



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

Louisiana Economic Activity Forecast 2022: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

Professional forecasters have weakened their outlook for the U.S. economy for the third consecutive quarter. Growth is now expected to average less than 3% over the next four quarters. Inflation is the greatest threat to the economic recovery, and the Federal Reserve has signaled their intention to increase interest rates several times in 2022. This will dampen the pace of recovery both nationally and locally. Employment in Louisiana rebounded from a sluggish third quarter with (net) gains of almost 28,000 in Q4. However, the economic outlook for Louisiana is being downgraded, with growth expected to slow in the second half of 2022. Over the next four quarters, the state is expected to gain 33,000 jobs. The Alexandria and Houma-Thibodaux metro regions are expected to experience the weakest growth over the next year, while the Baton Rouge, New Orleans, and Lake Charles regions are expected to experience the fastest growth. At the current pace of the economic recovery, Louisiana is now expected to regain all COVID-related jobs losses in the first quarter of 2023.

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.

2022 Report Release Schedule:

Second Quarter: May 20, 2022
 Third Quarter: August 19, 2022
 Fourth Quarter: November 18, 2022

28,000

Job gains in Louisiana between 2021:Q3 and 2021:Q4.

8.6%

Year-over-year home price growth in Louisiana in 2021:Q3.

1.2%

Projected year-over-year growth in Louisiana's GDP over the next four quarters.

Contents

| | |
|---|-----------|
| Introduction | 4 |
| Alternative Economic Scenarios | 5 |
| Louisiana Employment Projections | 8 |
| Louisiana Unemployment Rate Projections | 9 |
| Louisiana GDP Projections | 10 |
| Louisiana Home Price Projections | 11 |
| Metro Area Employment Projections | 12 |
| Metro Area Employment Projections: Year-over-Year Growth | 13 |
| Metro Area Employment: COVID Job Losses and Recovery Relative to 2019:Q4 | 14 |
| Technical Appendix | 18 |
| Data Appendix: Endogenous Variables | 19 |
| Data Appendix: Exogenous Variables | 20 |
| About the Author | 21 |

List of Tables

| | | |
|---|--|----|
| 1 | Assumed Future Values of External Variables | 5 |
| 2 | One-Quarter Ahead Projection Errors: 2021:Q3 Projections for 2021:Q4 | 17 |

List of Figures

| | | |
|---|--|----|
| 1 | U.S. Economic Recovery Scenarios | 7 |
| 2 | Louisiana Employment Projections | 8 |
| 3 | Louisiana Unemployment Rate Projections | 9 |
| 4 | Louisiana GDP Projections | 10 |
| 5 | Louisiana Home Price Projections | 11 |
| 6 | Metro Employment Projections | 12 |
| 7 | Metro Area Employment Projections: Year-over-Year Growth | 13 |

8 Metro Area Employment: COVID Job Losses and Recovery Relative to 2019:Q4 14

9 Projected National Recession Probabilities 15

10 Recent Inflation Measures Relative to Historical Norms 16

Introduction

The U.S. economy expanded at an inflation-adjusted annualized rate of 6.9% in the fourth quarter of 2021. Between 2020:Q4 and 2021:Q4, the U.S. economy expanded at 5.5%, the fastest annual growth since the early 1980s. However, with inflation at its highest rate in nearly 40 years, the outlook for the national economy has softened over the next four quarters. 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 2023. The current outlook for the state has dampened some from the previous quarter. Baseline projections point to gains of 33,000 jobs over the next four quarters, which is slightly below the outlook 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, and gross domestic product 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. Quarterly tax collections are no longer included in the LEAF reports.

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:Q4 values for the Baseline, Optimistic, and Pessimistic scenarios are identical because this quarter has already occurred. This row is shaded gray. Values for 2022:Q1 to 2022: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 |
| 2021:Q4 | 6.89 | 6.89 | 6.89 | 4.23 | 4.23 | 4.23 | 77.27 | 77.27 | 77.27 |
| 2022:Q1 | 1.76 | 1.94 | 1.18 | 3.90 | 3.90 | 3.90 | 85.04 | 75.68 | 102.05 |
| 2022:Q2 | 4.16 | 4.58 | 2.79 | 3.70 | 3.70 | 3.70 | 83.63 | 74.43 | 100.35 |
| 2022:Q3 | 2.96 | 3.26 | 1.98 | 3.57 | 3.57 | 3.57 | 77.98 | 69.40 | 93.57 |
| 2022:Q4 | 2.92 | 3.21 | 1.95 | 3.50 | 3.50 | 3.50 | 70.98 | 63.18 | 85.18 |
| 2023:Q1 | 2.84 | 3.13 | 1.90 | 3.40 | 3.40 | 3.40 | 67.97 | 60.49 | 81.56 |

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 11, 2022. The Baseline expected path of oil prices is from the U.S. Energy Information Administration's Short-Term Economic Outlook released on February 8, 2022.

Consumer spending, which accounts for about 70% of GDP, rebounded in the fourth quarter after a sluggish third quarter. Despite the rebound, spending on durable goods fell in November and December. The December reduction was on the order of 5% (year-over-year), with the largest reductions occurring in spending on home furnishings, appliances, and communications equipment.

The reductions in consumer spending are (likely) being driven by a combination of COVID-related federal transfers that have declined (or ended) in recent quarters and rising inflation. As Figure 10 shows, year-over-year inflation on goods has exceeded 8% for each of the last two months. Between 1990 and 2019, average annualized goods inflation in the U.S. economy averaged 0.6%. The current pace of inflation has been outpacing wage growth. Inflation-adjusted after-tax personal income has now declined for 5 consecutive months (through December 2021). The last time real personal income declined this many months in a row was during the first half of 1974.

Job gains in the U.S. economy remained solid between the third and fourth quarters, adding nearly 1.8 million (net) new jobs. Over the past year, job growth nationally expanded at a clip of 4.3%, well above the historical norm of just over 1%.

