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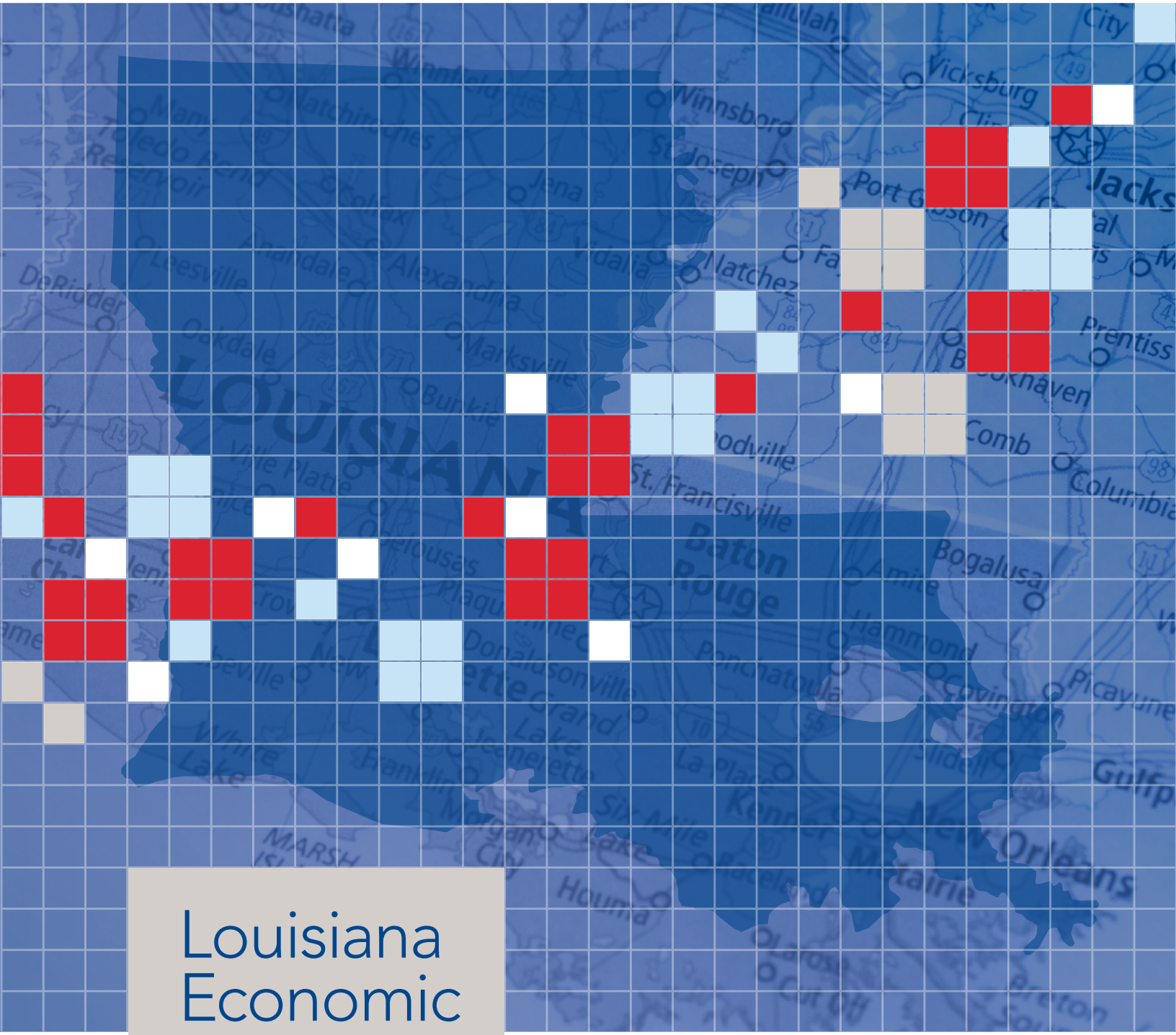

Louisiana Economic ABSTRACT

2022-2023

VOLUME 2

COLLEGE OF BUSINESS

Dean's Message

I am pleased to share the second edition of the Louisiana Economic Abstract produced by Louisiana Tech University's Center for Economic Research and written by the Center's director, Dr. Patrick Scott. This report, with a goal of providing state-wide analysis and forecasts, will benefit the strategic work of our lawmakers, economists, community leaders, and business owners.

The Louisiana Economic Abstract builds on other Center efforts—like the quarterly Regional Economic Analysis of Louisiana (REAL) Report, a series of publications designed to provide insight into recent economic developments in Louisiana. This report is written by faculty and students within the College of Business, providing an invaluable learning experience for our economics undergraduates. The Center also serves as a hub of industry and research expertise, consulting with local and regional governments on projects and providing analysis to media. If you are interested in partnering with the Center for Economic Research on a consulting project, I encourage you to reach out to Dr. Patrick Scott at pscott@latech.edu to see how the Center can serve your specific needs.

This publication and others produced by the Center are available for download at business.LATech.edu/CER. Please feel free to contact Dr. Scott for more information on this analysis. Media inquiries can be directed to waldroup@latech.edu.

I hope the Louisiana Economic Abstract serves as a valuable tool for your efforts in our state.

Sincerely,

CHRISTOPHER L. MARTIN, PH.D.
Dean and Chase Endowed Professor
College of Business
Louisiana Tech University

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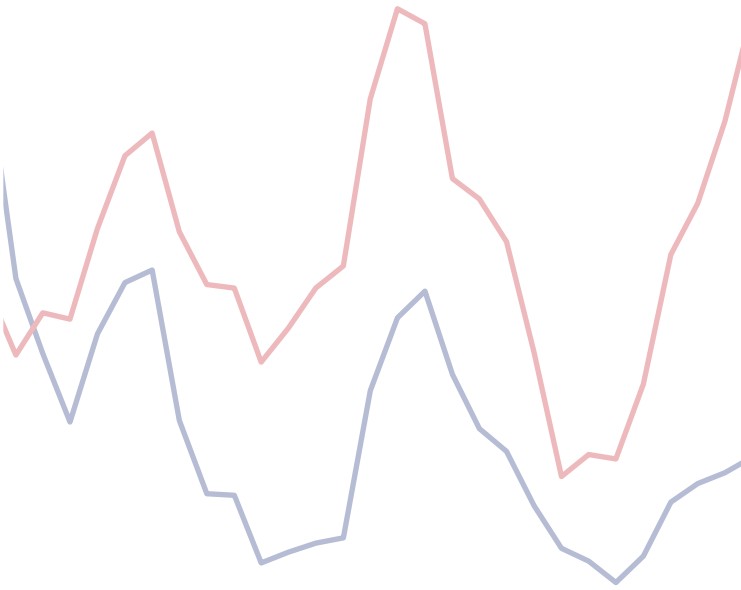

The Center for Economic Research (CER) provides economic analysis to private businesses and government agencies throughout Louisiana and our region. Housed within the College of Business at Louisiana Tech University, the Center serves to connect the University community with economic development efforts in the state by supplying detailed economic impact analysis of both private enterprise and government policy initiatives. The Center is a member of the Association for University Business and Economic Research (AUBER), the premier professional organization for regional economics centers across the U.S.

As a part of its community outreach, the CER partners with businesses, industry groups, local area chambers of commerce, and other economic research centers to provide updates of the ever-changing economic landscape and forecasts for the greater Louisiana area. The Center also collaborates with faculty in co-curricular efforts by producing the quarterly Regional Economic Analysis of Louisiana (REAL) Report with College of Business economics and finance students.

Dr. Patrick Scott is an associate professor of economics and director of the Center for Economic Research. He teaches macroeconomics, monetary theory, and research methods at Louisiana Tech University. His research interests include optimal monetary policy models, dynamic general equilibrium models, time series forecasting, and Bayesian econometrics.

Contact Patrick at pscott@latech.edu for more information on this report or the Center for Economic Research.

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Preface

This publication is the second edition in an ongoing annual series designed to report state-level economic developments and the impact of policies within Louisiana. In my capacity as an associate professor and director of the Center for Economic Research, I am frequently asked to provide context and analysis pertaining to the broader state economy. To better understand the present, we must also understand the past. As an academician and macroeconomist, I prefer to teach economic theory and concepts through data science. This feels more intellectually honest since so much of macroeconomic theory is motivated by empirical observations and stylized facts.

The Center for Economic Research has been publishing the Regional Economic Analysis of Louisiana (REAL) Report quarterly for four years. As I talked with numerous business leaders, policymakers, and news outlets about the report, it became clear that a more comprehensive picture of the state economy could and should be painted. There are many other reports that discuss the state of Louisiana's economic situation produced by academics, private-sector professionals, and government officials alike. The purpose of this report is not to replace these other resources but to provide another dimension to the discussion of economic welfare in Louisiana. This report sits squarely at the intersection of economic rationale and data science.

The Louisiana Economic Abstract takes a bird's-eye view of the Pelican State economy from a distinctly macroeconomic perspective. With that in mind, three distinct areas of the economy are analyzed. First, employment, unemployment, and labor dynamics are broken down across the region. Because traditional output measures tend to only focus on final goods and services production, labor market indicators are favored by many regional economists over output measures. This section includes a detailed analysis of employment trends alongside wage outcomes. Second, output measures, which are universally considered the primary metric for describing the wellbeing of a state or region, are explored for the state and along broad industry-level classifications. Personal income measures are also included since Louisiana has long suffered with a disconnect between gross state product and total personal income. Third, homeownership is such a large part of wealth building that it would be remiss to not discuss it here. House prices as well as shifting real estate market movements are explored to better understand personal wealth drivers in the state.

The data used in this report are mostly available from public (open) sources. Most of the public data are provided from the Bureau of Economic Analysis, the U.S. Census, the Bureau of Labor Statistics, and the Federal Reserve Economic Data Base. Additionally, some other data mentioned are from proprietary sources. All publicly available data are recent at the time of publication (November 1, 2022), but these data are bound by release dates beyond my control. Some data are at the annual frequency and are subject to relatively long lag times to release as well.

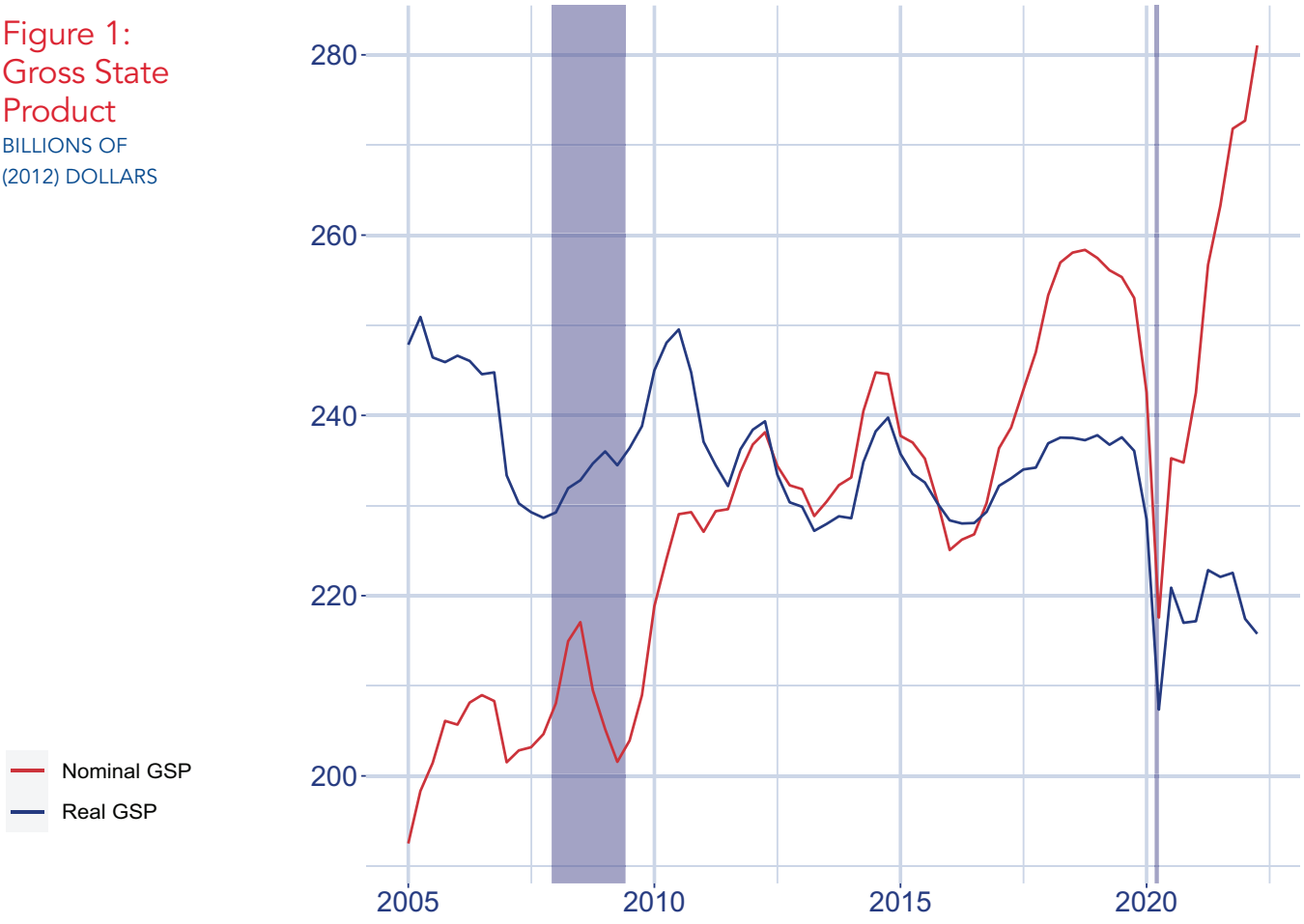
This report contains some forecasts of economic indicators for the state and local region. These forecasts are made utilizing multiple modeling methodologies. Some models utilized are structural time series models while others are relatively atheoretical models (i.e., VARs, VECMs, vector ARMA models, etc.). Regardless of modeling method, most forecasts are generally made employing a Bayesian model averaging approach where many models are considered and the forecasts from relatively better performing models are given disproportionately more importance in the weighting algorithm. In this way, the forecasts better summarize the probabilistic uncertainty that any one model is not properly specified. All forecasts are provided with a region of uncertainty around the point estimates. Depending upon the variable being forecasted, the upper bound and lower bound are frequently interpreted as optimistic or pessimistic cases of the forecast. This is not entirely accurate though as they represent the upper and lower bounds of statistically equivalent forecasts. In general, the point estimate of the forecast within the band of uncertainty is the most likely to occur.

2022 has brought its share of economic disruptions to Louisiana. Historically high consumer prices, labor shortages across many industries, persistent supply chain issues, and international conflict between Russia and Ukraine have all left their footprint across the economic landscape. While at the time of this report, there were no named storm systems that appeared to directly impact our area, the speed with which these can develop and become major events is well known to us. Caution is urged on the part of the reader when consuming these forecasts. That said, there have been three large scale disruptions etched within the topography of Louisiana's economic data. The precedent of these disruptions over the past 16 years means that they are not wholly unpredictable, and thus the forecasts do accommodate the nonzero probability of another hurricane-sized economic event.

Output & Income

In the overarching historical context of measuring economic welfare for nations and states, production levels are the first indicator of income and prosperity. Output and income levels are so closely approximated by one another that in just about every "Principle of Economics" classroom in America, we teach that output equals income (assuming Walras' Law holds). Measurement error problems for both production and income data reduce the helpfulness of relying solely on these variables for state level and local area economies. Nonetheless, income and output estimators are all primary economic indicators and usually are the first stop in gauging economic performance. Different estimators exist to capture either different features of the economy, or to reflect methodological nuances among other estimators. Generally, most estimators communicate the same qualitative result. The data described below are intended to provide multiple points of view in an effort to supply context to the evolving Louisiana economy.

Figure 1:
Gross State Product
BILLIONS OF (2012) DOLLARS



Gross State Product

Gross state product (GSP) is a primary economic indicator and is broadly considered to be the most important barometer of economic welfare in a state. For Louisiana, GSP is more nuanced than comparative state economies of similar size. Since Louisiana produces a relatively higher proportion of intermediate goods than final goods, this indicator does not fully communicate underlying economic dynamics or diversity of industries within the state. The proportion of value added to total economic value for Louisiana is approximately 48%. This means that just over half of what is produced in Louisiana supports the production of final goods and services in other states[1]. Lower values indicate reduced opportunity for the state economy since the production of final goods and services represents the largest component of value added. Understanding this about Louisiana helps to explain labor market dynamics at the state level during the financial crisis of 2007-2009—more on that below.

Figure 1 depicts nominal and real GSP for the past 17 years in the state. Real GSP accounts for changes in the price level and is chained to 2012 dollars. Nominal GSP is always expressed in current dollars. Nominal GSP is clearly trending upwards despite the short run drop off during the COVID-19 recession. This largely reflects the effect of inflation during the 21st Century. Real GSP exhibits a moderate downward trend which reflects reduced incomes either from lower economic prosperity or state-level production shifting even more to intermediate goods production. Like national gross domestic product data, real GSP for Louisiana inherits reduced volatility. Unlike national numbers though, real and nominal GSP overlap three times (two times beyond the base year) for the state. This indicates an economy that stagnated for around the five-year period of 2012-2017.

As monetary policy tightens across the country, the inflation-unemployment tradeoff is likely to exacerbate productivity concerns for Louisiana over the next year.

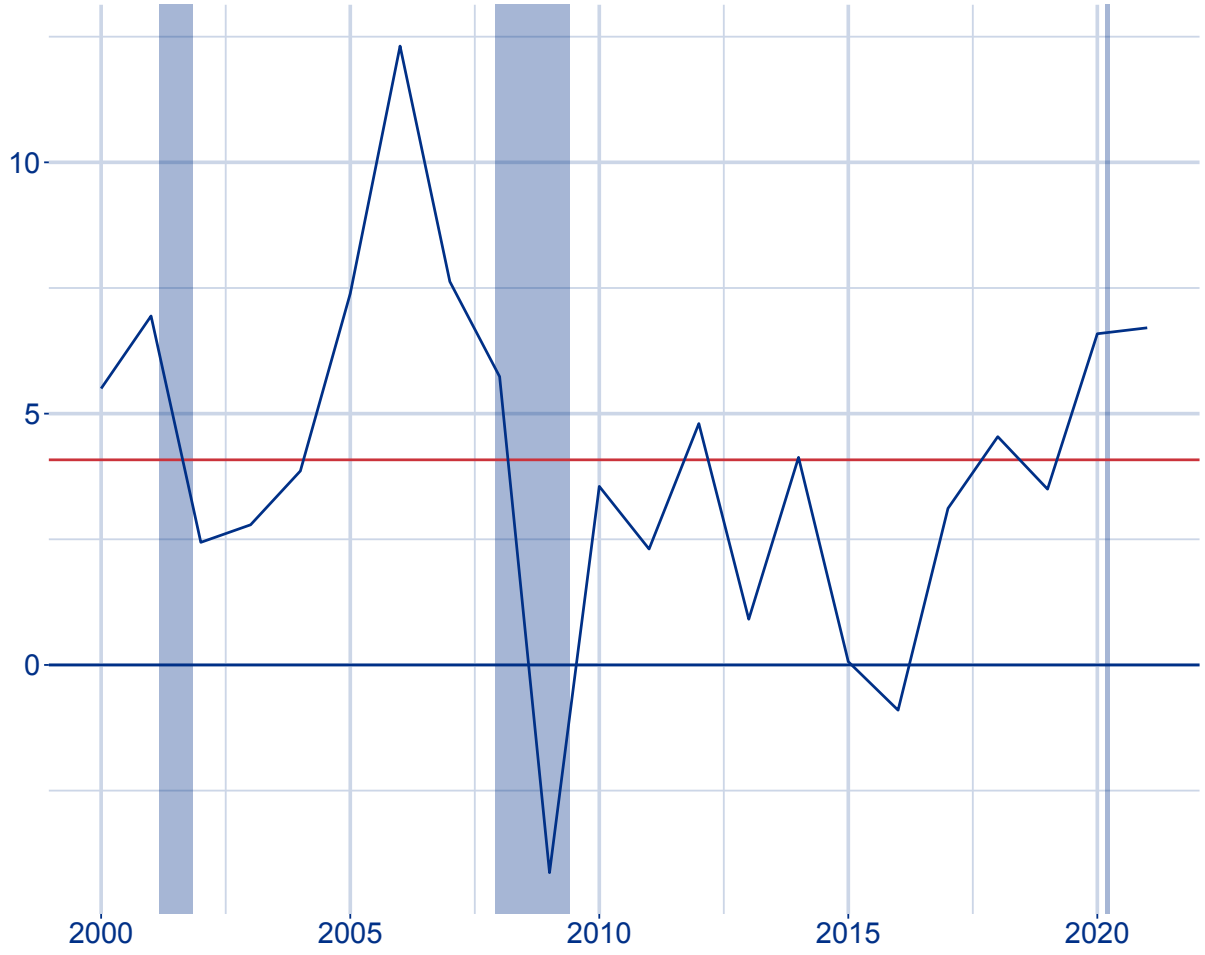
The peak of economic performance before the recession hit had not been felt in Louisiana since about 2010. The full magnitude of the decline in real economic activity was almost 13% over a six-month period. While the COVID recession nationally was the shortest in U.S. history, Louisiana real GSP still has not recovered from this shock. The magnitude of this shock is the worst we have observed in over 50 years, though this is not shown here. Louisiana has recovered about 40% of the lost output. While employment has recovered relatively more, output measures are recovering at a slower rate. The magnitude of the employment gap at the time of this report indicates that output productivity has fallen across the state. The upward pressure in prices is clearly visible in nominal GDP. As monetary policy tightens across the country, the inflation-unemployment tradeoff is likely to exacerbate productivity concerns for Louisiana over the next year.

Personal Income

Over 2020 and 2021, we have seen a divergence in output and personal income data in Louisiana. This divergence is apparent in the federal level data as well. Usually, personal income and GDP data coincide with one another, but the aggregate impact of stimulative fiscal policy on household incomes combined with the relatively lopsided nature of jobs losses in the economy, pushed these two indicators apart from one another. Stimulative fiscal policy, both direct household stimulus payments and historically generous unemployment benefits, propped up household balance sheets despite job losses. Additionally, most job losses disproportionately impacted low-wage earners nationwide. A broad cross section of the state economy has still not

1 In comparison, this proportion is almost 64% for Texas.

Figure 2: Personal Income Per Capita
GROWTH RATE



A broad cross section of the state economy has still not recovered from the initial shock when pandemic uncertainty was at its highest.

recovered from the initial shock when pandemic uncertainty was at its highest. Nearly 70% of all pandemic-related job losses in Louisiana were below the median salary for the state, and many of the jobs currently left unfilled were vacated by workers that were not the sole income earner of the household. Early on in the pandemic, aggregate personal income data were not impacted as much as they would if employment losses occurred at the median wage level. This disparity among these indicators can only be short-lived. Personal income has plateaued as has output growth for the state. The traditional dynamic roles are now consistent with each other, and Louisiana is feeling this hurt.

