



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

# Louisiana Economic Activity Forecast 2021:Q1

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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 national economy has strengthened considerably in recent months. As a result, the outlook for key economic indicators in Louisiana has also improved and is the strongest it has been in the past year. The state gained more than 44,000 jobs in the fourth quarter of 2020, with every metropolitan statistical area (MSA) in the state experiencing growth. The MSAs experiencing the fastest job growth included New Orleans (3.0%), Houma-Thibodaux (2.9%), Shreveport-Bossier (2.6%), and Baton Rouge (2.4%). Baseline projections are for continued growth in every MSA over the next five quarters, accounting for more than 56,000 additional jobs statewide. Despite the improved outlook, a full recovery for most economic indicators in the state is (now) not expected until late 2022 or early 2023. The unemployment rate remains stubbornly high as both initial and continued unemployment claims remain well-above historical norms. Home price growth continues to be the brightest indicator as quarterly growth is expected to average around 3% for the remainder of the year.

*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

**46,500**

Projected statewide job growth over the next 4 quarters.

**+2.8%**

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

**-45%**

Average residential housing inventory levels in Louisiana's metro areas compared to one year ago.

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## Introduction

Growth in the U.S. economy remained strong in the fourth quarter of 2020 and is expected to remain strong in the near-term. 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 first quarter of 2022. Although all statewide indicators suggest that growth continues to accelerate as we recover from the pandemic recession, a full recovery for most indicators is not expected until late 2022 at the earliest. Given the improved outlook for the national economy over the next 18 months coinciding with the COVID-19 vaccines, the outlook for Louisiana is the strongest it has been in the past year. The baseline projections point to job gains of more than 46,000 over the next 4 quarters.

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:Q4 values for the Baseline, Optimistic, and Pessimistic scenarios are identical because this quarter has already occurred. This row is shaded gray. Values for 2021:Q1 to 2022:Q1 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:Q4	4.01	4.01	4.01	6.77	6.77	6.77	42.50	42.50	42.50
2021:Q1	3.20	3.84	2.14	6.35	6.26	6.60	52.69	47.55	43.25
2021:Q2	5.04	6.05	3.38	6.10	6.01	6.29	50.32	51.56	43.50
2021:Q3	5.28	6.33	3.53	5.70	5.55	5.91	49.00	53.56	44.17
2021:Q4	4.04	4.85	2.71	5.40	5.21	5.73	49.00	54.23	43.40
2022:Q1	3.70	4.44	2.48	5.10	4.92	5.56	50.37	58.21	44.61

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 February 12, 2021. The Baseline expected path of oil prices are from the U.S. Energy Information Administration's Short-Term Economic Outlook released on February 9, 2021.

Despite growing a solid 4% (annualized rate) in the fourth quarter of 2020, the severity of the pandemic recession led the economy to contract 3.5% in 2020 compared to 2019. This was the largest annual contraction in the U.S. economy since 1946. GDP currently remains 2.5% *below* its pre-COVID level and is now expected to fully recover by the third quarter of this year. Fourth quarter growth was fueled by solid private-sector activity, most notably in consumer

spending, residential investment, and exports. Federal, state, and local government activities were a net drag on growth as these sectors contracted between the 3rd and 4th quarters of last year. Similar to last quarter's report, the Baseline projection is more optimistic than in last quarter's report. Annualized U.S. GDP growth is now expected to exceed 4% (on average) over the next five quarters. This is a very strong outlook considering that growth in the U.S. economy has averaged roughly 2% between 2009 and 2019.