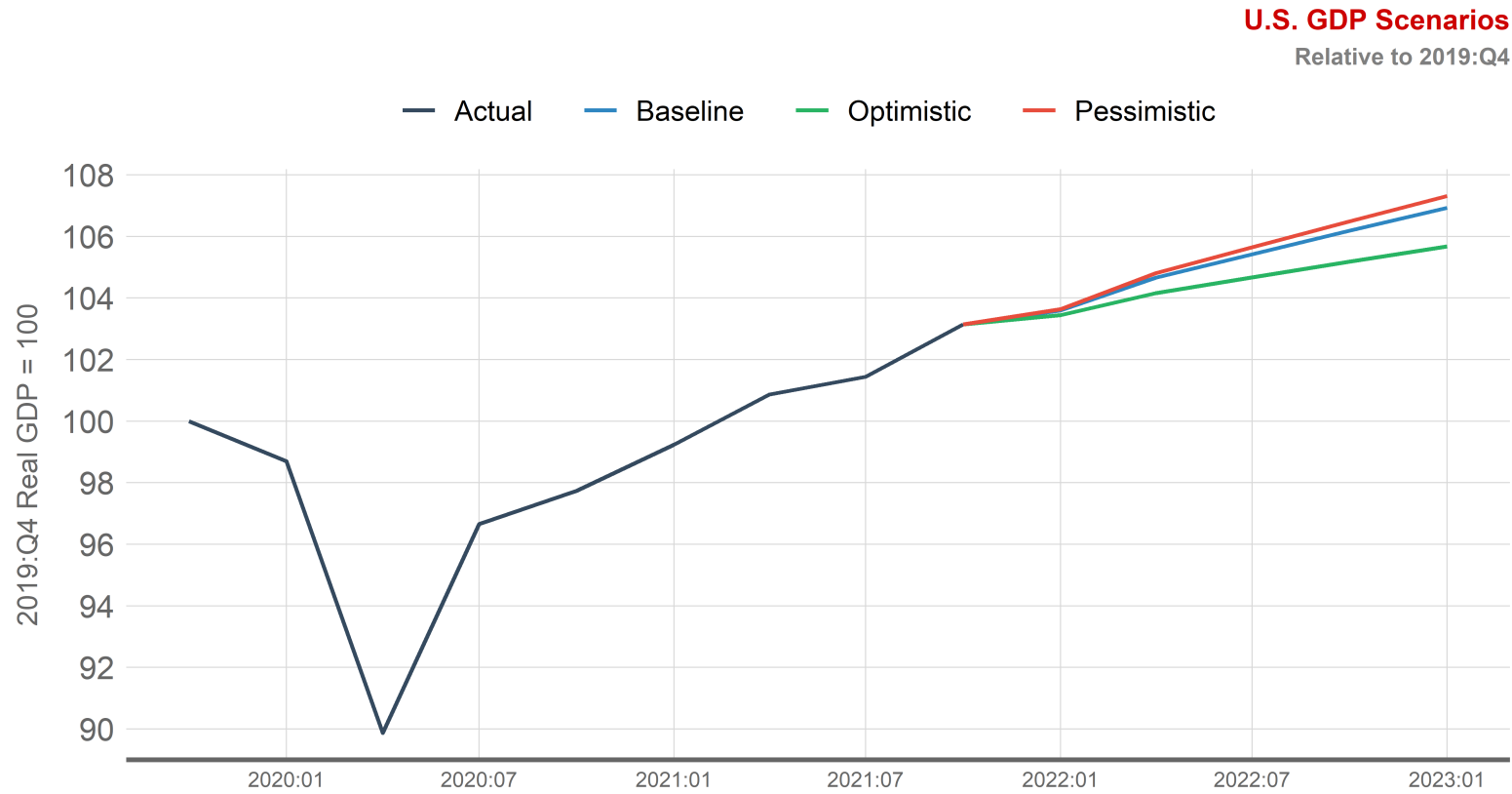
Employment in Louisiana rebounded strongly in the fourth quarter, notching gains of almost 28,000. Except for the Houma-Thibodaux metropolitan statistical area, job growth is projected to remain steady over the next four quarters. Current projections point to statewide job gains of 33,000 over the next four quarters. At the current pace, Louisiana is expected to regain all COVID-related job losses in the first quarter of 2023. Based on the strong fourth quarter, Louisiana now ranks 47th in the nation (up from 50th) in terms of COVID-related job losses that have been regained through December 2021.

The greatest threat to the economic recovery is inflation. The Federal Reserve has a 2% goal for inflation, and they signaled in their December 2021 meeting that interest rate increases will be forthcoming this year to slow the threat of rising prices. I anticipate the first rate hike to occur in March 2022. If the Federal Reserve must raise the federal funds rate target more quickly than anticipated because of inflation, then this could significantly alter the pace of economic recovery nationally and locally.

The Optimistic and Pessimistic scenarios, which I would assign a 10% 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. I would assign a 55% probability to the Baseline forecast. Consistent with the previous LEAF report, the largest downside risk at this time remains inflation.

Over the next four quarters, the Baseline scenario projects U.S. GDP to grow at an annual pace of 2.9%. This is a reduction of more than one percentage point from the previous quarter's outlook. This is the second consecutive quarter that the national growth outlook has been revised downward (by professional forecasters) by at least one percentage point. 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

