



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

Louisiana Economic Activity Forecast 2021:Q2

Gary A. Wagner, Ph.D.
Acadiana Business Economist Endowed Chair
Department of Economics & Finance

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

Despite job gains that were slower-than-expected in the first quarter, the outlook for the national economy continues to strengthen. Over the next four quarters, professional forecasters now expect the U.S. economy to grow at a pace not seen since the early 1980s. As a result of this improved outlook, economic conditions in Louisiana are also more favorable now than at any time since the COVID-19 pandemic began. The state is projected to gain almost 71,000 jobs in the next four quarters. Apart from Alexandria and Houma-Thibodaux, job growth is projected to exceed 3% in each of the state's metro areas over the coming year. The outlook for tax collections and home prices have also strengthened. Over the next year, quarterly tax collections are generally expected to grow at an annualized rate exceeding 10%. Home prices grew at an annualized rate of 4% in the fourth quarter of 2020, and are expected to remain above 3% for the forecast horizon.

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:

Second Quarter: May 21, 2021

Third Quarter: August 20, 2021

Fourth Quarter: November 19, 2021

4.9%

Projected growth in first quarter Louisiana GDP.

71,000

Projected statewide job growth over the next 4 quarters.

45%

Total statewide share of COVID-related job losses that have been recovered.

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Introduction

The U.S. economy grew faster than expected in the first quarter of 2021, coming in at a brisk 6.4% annualized rate. This is roughly three times faster than our pre-pandemic average over the past decade. Growth is expected to remain above 7% for each of the next two quarters before slowing to around 4%. 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 second quarter of 2022. While job growth in Louisiana was slower in the first quarter of 2021 than previously projected, the highly favorable outlook for the national economy is expected to lead to faster growth in the state over the next four quarters. Compared to a Baseline projection of gaining 46,000 jobs over the next year in the previous report, this updated report projects the state to gain almost 71,000 jobs in the coming year.

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:Q1 values for the Baseline, Optimistic, and Pessimistic scenarios are identical because this quarter has already occurred. This row is shaded gray. Values for 2021:Q2 to 2022:Q2 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:Q1	6.39	6.39	6.39	6.17	6.17	6.17	58.09	58.09	58.09
2021:Q2	7.89	9.20	5.32	5.82	5.60	6.00	61.89	61.89	61.89
2021:Q3	7.50	8.40	4.85	5.25	5.10	5.80	59.19	59.19	59.19
2021:Q4	4.96	6.80	3.64	4.90	4.70	5.60	56.50	56.50	56.50
2022:Q1	4.01	5.40	2.47	4.70	4.50	5.30	58.50	58.50	58.50
2022:Q2	2.63	4.40	1.88	4.50	4.30	5.20	56.50	56.50	56.50

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 May 14, 2021. The Baseline expected path of oil prices is from the U.S. Energy Information Administration's Short-Term Economic Outlook released on May 11, 2021.

Residential housing remained robust both nationally and in Louisiana in the first quarter of this year. Nationally, growth was also fueled by broad increases in manufacturing activity and solid consumer spending on recreation, accommodation, and food services. Much of the consumer spending reflects ongoing efforts to reopen activity. Business expenditures on equipment, which increased at an annualized rate of 68% and 25% in the third and fourth quarters of 2020, respectively, remained robust as it grew at an above-average pace of 17% in the first quarter. Business

expenditures on structures remains weak, which could be the beginning of a more permanent shift away from “brick and mortar” locations toward remote work situations for businesses that are able to do so. Overall, the Baseline outlook for the national economy in the next four quarters is the strongest it has been in the COVID-era.