Figure 2 reflects per capita personal income growth for the past 20 years. The average growth rate is a bright spot for Louisiana at 4.1% on an annual basis. This is tempered with a declining growth rate in population since 2007. While personal income per capita is the ratio of personal income to resident population, this number can increase by either growing the numerator (good growth) or shrinking the denominator (not good growth). 2010 was the last year that the population grew above 1%. Since 2017, the population has declined every year in Louisiana. Additionally, Louisiana has experienced an acceleration in the number of people exiting the state due to lack of quality health care during the pandemic and declining economic opportunity. The peak in per capita personal income growth occurs in 2006 due to the exodus of Louisiana residents that occurred in the aftermath of Katrina. This serves to pull up the average growth rate, but is not caused by sustained growth in the economy. Since the recession

caused by the financial crisis of 2007 to 2009 (what economists have dubbed the Great Recession since it followed a period identified as the Great Moderation), there have only been five annual data points of per capita personal income growth above the long-run average. This is a warning sign for the Louisiana economy over the long-term. In the short-term, this indicator is above the long-run average, thus for now, it is a strength.

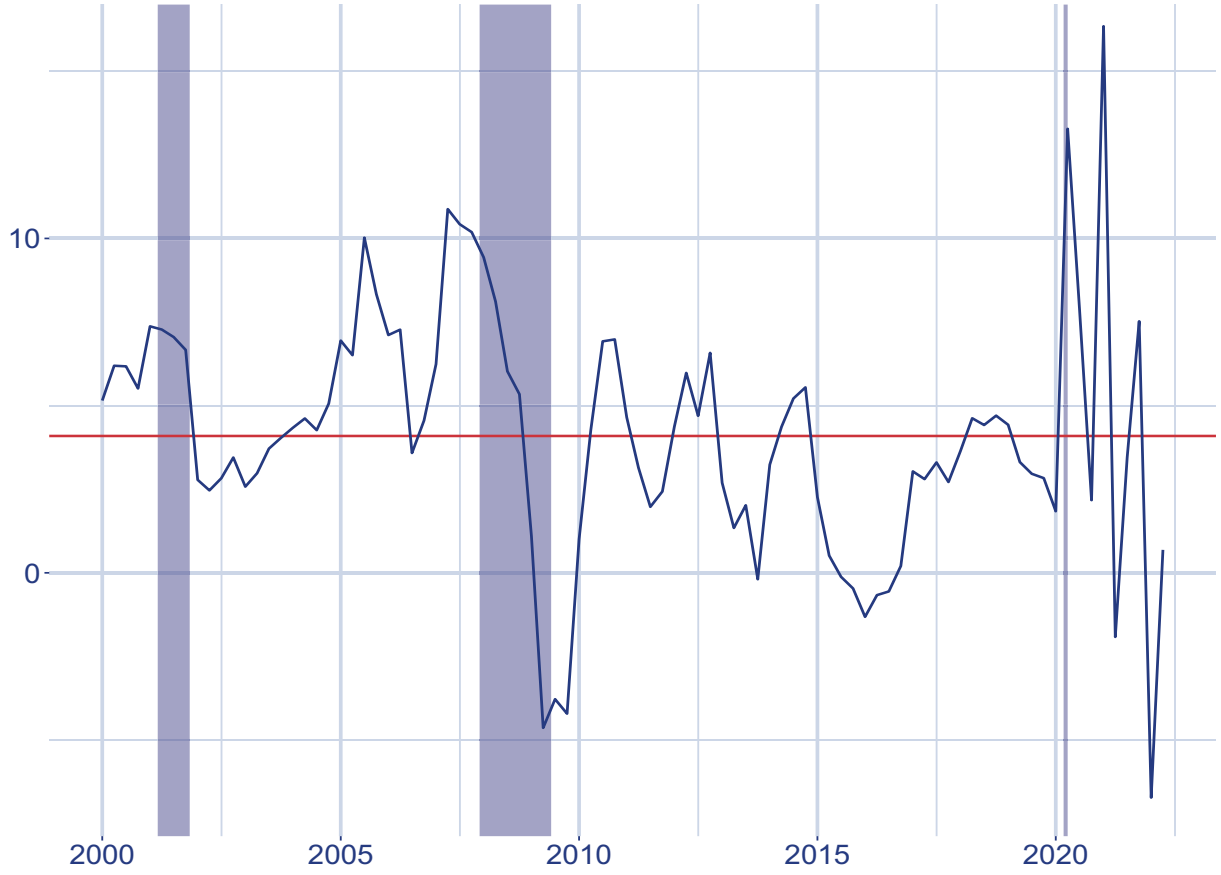


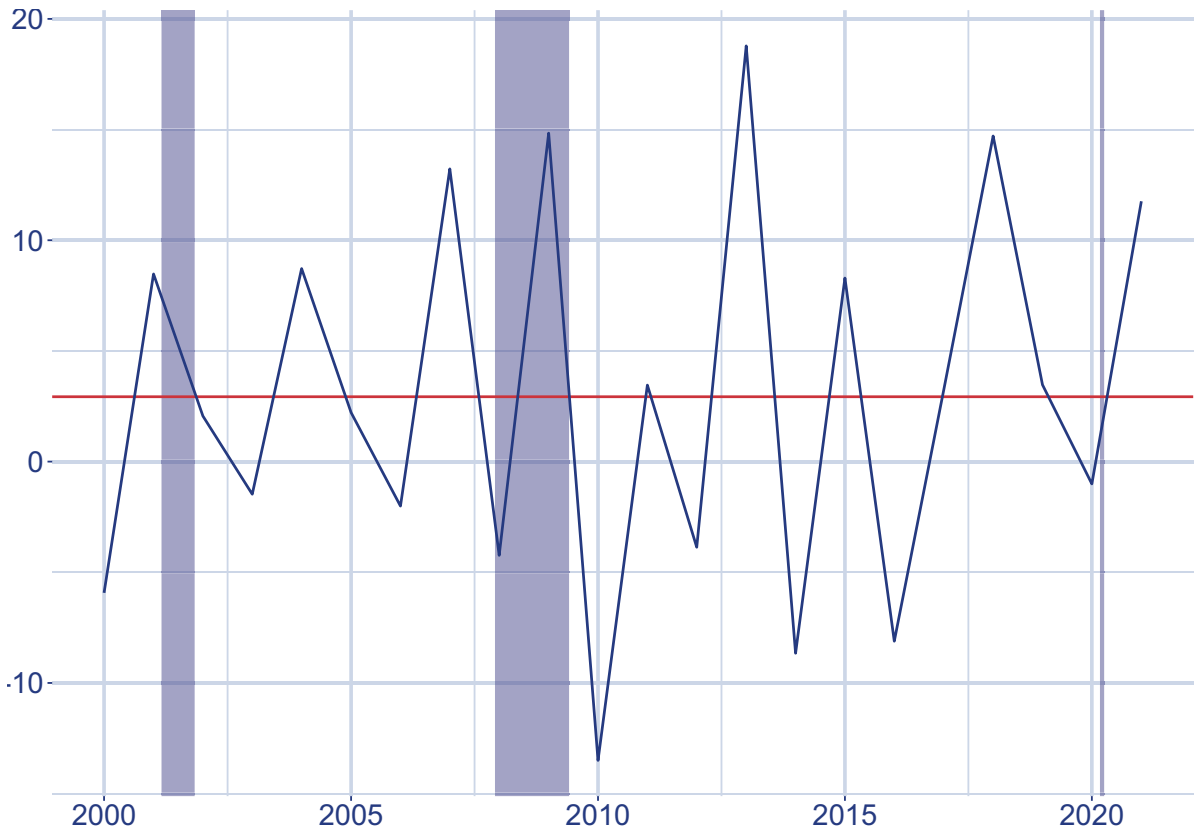
Figure 3: Total Personal Income
GROWTH RATE

Figure 3 depicts the growth rate of personal income for Louisiana. This metric tells us how incomes grew from sources like paychecks, employer benefits, business equity, rental property incomes, and transfer payments[2]. The long-term growth rate for personal income (about 4%) is higher than the average growth rate for real gross state product (about -0.6%). The past nine quarters, starting in the second quarter of 2020, exhibit considerable disruption to the long-run dynamics of this variable. This is the dual effect of both the economic crisis brought on by COVID-19 as well as the policy response to it on a federal level. Policy responses in the second quarter of 2020 and the first quarter of 2021 boosted aggregate income levels above the long-run trend. The severity of the economic crisis, combined with scattershot economic policy from both the Trump and Biden administrations, have induced historically high levels of volatility in personal income growth[3]. The magnitude of the gains in personal income are great for the state, but the lows that we are also experiencing are well below normal considering traditional business cycle dynamics. The increased volatility also brings with it additional uncertainty about the long-run stability of spending power and household level investment over the intermediate term.

The increased volatility of personal income growth brings with it uncertainty about the long-run stability of spending power at the household level.

2 Though this statistic excludes capital gains from stocks, bonds, and other financial assets.
3 This growth is also seasonally adjusted, so this is not a function of seasonality in the data.

Figure 4: Median Household Income
GROWTH RATE



Median Household Income

Median household income estimates are produced by the U.S. Census and are subject to swiftly changing methodological differences in the calculated estimates. Currently, state estimates are made using a method referred to as linear interpolation, which assumes a constant population density within defined income intervals. Given the relatively static nature of population growth in recent years for Louisiana, this is not likely to be a problem. **Figure 4** highlights the relative volatility of growth in median household income estimates. 2021 (the last observation since these annual estimates are produced) brought with it the highest annual median income of over $57,000. Median incomes shrank in 2020, but generous federal benefits prevented this from dropping below trend. The growth rate from 2020 to 2021 was above the long-run trend, 9.2%, and fully compensated workers for the relative change in the price level. Median household income is currently 4.1% above long-run trend. While the inflation picture is not at all optimistic for households, particularly for those on the lower end of the distribution, if nominal wages are at least able to keep up then some of the pain felt at the register is offset.

Industry Level Output

Gross state product estimates by major industries are produced at the quarterly frequency by the Bureau of Economic Analysis. Some less major industries are also available, but only at the annual frequency. This degree of granularity about production in Louisiana is helpful since broad GSP estimates are relatively noisy (not all industries move in tandem with one another). Economists frequently single out specific industries to better gauge economic movements, long-term strengths and weaknesses, and sources of potential volatility that can spill over into other sectors. For example, relatively strong growth in construction might signal future growth in retail sales, financing, and insurance, as well as manufacturing. Additionally, robust growth in a particular sector may signal employment growth opportunities that accompany business investment.

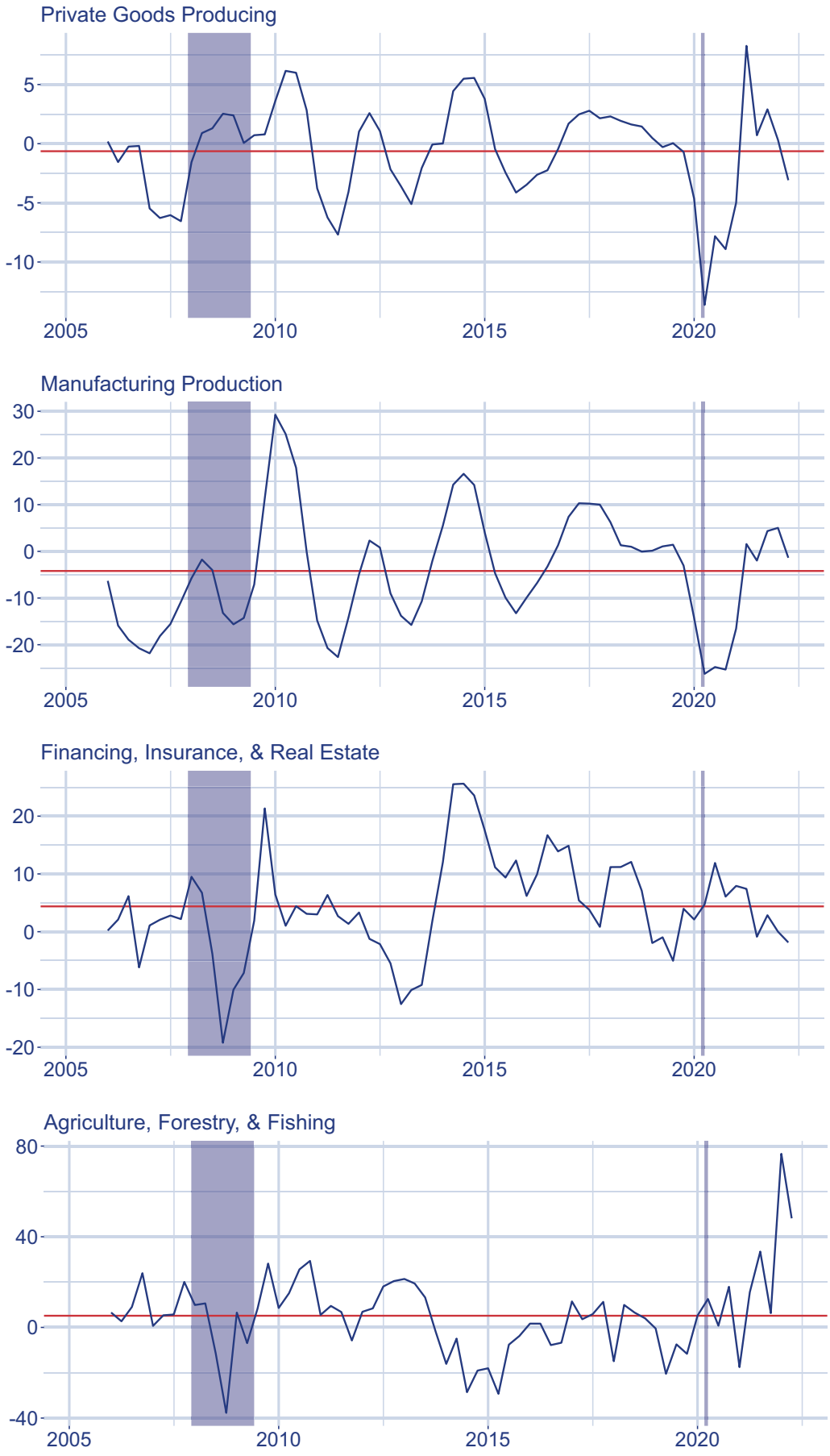
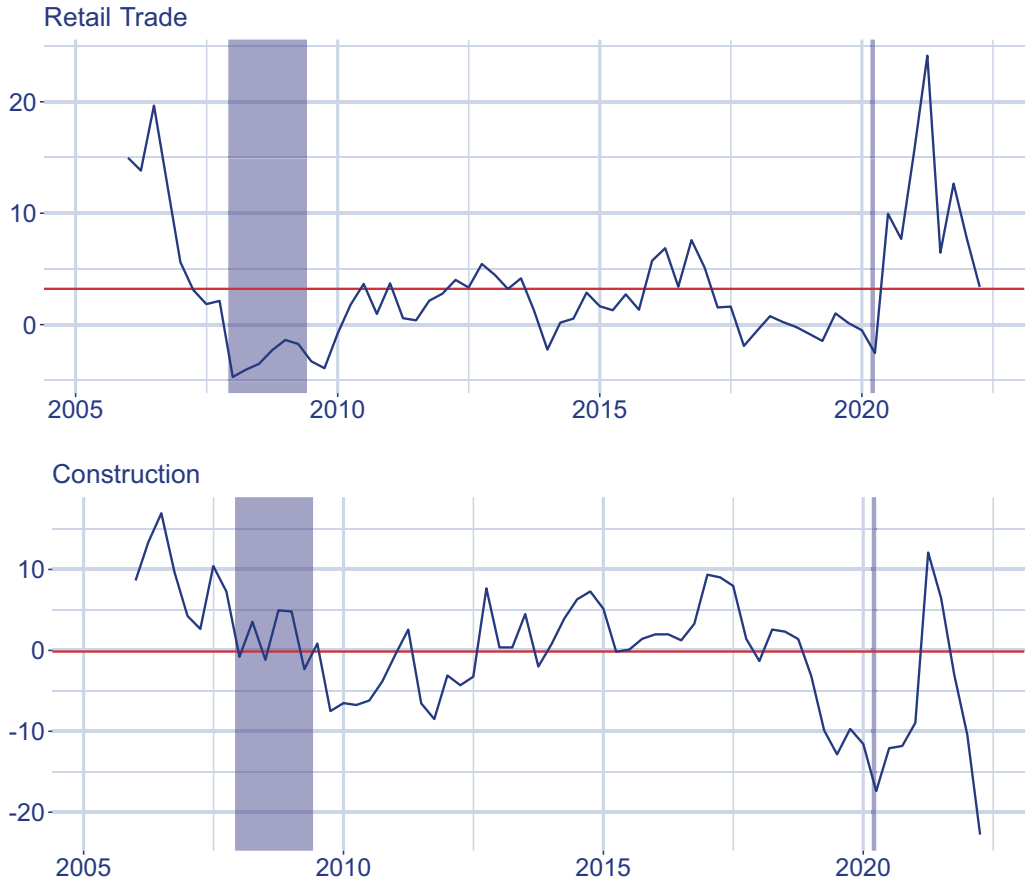


Figure 5: Industry Level Real Output

GROWTH RATE

Figure 5: Industry Level Real Output

GROWTH RATE (CONT.)



Private goods production, manufacturing production, and construction all have negative long-run trends and represent triage opportunities for state policy makers.

Figure 5 shows production growth rates for six major industries in Louisiana that are not necessarily mutually exclusive to one another. For example, private-goods production encompasses all of the other five sectors shown but is less than total GSP. The other five sectors, manufacturing production (including petrochemical manufacturing), retail trade, construction, agriculture, and financing, comprise nearly 60% of private goods production and almost half of all GSP in Louisiana. As with the other figures so far, the red line denotes the long-run average growth rate. Three out of six industry growth rates are currently at or above their long-run trend. While in general, this would normally be good news for a state, some of these long-run average growth rates are below zero, indicating that they are shrinking. Four out of six broad industry classifications exhibit negative growth, and all are in decline. Private goods production, manufacturing production, and construction all have negative long-run trends and represent triage opportunities for state policy makers. While it is difficult to tell with these preliminary estimates[4], Louisiana could be slipping into another recessionary phase.

4 Third quarter estimates of 2022 real GSP will not be out until December (after publication).

Forecasts

Output and income forecasts are based on the estimation of 132 empirical models. These models include univariate and multivariate time series models, as well as theoretical economic models. In some cases, the models utilize just past lags of themselves, and in some cases, additional economic variables are treated both exogenously and endogenously. Because the Louisiana economy has experienced multiple large-scale disruptions, a few stochastic volatility models are considered as well. All models are raced against a training data sample to determine relative forecasting performance. The algorithm is constructed to measure forecasting efficacy and not necessarily fit of the underlying data generating process. Models that forecast better are given priority over models that do not perform as well. The weighted average of these forecasts generates the distribution shown below in the context of the data being forecasted.

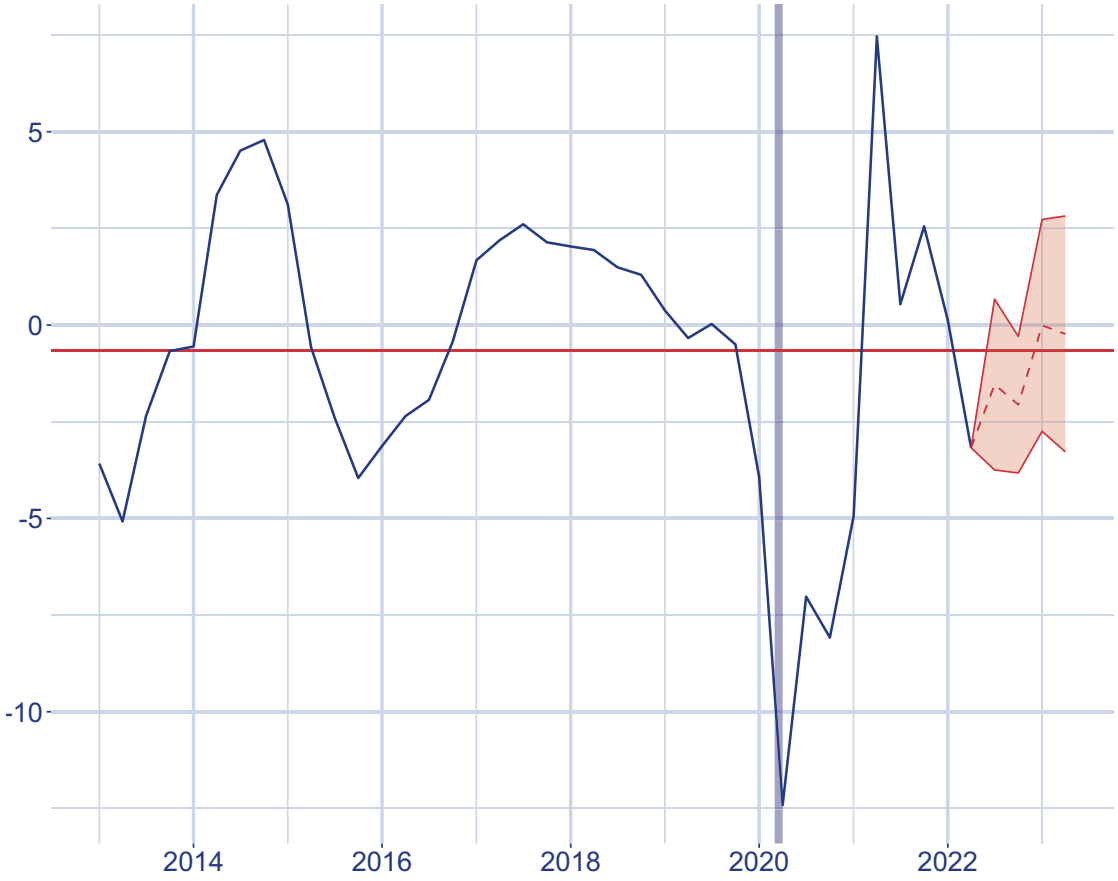


Figure 6: Forecasted Gross State Product
GROWTH RATE

Figure 6 combines both observed and forecasted real GSP growth rates for Louisiana. The average of all the forecasts denoted by the red dashed line represents the most likely outcome while the solid upper and lower lines represent optimistic and pessimistic forecasts. Real GSP growth rate is expected to stop falling in the coming months. A reversion to the long-run growth rate (denoted by the horizontal solid red line) is expected, but since it is negative, this is not an optimistic outcome for the state. At the time of this report, national macroeconomic indicators suggest the U.S. is already in a recession amid tightening monetary policy. This is likely to create a recessionary phase for the state of reduced magnitude relative to the nation because of the structure of the Louisiana economy. The most probable path for growth rate of real output for the state is still negative for the next four quarters. The optimistic side of the forecast region still puts Louisiana on the path of oscillating between positive and negative growth for the next six

months. This figure characterizes the main thrust of Louisiana's economic problem. The real economy is not growing when other states around us are. While this is disheartening, this represents an opportunity to benefit from keen policymaking as the Louisiana economy pivots into the third decade of the 21st Century.

