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ECONOMIC
RESEARCH

REAL

REGIONAL ECONOMIC ANALYSIS OF LOUISIANA

REPORT

FALL 2021



Dean's Message

We are pleased to share with you the seventh installment of the Regional Economic Analysis of Louisiana (REAL) Report, an ongoing series designed to provide insight into recent economic developments in Louisiana. In addition to economic forecasts, this edition features analyses of graduation rates compared to funding, the impact of COVID-19 on air travel, and how Louisiana's hurricanes have affected the oil industry.

The REAL Report is produced by the Center for Economic Research, in collaboration with faculty and students in Louisiana Tech University's College of Business, for the state of Louisiana and our region of the South. This report is compiled by undergraduate business economics majors in partial fulfillment of their Regional Economic Analysis class.

Business economics students from the College of Business provide strong analytical and critical thinking skills nationally and to our region of the South. Undergraduate business economics majors, as they progress through their degree program, not only learn economic intuition and modeling skills, but also data science and statistics, making them highly sought after in the marketplace.

This report and all subsequent issues can be found on the College of Business website at business.latech.edu/realreport. For more information on the report or the Regional Economic Analysis class (ECON 425), please contact Dr. Patrick Scott at pscott@latech.edu. Inquiries about specific sections of the report should be referred to the author of each section, while media inquiries should be directed to waldroup@latech.edu.

I hope the information included in this report serves as a valuable tool for your efforts.

Sincerely,



CHRISTOPHER L. MARTIN, PH.D.
Dean and Chase Endowed Professor
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Data used in this report extend to what is available as of October 31, 2021.

Meet the Team



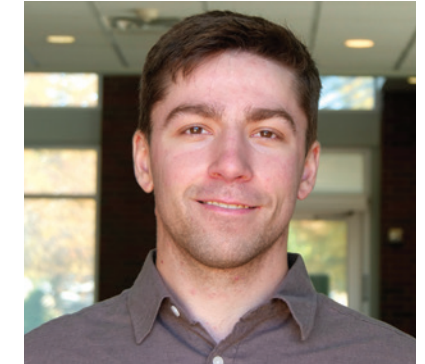
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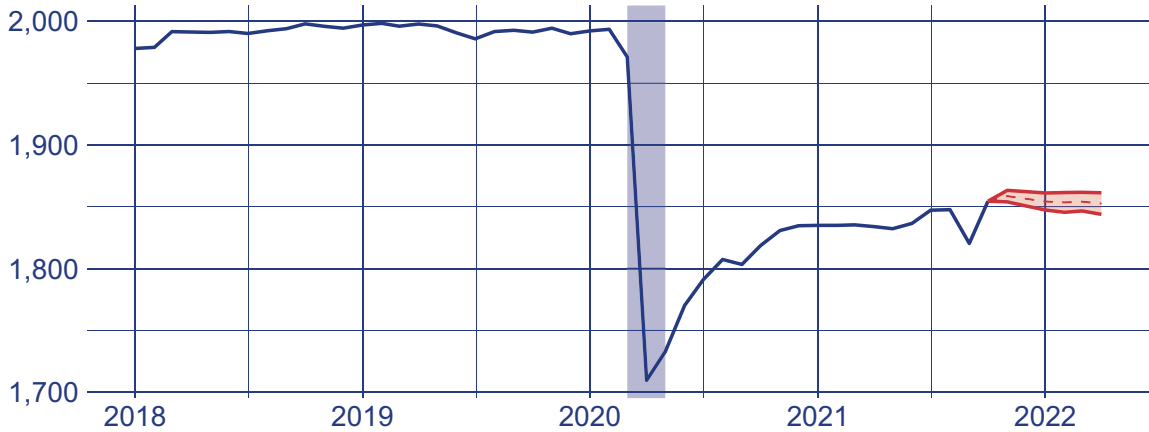
Dr. Patrick Scott is an assistant professor of economics and director of the Center for Economic Research. He teaches macroeconomics, monetary theory, and research methods at Louisiana Tech University. His research interests include optimal monetary policy models, dynamic general equilibrium models,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

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Louisiana Economic Indicator Forecasts

Forecasts are provided using a Bayesian model averaging approach from many statistical models. This method is utilized to capture the relative uncertainty that any one individual model is not properly specified and thus accounting for that uncertainty in our analysis. All data used below extend to October 2021.