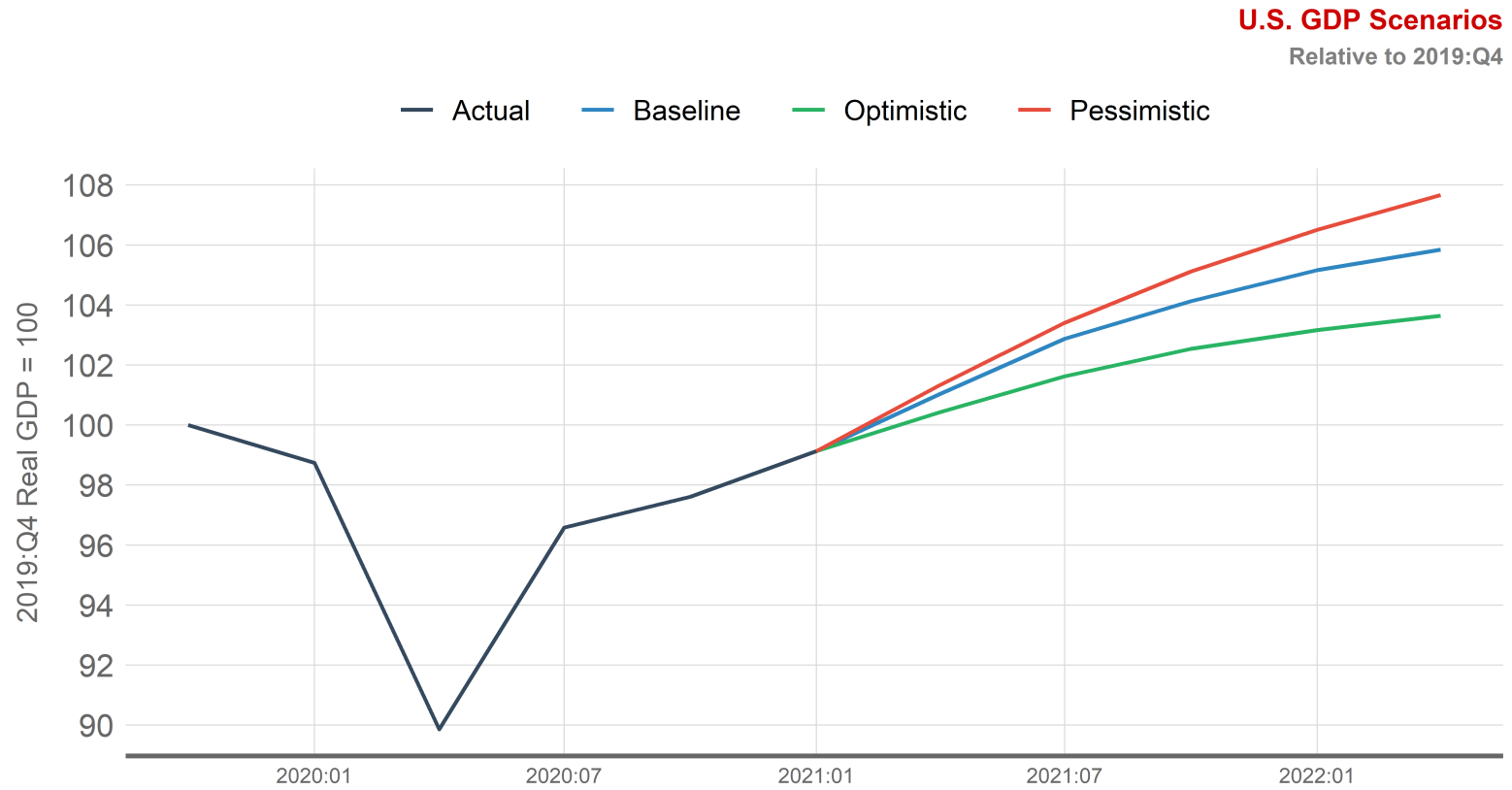
The unemployment rate, which averaged 6.8% in 2020:Q4, fell to an average of 6.2% in the first quarter. The U.S. economy also gained more than 730,000 jobs in Q1, but employment remains roughly 6% below pre-pandemic levels (about 8.5 million jobs). Most sectors in the economy have regained around 80% of the COVID job losses from early 2020. The pace of recovery in Louisiana, shown in Figure 8, has been much slower. Sectors shown in green have gained back some of their COVID-related job losses, while sectors shown in red have continued to shed jobs (post April 2020). To date, Louisiana has regained only 45% of the COVID-19 job losses that occurred between February and April 2020.

The Optimistic and Pessimistic scenarios, which I would assign a 20% and 10% 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 reflects much less uncertainty than in previous quarters, the Baseline, Optimistic, and Pessimistic scenarios for Louisiana all assume the same future path for oil prices. I would assign a 70% probability to the Baseline forecast.

The strong showing for the U.S. economy in the first quarter of 2021 has accelerated the timeline for recovery from the COVID-19 pandemic recession. Under the Baseline, Pessimistic, and Optimistic scenarios, the national economy is now expected to fully recover (based on GDP) in the second quarter of 2021. This is one quarter faster than previously projected. By the end of 2021, the U.S. economy is expected to be 4% larger than pre-pandemic levels (2019:Q4). 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 stronger outlook for the national economy has strengthened the outlook for Louisiana’s economic indicators relative to the 2021:Q1 LEAF report.