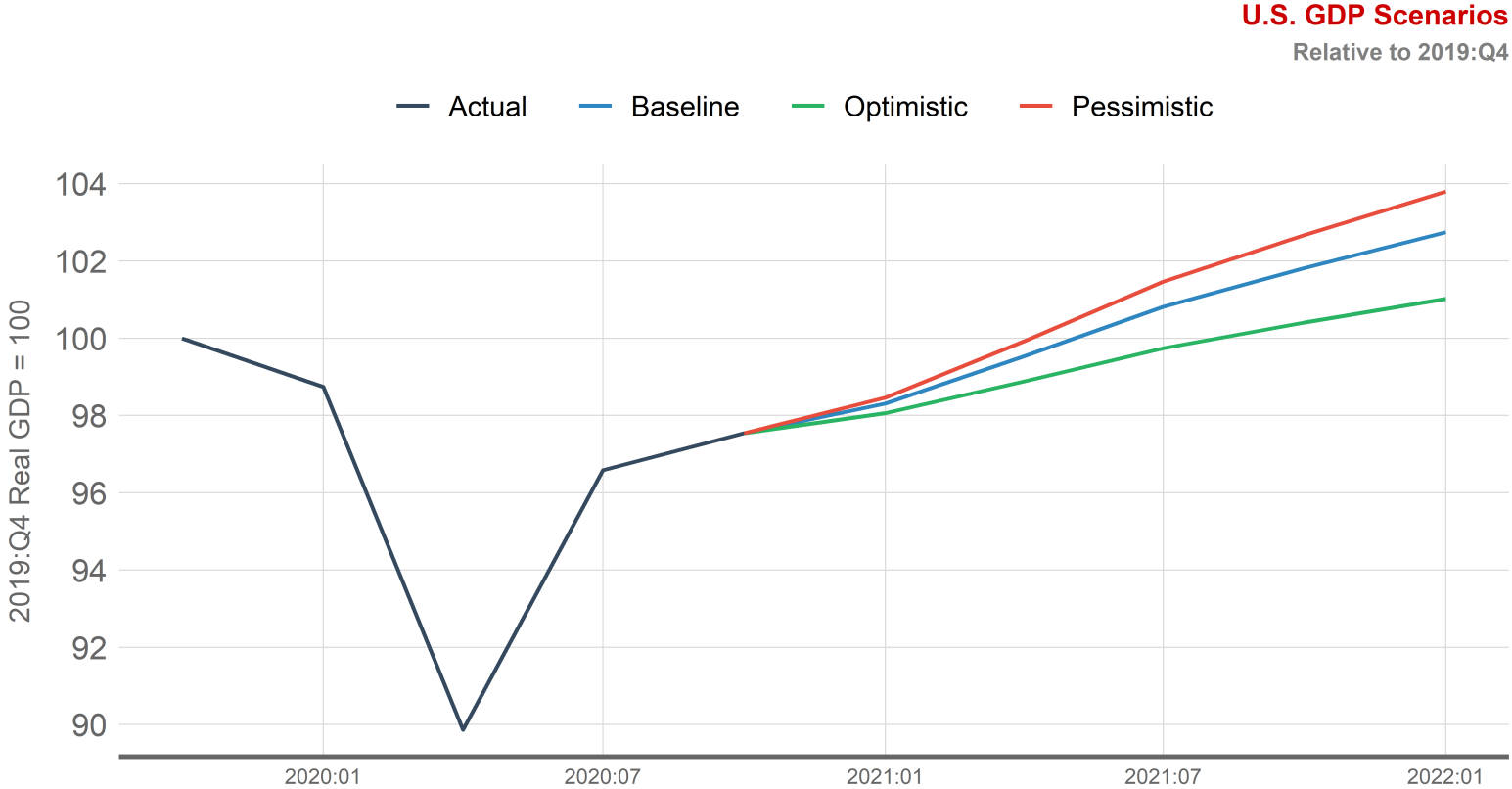
The unemployment rate, which averaged 8.8% in Q3, fell to an average of 6.7% in the fourth quarter. This is due to a combination of stronger growth in economic activity in general and a higher-than-average number of individuals continuing to leave the labor force. Although the pace did slow in the last quarter, an excess of 12 million individuals have dropped out of the labor force since April 2020 above the number that might be considered normal. In terms of oil prices, worldwide demand for oil fell sharply in 2020 and drilling activity in the U.S. responded accordingly; drilling in 2020:Q3 was down 70% compared to the same quarter in 2019. The U.S. Energy Information Administration's latest projections now show oil prices increasing slightly to roughly \$50 per barrel in the first quarter of this year. This estimate remains weaker than the \$60 per barrel range that was projected for 2021 prior to the pandemic. I would assign a 50% probability to the Baseline forecast.

The Optimistic and Pessimistic scenarios, which I would assign a 10% and 40% 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 GDP growth that is 25% slower over the forecast horizon than is currently expected. Figure 1 plots the three scenarios to make these differences more concrete.

The current Baseline projection continues to show 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 101.81 at the end of 2021, or 1.8% *above* where we were in 2019:Q4. Even under the current Pessimistic scenario, which assumes 25% slower growth, the U.S. economy fully recovers from the pandemic recession in the third quarter of this year. The stronger outlook for oil prices and the national economy in general has strengthened the outlook for most indicators in Louisiana compared to the 2020:Q4 LEAF report.