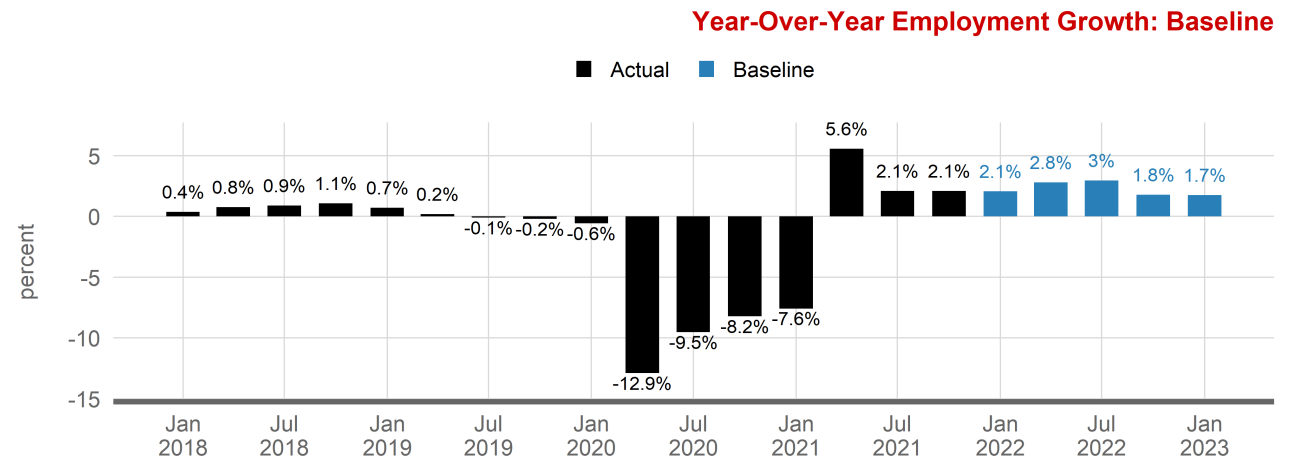
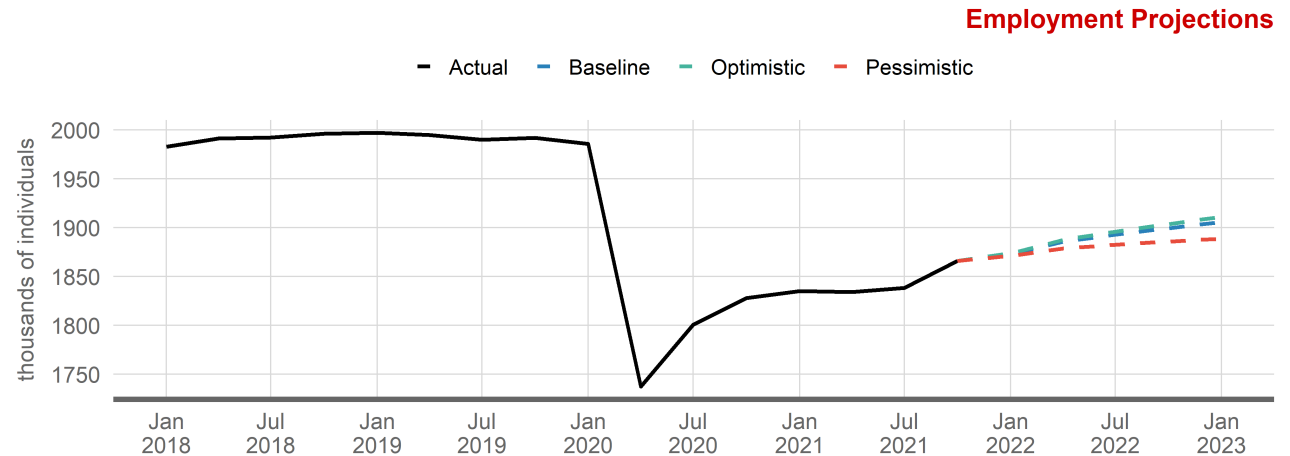


Louisiana Employment Projections

Employment rebounded strongly in the fourth quarter with gains of nearly 28,000 (net) new jobs. Excluding the Alexandria metropolitan statistical area, every metro region in the state experienced jobs gains between the third and fourth quarters. On an annualized basis, the Lake Charles region witnessed the fastest job growth in the state over the past year as the recovery from Hurricanes Laura and Delta continues. Statewide, the number of jobs remains about 125,000 (or 6.3%) below pre-pandemic levels (2019:Q4). Most sectors outside of oil and gas extraction and manufacturing are now experiencing growth. At the current pace of recovery, Louisiana is expected to regain COVID-related job losses in the first quarter of 2023.

Statewide job growth is expected to exceed 2% (year-over-year) for the next three quarters before slowing in the last quarter of 2022. The employment forecast error from the previous report was 0.90%. See Table 2 for forecast errors from the previous report.

Figure 2: Louisiana Employment Projections



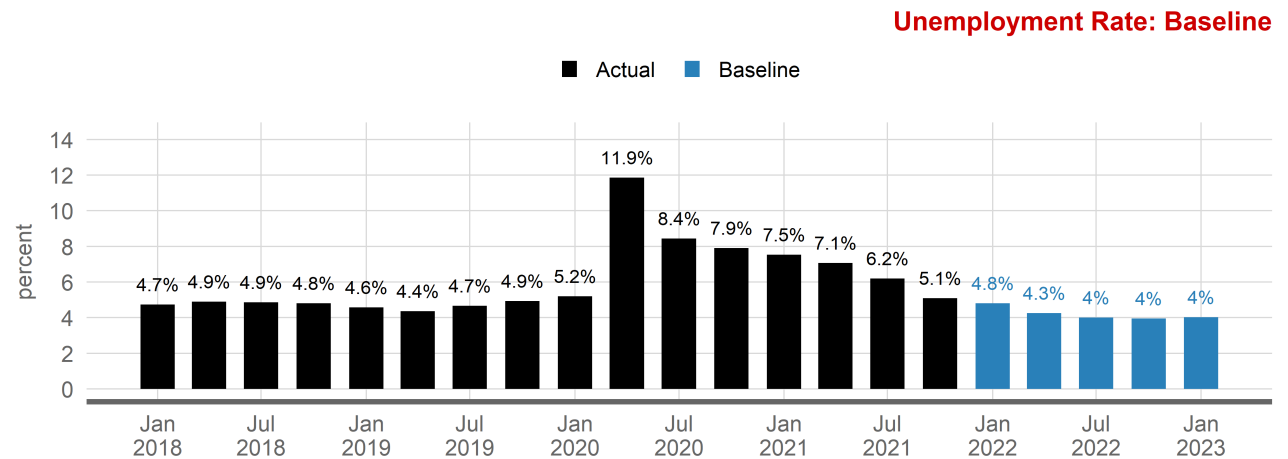
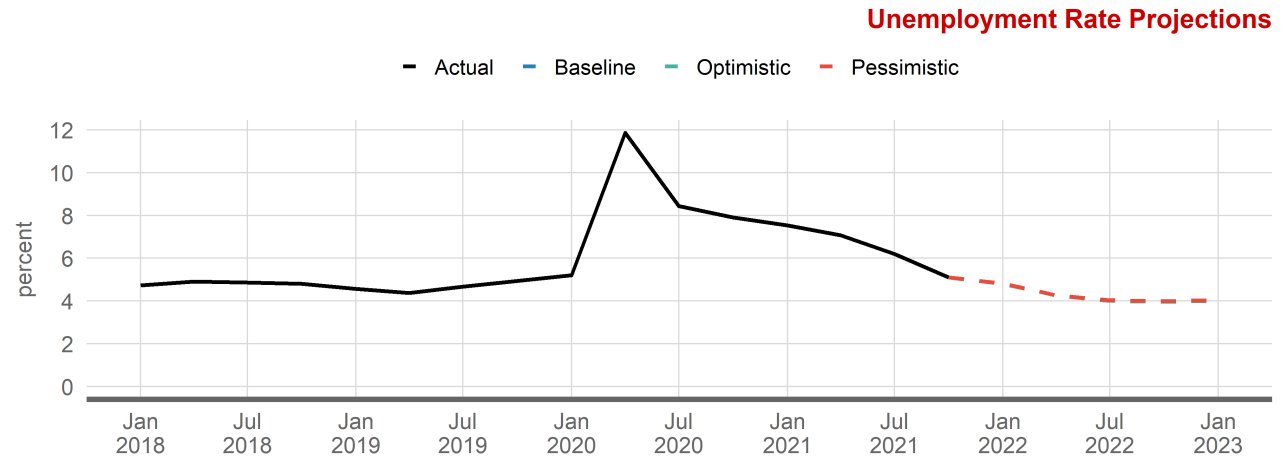
Louisiana Unemployment Rate Projections