Figure 1: U.S. Economic Recovery Scenarios

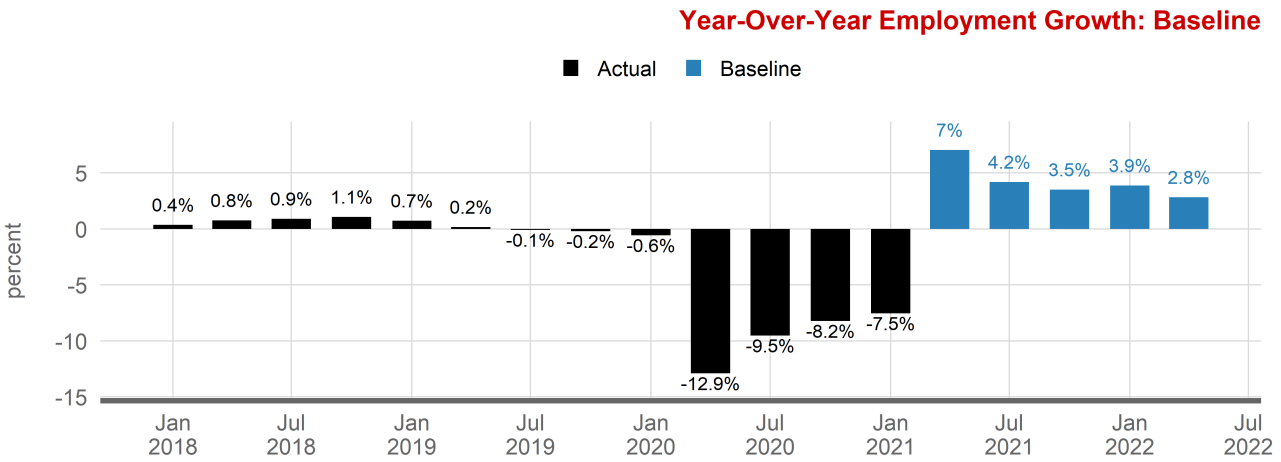
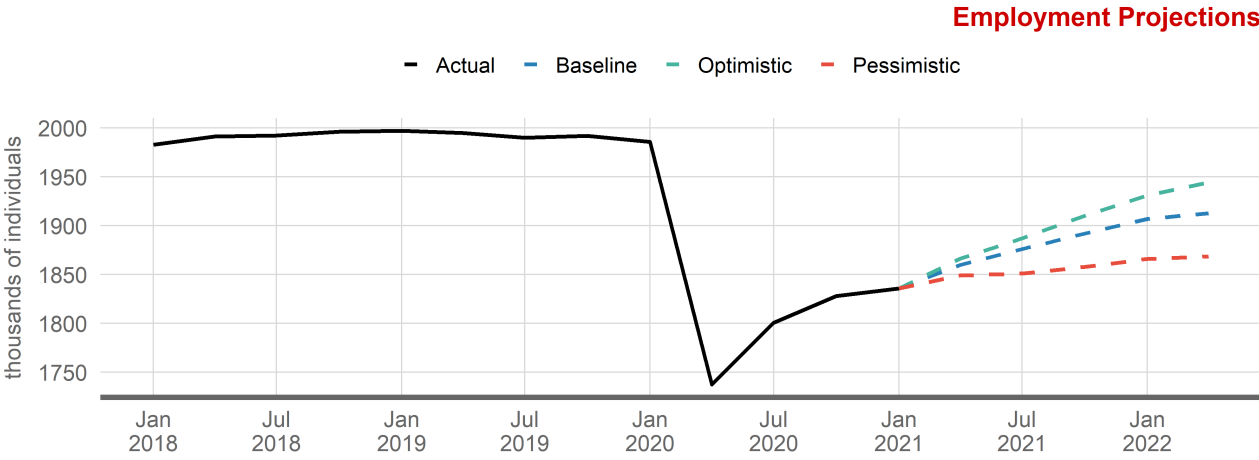


Louisiana Employment Projections

Job growth slowed sharply in Louisiana and nationally during the first quarter of 2021. The state gained fewer than 8,000 jobs in the first three months of the year, which is a growth rate of only 0.43%. This was the slowest quarter for job growth in the state since the COVID-19 job losses in 2020:Q2. Factoring in the most recent quarter, the state is not expected to fully regain all COVID job losses until 2023. As of March 2021, the state has regained 45% of all COVID-related job losses (see Figure 8). The comparable national figure is 70%.

The highly favorable national outlook is expected to accelerate job growth in Louisiana in the coming year. Baseline projections signal job gains in excess of 70,000 and year-over-year growth rates generally above 3%. The employment forecast error from the previous report was 3.49%. See Table 2 for forecast errors from the previous report.