Figure 1: U.S. Economic Recovery Scenarios

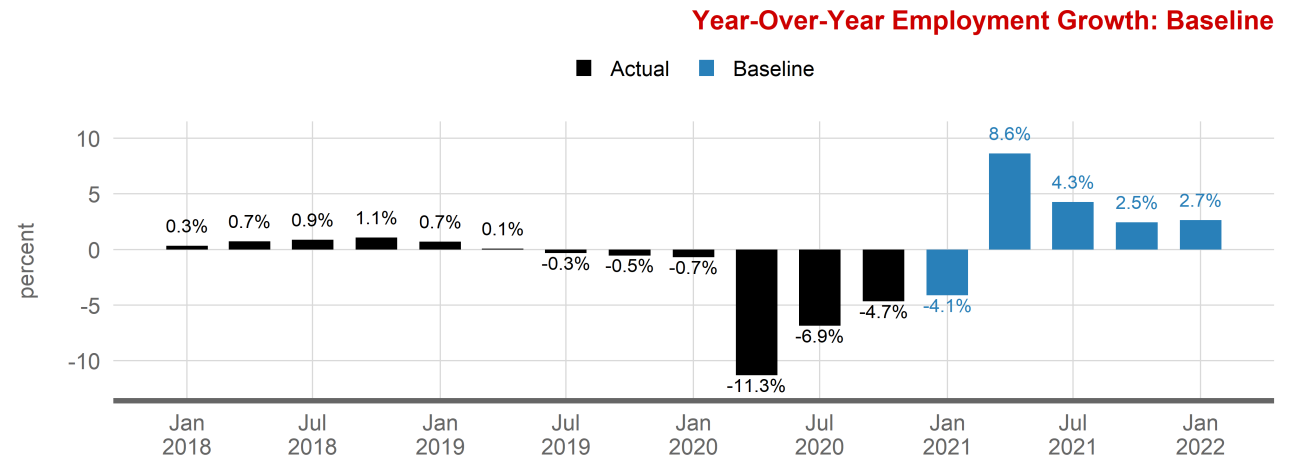
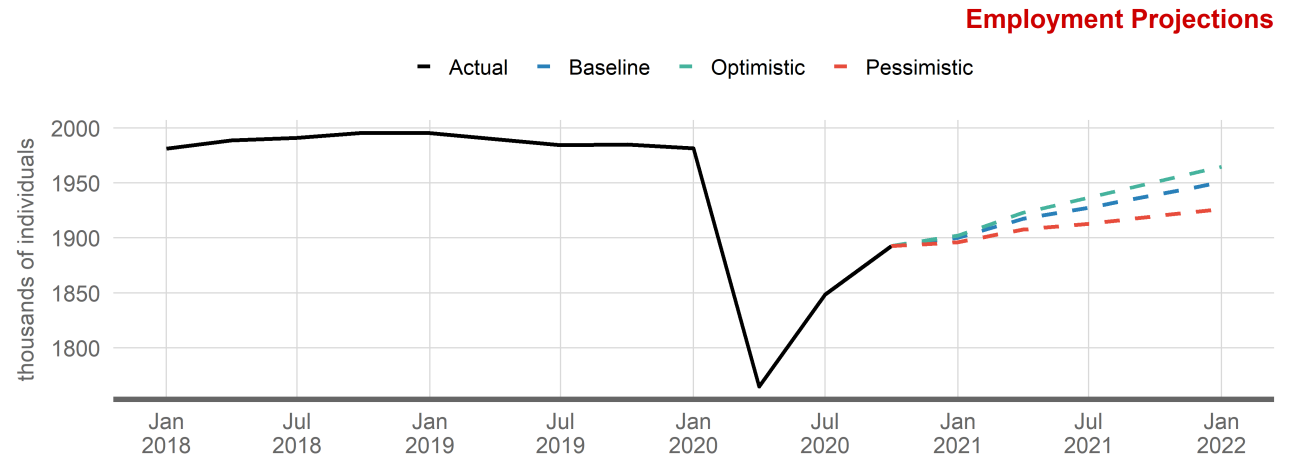


## Louisiana Employment Projections

Louisiana gained more than 44,000 payroll jobs between the third and fourth quarters of 2020 as the recovery from the pandemic recession accelerated. Through the end of December 2020, the number of jobs remains more than 90,000 lower (or 4.6%) than the number of jobs the state averaged in the fourth quarter of 2019 (1,984,467). In addition, the number of people employed part-time involuntarily in the state now exceeds 88,000 (4-quarter moving average), the highest number in nearly two decades.

Year-over-year job growth is expected to become positive in the second quarter of 2021 and remain positive for the next four quarters. The Baseline projection is for 46,000 jobs to be added in the next four quarters. At this pace, the state will not regain all of the COVID-related job losses until the fourth quarter of 2022. The employment forecast error from the previous report was 0.82%. See Table 2 for forecast errors from the previous report.

Figure 2: Louisiana Employment Projections



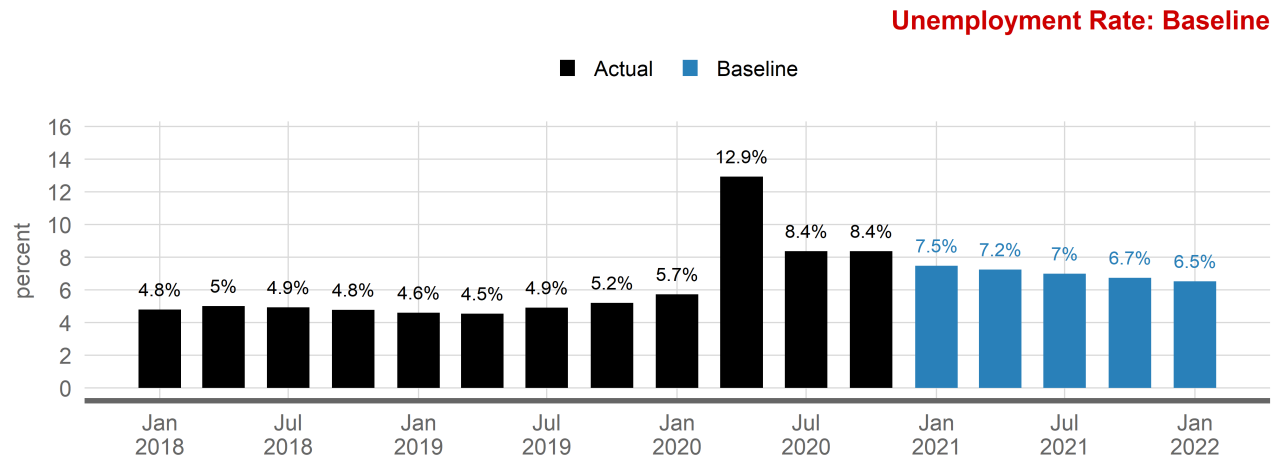
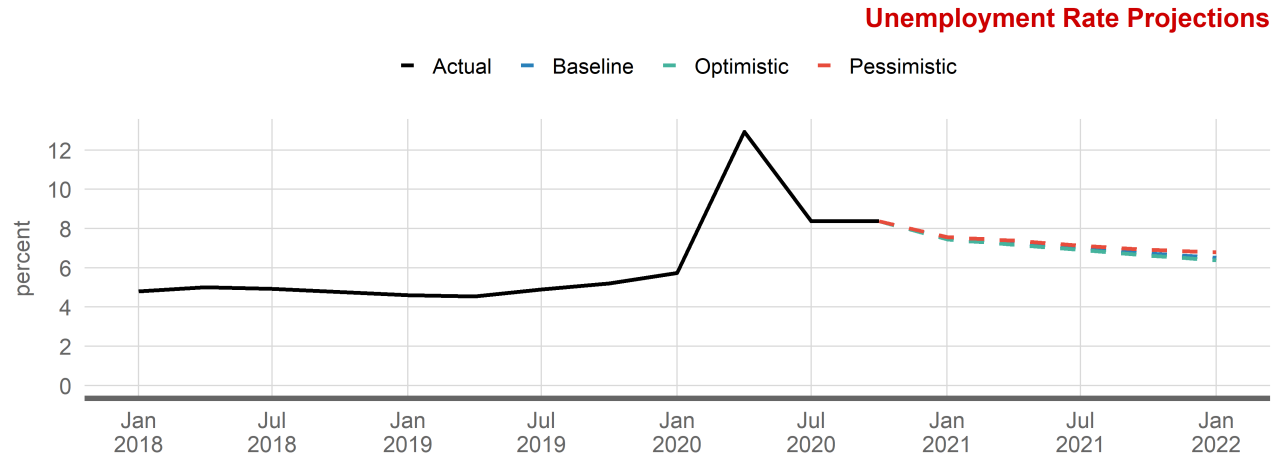