Figure 7: Forecasted Total Personal Income
GROWTH RATE

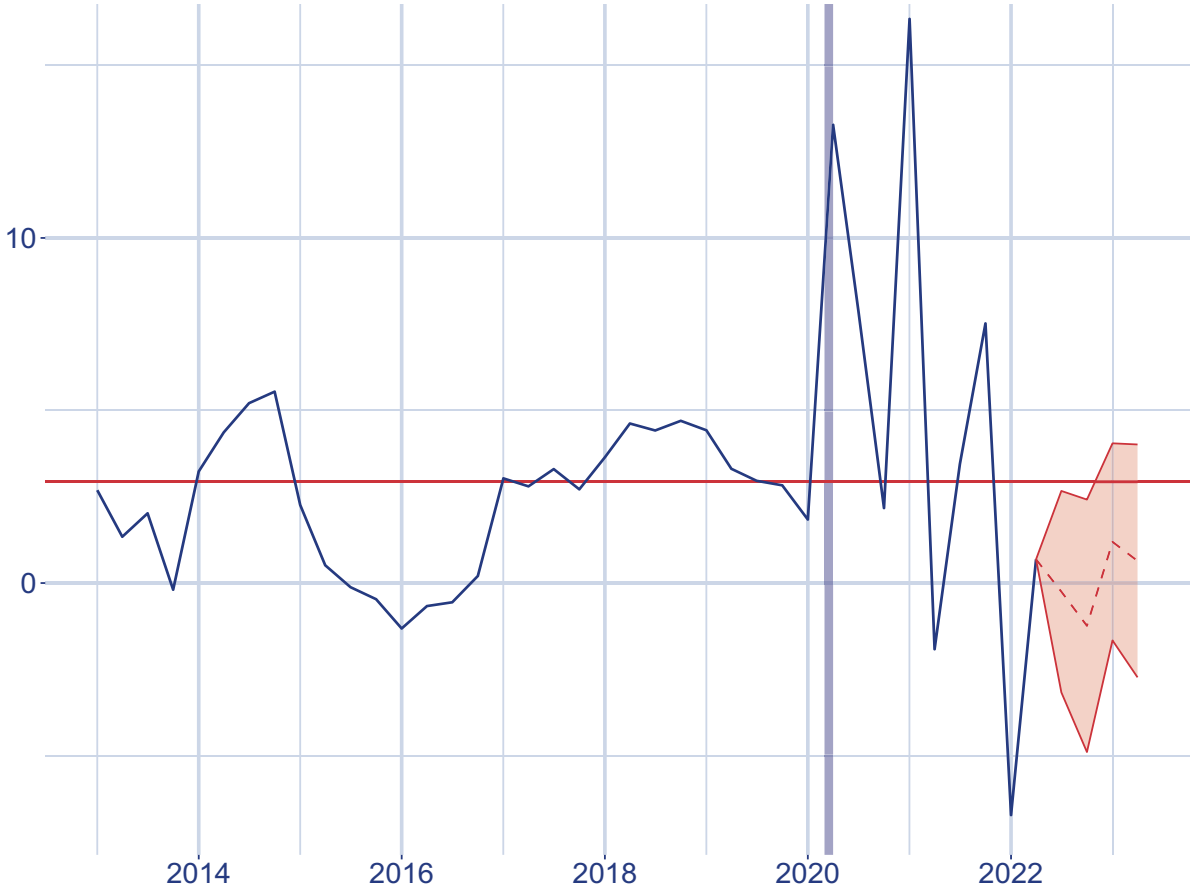


Figure 7 quantifies the annual growth rate of total personal income along with forecasted growth. Like with Figure 6, the horizontal solid red line represents the long-run average growth rate, and the red shaded region describes the range of statistically equivalent forecasts. After historically high personal income gains at the beginning of the COVID pandemic time frame, growth has faltered, and the variance has increased. This does more than just make forecasting difficult; it means that the probability of individually finding yourself with positive personal income gains is also obscured. On average, personal incomes are not expected to grow over the next year. Since three out of the past four quarterly observations have been negative, the lower bound of the forecast region projects declining personal incomes. Personal income growth is expected to remain below long-run levels into 2023, which is consistent with the Real GSP growth forecasts in Figure 6.

Table 1: Forecasted Growth Rates

	REAL GROSS STATE PRODUCT			TOTAL PERSONAL INCOME		
Date	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic
2022: Q4	-3.75	-1.54	0.67	-3.17	-0.25	2.67
2023: Q1	-3.82	-2.06	-0.29	-4.90	-1.24	2.42
2023: Q2	-2.75	-0.01	2.73	-1.66	1.19	4.05
2023: Q3	-3.28	-0.23	2.82	-2.73	0.64	4.02

Employment & Unemployment

Labor markets are arguably the preferred indicator of state and sub-state level economic activity. Labor market data provides relatively more clarity since they are less volatile than output data. They usually are updated at a higher frequency as well. The only drawback to this is that labor market data are not directly (but indirectly) related to economic wealth. One must infer that more employment leads to increased wages and thus income. By this train of thought, workforce data are not primary economic indicators. But at the regional level, these variables communicate more since they are not subject to the noise of output and income data. Additionally, revisions to employment/unemployment data are generally smaller and less persistent than output data. As a result, these data are available for a more disaggregated cross section of the region.

Total Nonfarm Employment

Nonfarm employment is generally goods and services employment which includes both construction and manufacturing hiring. It does not include private household employment, nonprofit employment, or farm workers. This is the broadest level indicator of private hiring we have available to us. Estimates are produced monthly by the Bureau of Labor statistics. Because these estimates are based largely on employer surveys, revisions are typically small and not persistent. Relatively sharp movements in nonfarm employment signal economic uncertainty. Long run trends of this data are important because it indicates long run growth or potential. Nonfarm employment does not necessarily correlate to population trends in a given area.

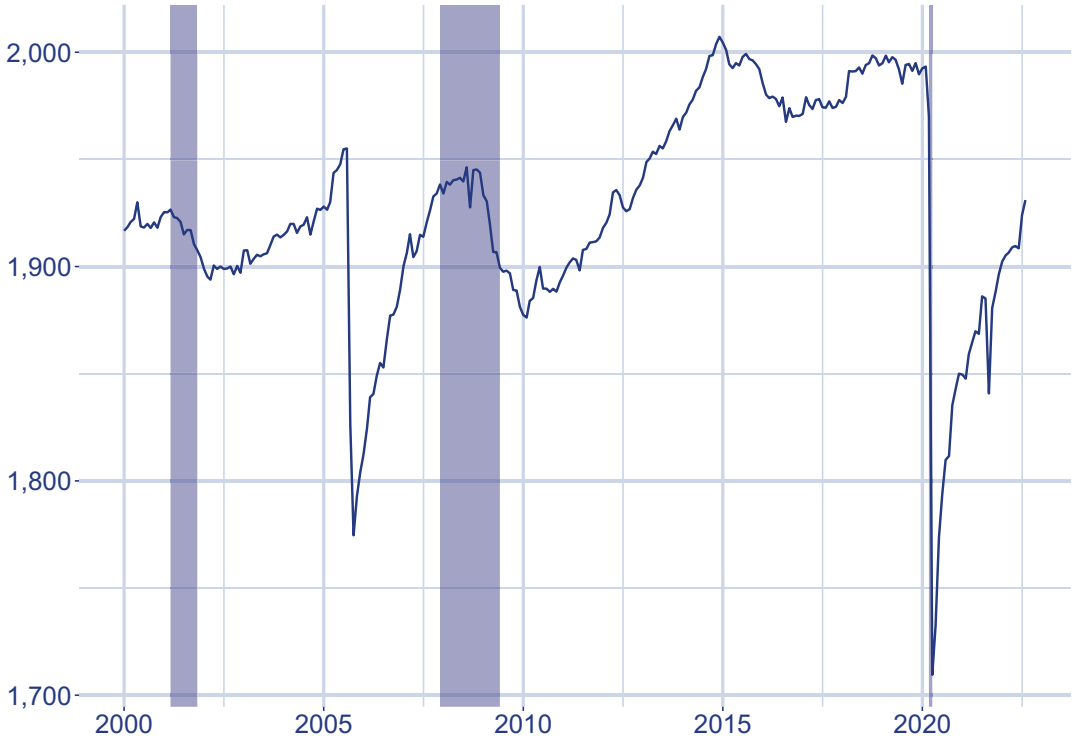


Figure 8: Total Nonfarm Employment
THOUSANDS OF WORKERS

Figure 8 depicts monthly nonfarm employment from 2000 to present in thousands of workers. Generally, nonfarm employment decreases sharply during recessionary periods. We can see this in the 2001 recession, the 2007 to 2009 financial crisis, and the 2020 to 2021 COVID recession. It's been previously mentioned that Louisiana produces disproportionately more intermediate goods

than final goods. As a result, during these recessionary phases, the trough in employment activity usually hits a local minimum after the recession ends for Louisiana. This is exhibited both during the 2001 recession as well as the 2007 to 2009 financial crisis, what economists frequently refer to as the Great Recession since it followed the period of Great Moderation from the mid 1980s to mid 2000s. The exception to this, however, is the COVID recession. During the COVID recession, employment hit a local minimum in the middle of the two-month period that has been identified by the National Bureau of Economic Research for this recession. Louisiana has also experienced an additional shock from Hurricane Katrina that is etched across the economic landscape. Overall, we see three national crises and one large scale regional disruption to employment over the past 20 years that alter the long-run dynamics of this data for our state. In all four cases, employment drops and then takes disproportionately longer to recover. During this more recent crisis, employment has recovered approximately three quarters of the initial losses in private sector hiring. At the time of publication, Louisiana is still down approximately 62,000 jobs compared to pre-pandemic levels. While a small fraction of workers have temporarily left the workforce, most of these losses are attributed to a couple of factors. The population has shrunk by about 48,000 people according to census estimates. Additionally, Louisiana has suffered disproportionately from COVID-related deaths compared with other states of similar size. We have lost over 18,000 people of which nearly 12,000 are estimated to have been actively participating in labor markets. A return to pre-pandemic levels of employment at this phase of the recovery is likely to take some years since it requires long run growth.

A return to pre-pandemic levels of employment at this phase of the recovery is likely to take some years since it requires long run growth.

Figure 9: Total Nonfarm Employment by Economic Crisis

THOUSANDS OF WORKERS

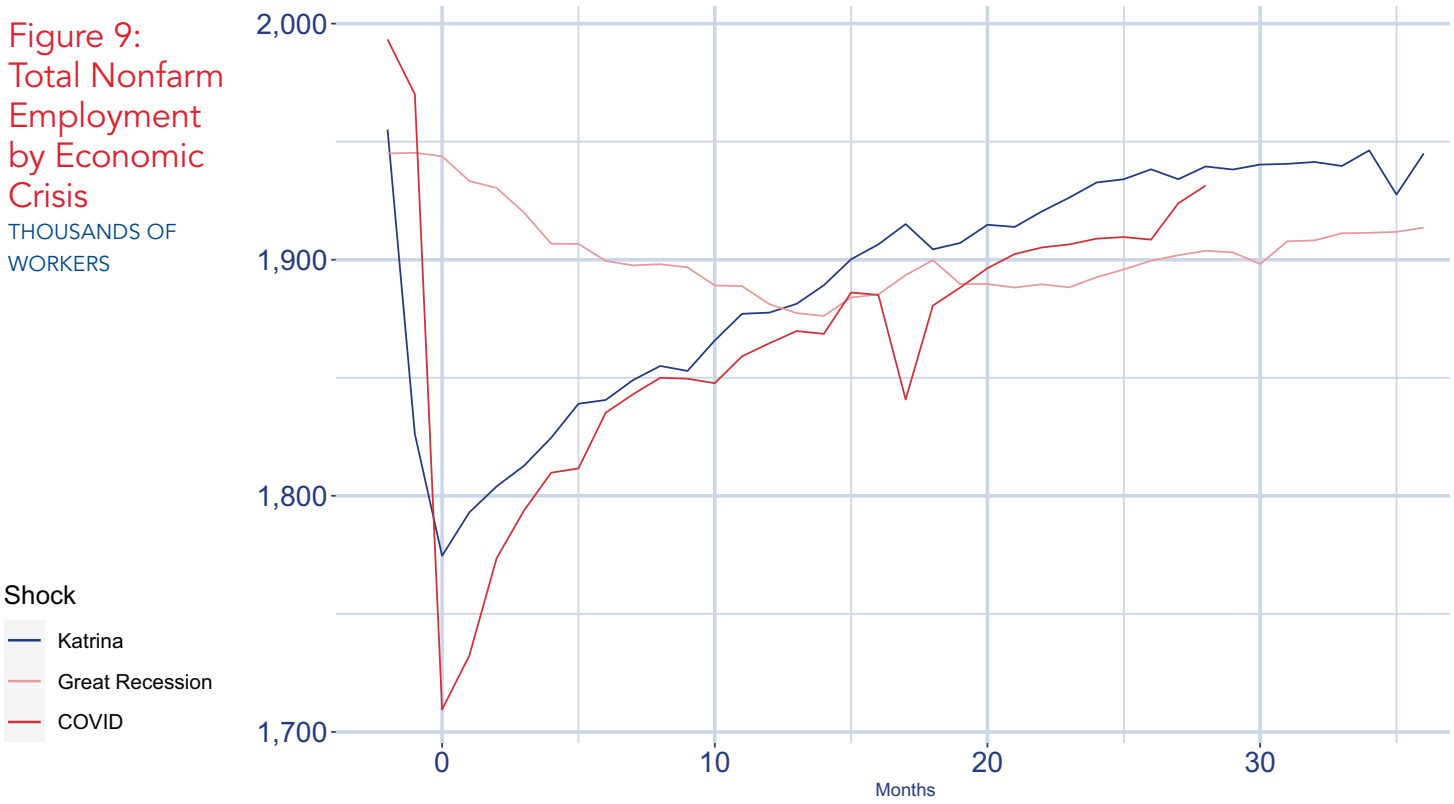


Figure 9 shows the same nonfarm employment data (in thousands) broken down by major economic shocks for Louisiana. Here the blue line represents the level of employment before, during, and after the Hurricane Katrina shock. The pink line indicates employment during the Great Recession. The red line indicates nonfarm employment during the COVID recession. Unlike Figure 8, here the horizontal axis represents months into each economic shock, not a specific point in time.

This allows us to plot these three lines together. It is important to note that for all three of these economic shocks, before the period of crisis starts, employment is approximately the same. This indicates that over the long run, employment has not substantively grown for the past 15 years once Louisiana has recovered from each economic shock. Both Katrina and COVID were direct economic shocks to this area. Thus, the drop in employment is relatively steep and the recovery is relatively long. During the Great Recession, consumers nationwide reduced discretionary spending. Because Louisiana produces disproportionately more intermediate goods than final goods, the drop in employment corresponds more to the decrease in demand for final goods and services. As mentioned before, employment hits a local minimum at the beginning of 2010 (month 14 for the pink line), after the recession had already officially ended. Private sector hiring is following roughly the same trajectory for the COVID recession as it did for the Hurricane Katrina shock. This is not expected to continue since so many individuals have left the state due in large part to lack of healthcare and economic opportunities. Additionally, as Louisiana recovered from Katrina, population levels were growing which drove the recovery in hiring. This is no longer the case. Louisiana is suffering from a perfect storm of pandemic-related ills, declining population, and inability to attract a relatively young, educated work force to drive the state forward. Though the legislature has made strides to increase state funding to higher education in recent fiscal years, these efforts are still countering past budgetary cycle cuts over the past 15 years. The cumulative effect of long-term budget cuts to higher education and healthcare is hurting growth now.

Louisiana is suffering from a perfect storm of pandemic-related ills, declining population, and inability to attract a relatively young, educated work force to drive the state forward.

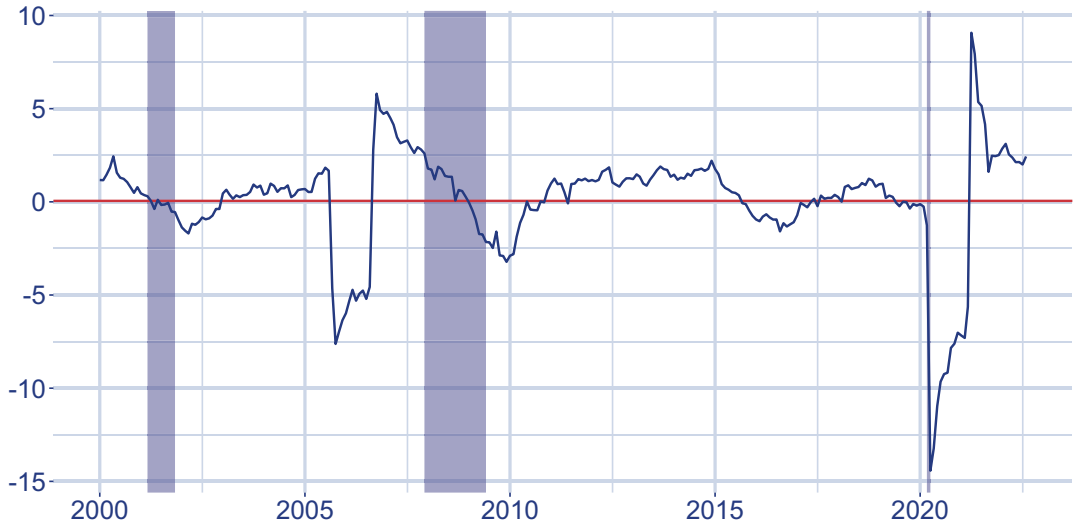


Figure 10: Total Nonfarm Employment
GROWTH RATE

Figure 10 presents nonfarm employment growth over time in blue and the long-run average growth rate in red. While the long-run growth rate appears to visually be zero, it is actually just above zero at 0.047%. The extended long-run average (over the past five decades) is higher than the 20-year average growth rate of employment which is -0.007%[4]. One can easily see the sharp decline in employment as a result of Katrina (about 6.593% decline) and COVID (approximately 13.267% decline). In both cases, the sharp decline is not followed by an equally matched increase. They are both followed by observations that are above the long-run growth rate, which slowly reverses the overall job losses from these two events over many months. While the economy takes time to recover, overall economic prosperity suffers for all.

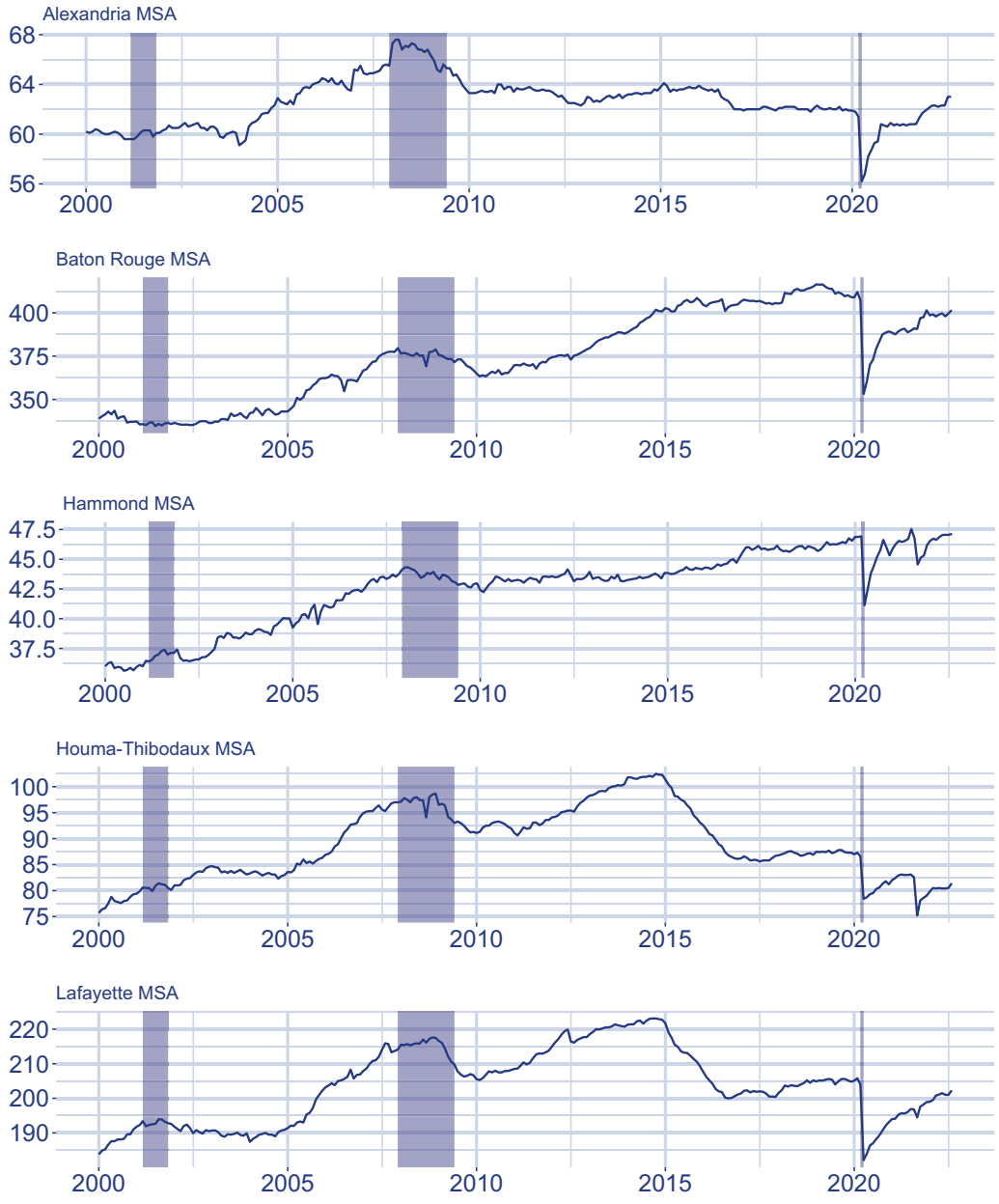
4 Statistically speaking though, these two numbers are probably not different from one another or zero.

MSA Level Employment

All states in the U.S. have economic centers of gravity that represent the majority of economic activity captured by state level indicators. These economic centers are categorized as metropolitan statistical areas (MSAs). While there are specific criteria that must be met to be classified as an MSA, these are usually colloquially referred to as the relative population centers as well. In the case of Louisiana, there are nine MSAs that are comprised from 36 parishes within the state. These 36 of the 64 total parishes within the state account for approximately 91% of output and 88% of total employment in the state. The nine MSAs drive most of the volatility within the macroeconomic data, but there is considerable disparity among them as well since each MSA has a unique industry composition. North Louisiana MSAs look substantively different than South Louisiana MSAs. Additionally, the overall industry makeup of the state lends itself to a lack of economic integration among the MSAs. After a direct economic impact in any one of the nine MSAs, the average dollar circulates within the local region less than once. As a result, most economic multipliers for hiring and industry output are less than two, and most of the economic benefit from growth is ceded to other states.