Figure 2: Louisiana Employment Projections

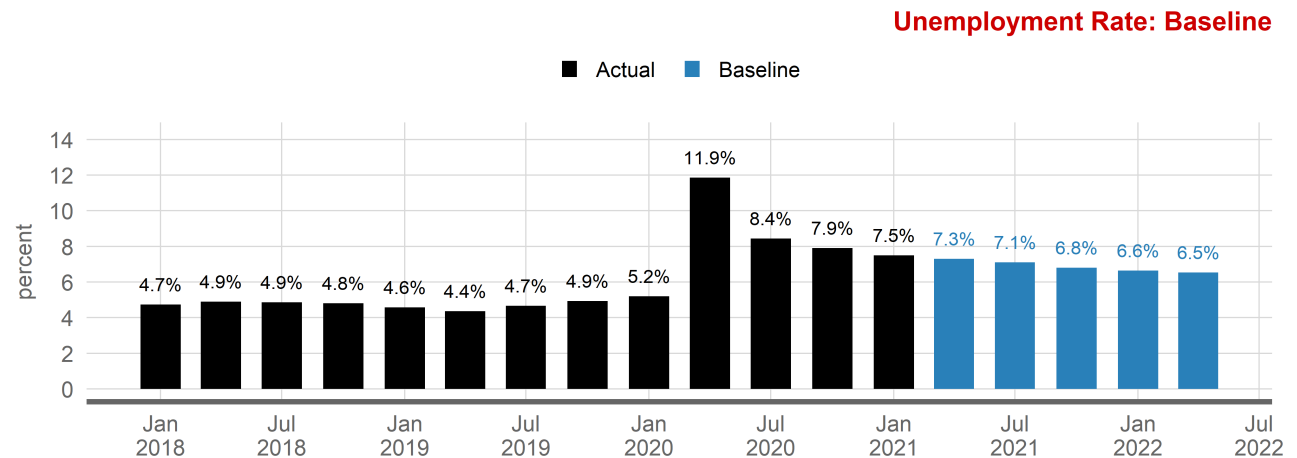
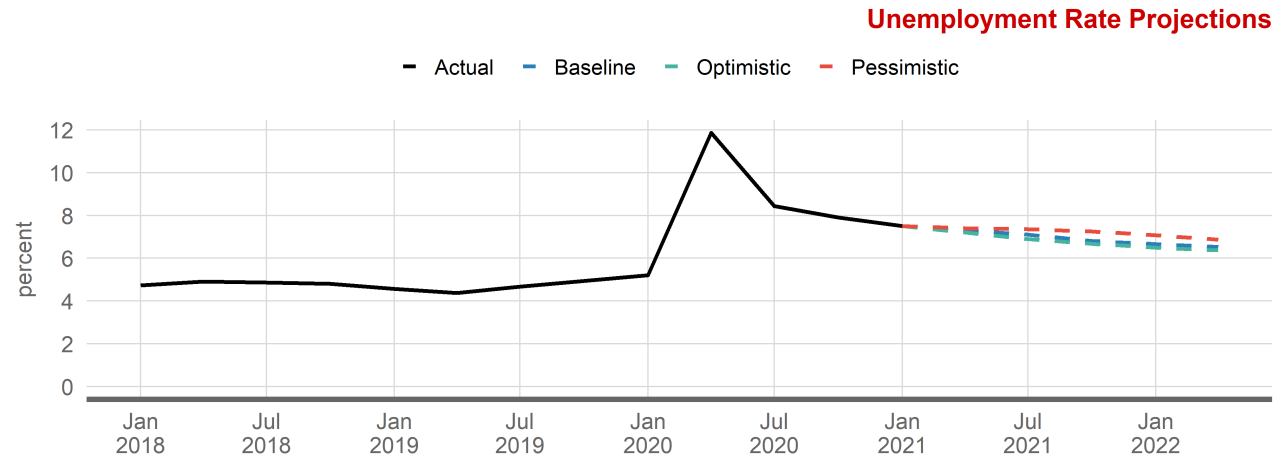


Louisiana Unemployment Rate Projections

Figure 3: Louisiana Unemployment Rate Projections

Much like job growth, Louisiana’s unemployment rate has been declining at a slower pace than the national economy. The unemployment rate averaged 7.5% in the first quarter of 2021, as projected in the previous LEAF report. While the unemployment rate is projected to gradually decline over the next four quarters, the labor force has yet to stabilize. More than 21,000 people in Louisiana dropped out of the labor force between December 2020 and March 2021, causing the labor force participation rate to drop 0.6 percentage points. It seems highly likely at this point that supplemental unemployment benefits are playing a role in suppressing labor force participation.

The Baseline projection shows the unemployment rate falling very gradually to 6.5% by the second quarter of 2022. At this pace, the unemployment rate is not projected to reach its pre-COVID rate of 5.2% until late-2023.

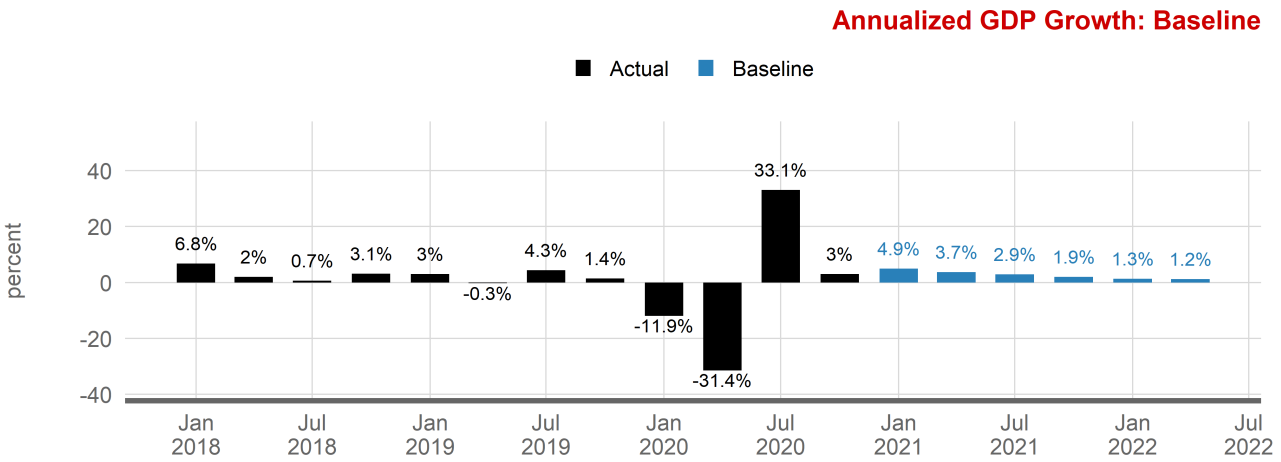
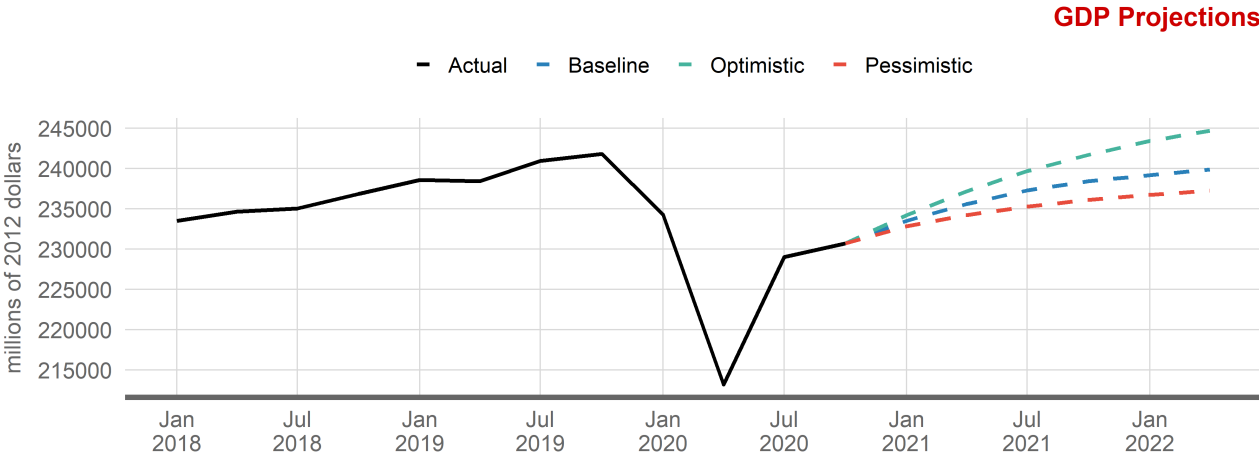


