment	95.50	92.50	3.24
Monroe MSA employment	74.60	74.20	0.54
New Orleans MSA employment	533.30	523.70	1.83
Shreveport-Bossier MSA employment	168.40	168.10	0.18

## 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 (SMU22252200000000001SA), 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 = PRICENQUSD). 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*, *Journal of Economic Behavior and Organization*, *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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