Figure 11: Total Nonfarm Employment by MSA

THOUSANDS OF WORKERS



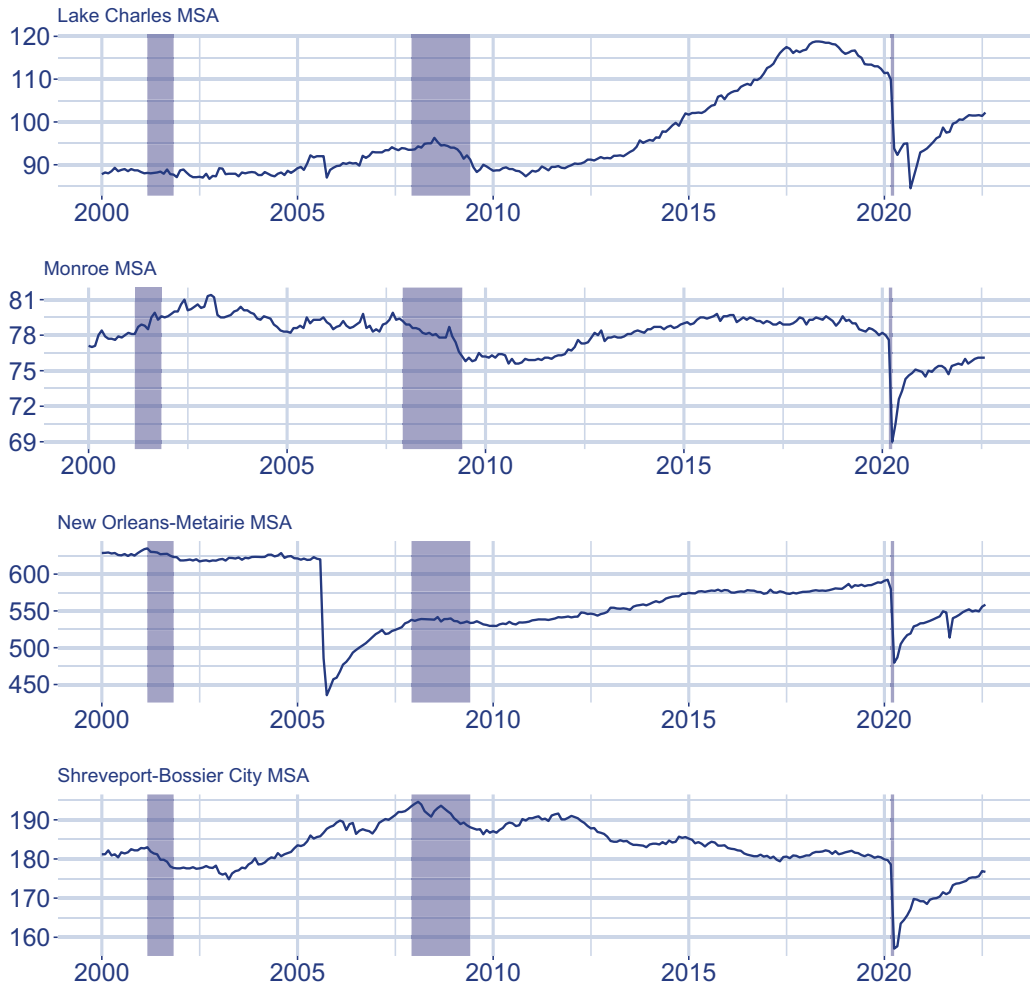


Figure 11: Total Nonfarm Employment by MSA

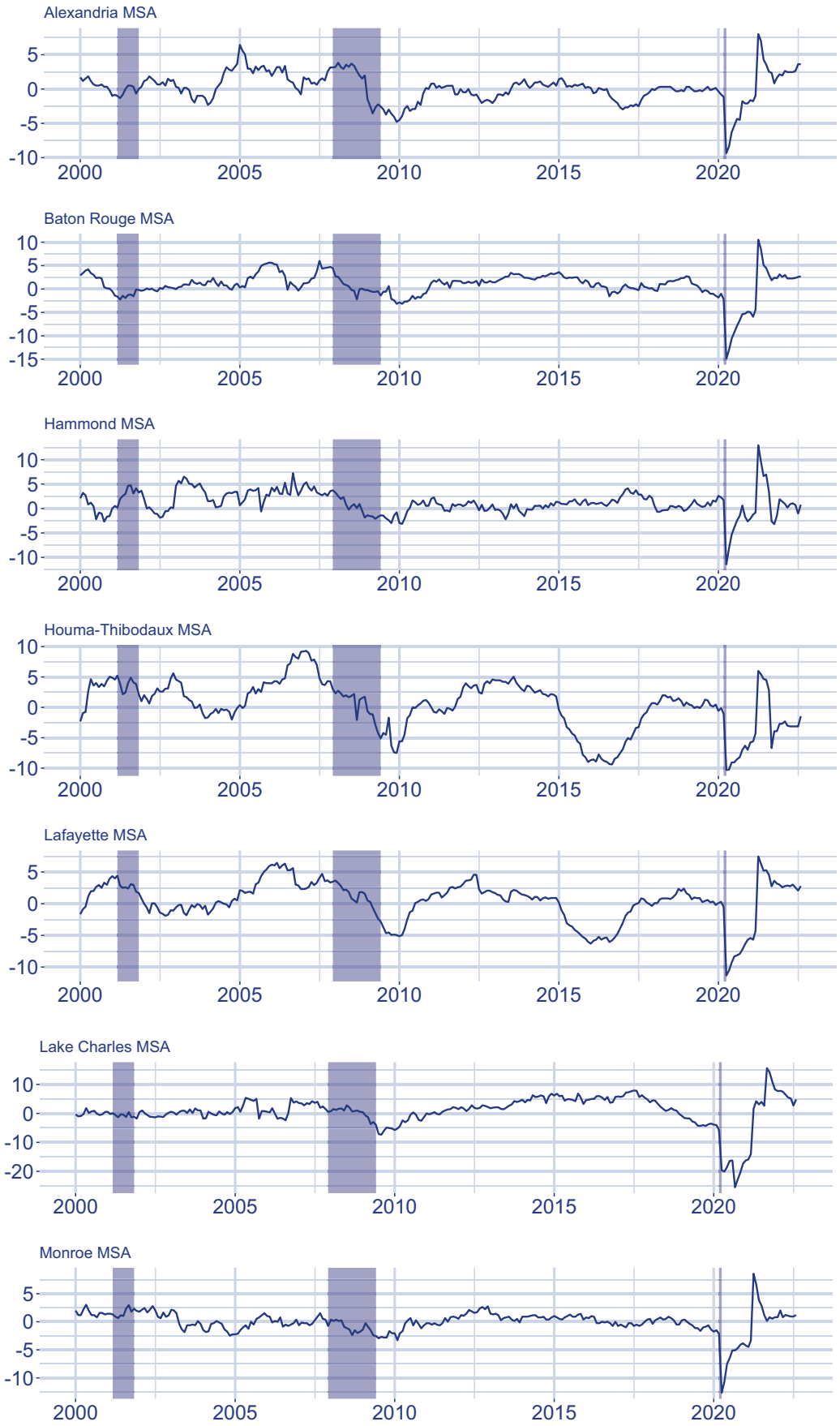
THOUSANDS OF WORKERS (CONT.)

Figure 11 includes nine subplots that correspond to the nonfarm employment described in Figure 8 broken down by MSA. Each area MSA inherits its own unique data generating process. The largest, New Orleans-Metairie, exhibits relatively stable growth until Hurricane Katrina. Employment improves after this but does not fully recover in the following 15 years until the COVID-19 pandemic sent many workers home. The drop in employment that we observe from that MSA alone is the size of all pre-COVID employment in the Monroe MSA. The Houma-Thibodaux, Lafayette, and Shreveport-Bossier City MSAs display a downward employment trajectory before COVID, which only exacerbated matters. In all cases, that downward trend combined with COVID has wiped away all employment gains for the past 20 years. Alexandria and Hammond MSAs have come the closest to recovering to pre-pandemic employment levels, but Lake Charles, Houma-Thibodaux, and Monroe have all struggled to replace even half of the employment losses in the past two years. The Lafayette and Shreveport-Bossier City MSAs are approaching pre-pandemic levels, but the other five MSAs have much further to grow before the state recovers. Half of all state employment is within New Orleans-Metairie and Baton Rouge MSAs. Their lack of employment recovery effects the whole state.

The Alexandria and Hammond MSAs have come the closest to recovering to pre-pandemic employment, but Lake Charles, Houma-Thibodaux, and Monroe have all struggled to replace even half of the employment losses in the past two years.

Figure 12: Total Nonfarm Employment by MSA

GROWTH RATE



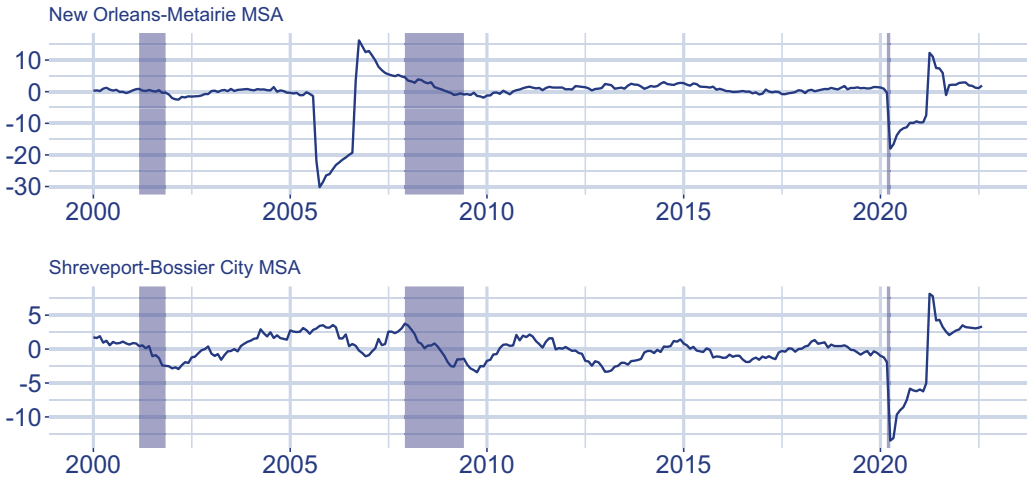


Figure 12: Total Nonfarm Employment by MSA
GROWTH RATE (CONT.)

Figure 12 displays the growth rates of nonfarm employment by MSA. Nearly every MSA experienced a decline in employment of 10% or greater (except for Alexandria which declined 8.9% and Houma-Thibodaux that declined 9.6%). During the Hurricane Katrina crisis, nearly all of the employment shock occurred in the New Orleans-Metairie MSA. The impact was relatively localized within the state economy. At the height of the Great Recession, nearly all MSAs were experiencing employment losses, but they were not severe. The past 32 months have brought Katrina-level employment shocks to every MSA. The only reason that this is not worse for the state is two-fold. First, those individuals that could work from home during the lockdown phase of this health emergency were both relatively high-income earners as well as the least likely to lose their jobs. Second, federal unemployment assistance combined with federal stimulus payments have propped up personal incomes, especially for relatively low-wage earners. Federal monies have dried up and historically generous unemployment benefits have ended. This has pushed some workers back into the labor force, but we have largely hit the upper bound of this recovery. As monetary policy tightens due to inflationary pressures, hiring is expected to stagnate. Each of the small regional economies featured in Figure 12 shows how this recovery has propagated in different ways. As the state exited Phase 3 of emergency COVID measures in May 2021, we saw an immediate increase in hiring in every MSA. Five of the nine MSAs have transitioned into the neighborhood of zero employment growth currently.

Unemployment Rate

The surveys used to compute the unemployment rate allow for a relatively wide statistical sample at the national level. For state and local regional economies, the data are still relatively sparse. While we are able to estimate the unemployment rate for women over the age of 25 with a bachelor's degree for the U.S., this is not available within Louisiana because the sample size is not wide enough to trust for statistical inference. What we do have are relatively robust overall unemployment rates even at the parish level, though these are updated less frequently. It is important to keep in mind that these are still statistical estimates. The more we drill down to specific locales (especially rural areas), the wider our uncertainty around that estimate is. To combat this, our discussion of parish level data is cast within the context of the surrounding region.

Figure 13: Unemployment Rate

PERCENT

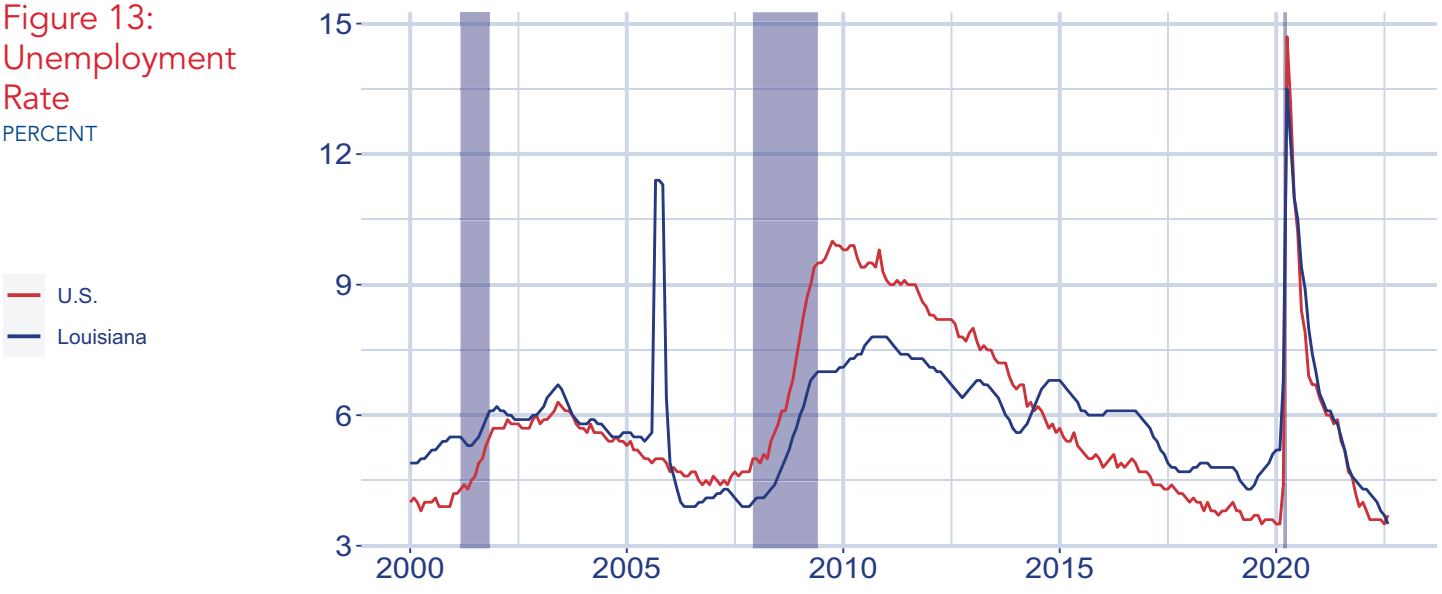


Figure 13 is a plot of both U.S. and Louisiana unemployment rates. For much of the last 20 years, the unemployment rates for the U.S. and Louisiana have been co-moving processes. Indeed prior to COVID, the last ten years have seen a particular phenomenon where the highs experienced by the U.S. have not been matched by Louisiana, but the lows of the U.S. have also not been matched. In this way, Louisiana has been insulated from the worst of economic recessionary phases but has not shared in the benefits of the expansionary phases. Given that the recovery phase of the COVID recession truly is upon us, then this pattern still holds true today. In the context of the labor force participation rate, both unemployment rates are probably underestimated due to the existence of discouraged and marginally attached workers. Our most recent estimates of these two numbers breaks with this pattern, but these numbers are the most likely to be revised. The unemployment rate has continued to drop, for both the state and the country as a whole, well below what we would expect for full employment levels. Since real output has not fully recovered in either case, this is peculiar. Data on labor force engagement help shed some light on this incongruity.

Figure 14: Deviations from State Unemployment Rate - Parish Level

PERCENT

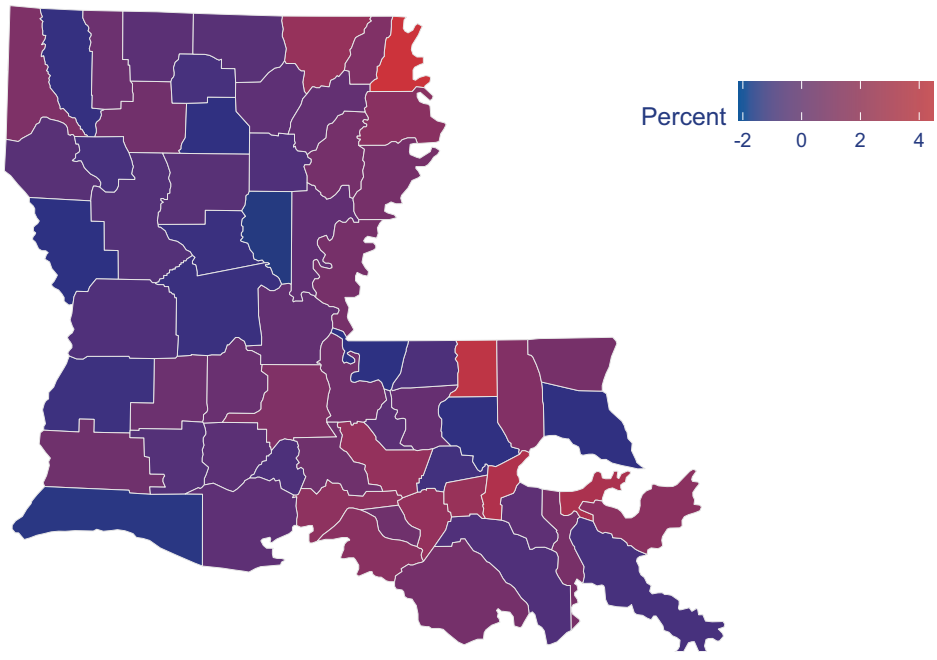


Figure 14 illustrates a parish level heat map of Louisiana where each color of a parish represents the percent above or below the state average unemployment for the past six months. The color spectrum defines areas most impacted by COVID-specific labor market outcomes. Lighter colored parishes represent regions of relatively higher unemployment compared to the state (positive numbers). Likewise, darker colored parishes represent relatively lower unemployment with respect to the state average. This figure reinforces that the major economic centers are driving state employment numbers. We see the most extreme cases of over and under employment relative to the state in the rural parishes. They are just not large enough to dictate the dynamics broadly.

Labor Force Participation Rate

The labor force participation rate gives us a sense of labor market engagement among working age individuals. It is often used in conjunction with the unemployment rate, since the denominator of the unemployment rate is the same as the numerator of the labor force participation rate. When worker engagement in the labor market changes, this can drive both numbers. The labor force participation rate tends to be more stable than the unemployment rate over the long term.

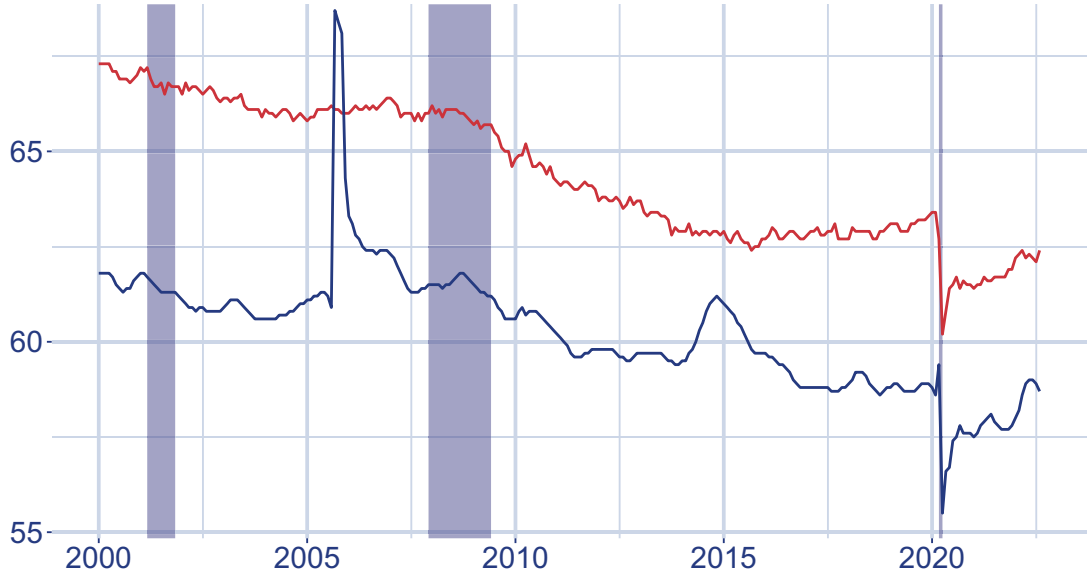


Figure 15: Labor Force Participation Rate
PERCENT

Figure 15, similar to Figure 13, depicts both U.S. and Louisiana labor force participation rate data. Both labor force participation rates exhibit downward trends over the past 20 years. In the case of Louisiana, the effects of both Hurricane Katrina and COVID-19 substantively changed the trajectory of this data. The decline in labor market engagement for Louisiana is nearly double that of the United States, however Louisiana has also recovered relatively more of that workforce than the U.S. has on average. Despite this, Louisiana still is well below the national average in terms of worker engagement. Louisiana has largely recovered both in unemployment and labor force participation rates to pre-pandemic levels, yet not recovered overall employment levels. Of the 62,000 jobs still not recovered from this recession, approximately 4,000 to 8,000 have left the labor force (unemployed and stopped looking for work). While it is important from a policy perspective to find ways to encourage labor force participation, the lion's share of the remaining job losses represents population decline.

Louisiana has largely recovered both in unemployment and labor force participation rates to pre-pandemic levels, yet not recovered overall employment levels.

Our recovered labor force participation is more due to a shrinking working age population. As Louisiana has fewer workers, the output has recovered relatively more than employment. Productivity is up due to wage growth and increases in the capital stock per worker. The lack of recovery at the national level reflects this reality as well. All employment indicators suggest that the only path forward for Louisiana is state-level growth

Figure 16: Labor Force Participation Rate - Parish Level

PERCENT

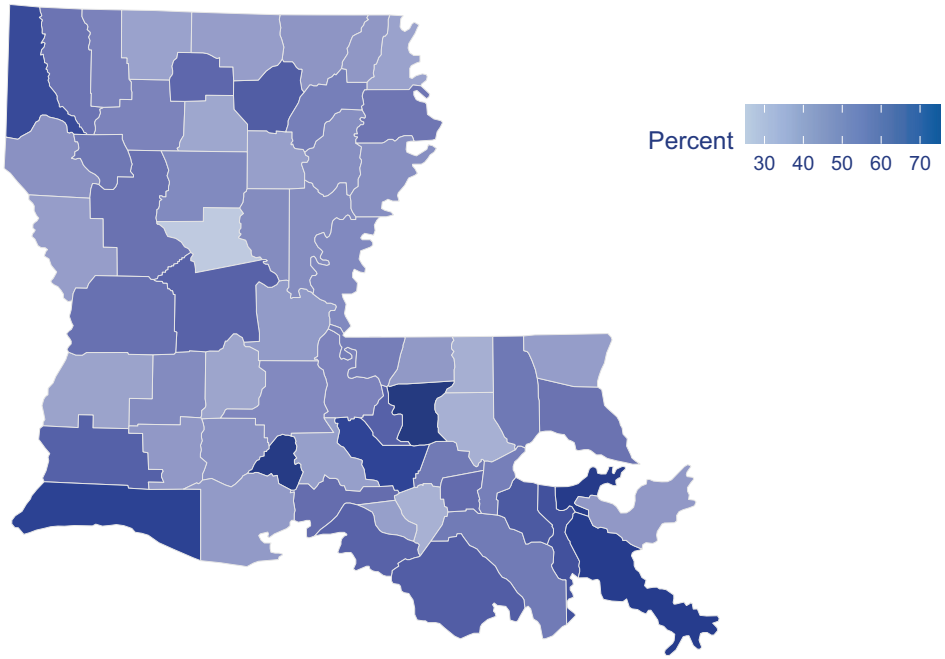


Figure 16 graphically shows the full variance in labor force participation rates across the state at the parish level. Along the bottom of the state, Baton Rouge, Lafayette, Plaquemines, and Orleans Parishes have the highest proportion of total population engaging the labor market. This is generally consistent with most regional economic literature and reflects the broader array of economic job opportunities in urban areas. Near the top of the state, Caddo Parish, which is part of the fourth largest MSA, is also higher than the state average. On the lower end of the spectrum, Louisiana's rural areas reflect less economic opportunity and thus lower labor force engagement. Our four largest MSAs bring up the average for labor participation on aggregate.