Louisiana GDP Projections

Louisiana's GDP expanded at an annualized rate of 3% in the fourth quarter of 2020. Fueled by national GDP growth exceeding 6% in Q1, Louisiana's growth is projected to be near 5% in the first quarter of this year. The Baseline projections also now point to above-average growth for the state over the next 6 quarters.

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 0.07%. See Table 2 for forecast errors from the previous report.

Figure 4: Louisiana GDP Projections

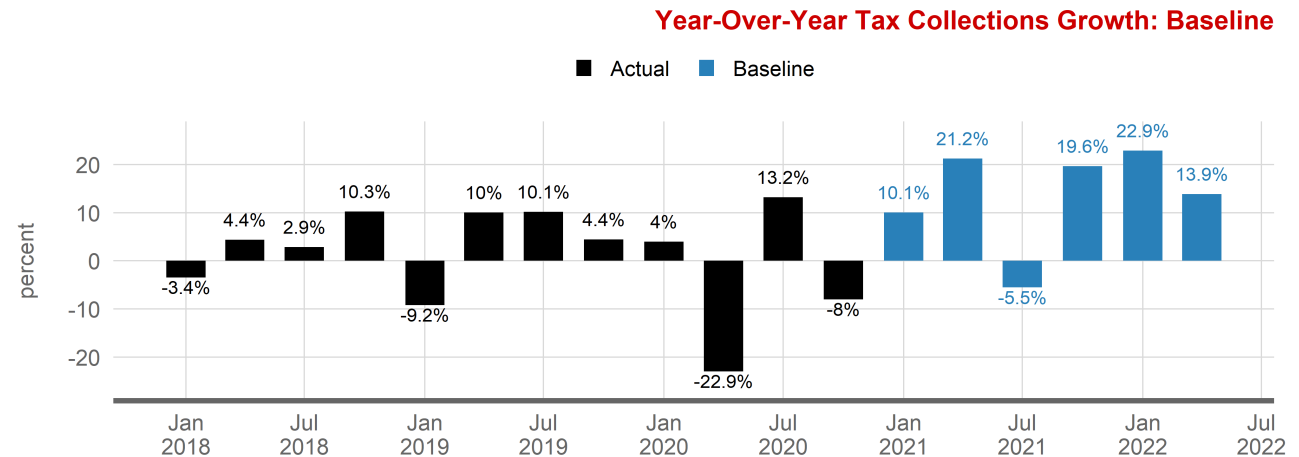
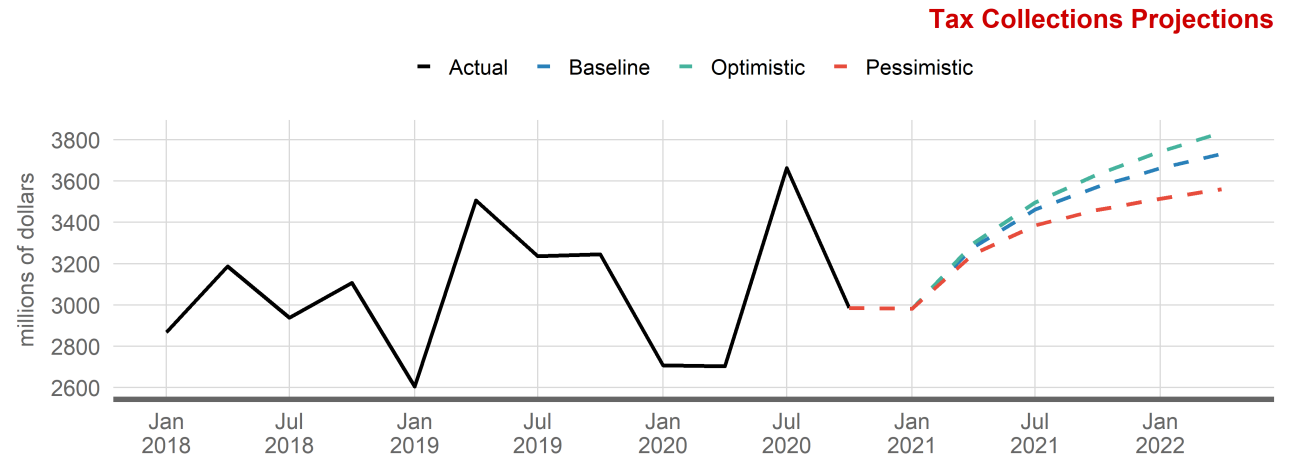