Figure 1: Forecasted Non-Farm Employment (Thousands)



Forecasted Non-Farm Employment

Non-farm employment has now recovered from the approximately 28,000 jobs lost due to Hurricane Ida two months ago. October employment even added 6,000 jobs in addition to that recovery. Ida’s landfall coincided with the ending of supplemental pandemic unemployment assistance which was expected to grow payroll rosters when Louisiana ended federal assistance one month early in August. The weighted average of model forecasts projects relatively little job growth for the next six months. This reflects not only continuing recovery efforts, but also the relative uncertainty that new variants of the coronavirus may pose to the state economy. The state recovery is looking very similar to Hurricane Katrina for the New Orleans-Metairie MSA except more pronounced and slower moving. This is a concern since about 85,000 of the jobs lost are estimated to be workers that have disengaged from the labor force. Most models are predicting only modest job gains for the remainder of 2021 and a flat growth trajectory into 2022.

Forecasted Unemployment Rate

The Louisiana unemployment rate has largely recovered to what economists would call full employment levels. This is a false comfort since the rate is low due to reduced labor force participation and not by increased economic activity. The continuing decline we have experienced over the past few months is expected to correct upward, reflecting stalled hiring and more workers cautiously re-entering the workforce. October’s rate of 5.4% is expected to close the year at around 5.6% and slowly correct upward, to about 5.8% in the first few months of 2022 unless extenuating circumstances intervene. We have not reached pre-COVID levels for the unemployment rate, but those numbers were possibly over employment highs that may not be seen again without a sustained economic recovery.

Figure 2: Forecasted Unemployment Rate (Percent)

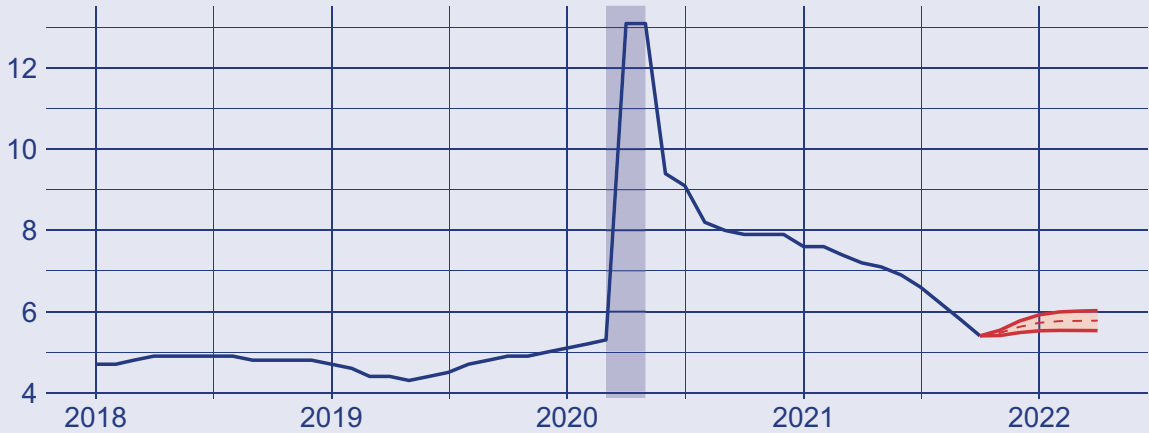
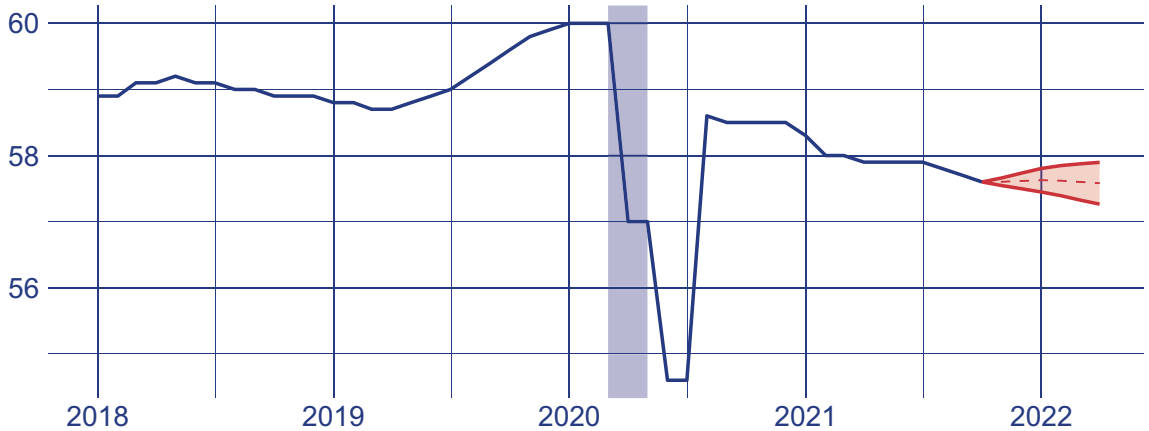