MSA Level Unemployment

A resounding refrain across most of our labor market economic indicators is that the MSAs are both the driving force for the state and also are distinctly different from one another. Each MSA has its own idiosyncratic differences and responds somewhat differently to state level shocks.

Figure 17 breaks down where Louisiana's unemployment occurs by MSA. Please note that these data only account for those still considered in the labor force. Cumulatively, all nine MSAs represent approximately 69,000 individuals that are unemployed. Since the state has recovered in terms of unemployment rate and labor force participation rate, this number reflects labor market churn. Initial and continued jobless claims confirm this reality as well. All nine MSAs have reached pre-pandemic levels of unemployment. Four out of nine MSAs currently have

historically low levels (at least at the 10- to 15-year interval) of unemployment. The Baton Rouge and New Orleans-Metairie MSAs are the ones to keep an eye on as the Fed moves to a relatively more aggressive stance on inflation via interest rate setting policy. The unemployment trade off that the Fed faces will be most seen in these areas since they contain about half of the employment in the state.

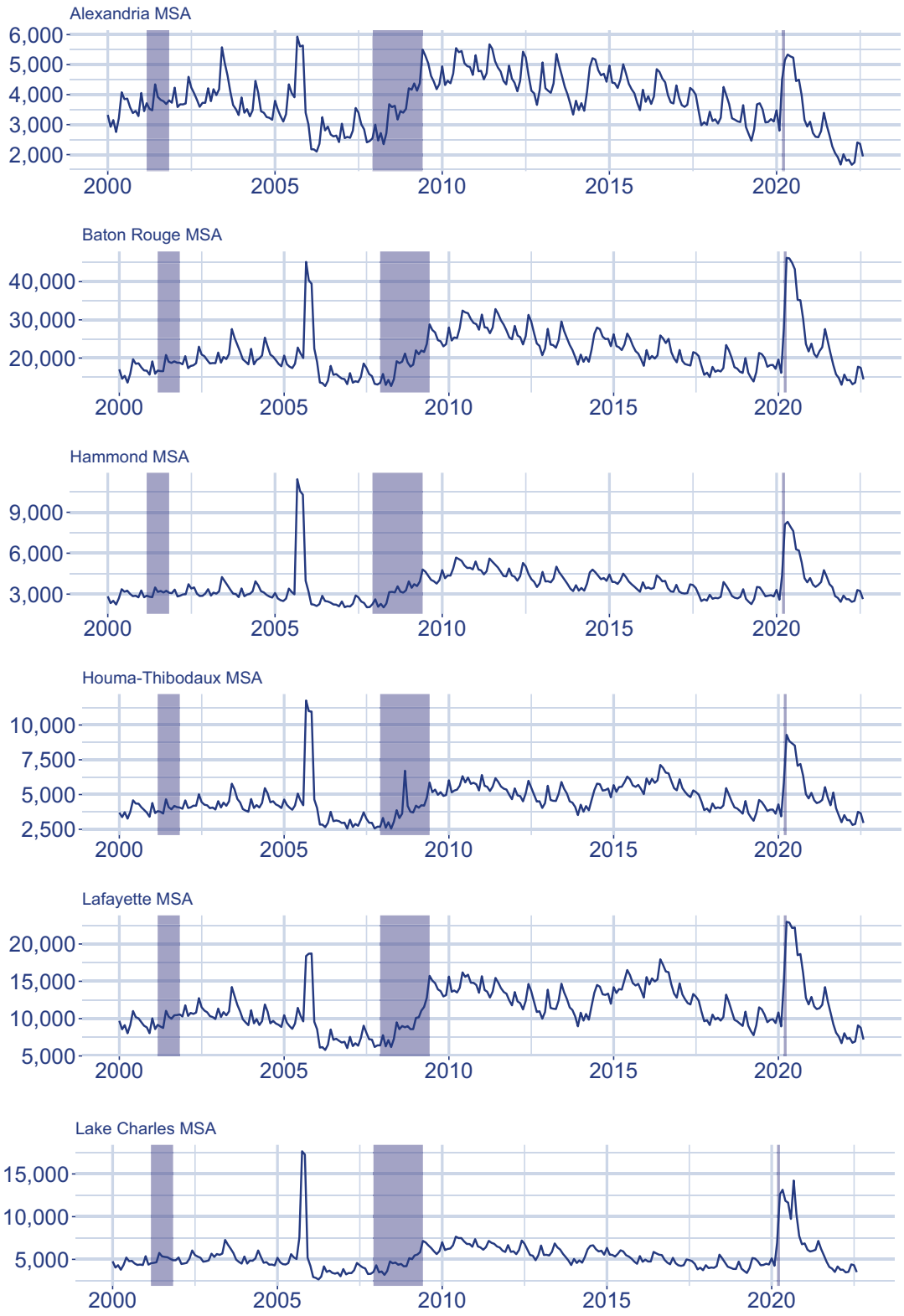
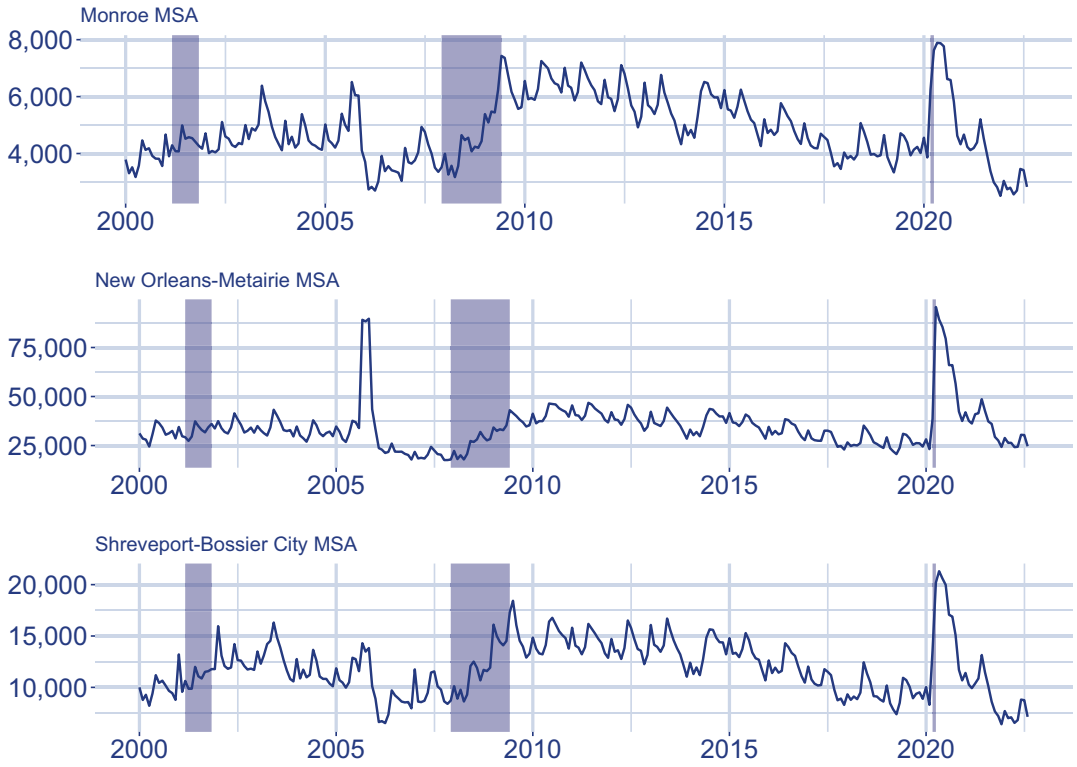


Figure 17: Unemployment by MSA

WORKERS

Figure 17: Unemployment by MSA
WORKERS (CONT.)



Wages

Inflationary pressures over the past 12 months have generated increased discussions about the effects of wages on prices. This is a long-term historical discussion within the economic literature given persistent double-digit inflation that we observed during the 1970s. The current conditions of this economic climate have pivoted to a similar situation. Today, output and employment are relatively low combined with oil prices that are above fundamentals for much of this past year due to international conflict between Russia and Ukraine along with OPEC supply constraints. As firms bid up the price of labor in order to encourage more employment, they weigh the choice of having to pass those wage increases on to consumers through higher prices or to keep prices low and not sacrifice market share. This is testing the traditional connection between price inflation and wage inflation but will likely only do so in the short-term. In the long-term, price inflation will adjust to fully compensate for the increased wages because firm owners will only sacrifice their profit margin for market share in the short term.

Is wage inflation good or bad for the state or local economy? The answer is a bit mixed. Wage growth is good for wealth building, but some (and possibly all) of the increased earnings may be allocated to higher prices of final goods and services. Additionally, if local regions experience higher wage growth than surrounding areas, this could create arbitrage opportunities for a relatively mobile workforce. Wage growth coupled with sustained economic growth is important to combating these issues

Figure 18 displays real wages relative to state real wages for each MSA. If the MSA is in parity with the state, the wage index value is close to one. A wage index above one indicates that MSA level wages are higher than the state, while the opposite is true for an index score of less than unity. Here we see a true tale of two states within Louisiana. The northern half of the state represented by the Alexandria, Shreveport-Bossier City, and Monroe MSAs all have persistent wage index scores below the state average. The remaining MSAs to the south of the state contain multiple periods of wage gains above the state average. Wage growth in all nine MSAs are above their respective long-run trends (not shown here), but New Orleans-Metairie, Baton Rouge, and Lake Charles are benefiting disproportionately more than other MSAs. Note that the Hammond MSA is excluded from this since it was only recently categorized as an MSA. Their long-run growth rate was not trustworthy for these calculations.

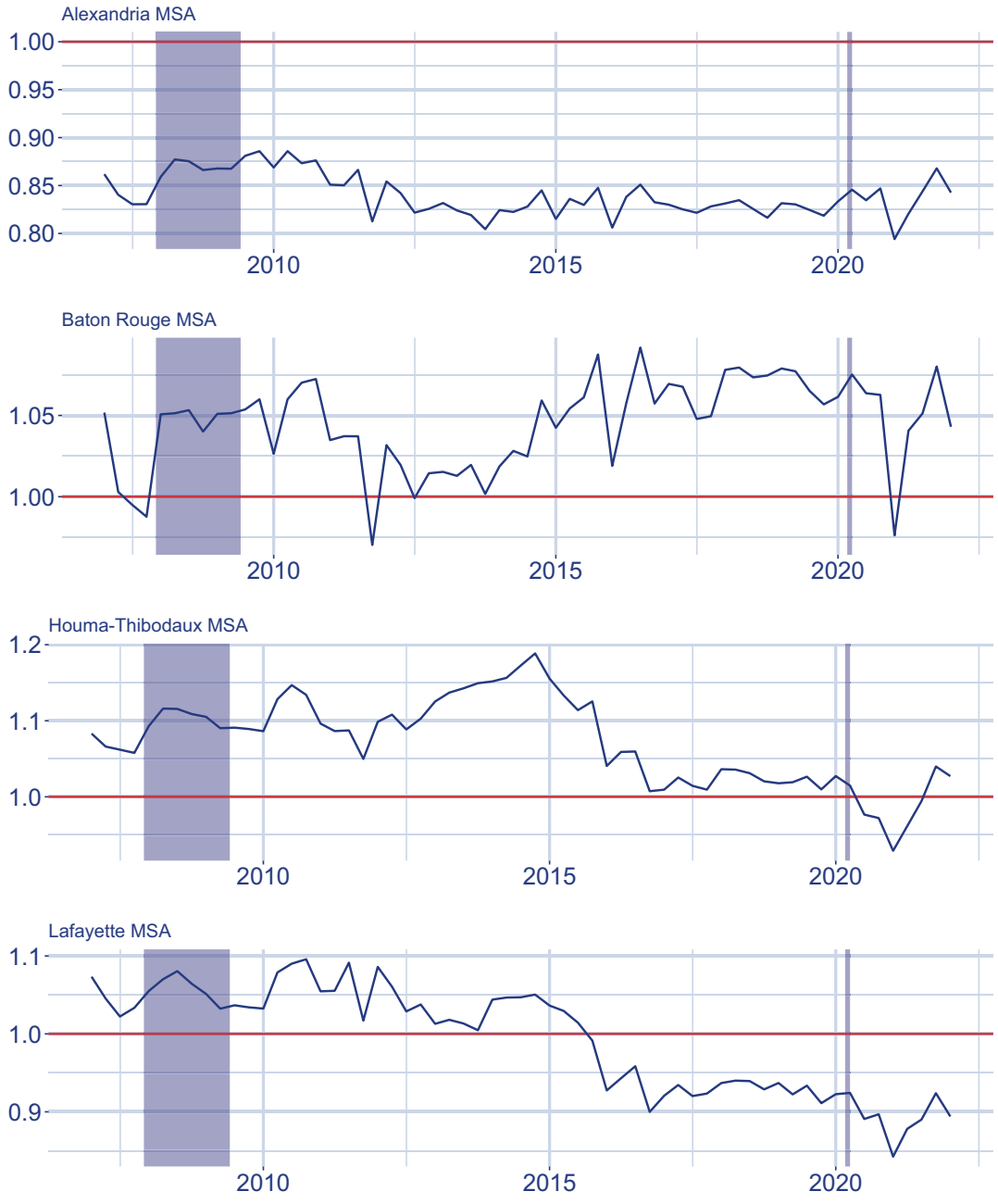
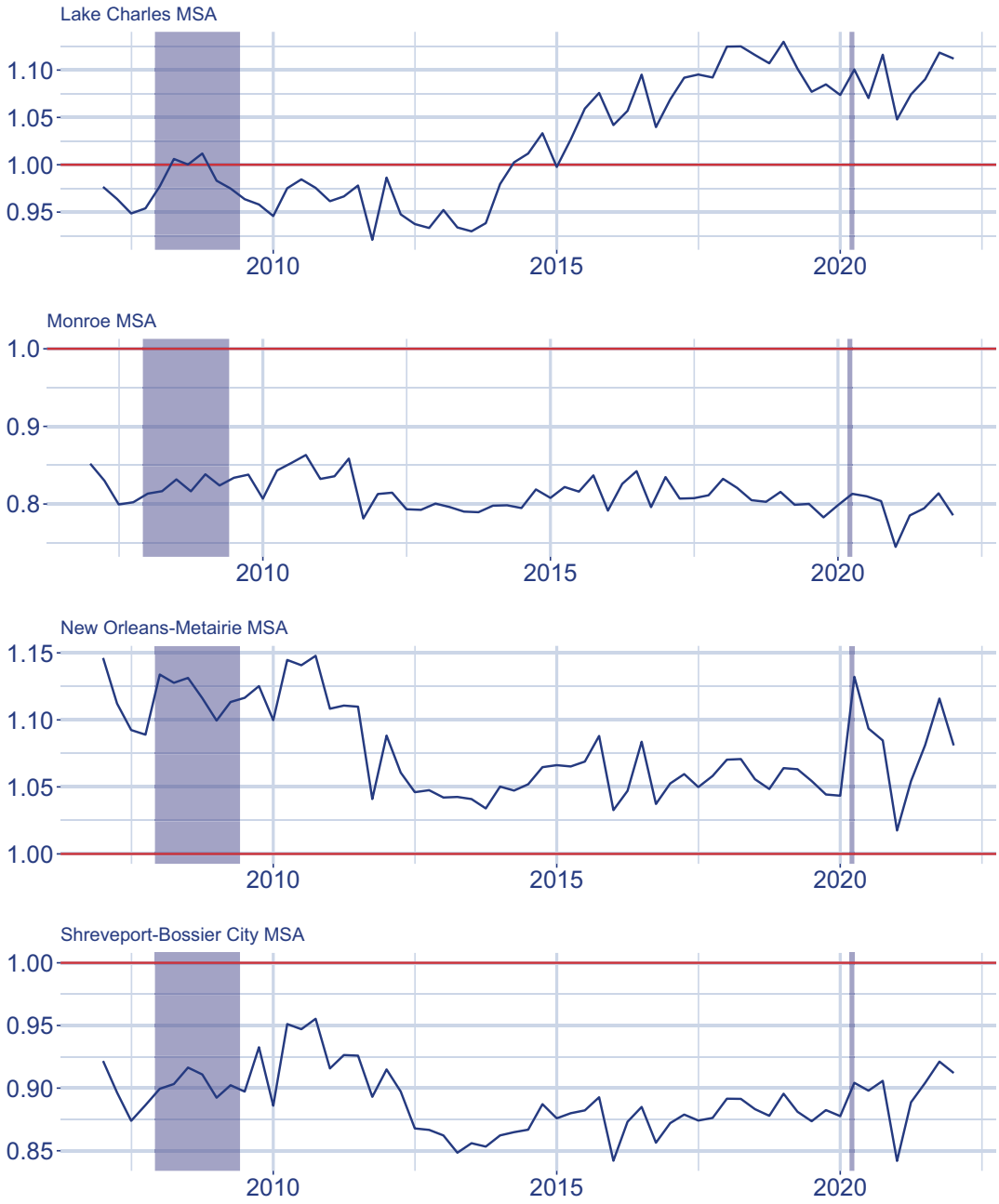


Figure 18: Real Wages by MSA Indexed to State Real Wages

1 = PARITY WITH STATE

Figure 18: Real Wages by MSA Indexed to State Real Wages

1 = PARITY WITH STATE (CONT.)



MSAs to the south of the state contain multiple periods of wage gains above the state average.

Forecasts

Labor market forecasts are based on the estimation of 192 statistical models. The algorithm for these forecasts is similar in nature to the output and income forecasts discussed above. Please see the discussion on page 13 and in the preface on page 5 for more details of this procedure.

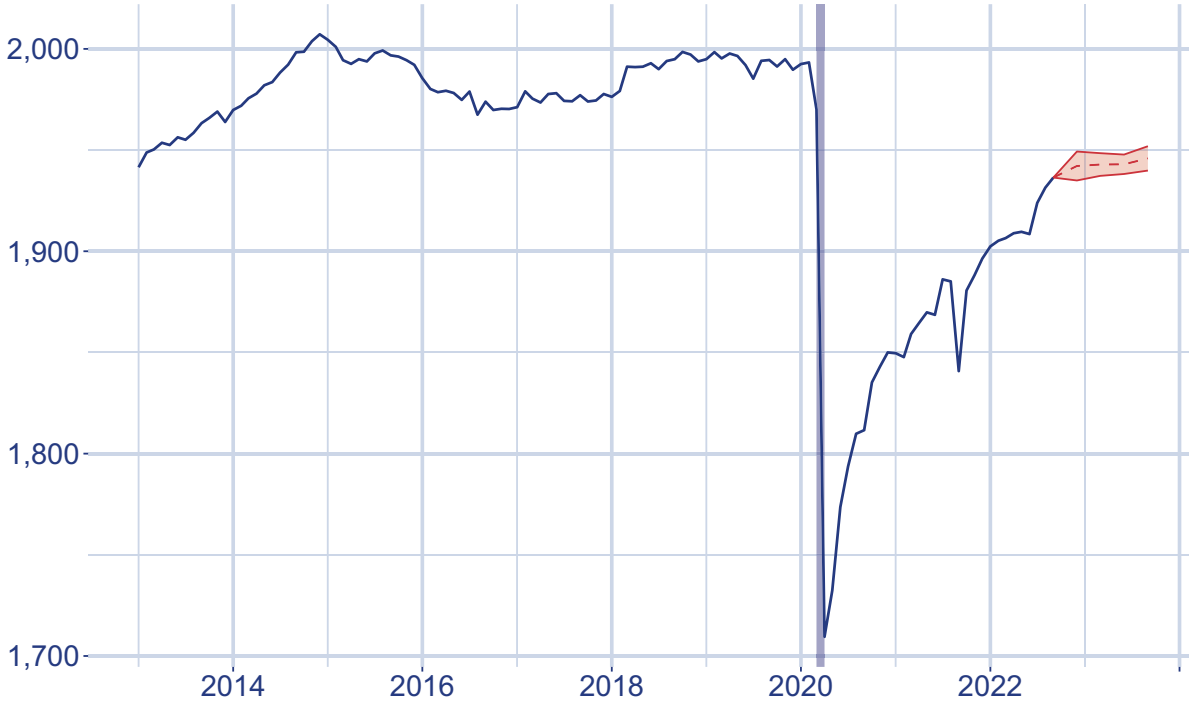


Figure 19: Forecasted Total Nonfarm Employment
THOUSANDS OF WORKERS

Figure 19 reports forecasts for total nonfarm employment (in thousands) alongside data starting in 2013. In the middle of the statistical forecast range, employment is expected to grow only modestly by about 6,000 workers over the next year. This will cumulatively recover about 82% of the employment losses from COVID-19. If these forecasts hold true, the remainder of the employment losses will have to come from sustained growth in population that are of working age and that actually join labor markets. The upper bound of the forecast range suggests an addition of approximately 11,000 jobs, while the lower bound of the forecast range suggests almost no job growth over the next 12 months. If the Federal Reserve takes an overly aggressive policy stance, it may induce more volatility that could undo some of the hard-won employment gains that the state has made over the past 15 months. Table 2 enumerates the forecast scenarios described above.

	TOTAL NONFARM EMPLOYMENT			UNEMPLOYMENT RATE		
Date	**Pessimistic**	**Realistic**	**Optimistic**	**Pessimistic**	**Realistic**	**Optimistic**
2022: Q4	1935.0	1942.1	1949.3	3.78	3.62	3.46
2023: Q1	1937.3	1942.9	1948.5	3.93	3.68	3.44
2023: Q2	1938.2	1943.0	1947.8	4.25	3.84	3.43
2023: Q3	1939.9	1945.9	1951.9	4.37	3.89	3.41

Table 2: Forecasted Total Nonfarm Employment
THOUSANDS OF WORKERS
and Unemployment Rate
PERCENT

Six out of nine MSAs cannot exclude the joint probability of no-growth in employment over the next six months.

Figure 20 depicts employment forecasts at the MSA level, similar to the state level forecast in Figure 19. The employment dynamics for each MSA are treated separately, however the forecasts for all are bound to reflect the state-wide forecasts in Figure 19. The forecast range is relatively flat for some MSAs (Alexandria, Lake Charles, and Monroe) and wider for others (Hammond, New Orleans-Metairie, and Shreveport-Bossier City). New Orleans-Metairie is expected to shift downwards as that MSA is estimated to have borne the brunt of population exodus from the state in the last two years. Houma-Thibodaux and Lafayette MSAs are expected to continue to grow even under the pessimistic estimate scenarios. Six out of nine MSAs cannot exclude the joint probability of no-growth in employment over the next 12 months. Though it is not reported here, total employment in non-MSA parishes is expected to contribute about 11% to total state employment.