Louisiana Tax Collections Projections

Figure 5: Louisiana Tax Collections Projections

Quarterly tax collections in the fourth quarter of 2020 were 8% lower than collections in the fourth quarter of 2019. With the exception of the third quarter of this year, year-over-year projected tax collections are expected to be quite strong in the coming year, generally growing in excess of 10%. 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 Baseline, Optimistic, and Pessimistic scenarios all point toward continued growth in collections over the next six quarters. The tax collections forecast error from the previous report was 3.09%. See Table 2 for forecast errors from the previous report.

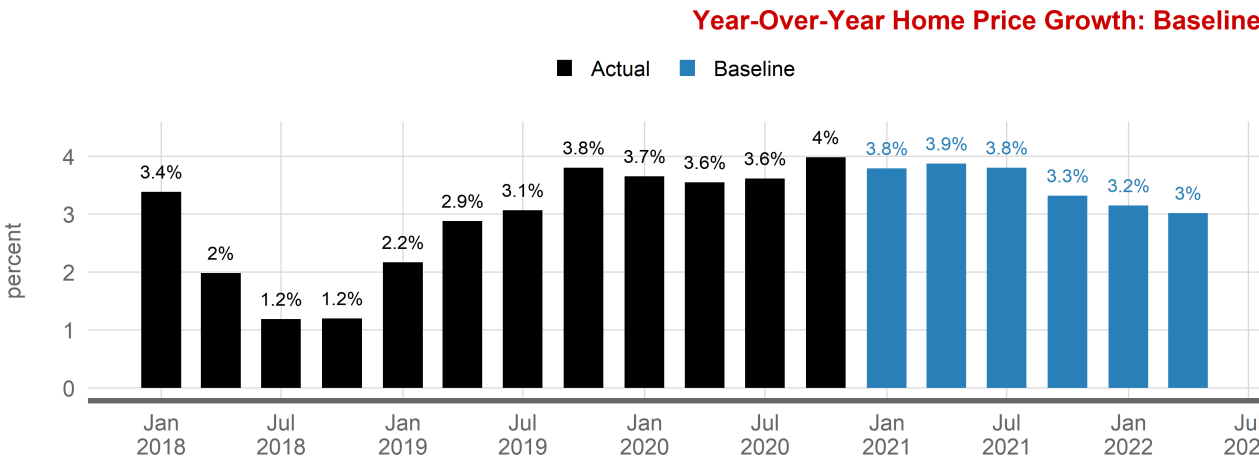
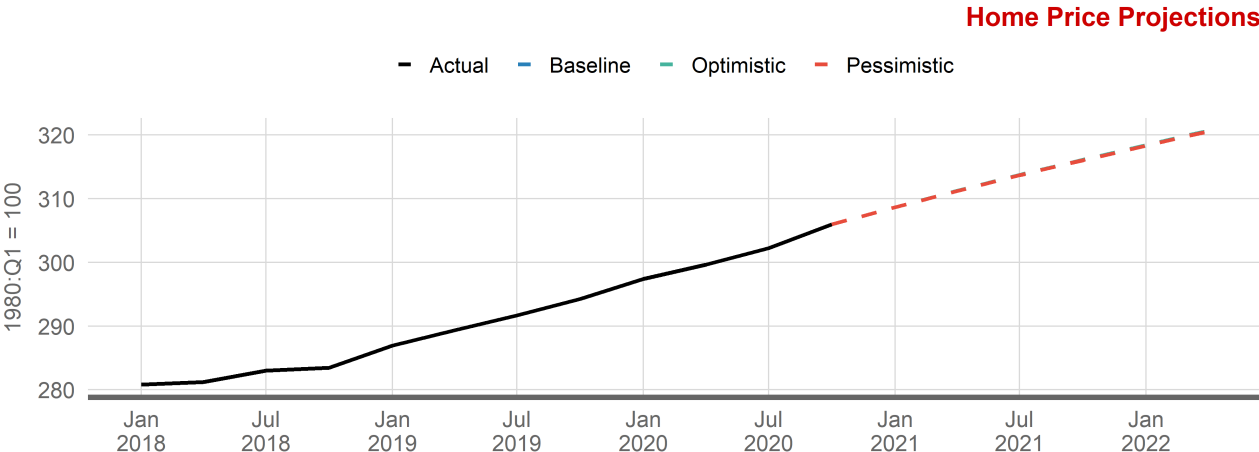


Louisiana Home Price Projections

Figure 6: Louisiana Home Price Projections

Much like the nation, residential housing remains “hot” in Louisiana, with year-over-year prices growing at 4% in the fourth quarter of 2020. Inventory levels remain well-below normal, and the accommodative lending environment should be sufficient to offset the rising cost of construction materials that could slow buyers. The Federal Reserve has signaled that interest rates will likely remain low through at least 2023. Other than the Shreveport MSA, which is beginning to show signs of cooling, home price growth has been solid in every region of the state.