Figure 3: Forecasted Labor Force Participation Rate (Percent)

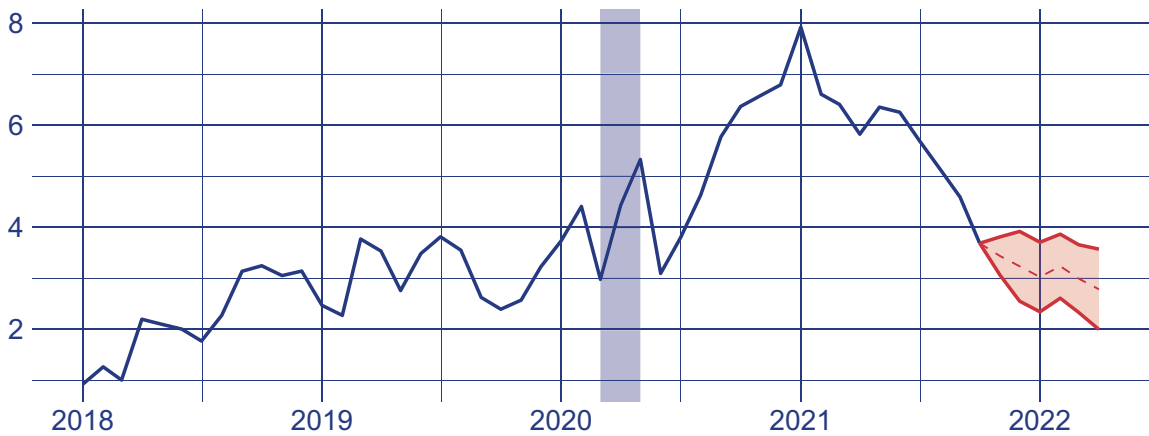


Forecasted Labor Force Participation Rate

The labor force participation rate highlights the crux of the employment crisis for Louisiana. Workforce engagement has been trending downward since the 2007-2009 financial crisis. COVID accelerated this trend, reducing labor force participation by over 5% in four months. While over half of this recovered two months later, the downward trending trajectory is still present and has eroded some of the initial rebound. Workforce participation must still recover 2.5% to achieve pre-pandemic levels. Until these workers (which represent about 85,000 jobs) reengage the labor market, economic recovery will not be possible. A relatively wide cross section of economic and statistical models predict little movement in this indicator over the next few months. This indicates that the symptoms facing the state economy are not likely to be solved in the short term. This requires not only careful policy responses to address the long-term employment situations, but also planning to account for potential tax revenue shortfalls and the budgetary issues they create.

Louisiana Economic Indicator Forecasts (Cont.)