## Louisiana Unemployment Rate Projections

Figure 3: Louisiana Unemployment Rate Projections

While the national unemployment rate declined from 8.8% to 6.6% between the third and fourth quarters of 2020, Louisiana's unemployment rate remained steady at 8.4% over the same period. New or re-entrants into the labor force offset the job gains at the end of last year to keep the unemployment rate steady. Initial and continued unemployment claims continue to slow gradually, however, both indicators remain roughly five times higher normal.

The Baseline projection shows the unemployment rate falling very gradually to 6.5% by the end of the first quarter of 2021. At this pace, the unemployment rate is not projected to reach its pre-COVID rate of 5.2% until mid-2023.

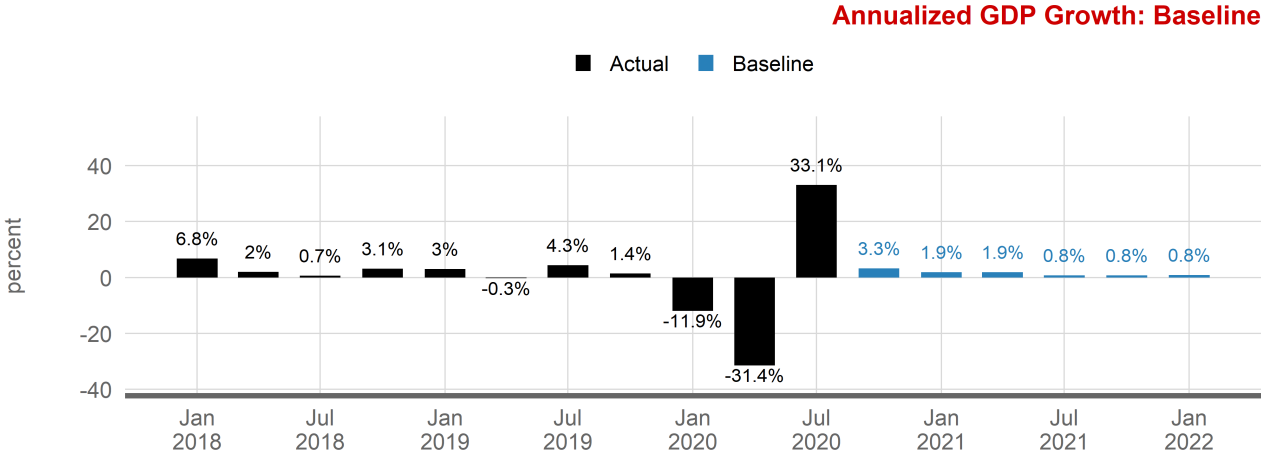
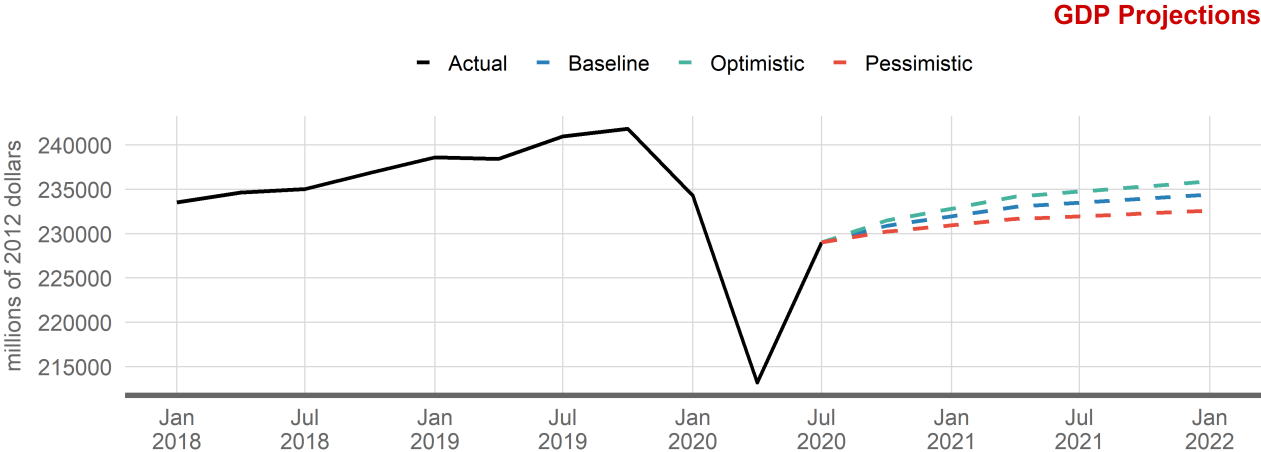