Figure 3: Louisiana Unemployment Rate Projections

For the second consecutive LEAF report, Louisiana’s unemployment rate declined more than projected, falling to an average of 5.1 percent in Q4 (the projected value was 5.9 percent). And, consistent with the previous report, the reduction in the unemployment is driven to a large degree by people continuing to drop out of the labor force.

The national labor force participation rate has risen steadily since June 2021 and now sits at 62.2%. Louisiana’s labor force participation has fallen steadily since August 2020 and now sits as 57.7%. Excluding the pandemic months in early-to-mid 2020, Louisiana’s labor force participation rate is at its lowest level since May 1977.

The unemployment rate forecast error from the previous report was 15.7%. See Table 2 for forecast errors from the previous report.

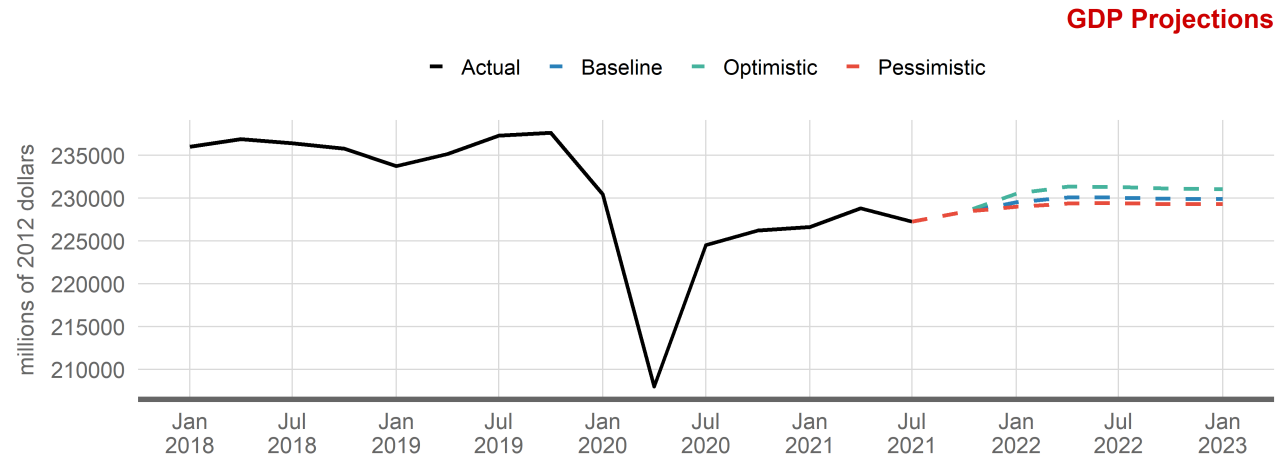


Louisiana GDP Projections

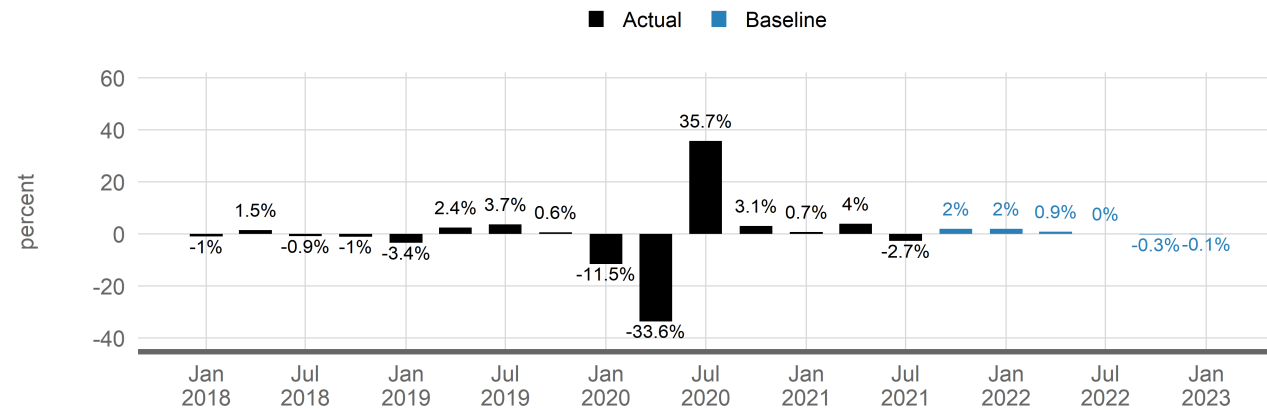
Louisiana's GDP contracted at an annualized rate of 2.7% in the third quarter of 2021. (The U.S. economy expanded by 2.3% during this time period.) GDP growth is expected to rebound in 2021:Q4 and 2022:Q1, growing at a 2% clip before slowing sharply in mid 2022. GDP remains more than 4% below pre-pandemic levels (2019:Q4) and is not expected to fully recover until 2024.

The GDP forecast error from the previous report was 2.10%. See Table 2 for forecast errors from the previous report.