Figure 4: Forecasted Average Hourly Earnings Growth (Percent)



Forecasted Average Hourly Earnings Growth

The growth rate of average hourly earnings at the state level tends to oscillate around a long-run average of about 2.6% and indicates a relatively more stable growth trajectory than the percent changes in wages (what we would call wage inflation). Average hourly earnings growth recently peaked in January 2021 at 7.9%, the highest monthly rate of growth since the 2007-2009 financial crisis. Since January, growth has declined by about 54%. This pattern is not mirrored in the aggregate US data and signals that Louisiana may be experiencing additional volatility due to the nature and makeup of our specific state economy. Nearly all models forecast the continuing trend in declining average hourly earnings growth, to about 2.8% six months out (April 2022). It is important to note however that this is still above our long-term average growth rate for the past 12 years and indicates wage growth above the 2% general price inflation target that the Federal Reserve publicly targets.

Forecasted Wage Growth

Total wages and salaries for Louisiana is a nominal economic variable that describes labor income paid to employees and moves as the price level moves. To account for this, wage growth is expressed here in percent deviations from long-run trend. Positive deviations are interpreted as periods of wage growth above trend. Negative deviations are a bit more nuanced; they are periods of wage growth below trend (and possibly declining wages or negative growth). For much of the early 2000s, until about 2006, wage growth is below trend. Post-2006, until about 2015, wages grow above trend, peaking at about October 2008. Post-2015 wages are growing below long-run trend again. Since the labor force has been steadily declining during this period, this is intuitive. Forecasts indicate a normalizing cycle for wages and salaries that return to long-run trend levels over the next quarter and remain there for the rest of the following year.

Figure 5: Forecasted Wage Growth (Percent)

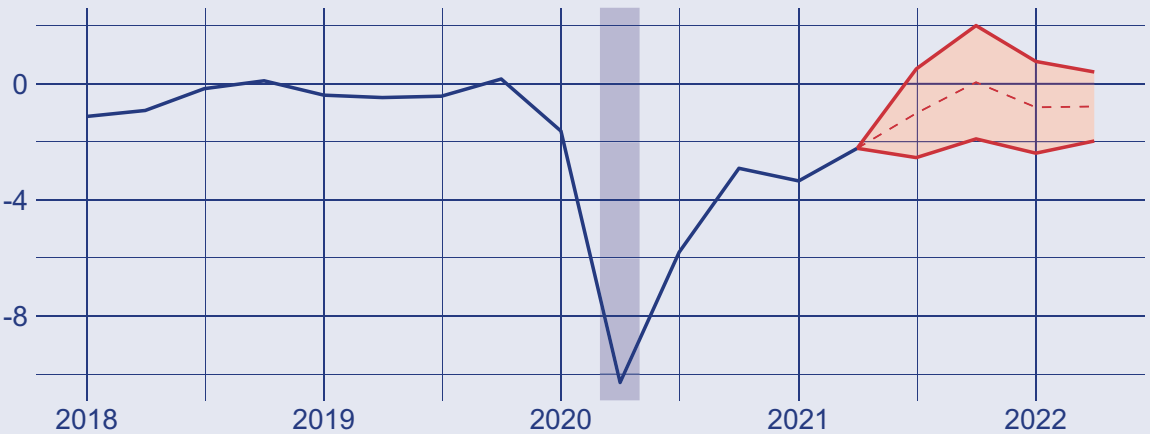
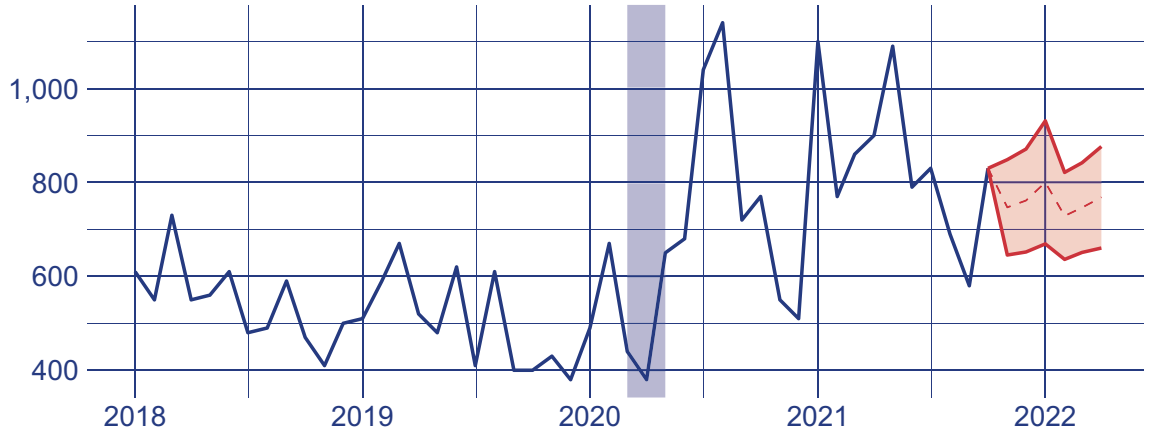