# Louisiana GDP Projections

Louisiana’s GDP rebounded as strongly as the U.S. economy in the third quarter of 2020, posting an annualized growth rate of 33.1%. The U.S. economy expanded at 33.4% over the same period. The Baseline projections point to slowing, but positive, growth in statewide economic activity for the forecast horizon.

Similar to the nation, the Baseline projection is for Louisiana’s economy to grow at 3.2% in the fourth quarter of 2020. After this period, growth is projected to slow sharply and average less than 1% in three of the next five quarters. At the current pace of recovery, statewide output will reach pre-COVID 19 levels in late 2022 or early 2023.

Figure 4: Louisiana GDP Projections

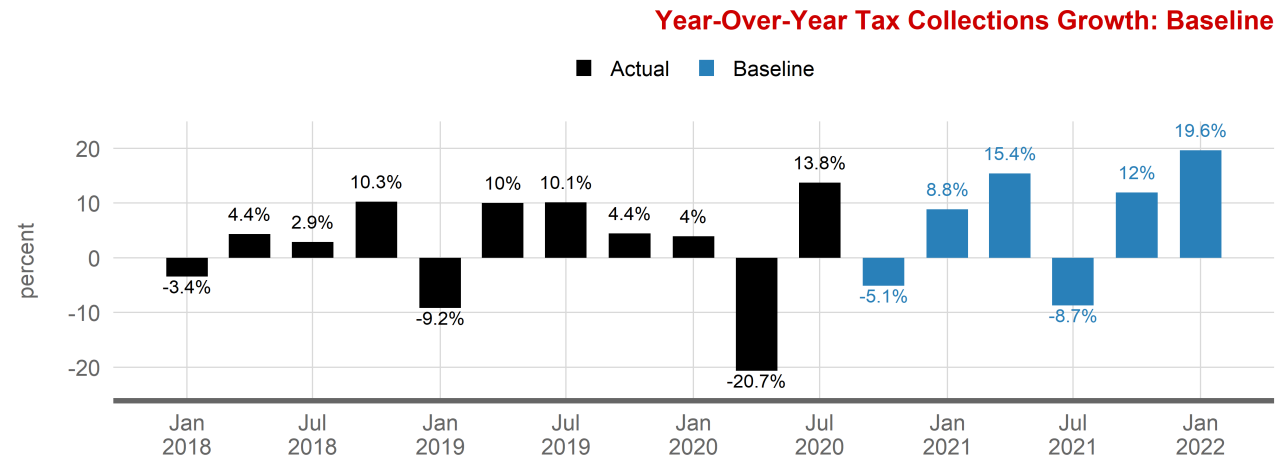
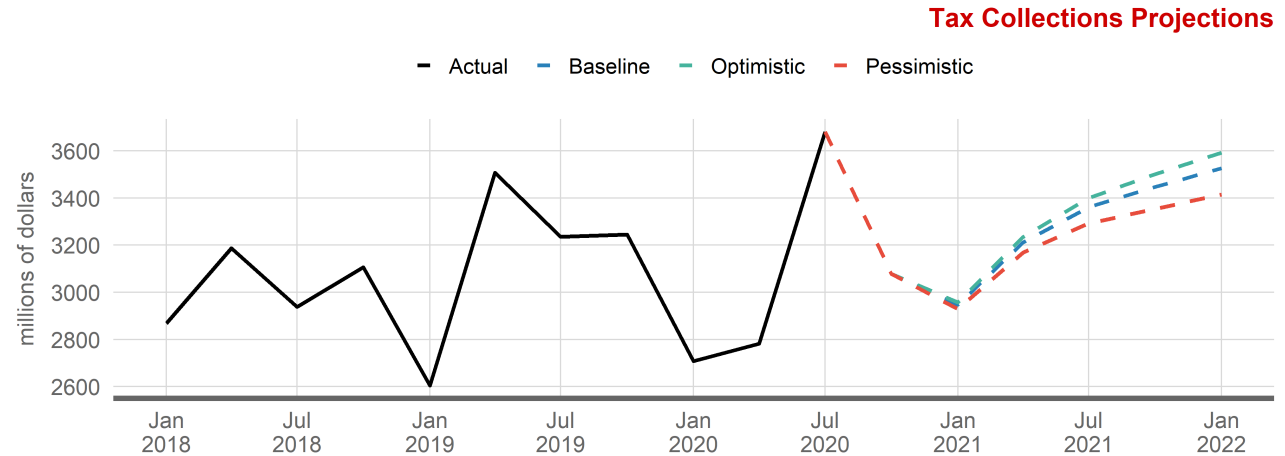


## Louisiana Tax Collections Projections

Figure 5: Louisiana Tax Collections Projections

Quarterly tax collections in the third quarter of 2020 were 13.8% higher than collections in the third quarter of 2019. This was 22% higher than projected in last quarter's report and reflects institutional factors rather than an improvement in general economic activity. Almost every state that taxes personal and corporate income experienced large year-over-year gains in the third quarter of 2020 because of a combination of federal stimulus payments, supplemental unemployment insurance payments, and filing extensions for personal and/or corporate income tax returns.