Figure 4: Louisiana GDP Projections



Annualized GDP Growth: Baseline



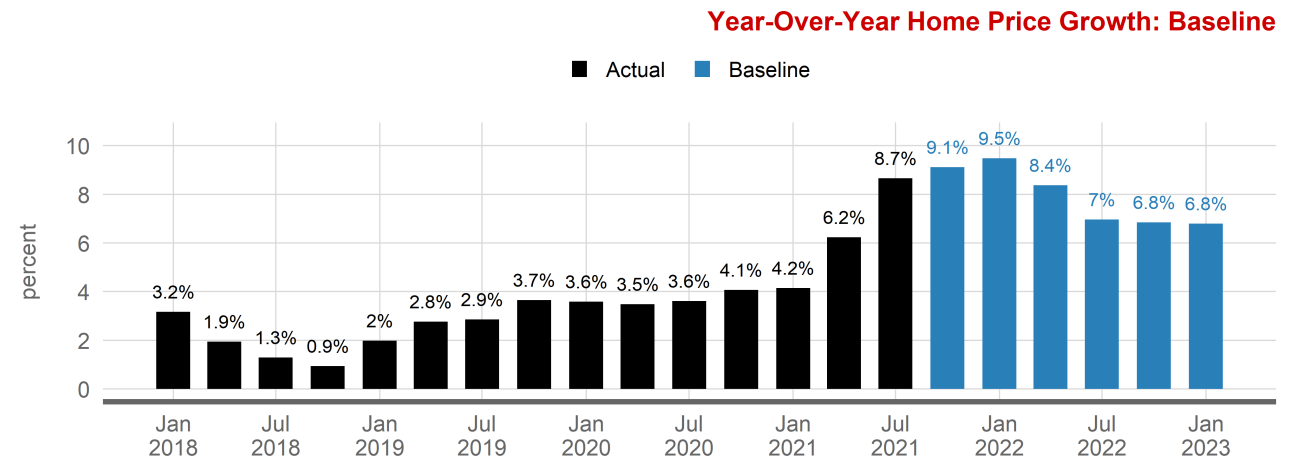
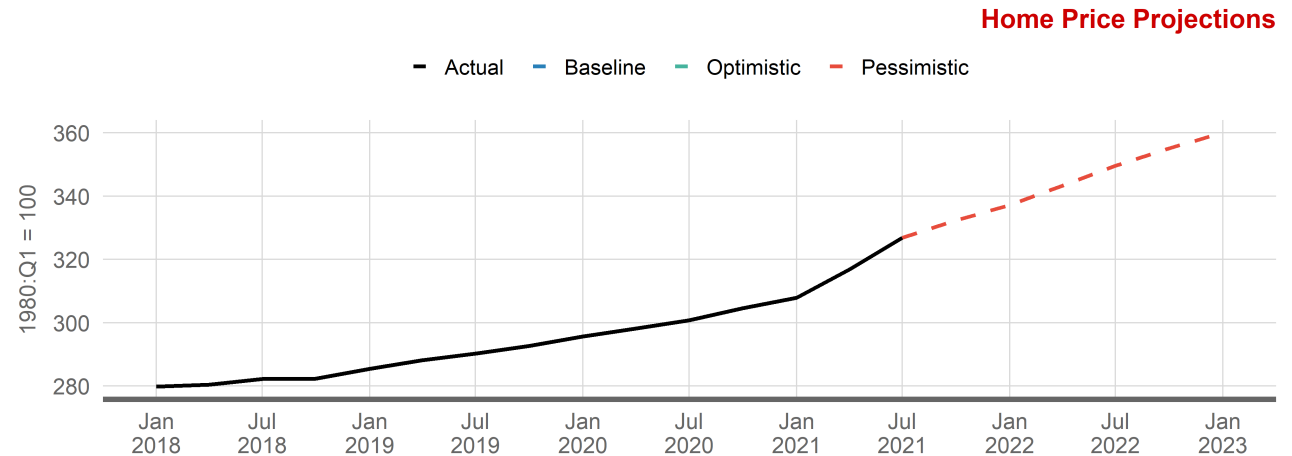
Louisiana Home Price Projections

Like the nation, home price growth in Louisiana remains well-above historical norms. Year-over-year home price growth increased by 8.7% in the third quarter and is expected to exceed 9% in each of the next two quarters. For comparison purposes, year-over-year home price growth exceeded 10% in the third quarter in every state except Louisiana and North Dakota. With economic activity expected to slow in mid-to-late 2022, home price growth is now expected to fall below 7% later this year.

Inventory levels continue to remain well below pre-COVID levels in each of the state's nine metro areas, contributing strongly to the price growth. As the Federal Reserve raises interest rates in 2022, most likely beginning in March, this should put upward pressure on mortgage rates and slow home sales.