Figure 20: Forecasted Total Nonfarm Employment by MSA

THOUSANDS OF WORKERS

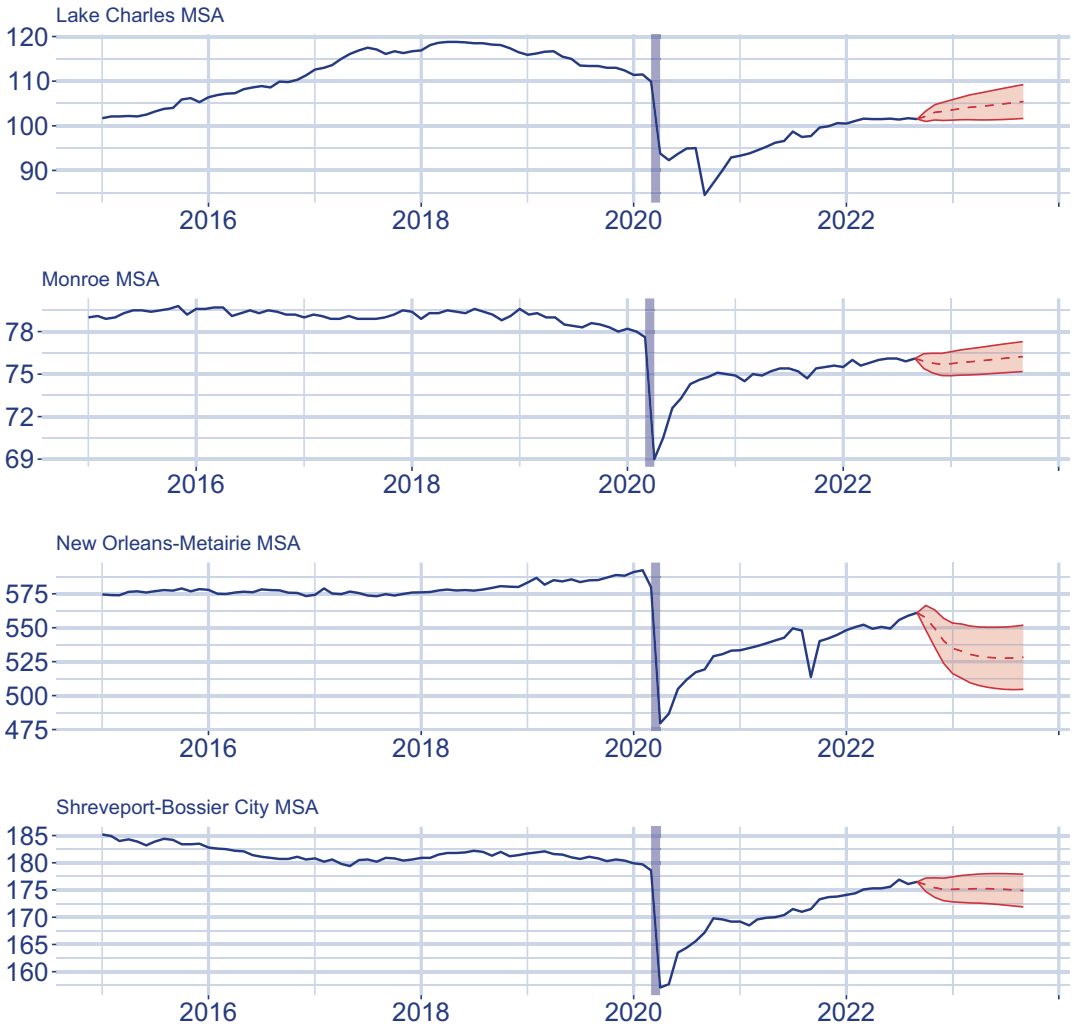


Figure 20: Forecasted Total Nonfarm Employment by MSA

THOUSANDS OF WORKERS (CONT.)

Table 3: Forecasted Nonfarm Employment by MSA

THOUSANDS OF WORKERS

	ALEXANDRIA			BATON ROUGE			HAMMOND		
Date	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic
OCT. 2022	62.4	62.8	63.2	399.3	402.5	405.7	46.2	46.6	47.0
NOV. 2022	62.1	62.6	63.1	397.5	401.9	406.2	46.1	46.6	47.1
DEC. 2022	61.8	62.5	63.1	397.2	402.1	407.1	45.9	46.5	47.0
JAN. 2023	61.7	62.4	63.1	397.5	402.9	408.3	46.0	46.5	47.1
FEB. 2023	61.6	62.3	63.1	398.4	404.1	409.9	46.0	46.6	47.2
MAR. 2023	61.5	62.3	63.1	399.3	405.3	411.4	46.0	46.6	47.2
APR. 2023	61.5	62.3	63.1	400.4	406.6	412.8	46.0	46.6	47.3
MAY 2023	61.5	62.3	63.2	401.3	407.7	414.1	46.1	46.7	47.3
JUN. 2023	61.4	62.3	63.2	402.1	408.7	415.2	46.1	46.7	47.4
JUL. 2023	61.4	62.3	63.2	402.8	409.6	416.3	46.1	46.8	47.4
AUG. 2023	61.4	62.3	63.2	403.5	410.4	417.3	46.1	46.8	47.5
SEP. 2023	61.3	62.3	63.2	404.1	411.1	418.2	46.2	46.8	47.5

	HOUMA-THIBODAUX			LAFAYETTE			LAKE CHARLES		
Date	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic
OCT. 2022	81.0	81.8	82.6	202.3	203.6	205.0	101.0	102.1	103.3
NOV. 2022	81.1	82.1	83.1	202.0	203.9	205.9	101.3	103.0	104.7
DEC. 2022	81.1	82.3	83.5	202.0	204.3	206.7	101.2	103.2	105.3
JAN. 2023	81.1	82.5	83.8	202.4	205.1	207.8	101.3	103.6	105.9
FEB. 2023	81.3	82.8	84.3	202.8	205.8	208.8	101.4	103.9	106.4
MAR. 2023	81.6	83.2	84.8	203.3	206.5	209.7	101.4	104.1	106.9
APR. 2023	81.9	83.6	85.4	203.7	207.1	210.5	101.3	104.3	107.3
MAY 2023	82.2	84.1	86.0	204.2	207.7	211.3	101.3	104.5	107.7
JUN. 2023	82.6	84.6	86.5	204.6	208.4	212.1	101.4	104.7	108.1
JUL. 2023	82.9	85.0	87.1	205.0	208.9	212.8	101.4	105.0	108.5
AUG. 2023	83.3	85.4	87.6	205.4	209.4	213.4	101.5	105.2	108.9
SEP. 2023	83.6	85.9	88.2	205.7	209.9	214.0	101.6	105.4	109.2

	MONROE			NEW ORLEANS-METAIRIE			SHREVEPORT-BOSSIER CITY		
Date	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic
OCT. 2022	75.4	75.9	76.4	548.3	557.3	566.4	174.7	176.0	177.2
NOV. 2022	75.1	75.8	76.5	535.6	549.3	563.1	173.6	175.4	177.2
DEC. 2022	74.9	75.7	76.5	523.8	540.4	557.0	173.0	175.1	177.2
JAN. 2023	74.9	75.7	76.6	516.2	534.8	553.4	172.8	175.1	177.4
FEB. 2023	74.9	75.8	76.7	512.8	532.8	552.7	172.7	175.2	177.7
MAR. 2023	74.9	75.9	76.8	509.5	530.4	551.3	172.6	175.2	177.8
APR. 2023	75.0	75.9	76.9	507.5	529.0	550.6	172.6	175.3	177.9
MAY 2023	75.0	76.0	76.9	506.1	528.2	550.3	172.5	175.3	178.0
JUN. 2023	75.1	76.0	77.0	505.2	527.8	550.3	172.4	175.2	178.0
JUL. 2023	75.1	76.1	77.1	504.6	527.6	550.5	172.2	175.1	178.0
AUG. 2023	75.1	76.2	77.2	504.4	527.7	551.0	172.1	175.0	178.0
SEP. 2023	75.2	76.2	77.3	504.6	528.3	551.9	171.9	174.9	177.9

Figure 21: Forecasted Unemployment Rate
PERCENT

Figure 21 delivers forecasts of the state headline unemployment rate. The jobless rate is expected to continue to modestly increase over the next 12 months, but still remain below natural unemployment rate levels. The intuition surrounding the discussion of Figure 9 is informative here. If the Fed creates a deflation spiral through contractionary monetary policy, the recession that is felt by the state would be closer to that of the Great Recession (though probably less severe). In this case, Louisiana's industrial make up works to the state's advantage. Unemployment rates are at historical lows well into the distant past. They are not likely to persist even if the Fed is successful in executing a soft landing.

If the Fed creates a deflation spiral through contractionary monetary policy, the recession that is felt by the state would be closer to that of the Great Recession (though probably less severe).

Housing Market

For most consumers, a house represents the largest financial investment in their asset portfolio. For real estate in particular, the capital gain (the real difference in price between acquisition and liquidation) disproportionately dominates the total return for this asset. Households receive a wealth bump when house prices appreciate and a reduction of wealth when they depreciate. Additionally, the long-term investment in a home is an important component of generational wealth building via forced savings. As a result, consumer real estate markets serve as a bellwether for regional economies.

At the beginning of the COVID-19 recession, the Federal Reserve enacted numerous policies to encourage adequate flow of financial capital in the banking system. Among these policies was a reduction of its key benchmark interest rate. Because all interest rates tend to move together, the average yield on a 30-year fixed mortgage loan dropped over 1% for 2020. This reduction in the opportunity cost of buying a home led to a flurry of house buying activity, and in some areas of the country, house prices have risen faster than they did during the early 2000s. The housing bubble that occurred back then was the perfect storm of loose monetary policy, rapid deregulation of capital adequacy requirements for banks, and innovation in financial assets that warped economic and investor decisions. The hot housing market of 2020-2022 does not quite meet the formal definition of a bubble, but there are some shades of similarities (even though housing markets in some areas are already showing signs of cooling).

House Price Index

The house price index (HPI) is a quality-controlled composite measure of house prices similar in nature to the more popular consumer price index (CPI). CPI measures the cost of a fixed basket or grouping of goods for consumers, therefore the share of relative spending on certain items is controlled for. Since most home-buying individuals don't own more than one home at a time, this does not make sense for HPI. Thus, HPI controls the quality variation of homes so that values can be compared to one another in a meaningful way. This is important because all price indices are unitless variables. An individual observation only has meaning when compared to its immediate or distant neighbor.

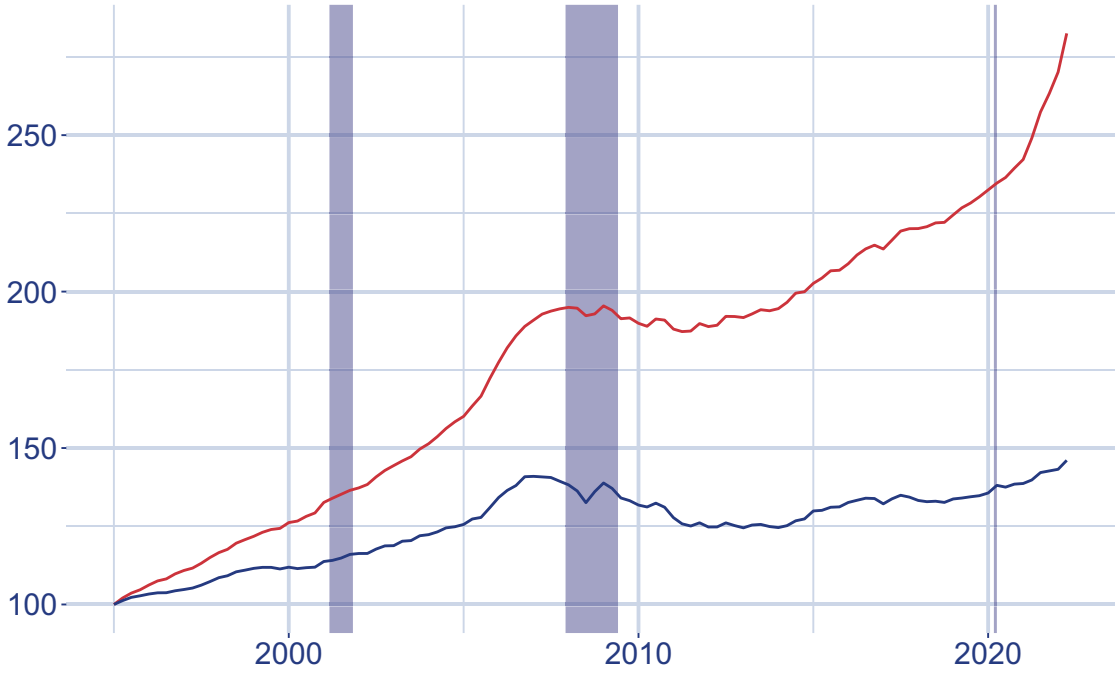


Figure 22: Nominal and Real Quality Controlled House Price Index

1995 = 100

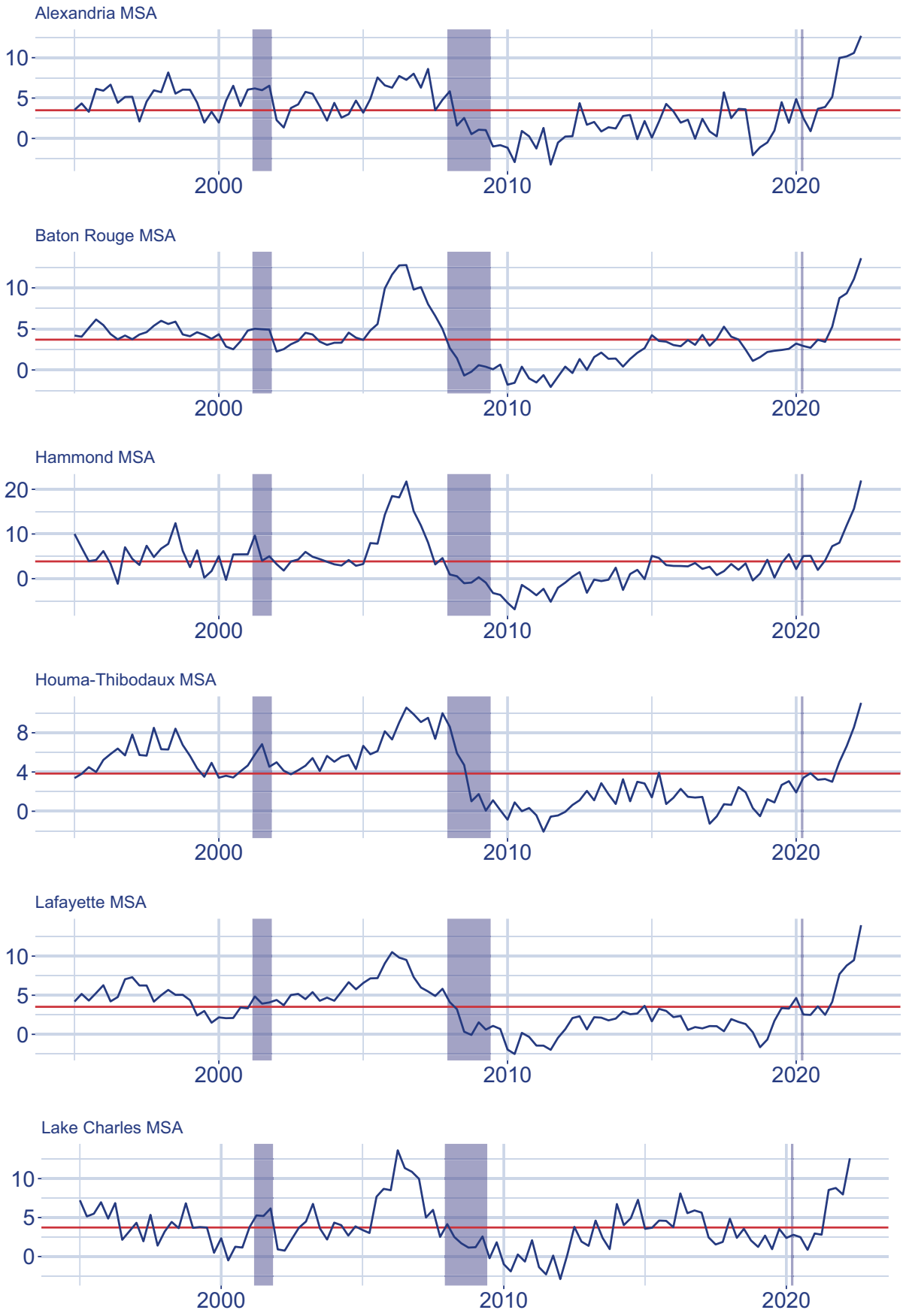
Figure 22 reflects quarterly observations of quality adjusted Louisiana house price index. The growth rate of housing prices during the housing bubble of the early 2000s is reflected in the convex curvature of the line preceding the 2007-2009 recession. House prices tapered off leading into the recession and then dropped moderately until 2011, erasing gains from 2006 for Louisiana. After 2011, house prices followed a relatively constant growth rate until the COVID-19 recession. Nationwide, COVID-19 brought with it an increase in the demand for housing as people desired less close proximity to neighbors combined with increased opportunities to work from home. Starting in 2021, house prices grew faster than the long run growth rate. The nationwide equivalent for this variable, which is released monthly, already shows a decline of the price index. This has not shown up yet for the state since this data only extend to the second quarter of 2022. Anecdotal discussions between the Center for Economic Research and more than a dozen realtors across the state indicate that closings are down, prices are clearing below asking, and fewer mortgage applications are being processed. The general consensus among all of these real estate professionals is that the market is cooling, and the industry is preparing for a contraction.

Figure 22 also shows an inflation adjusted (real) HPI in blue. While the HPI accounts for quality, it is still a nominal variable that also reflects the overall dynamics of inflation. Inflation adjusted HPI shows a relatively more stable growth rate of housing prices for Louisiana. When accounting for the loss of purchasing power over time, Louisiana only just recently recovered from the decline in house prices during the Great Recession. The recent housing bump merely served to bring house prices out of the recovery-slump from 15 years ago. Given that this party has already come to an end, how much will the contraction set back the Pelican S tate?

Discussions between the Center for Economic Research and more than a dozen realtors across the state indicate that closings are down, prices are clearing below asking, and fewer mortgage applications are being processed.

Figure 23: House Price Index - Growth Rate by MSA

PERCENT



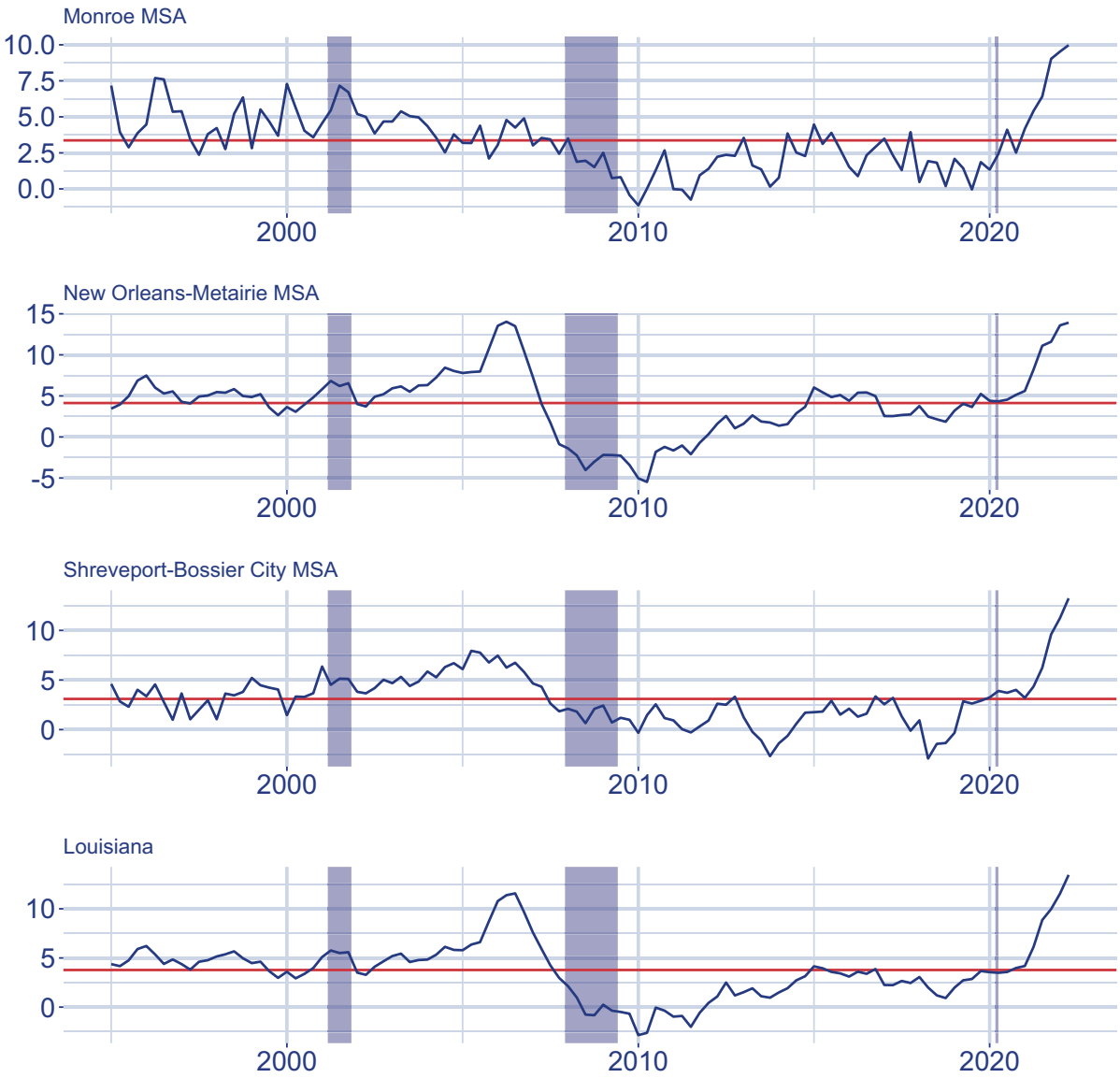
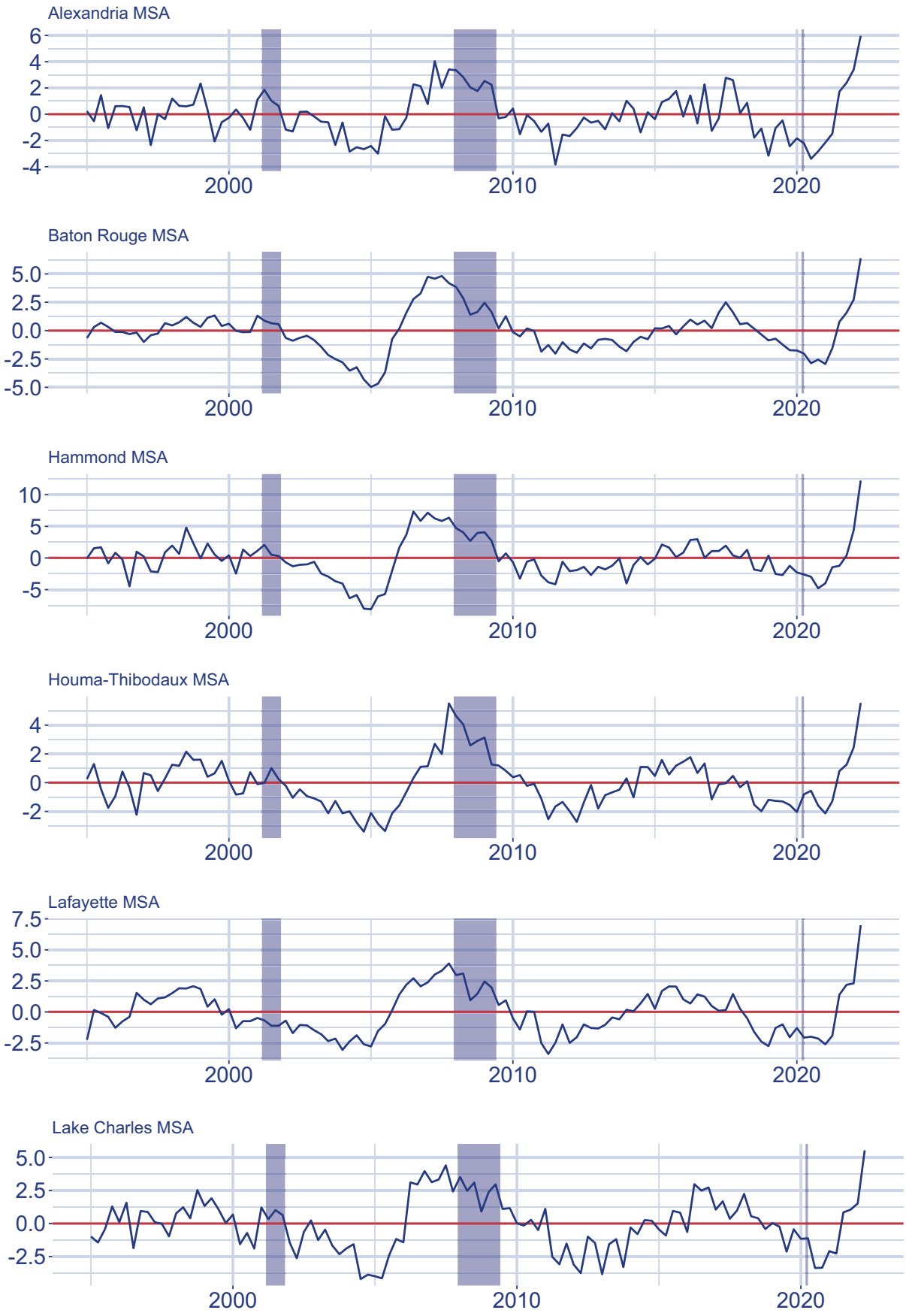


Figure 23: House Price Index - Growth Rate by MSA
PERCENT
(CONT.)