The Baseline, Optimistic, and Pessimistic scenarios all point toward continued growth in collections over the next five quarters. Projections for a year-over-decline in 2021:Q3 are simply due to the fact that collections in 2020:Q3 are likely to be an abnormally large outlier for the reasons noted above.

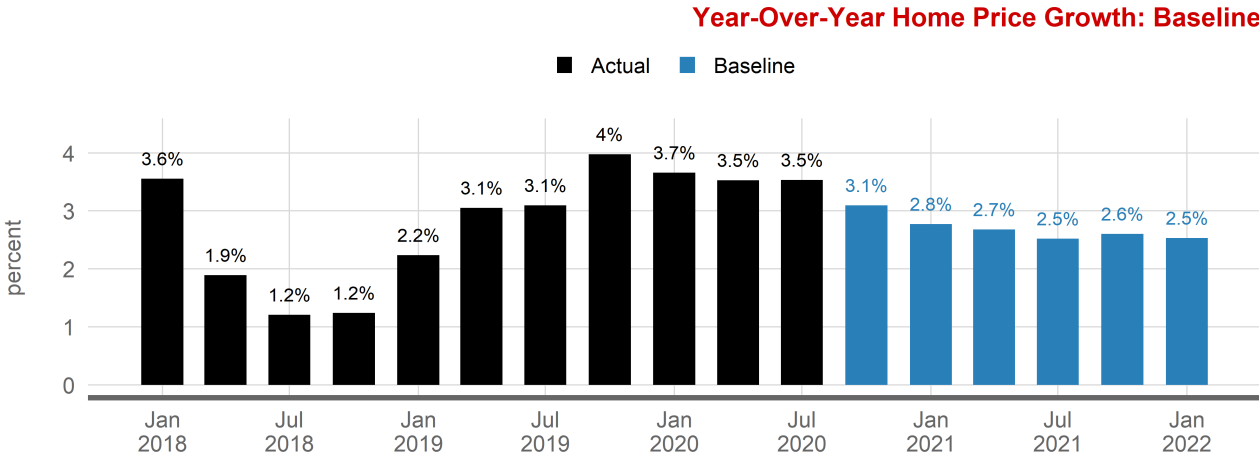
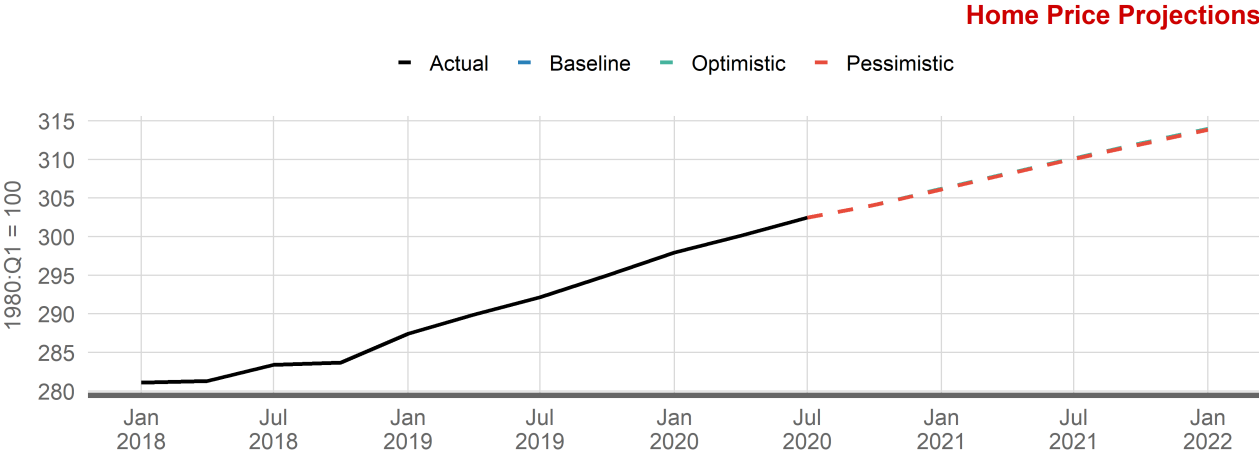


# Louisiana Home Price Projections

Figure 6: Louisiana Home Price Projections

Consistent with last quarter’s report, home price growth is projected to remain strong under the Baseline, Pessimistic, and Optimistic scenarios. Year-over-year inventory levels in the state’s metropolitan statistical areas are down roughly 45%, which is the primary driver of the strong price growth. Figure 8 shows year-over-year residential inventory levels for the state’s nine MSAs for the past six months.

The Baseline scenario is projecting year-over-year home price growth to average 2.8% for the next five quarters. The projection from last quarter’s LEAF report over-projected home prices by 0.13%.