Figure 6: Forecasted Business Applications with Planned Wages (Number of Applications)



Forecasted Business Applications with Planned Wages

Business application data is collected from the US Census Bureau and indicates business formations that are accompanied by a hiring plan for wage paid employees. Since the majority of labor market churn over the business cycle frequency is governed by new and small businesses, these data indicate a real-time gauge of economic and hiring conditions. New business applications follow a relatively stable and seasonal pattern after the 2007-2009 financial crisis for LA until COVID, averaging about 560 applications per month. Abnormally high personal income levels and ingenuity of individuals working from home, have altered the incentive structure and perceived riskiness of new business formation despite COVID-19. After the immergence of COVID, new business applications average about 760 per month. Nearly all models evaluated here forecast new business applications with wage plans at levels above the 560 per month average of the 2010s but lower than the post-COVID highs of around 1,100 per month over the past year.

Louisiana Employment Changes in the COVID-19 Era

BY PAYCEN BROUILLETTE

Across the state, employment among all workforce sectors has declined 8.74% from pre-pandemic levels. The combination of business grinding to a halt in response to state and federal stay-at-home mandates and widely available unemployment benefits was the perfect recipe for an uptick in unemployment statewide. The initial surge of the COVID-19 pandemic brought a 14.2% decrease in employment for the state of Louisiana, and a 12.8% average decrease in employment across the main metropolitan statistical areas. However, there have been considerable improvements in economic conditions since the beginning of COVID-19. Employment has increased across the state by 6.3% since April of 2020, when unemployment was at its peak. Both lifting of stay-at-home and mask mandates along with increased vaccination participation have paved the way for many across the state to return to the workforce. Despite these improvements and policy changes, many workers have left the workforce altogether and their return to labor force participation is uncertain.

Employment levels in Louisiana are down on average in every metropolitan statistical area (MSA) by 7.8% since January 2020. The Louisiana economy (Figure 1) lost about 174,000 jobs from January 2020 to September 2021, representing an 8.7% decrease in employment. This number is up slightly from the end of the economic recession levels in April 2020, but over the last few months employment growth for the state of Louisiana has stagnated. Each MSA is still experiencing a drop in unemployment from long run employment numbers. As of the most recent jobs report published in October of 2021, no MSA has returned to its long run average level of employment.

Of the MSAs across Louisiana, Alexandria experienced the smallest drop in employment levels, a 2.6% decrease from January 2020 to September 2021. Baton Rouge, the state’s capitol, saw a 5.4% decrease over the same period. From

January 2020 to September 2021, the Hammond MSA reported a 3.1% decrease in employment. Houma-Thibodaux MSA reported employment levels of 87,100 in January 2020 and 78,400 in September 2021, a 10% decrease. Lafayette MSA lost nearly 15,000 jobs over this same time, a 7.24% decrease from pre-COVID levels. Lake Charles MSA experienced the largest relative drop in employment levels after the COVID-19 pandemic, with employment levels at 111,900 in January 2020, but only 93,700 in September 2021, a 16.3% decrease in employment. Monroe MSA reported a 4.86% drop in employment levels from January 2020 to September 2021. New Orleans MSA, the most heavily populated city in the state, reported employment levels of 592,000 in January 2020 and 509,800 in September 2021, a 13.9% decrease. Finally, Shreveport-Bossier MSA experienced a 6.67% decrease in employment since COVID.