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 0.62%. See Table 2 for forecast errors from the previous report.



Metro Area Employment Projections

Figure 7: Metro Employment Projections

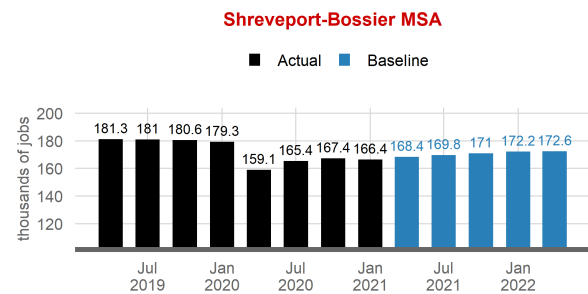
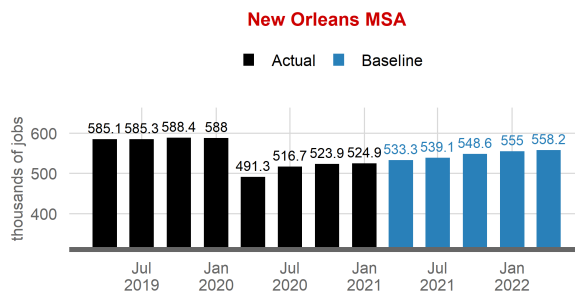
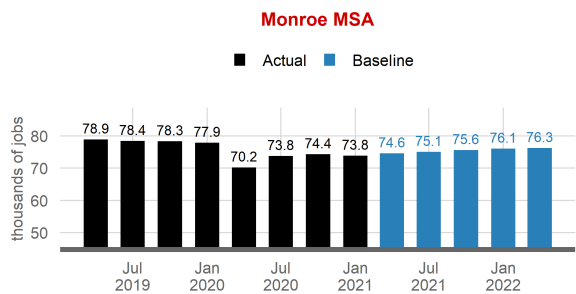
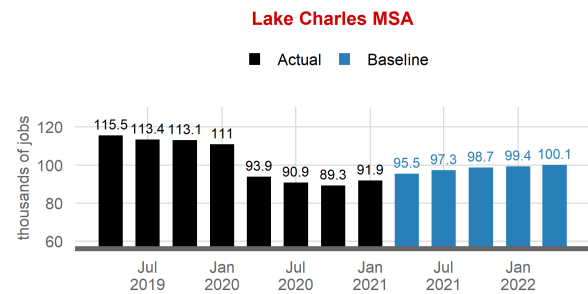
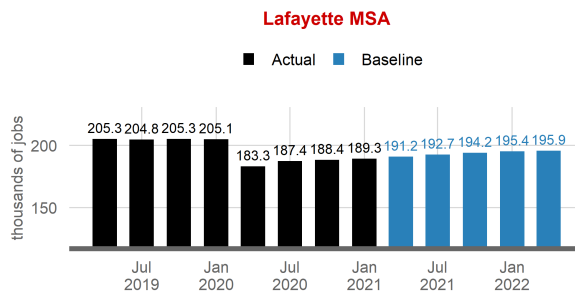
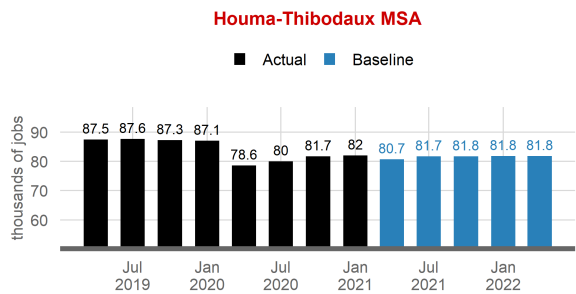
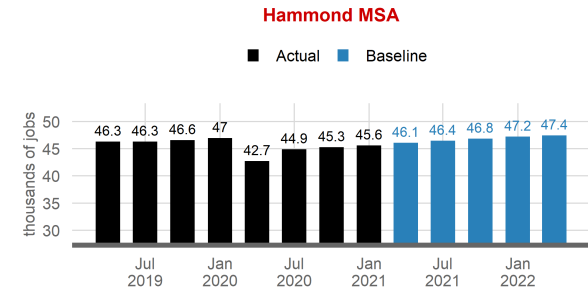
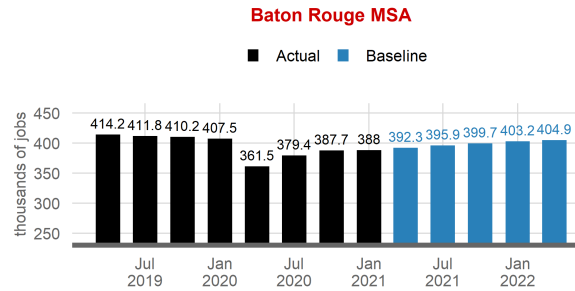
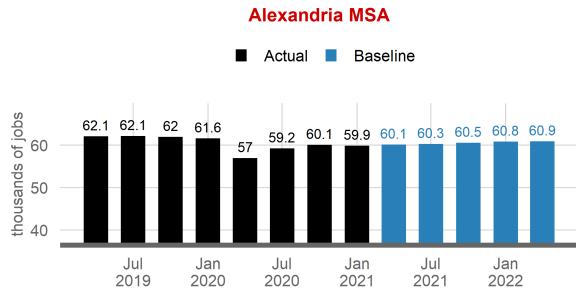
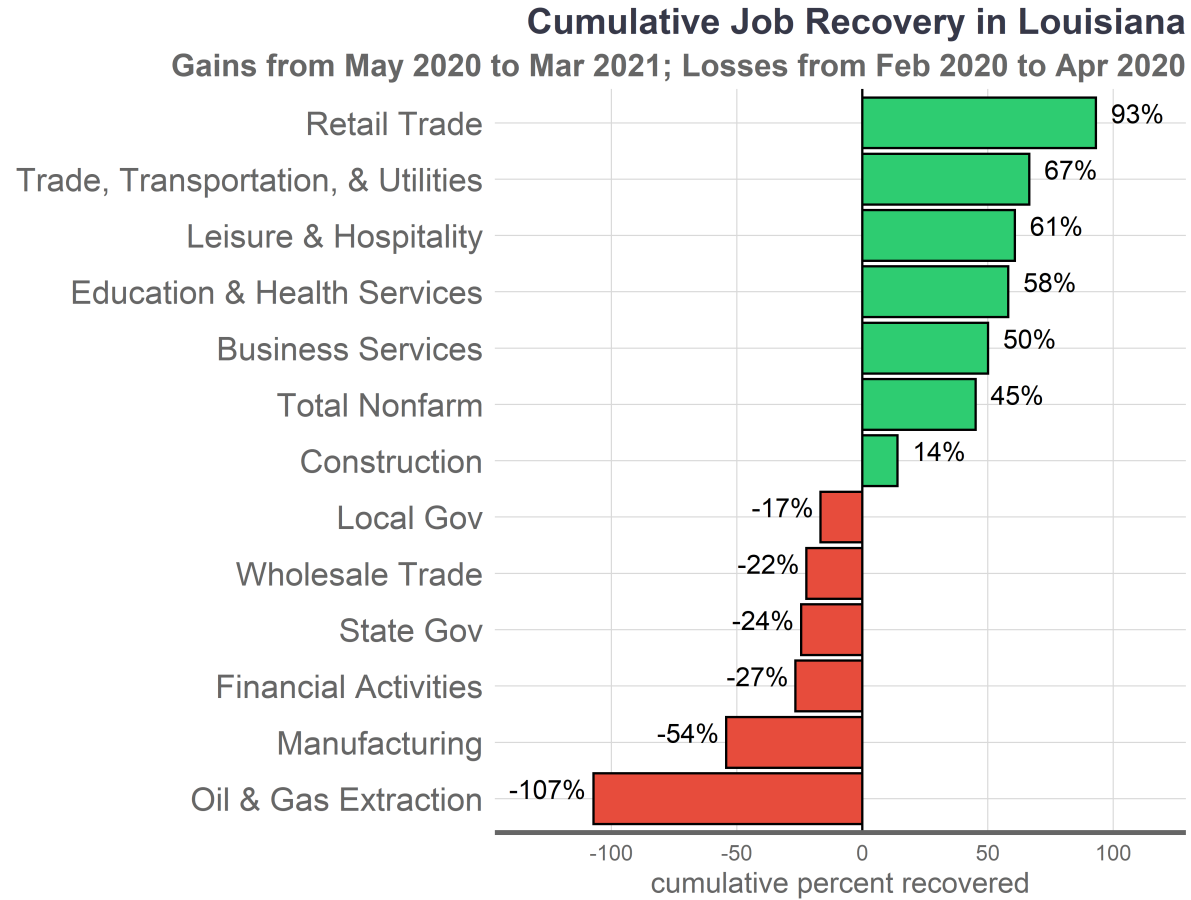


Figure 8: COVID Job Recovery in Louisiana



Source: Bureau of Labor Statistics.

Table 2: One-Quarter Ahead Projection Errors: 2020:Q4 Projections for 2021:Q1

Variable	Baseline Projection	Actual Value	Absolute % Error
employment (statewide)	1900.00	1835.90	3.49
unemployment rate	7.50	7.50	0.00
GDP	230879.60	230724.70	0.07
quarterly tax collections	3078.40	2986.00	3.09
FHFA home price index	304.10	306.00	0.62
Alexandria MSA employment	59.80	59.90	0.17
Baton Rouge MSA employment	395.50	388.00	1.93
Hammond MSA employment	43.60	45.60	4.39
Houma-Thibodaux MSA employment	85.20	82.00	3.90
Lafayette MSA employment	196.50	189.30	3.80
Lake Charles MSA employment	95.60	91.90	4.03
Monroe MSA employment	78.90	73.80	6.91
New Orleans MSA employment	544.30	524.90	3.70
Shreveport-Bossier MSA employment	174.60	166.40	4.93

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 one 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*, *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.

Contact information:

Phone: (337) 482-5381

Email: gary.wagner@louisiana.edu