Figure 23 plots MSA level HPI growth rates for all nine MSAs. A familiar pattern is observed among most of the MSAs in the state. The decline in growth rates as we exit the Great Recession is followed by multi-year long episodes of low (and sometimes negative) growth rates. The recent surge in HPI is visible among all nine MSAs with growth rates in excess of 10% year-to-year for eight of these. For all MSAs, recent home buying activity has led to growth rates not seen since the housing bubble of the early 2000s. This is why so many have compared the past two years directly to that period. In many ways though, this is still not the irrational exuberance we saw 15 years ago. House prices largely reflect a constrained supply of single-family homes relatively more than overly robust consumer demand.

Figure 24: House Price Index - Deviation from Long Run Growth by MSA

PERCENT



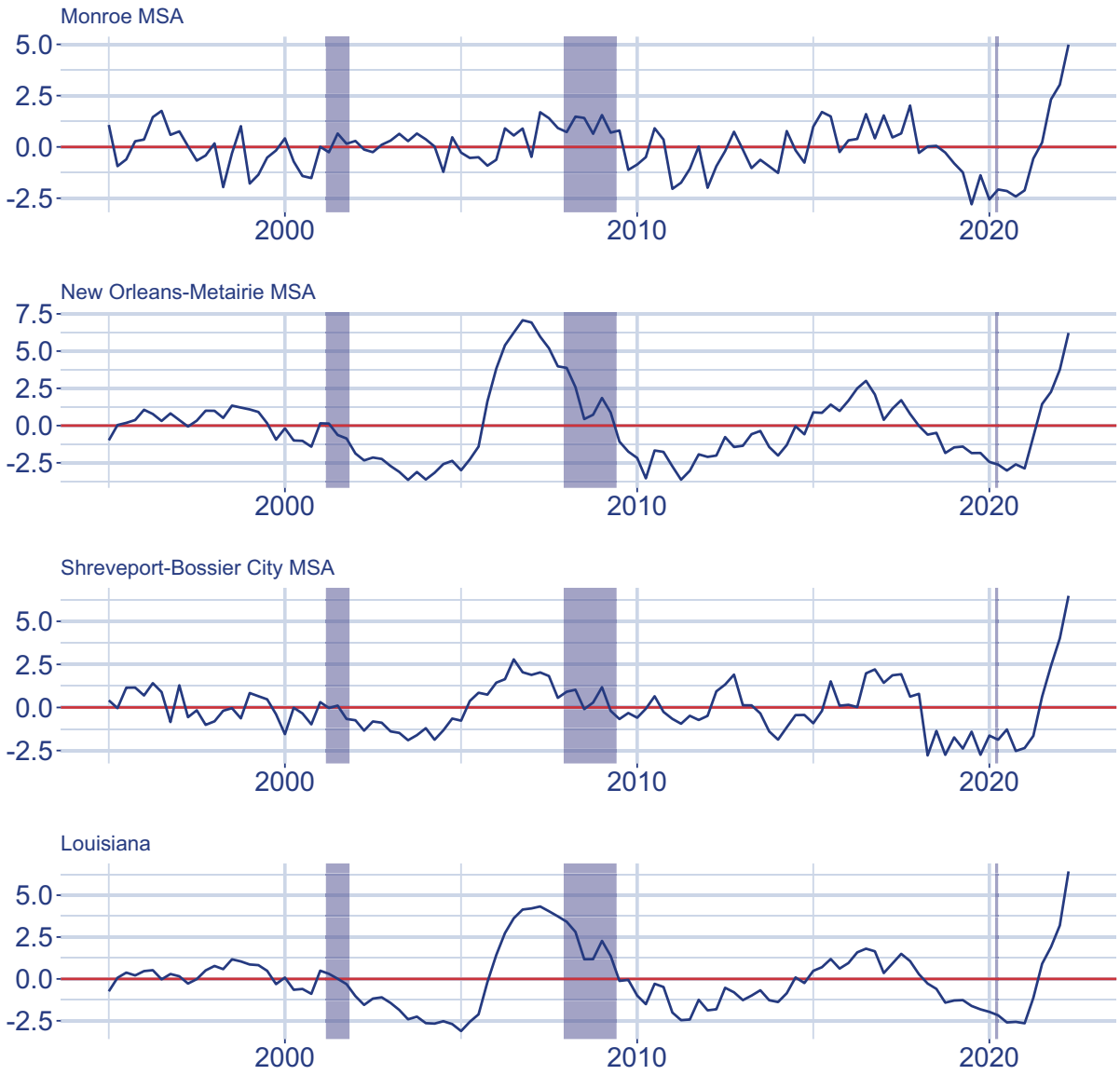


Figure 24: House Price Index - Deviation from Long Run Growth by MSA

PERCENT

(CONT.)

Figure 24 expresses the same housing price data in percent deviations from a long-run growth trend. These estimates provide a more regional specific snapshot of housing market dynamics. They identify periods of growth and contraction relative to the long-term trajectory of house prices which may be a function of growing standards of living as well as the nominal price level. This not only identifies potential periods of bubble-like market behavior, but also places the relative scale of these periods in context with others in the past. As we expand our area of study to the state level, micro variations at the MSA level are smoothed out. The current uptick in home prices only matched the scale (but not the duration) of the housing market bubble of 2002-2007 in the past 12 months. The increase in prices relative to trend is sharper this past year than in any one-year period of the past two decades. It is important to note that next quarter's numbers are expected to be lower, as they will reflect three 75 basis point rate increases in the Fed's overnight rate.

The increase in prices relative to trend is sharper this past year than in any one-year period of the past two decades, but next quarter's numbers are expected to be lower.

Each MSA, as well as the state composite, exhibits the full scale of how quickly house prices have increased during the pandemic. The Monroe MSA experienced nearly none of the growth in prices in the previous market bubble, but all MSAs have experienced home price inflation post 2020. Relative to long run trend, all areas examined here are above stable growth. Nearly all forecasted models of HPI data predict a downward path for home prices. Separately, Louisiana house prices follow much of the national trajectory in real time. Louisiana HPI and U.S. HPI tend to co-move together (possibly sharing a similar stochastic process). Since national numbers are trending down, this is expected to be borne out in subsequent data releases for Louisiana.

Homeownership Rates

In the early days of the COVID-19 recession and the corresponding policy response, a moratorium on evictions and foreclosures was implemented to stymie a potential wave of mortgage write downs that might rival what was seen during the Great Recession. A lot of underlying risk that was inherent in the banking system during that time is still there today. As the Fed continues to aggressively set interest rate policy in response to inflation pressures, it does so at the expense of it's maximum employment mandate. One of the lessons that the last financial crisis taught us (rather painfully too), is that even a relatively small number of mortgage defaults can quickly drive a bank to insolvency since it typically absorbs these losses via excess reserve balances. Any relatively large disruptions in economic activity are concerning then for homeownership rates. Now that extraneous policies have largely ended, combined with moderately recovered homeownership rates, the concern is that homeownership may decline rapidly again and wipe away a new generation of consumer wealth.

Figure 25: Homeownership Rates
PERCENT

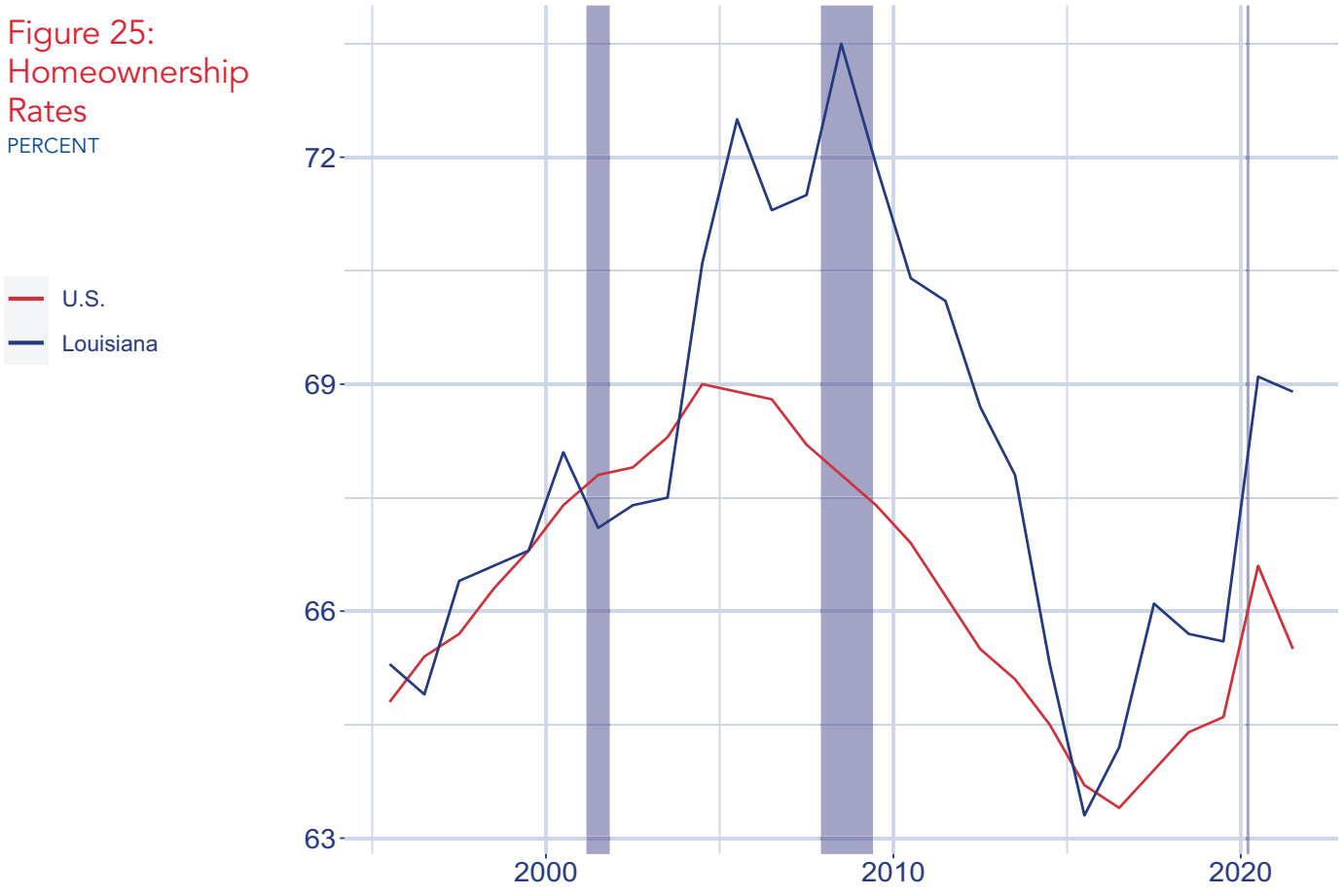


Figure 25 graphs annual homeownership rates for Louisiana since 2000. Louisiana's peak homeownership occurs in 2009, a full five years after the U.S. Louisiana rates stop falling in 2015, a full year before they stop falling nationally, although the spread from peak to trough is nearly double that of the U.S. Currently, homeownership rates have already started to decline for the U.S. (about 1.1%), but Louisiana has only lost about .2%. In general, these data reflect the historical pattern that Louisiana is more volatile than the national data (at least going as far back as the early 1980s). The figure also highlights one of the main arguments for why this is not a housing bubble. Since homeownership was already down in 2021, before the Fed started raising its key benchmark interest rate, the 2022 data are expected to continue this trend.

MSA Level Market Turnover

While COVID-19 has exposed more than a few weaknesses in global supply chains, it has also impacted new home construction. This is a multi-faceted problem from raw materials to labor constraints. As a result, existing home sales have driven most of the housing market transactions of the past year. New housing starts declined 19.6% in March 2020 followed by 26.5% in April 2020 (the worst since March 1984)[5]. Nearly all MSAs in Louisiana have experienced declining average days on the market and increasing median listing prices. All of which is expected when new home construction is stagnating. Some MSAs are already showing signs of cooling. Relatively tighter monetary policy and reduced willingness to underwrite new mortgage loans is altering the incentive structure for the market.

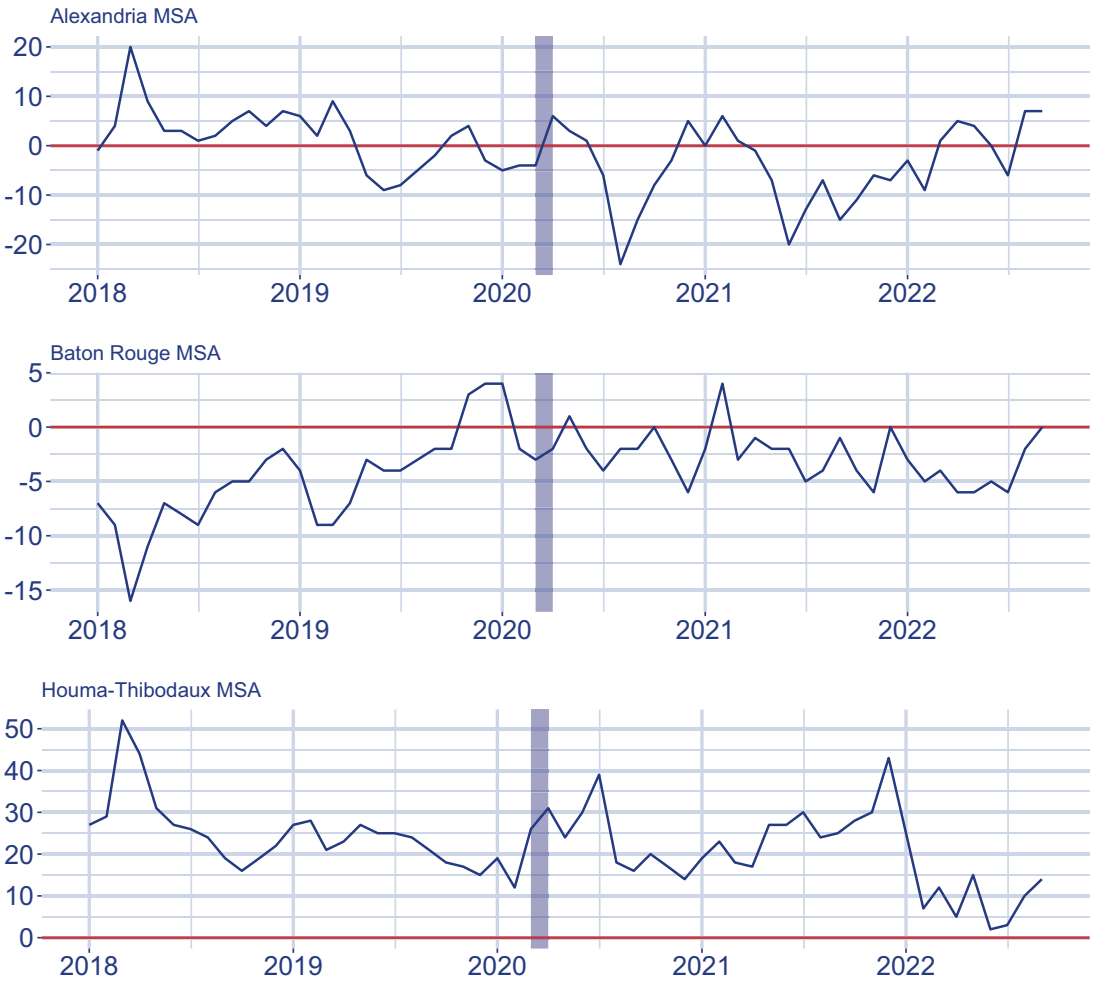


Figure 26: House Listings on Market – Median Days Above or Below State
BY MSA

5 These are annually adjusted percent changes.

Figure 26: House Listings on Market – Median Days Above or Below State

BY MSA
(CONT.)

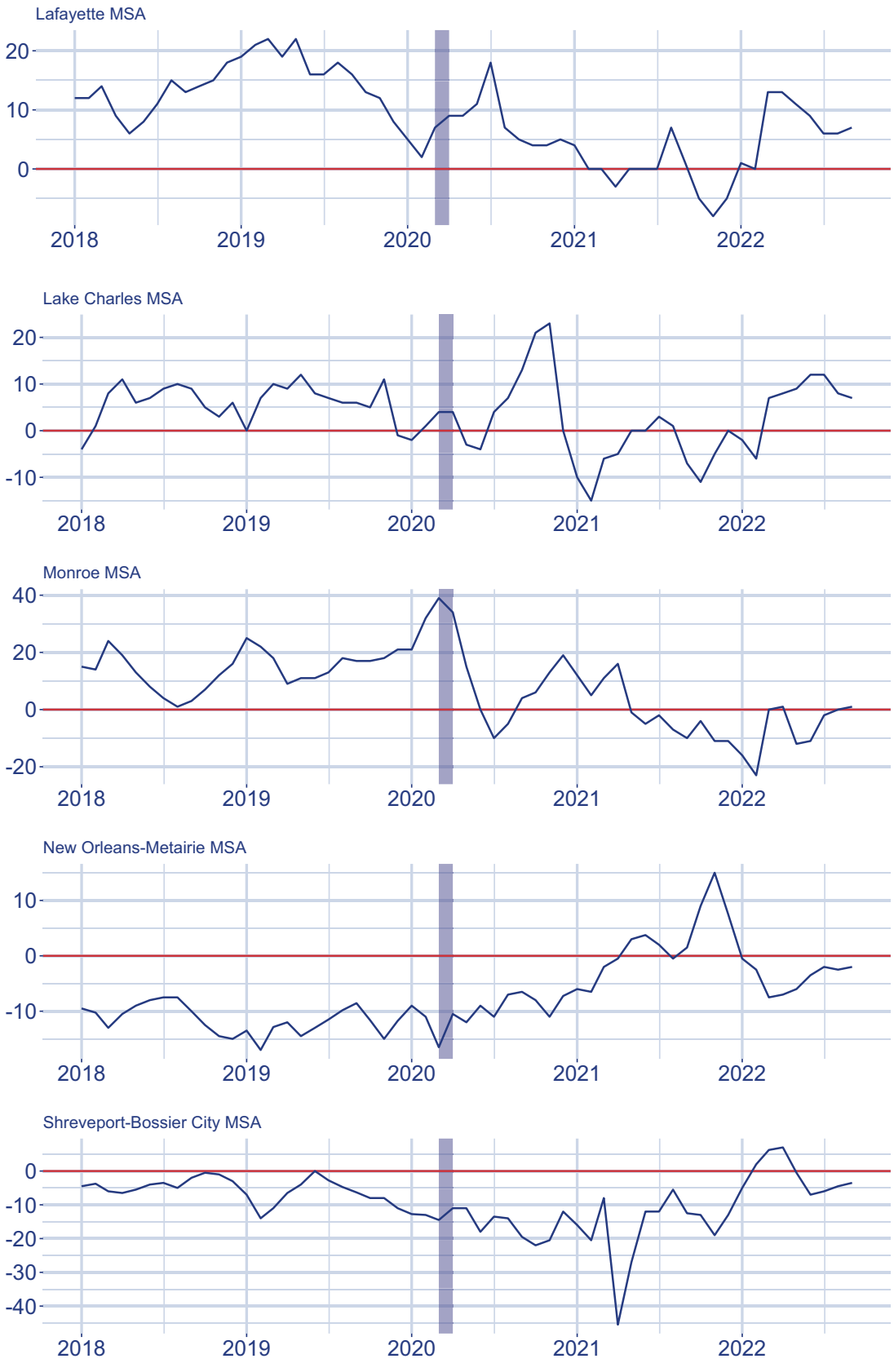


Figure 26 explores the median number of days a listing stays on the market in a given MSA less the state median. Numbers that are consistently above zero indicate that a particular MSA is less fluid than the state, while numbers consistently below zero indicate an MSA that is more dynamic than the state. Generally, the median number of days a house stays on the market in Louisiana has declined by almost half post-COVID. This is why the data are expressed in this way. Alexandria, Baton Rouge, Monroe, New Orleans-Metairie, and Shreveport-Bossier City are all showing signs of strong housing market activity relative to the state. Houma-Thibodaux, Lafayette, and Lake Charles have markets that reflect relatively more price rigidity. These data are not available for the Hammond MSA since it is the most recent of our MSAs in the state.

Houma-Thibodaux, Lafayette, and Lake Charles have markets that reflect relatively more housing price rigidity.