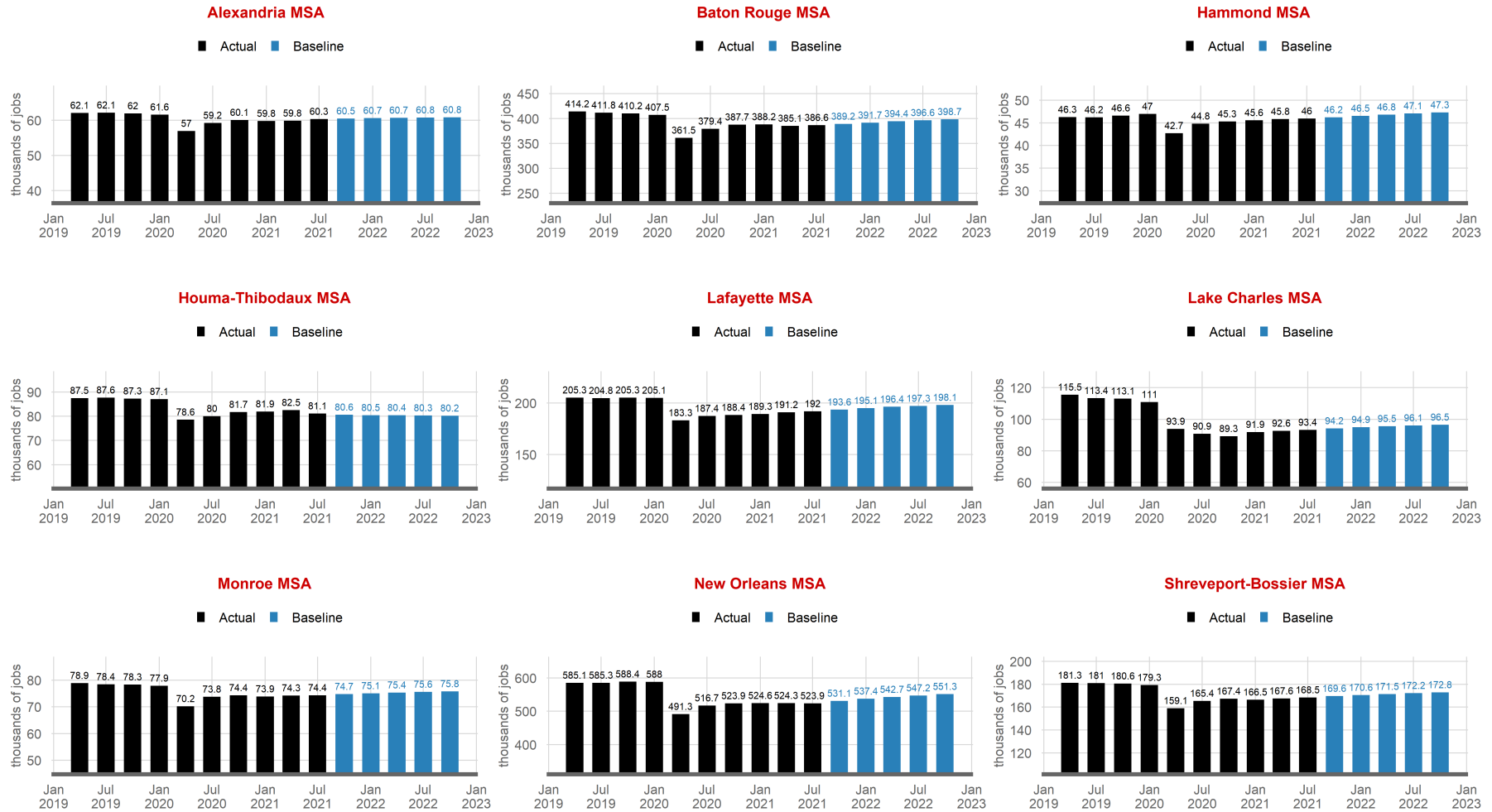
The previous LEAF report's forecast error for home prices was 2.42%. See Table 2 for forecast errors from the previous report.