State and MSA Employment Levels

	January 2020	April 2020	December 2020	September 2021
Louisiana	1,992,200	1,709,600	1,834,600	1,818,000
Alexandria	61,800	55,900	60,300	60,200
Baton Rouge	407,800	352,900	387,700	385,600
Hammond	46,940	41,860	45,378	45,480
Houma-Thibodaux	87,100	78,400	81,600	78,400
Lafayette	205,800	181,700	188,300	190,900
Lake Charles	111,900	94,600	91,000	93,700
Monroe	78,200	68,500	74,500	74,400
New Orleans	592,000	480,900	525,500	509,800
Shreveport-Bossier	179,900	157,000	167,800	167,900

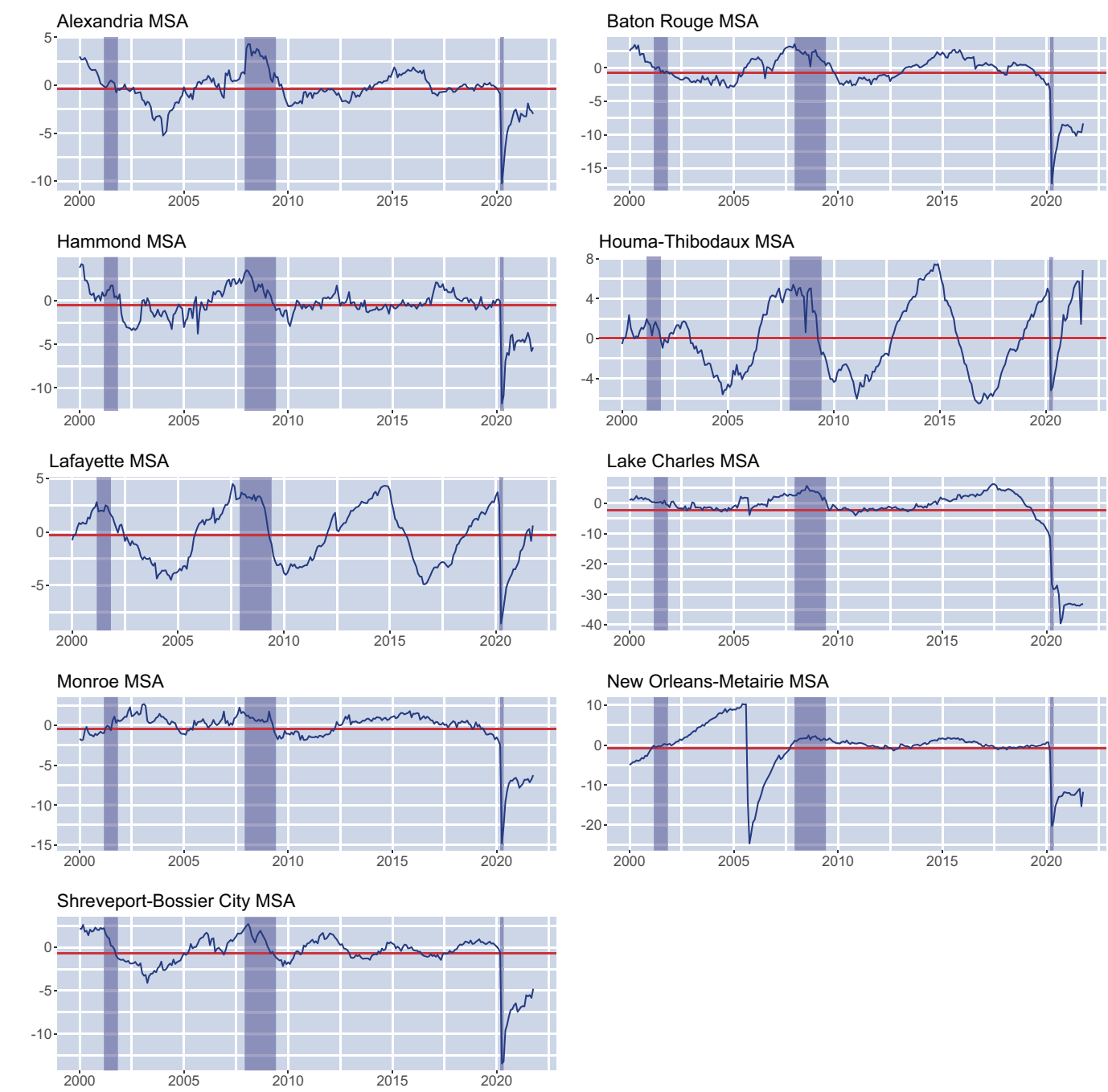
Figure 7 displays MSA employment in percent changes from their long run trend (growth). Prolonged periods above the red line indicate above average employment growth, and periods below the red line represent slower employment growth (and possibly shrinking employment). Most MSAs are below their long run growth path compared to pre-pandemic