# Metro Area Employment Projections

Figure 7: Metro Employment Projections

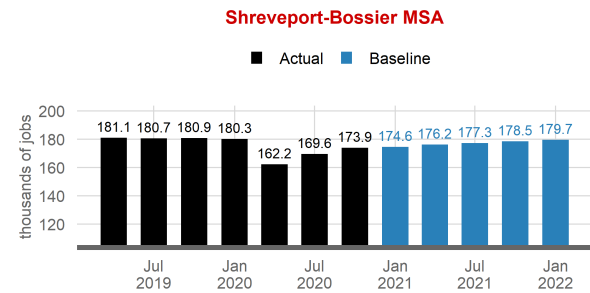
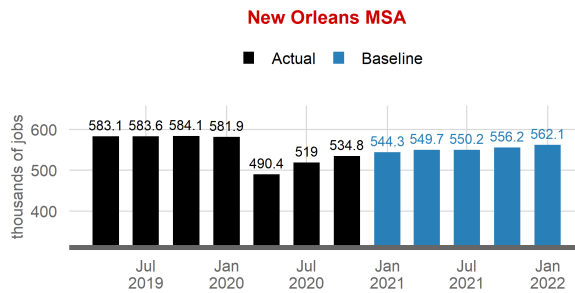
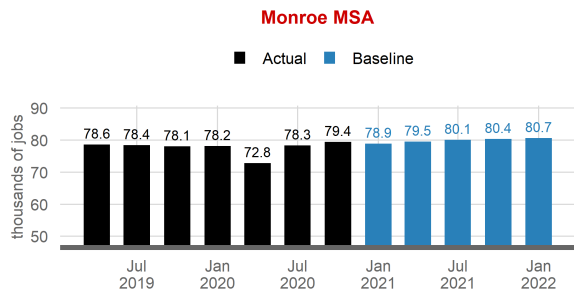
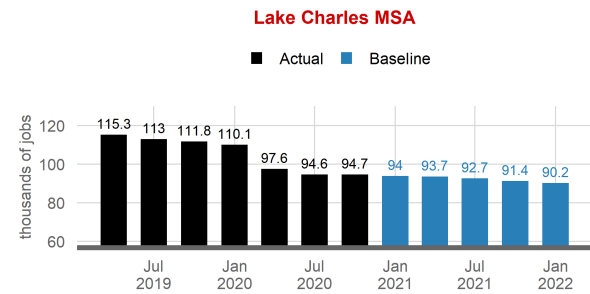
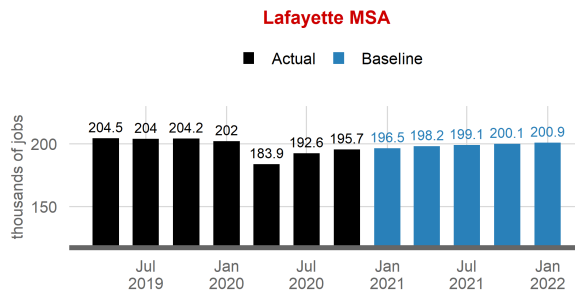
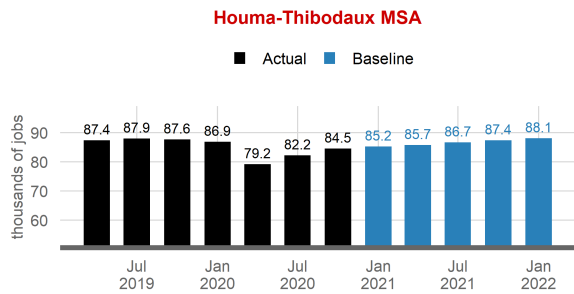
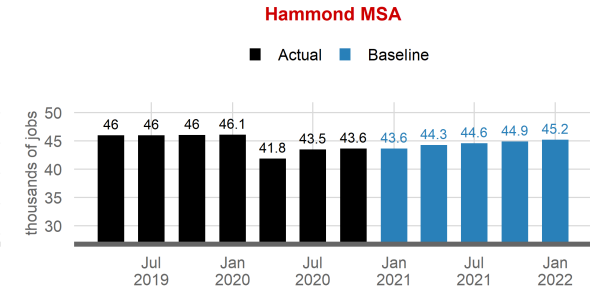
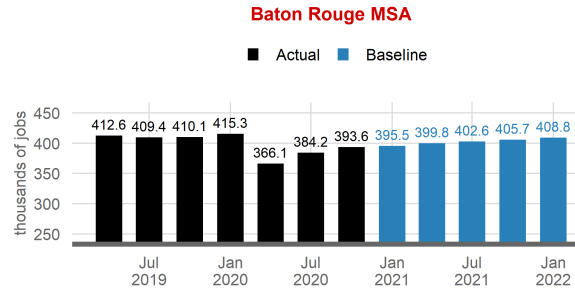
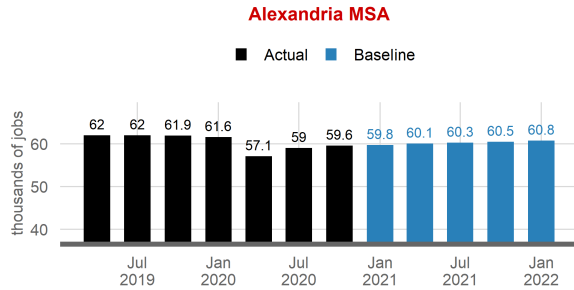
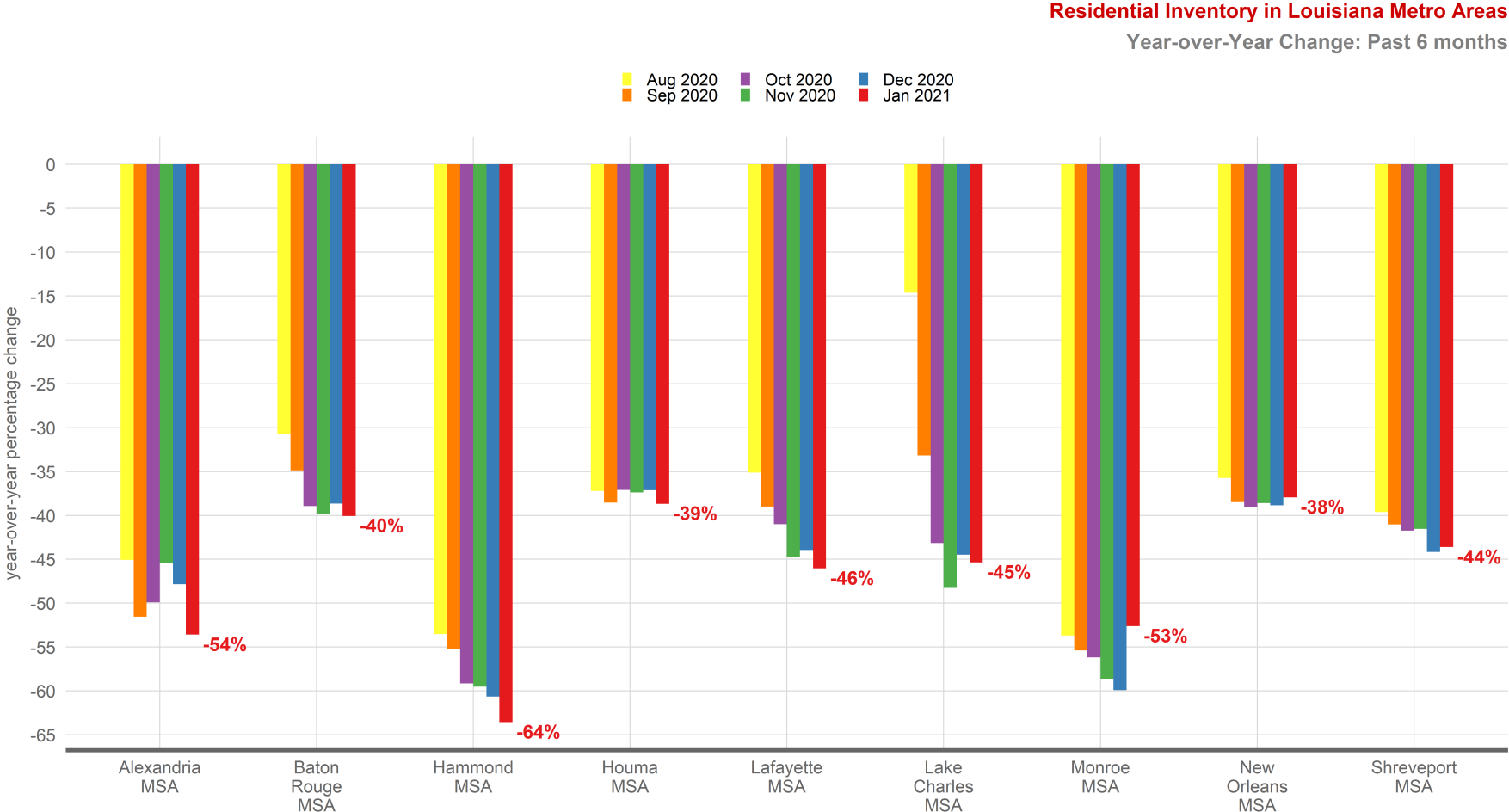