Housing Affordability

In an era of relatively high inflation and house prices, housing affordability concerns enter into the national discourse. Additionally, rent prices have also increased about 4.8% in the past 12 months. There exists relatively little data on housing price affordability at the state or MSA level. To examine this phenomenon locally, a wage adjusted HPI is constructed via deflating HPI data with real wage data for each MSA. A similar base year is adopted for this calculation. Additionally, the same data constraints for the Hammond MSA (see Figure 26) also apply for wage data.

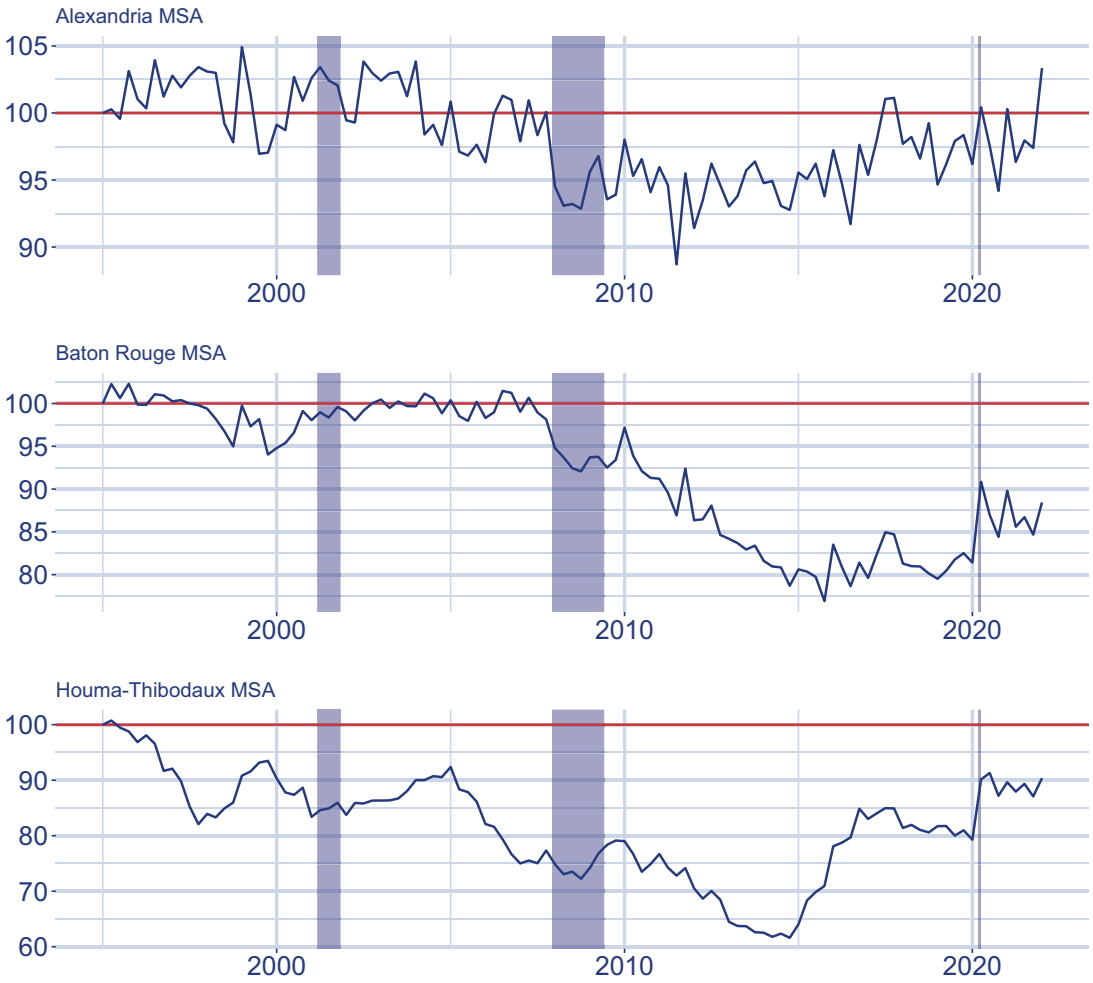


Figure 27: Wage Adjusted House Price Index by MSA

1995 = 100

Figure 27: Wage Adjusted House Price Index by MSA

1995 = 100
(CONT.)

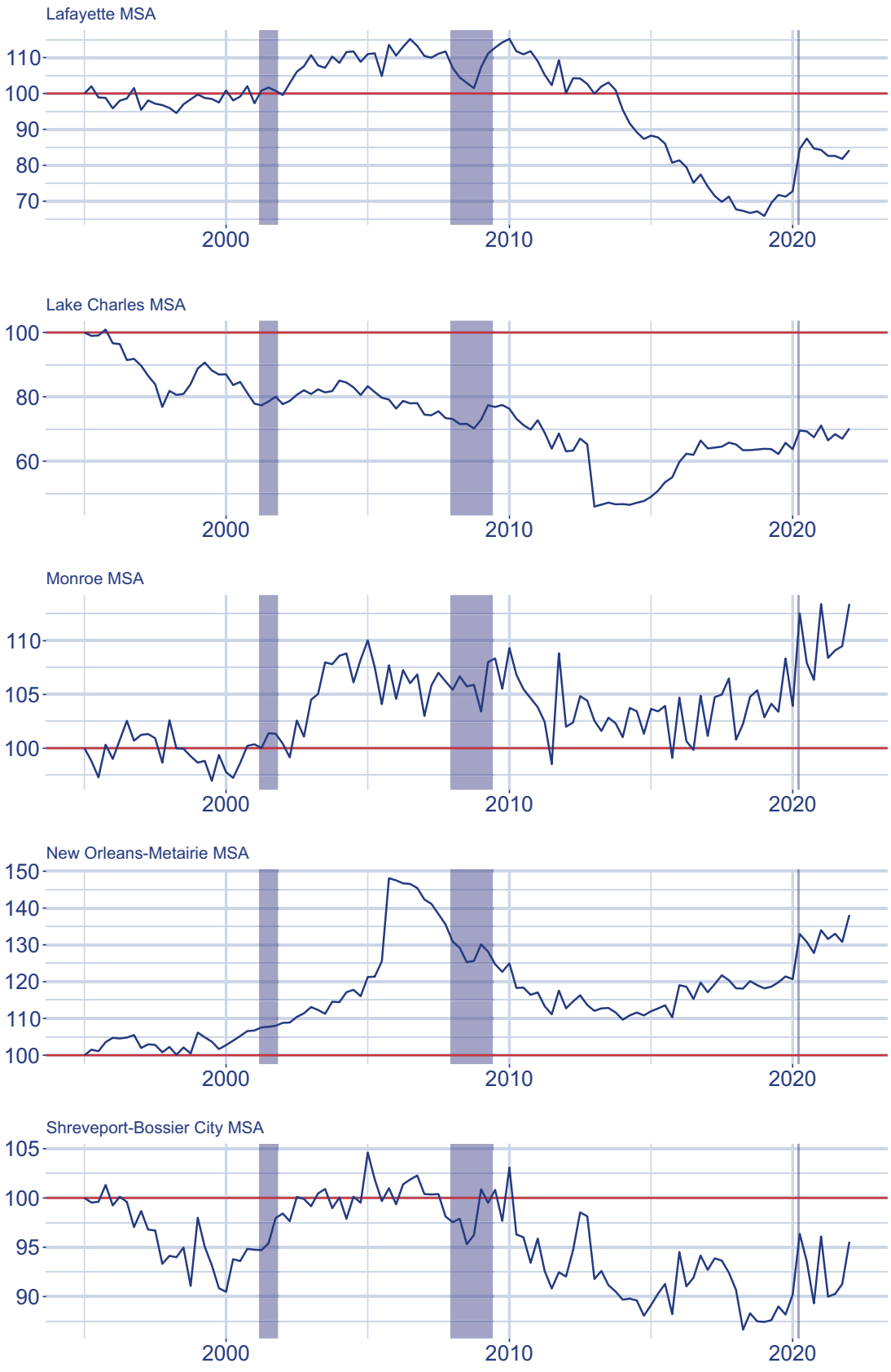


Figure 27 represents the affordability of similar quality houses when adjusted for real wages in each MSA. The red line at the base year value of 100 (1995: Q1) indicates a benchmark of affordability. Over time nominal wages grow, but some of that wage growth is offset by higher consumer prices (inflation). When this index is consistently above the red line, house prices are growing faster than real wages, housing is less affordable. The inverse is also true, when the index is predominantly below 100, real wage growth keeps with housing prices. Five out of eight MSAs exhibit faster real wage growth than house price inflation. Alexandria is in parity, while Monroe and New Orleans-Metairie have overheated housing markets and represent areas that are ripe for new housing start investments within the state.

Monroe and New Orleans-Metairie have overheated housing markets and represent areas that are ripe for new housing start investments within the state.

Forecasts

Housing market forecasts are based on the estimation of 219 statistical models. The algorithm for these forecasts is similar in nature to the output and income and labor market forecasts discussed previously. Please see the discussion on page 13 and in the preface on page 5 for more details of this procedure.

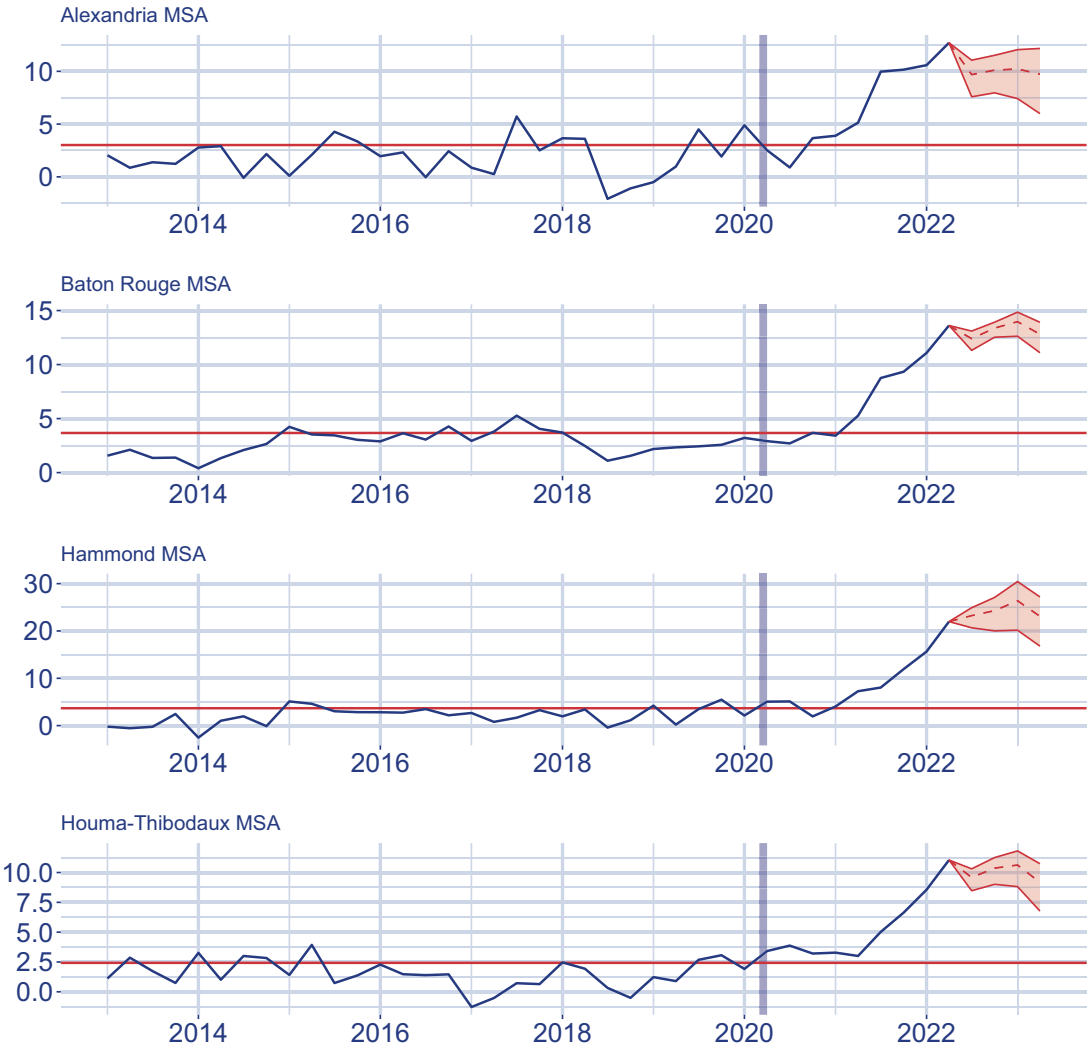
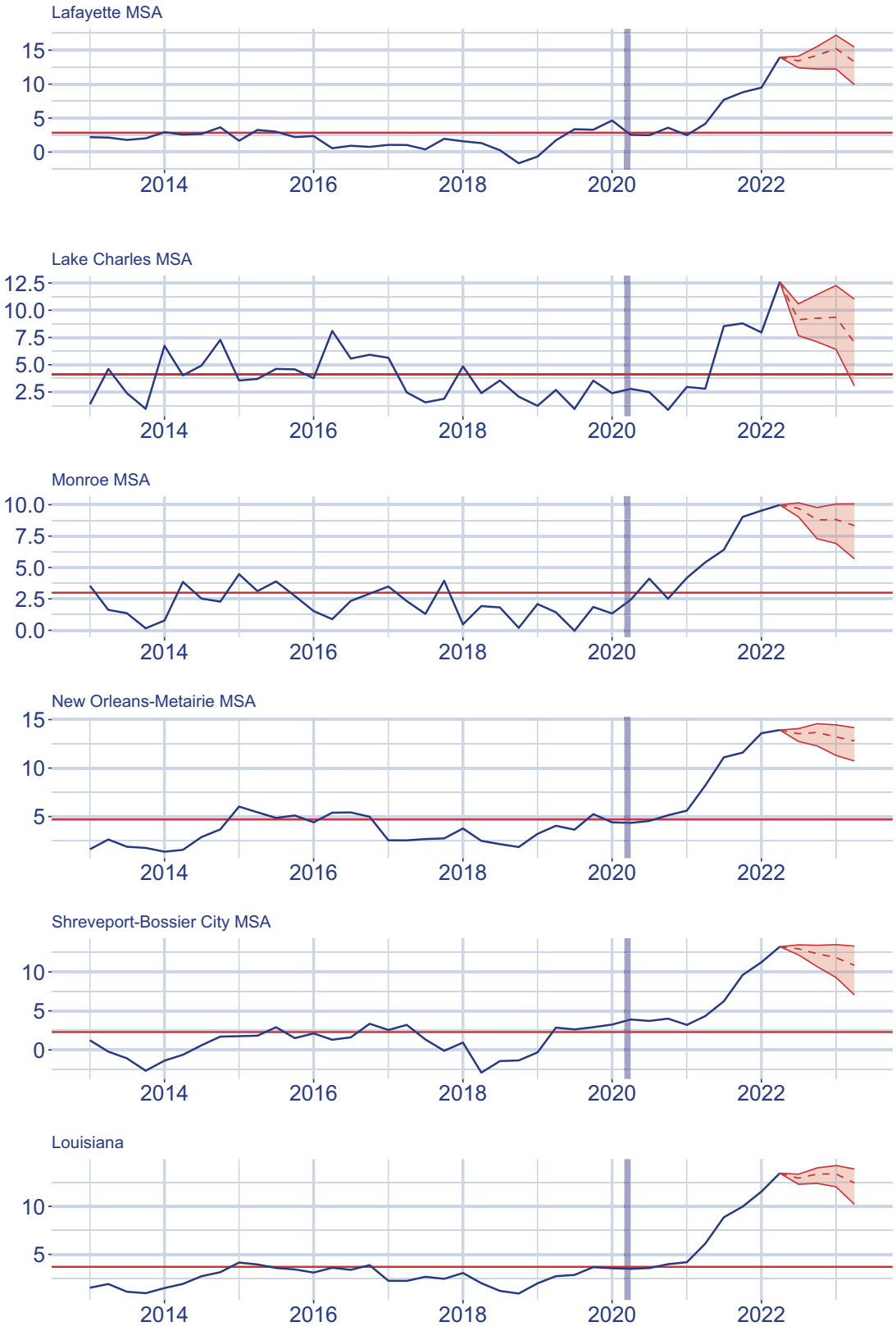


Figure 28: Forecasted House Price Index Growth Rate by MSA
PERCENT

Figure 28: Forecasted House Price Index Growth Rate by MSA

PERCENT
(CONT.)



HPI growth is expected to remain elevated above the long-run average, but will start to contract and slowly return to their long-run average growth rate.

Figure 28 displays observed and expected HPI growth rates alongside the quarterly long-run average growth rate for each MSA and the state aggregate. House prices have grown well above the long-run average for the past four quarters, but this is not expected to continue. Third quarter estimates of GDP nationally signal a struggled residential real estate sector. Nationally, this industry shrank about 26% at an annualized rate in third quarter of 2022. This sector contributed to national output by its lowest amount since 2008. While Louisiana is still relatively insulated by some of these national dynamics, this is cause for concern in this industry.

For the next year, HPI growth is expected to remain elevated above the long-run average, but will start to contract and slowly return to their long-run average growth rate. Since personal incomes have not fallen with employment during this recessionary-type phase (which is not normal for severe economic disruptions), a sharp correction in home prices is not expected. Additionally, house price volatility is usually relatively smooth and inherits quite a persistent time series process. Forecasted intervals for each MSA of Figure 28 and the state are displayed in Table 5.

Table 5: Forecasted House Price Index Growth Rates by MSA

PERCENT

	ALEXANDRIA			BATON ROUGE			HAMMOND		
Date	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic
2022: Q3	7.58	9.69	11.06	11.31	12.40	13.10	20.67	23.24	24.92
2022: Q4	7.96	10.11	11.52	12.53	13.37	13.92	20.01	24.29	27.08
2023: Q1	7.41	10.22	12.05	12.62	13.97	14.85	20.15	26.38	30.45
2023: Q2	5.99	9.73	12.16	11.09	12.80	13.92	16.79	23.09	27.20

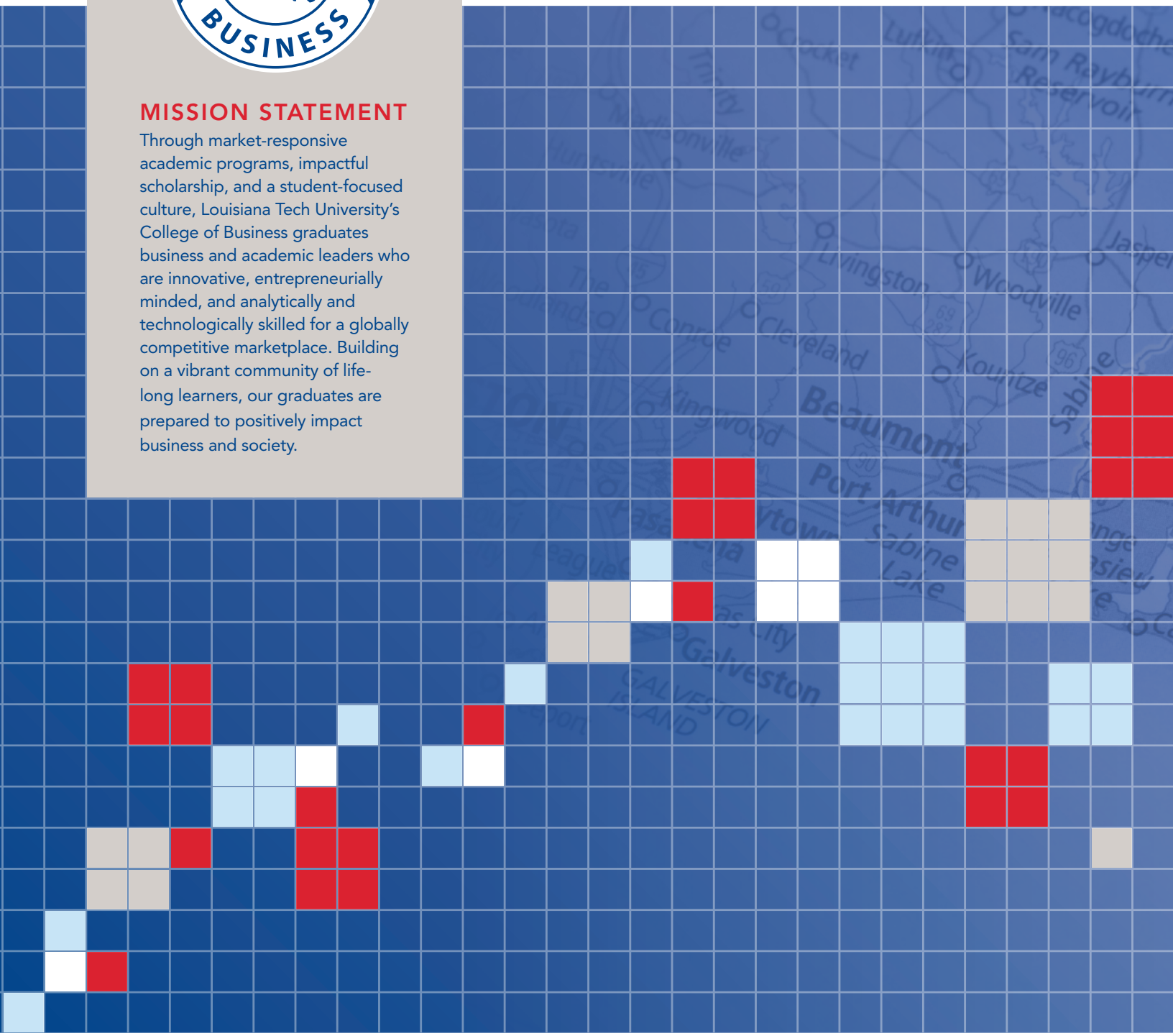
	HOUMA-THIBODAUX			LAFAYETTE			LAKE CHARLES		
Date	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic
2022: Q3	8.47	9.58	10.31	12.39	13.43	14.11	7.67	9.13	10.59
2022: Q4	9.01	10.37	11.25	12.23	14.23	15.54	7.10	9.27	11.44
2023: Q1	8.82	10.63	11.81	12.23	15.23	17.19	6.41	9.34	12.27
2023: Q2	6.77	9.17	10.74	9.93	13.27	15.46	3.06	7.04	11.02

	MONROE			NEW ORLEANS-METAIRIE			SHREVEPORT-BOSSIER CITY		
Date	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic	Pessimistic	Realistic	Optimistic
2022: Q3	9.04	9.71	10.15	12.75	13.55	14.07	12.19	12.97	13.47
2022: Q4	7.28	8.79	9.78	12.28	13.67	14.58	10.67	12.33	13.41
2023: Q1	6.92	8.82	10.05	11.31	13.21	14.46	9.28	11.84	13.50
2023: Q2	5.69	8.34	10.06	10.73	12.81	14.17	7.06	10.84	13.31

	LOUISIANA		
Date	Pessimistic	Realistic	Optimistic
2022: Q3	7.58	9.69	11.06
2022: Q4	7.96	10.11	11.52
2023: Q1	7.41	10.22	12.05
2023: Q2	5.99	9.73	12.16

MISSION STATEMENT

Through market-responsive academic programs, impactful scholarship, and a student-focused culture, Louisiana Tech University's College of Business graduates business and academic leaders who are innovative, entrepreneurially minded, and analytically and technologically skilled for a globally competitive marketplace. Building on a vibrant community of life-long learners, our graduates are prepared to positively impact business and society.



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