levels. It should come as no surprise that New Orleans is the most affected in employment levels, as the workforce decreased 13.89%, or almost 100,000 workers. New Orleans is the most populated city in Louisiana and imposed relatively stricter COVID-19 mandates in Louisiana in response to the initial surge of the virus. Among the actions taken by the city,

relatively strict mask mandates, stay-at-home orders, as well as the cancellation of the city’s annual Mardi Gras celebration were the most prevalent. The Houma-Thibodaux MSA and the Lafayette MSA are the two outliers with relatively high current-day employment levels compared to trend. As of September 2021, these two MSAs have reached pre-pandemic levels of employment. However, they both historically exhibit more volatile employment cycles. The Lake Charles MSA experienced the biggest drop in average employment levels, seen in the 40% decrease shortly after Hurricane Laura.

The Louisiana economy has stagnated in terms of employment growth; however, the economic production of the state has recovered significantly. With unemployment benefits readily available to those not participating in the labor force, job growth stands to experience little growth without changes to labor policy in the state of Louisiana. It stands to reason that many of those who have chosen not to participate in the labor force will continue to forgo employment unless action is taken by policy makers and employers. Marginal statewide reductions to unemployment benefits, as well as a decrease in new hire payroll taxes for businesses are possible solutions to help kickstart employment growth.

Figure 7: Employment Gap by MSA (Percent Deviation from Long-Run Trend)