Figure 8: Year-Over-Year Housing Inventory in Louisiana Metro Areas: Last 6 Months



Source: Realtor.com (<https://www.realtor.com/research/data/>)

Table 2: One-Quarter Ahead Projection Errors: 2020:Q3 Projections for 2020:Q4

<b>Variable</b>	<b>Baseline Projection</b>	<b>Actual Value</b>	<b>Absolute % Error</b>
employment (statewide)	1908.10	1892.50	0.82
unemployment rate (statewide)	7.80	8.40	7.14
Louisiana GDP (statewide)	226569.70	229019.50	1.07
quarterly tax collections (statewide)	2839.30	3681.00	22.87
FHFA home price index (statewide)	302.90	302.50	0.13
Alexandria MSA employment	60.30	59.60	1.17
Baton Rouge MSA employment	396.70	393.60	0.79
Hammond MSA employment	44.70	43.60	2.52
Houma-Thibodaux MSA employment	84.00	84.50	0.59
Lafayette MSA employment	199.20	195.70	1.79
Lake Charles MSA employment	92.80	94.70	2.01
Monroe MSA employment	80.20	79.40	1.01
New Orleans MSA employment	552.90	534.80	3.38
Shreveport-Bossier MSA employment	174.20	173.90	0.17

## 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 (LAF122NA), 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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