Figure 5: Louisiana Home Price Projections



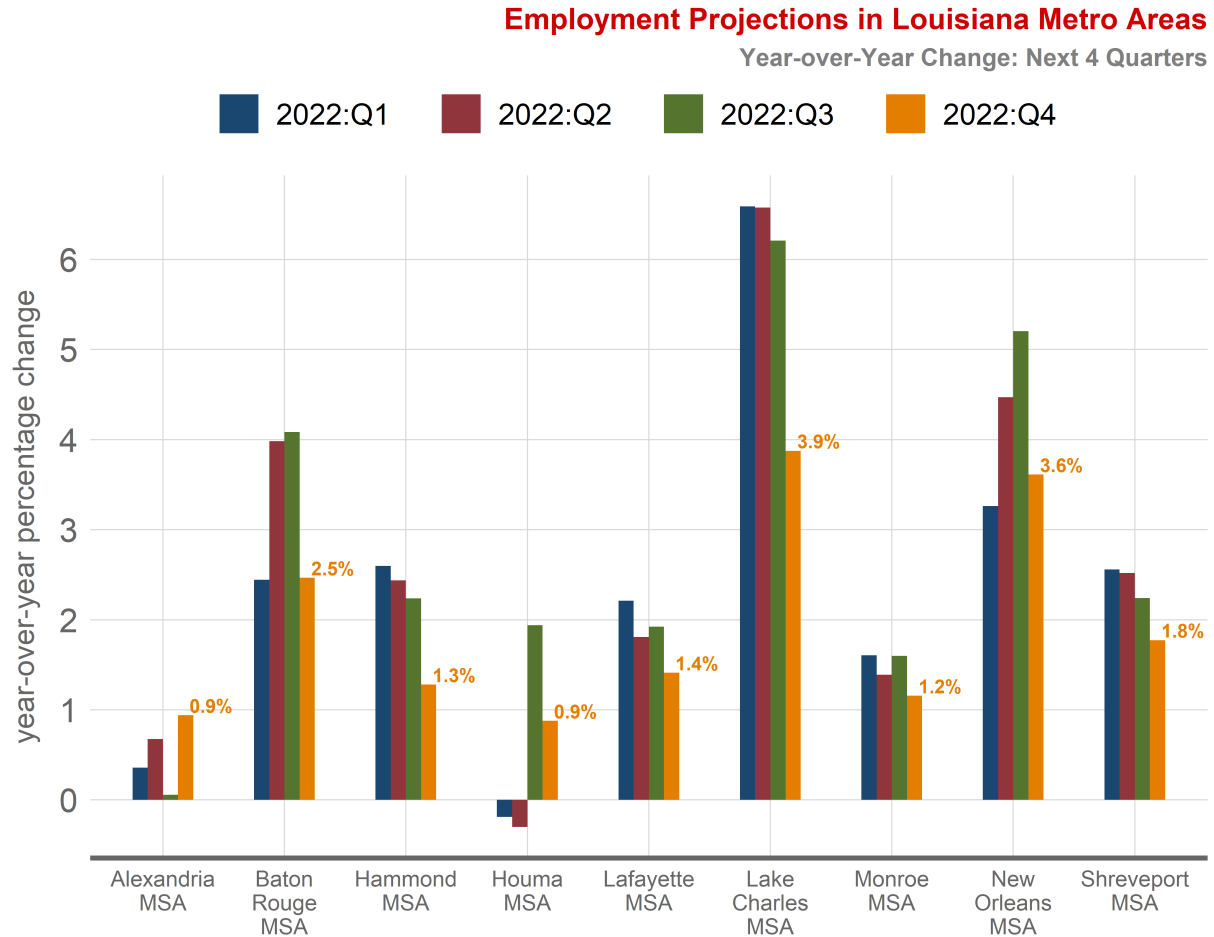
Metro Area Employment Projections

Figure 6: Metro Employment Projections



Metro Area Employment Projections: Year-over-Year Growth

Figure 7: Metro Area Employment Projections: Year-over-Year Growth

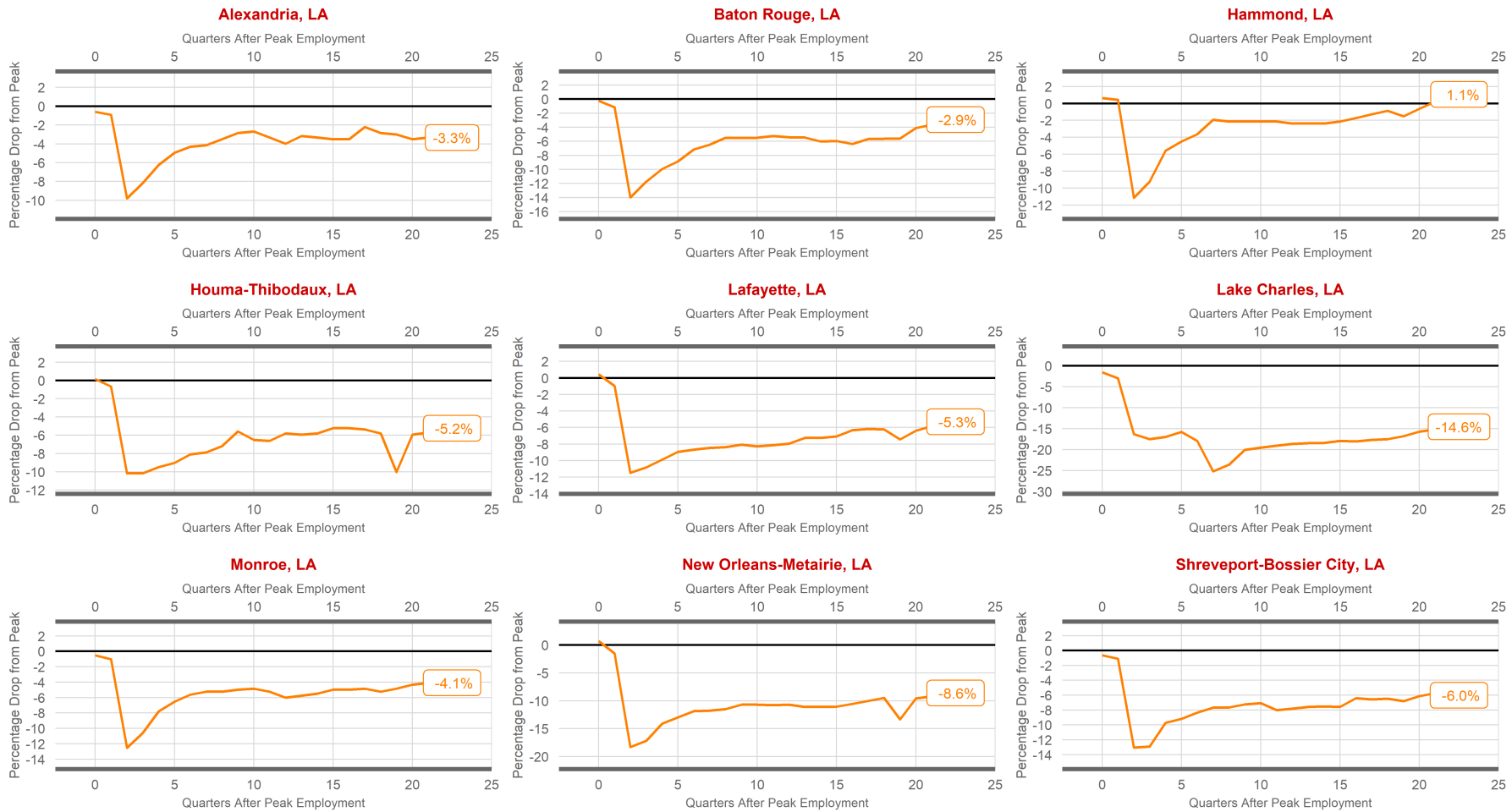


Source: Raw data from the Bureau of Labor Statistics. Projections by Gary A. Wagner, Ph.D.

Metro Area Employment: COVID Job Losses and Recovery Relative to 2019:Q4

Figure 8: Metro Area Employment: COVID Job Losses and Recovery Relative to 2019:Q4

Employment data through Dec 2021



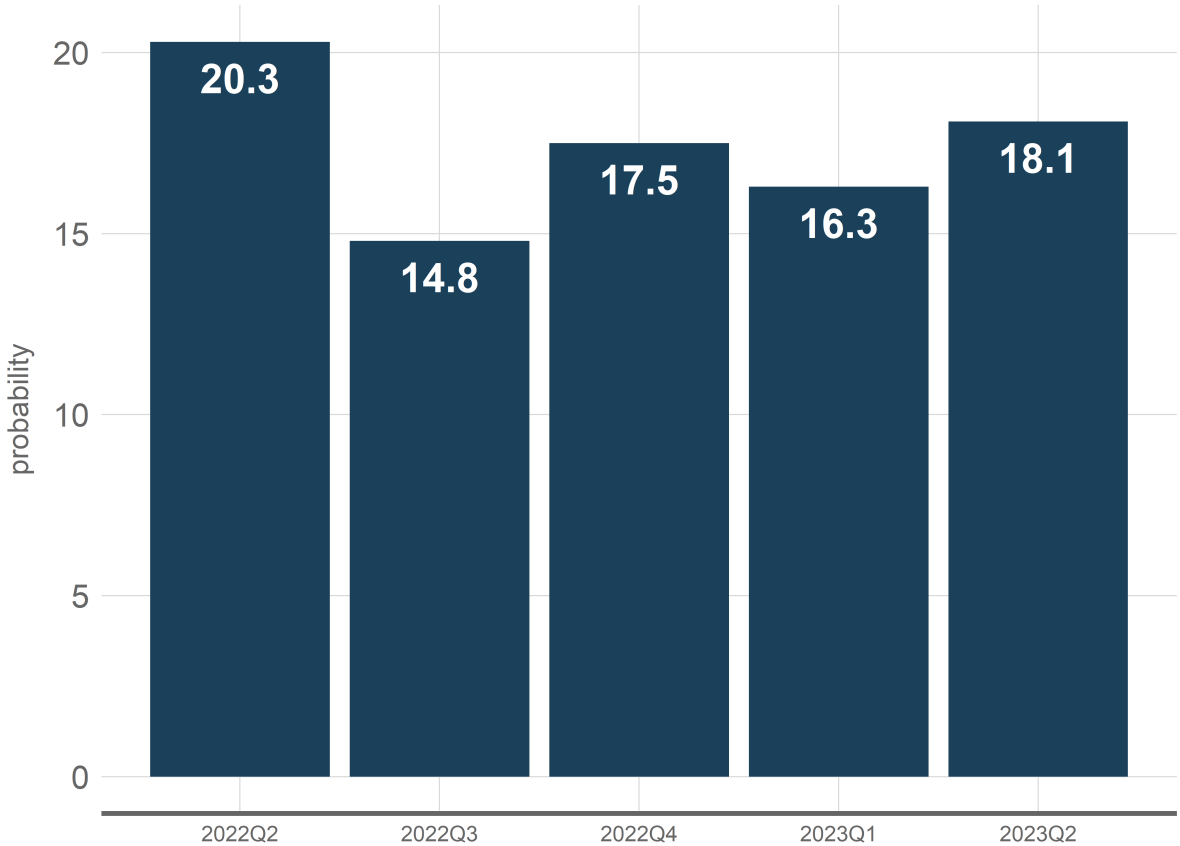
Source: Raw data from the Bureau of Labor Statistics.

National Recession Probabilities for Upcoming Quarters

Figure 9: Projected National Recession Probabilities

Survey of Professional Forecasters: Recession Probabilities for Future Quarters

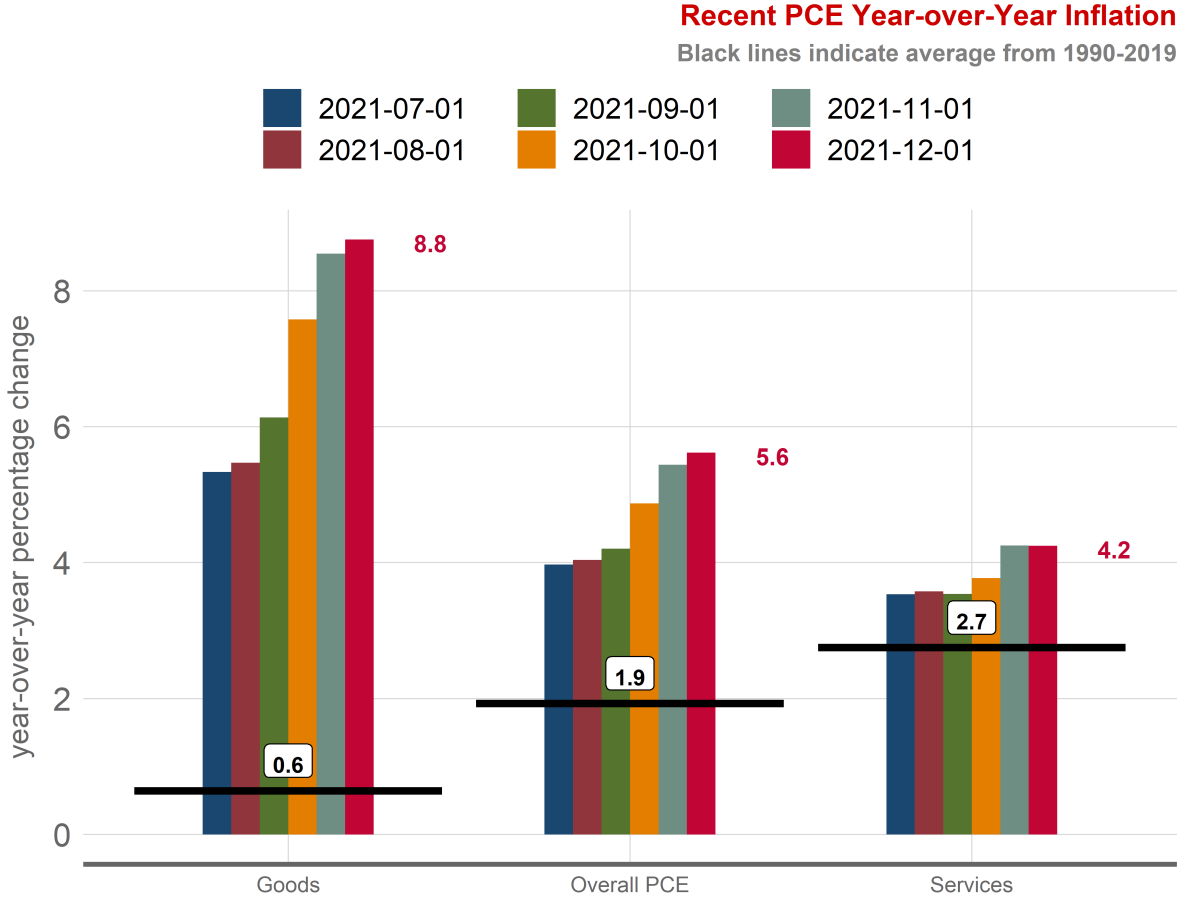
Date of projections: 2022:Q1



Source: Federal Reserve Bank of Philadelphia

Recent Inflation Metrics: Personal Consumption Expenditures (PCE) Price Index

Figure 10: Recent Inflation Measures Relative to Historical Norms



Source: Bureau of Economic Analysis.

Projection Errors from Previous Louisiana Economic Activity Forecast

Table 2: One-Quarter Ahead Projection Errors: 2021:Q3 Projections for 2021:Q4

| Variable | Baseline Projection | Actual Value | Absolute % Error |
|-----------------------------------|----------------------------|---------------------|-------------------------|
| employment (statewide) | 1849.20 | 1866.00 | 0.90 |
| unemployment rate | 5.90 | 5.10 | 15.69 |
| GDP | 232023.6 | 227252.6 | 2.10 |
| FHFA home price index | 318.90 | 326.80 | 2.42 |
| Alexandria MSA employment | 60.50 | 59.90 | 1.00 |
| Baton Rouge MSA employment | 389.20 | 395.60 | 1.62 |
| Hammond MSA employment | 46.20 | 46.60 | 0.86 |
| Houma-Thibodaux MSA employment | 80.60 | 82.40 | 2.18 |
| Lafayette MSA employment | 193.60 | 193.30 | 0.16 |
| Lake Charles MSA employment | 94.20 | 95.90 | 1.77 |
| Monroe MSA employment | 74.70 | 75.00 | 0.40 |
| New Orleans MSA employment | 531.10 | 534.70 | 0.67 |
| Shreveport-Bossier MSA employment | 169.60 | 169.80 | 0.12 |

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.

- **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 = PRICENPQUSD). 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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