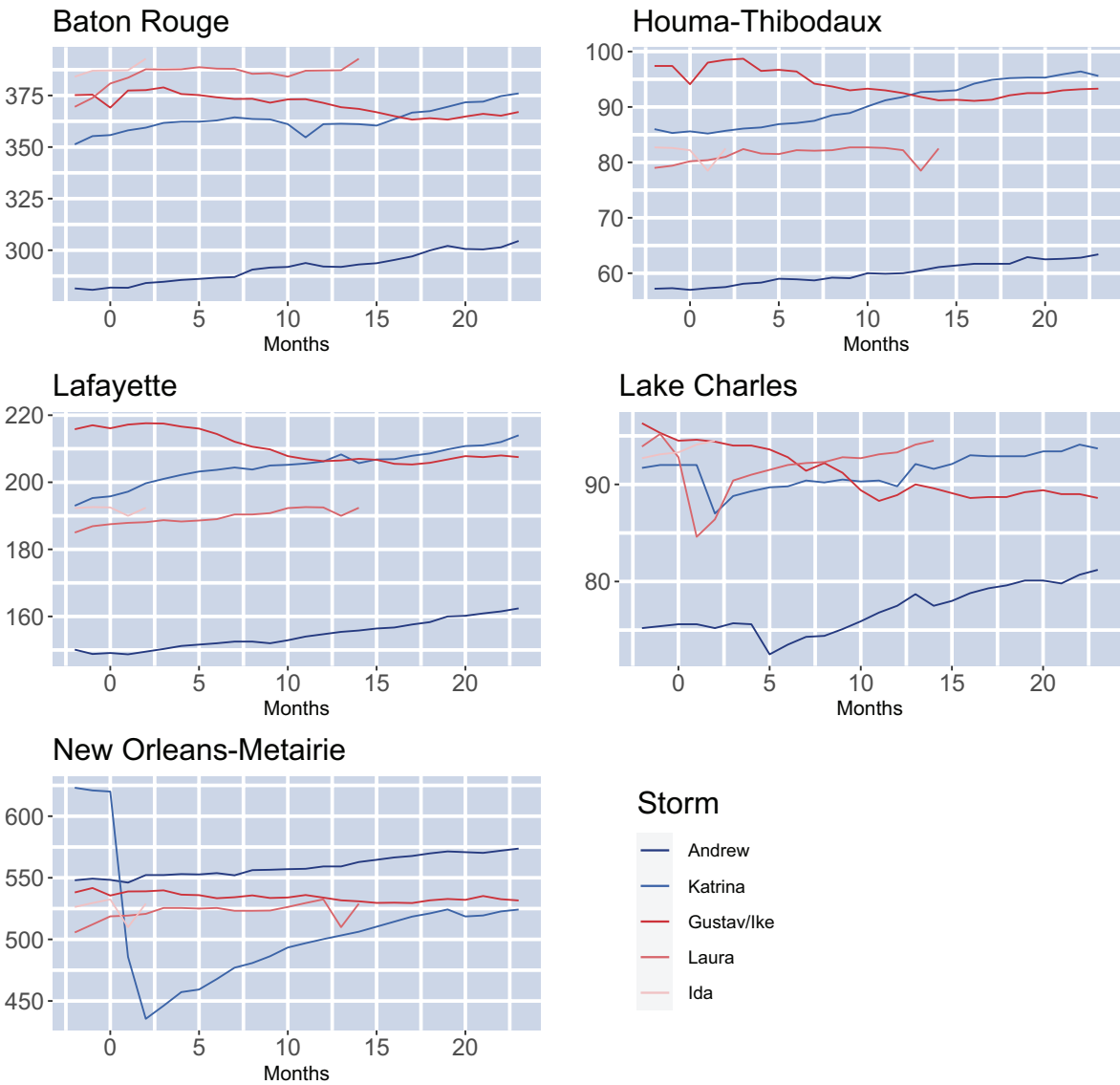


Hurricanes of Southern Louisiana and Their Effect on Employment Rates

BY ADAM QUEBEDEAUX

During the last three decades, Louisiana has experienced some of the nation’s most devastating hurricanes. The lower part of Louisiana feels the effects of a hurricane more acutely than the rest of the Pelican State. Figure 8 follows the storms’ effect on MSA employment for 26 months, beginning with the month before the storm’s landfall. The storms included in this study are as follows: 1) Hurricane Andrew in 1992; 2) Hurricane Katrina in 2005; 3) Hurricane Gustav/Ike in 2008; 4) Hurricane Laura in 2020, and 5) Hurricane Ida in 2021. Hurricanes Gustav and Ike are combined in this study because they made landfall within the same month in 2008. The charts analyze the hurricanes’ impact on the following MSAs: Baton Rouge, Houma-Thibodaux, Lafayette, Lake Charles, and New Orleans-Metairie. The vertical axis shows total employment in thousands of workers, and the horizontal axis indicates the number of months post-storm, starting two months before landfall. Each colored line on the charts represents a storm, with the darkest hues representing the oldest storms and the lightest shades depicting the more recent storms.

Figure 8: Employment by MSA Following Named Storms (Thousands of Workers)



There appears to be minimal to no negative impact on the employment rate from Hurricanes Andrew, Katrina, Laura, and Ida in the Baton Rouge MSA. Hurricanes Gustav/Ike caused a 1.7% decrease in employment in September, followed by a 2.2% increase in October. The October employment rate was 0.5% higher than August’s rate. The primary source of property destruction from the hurricanes in this MSA was wind damage.

In the Houma-Thibodaux MSA, we notice the effects of Hurricanes Andrew, Katrina, Laura, and Ida had a minimal negative impact. Hurricanes Gustav and Ike caused a 3.4% decrease in employment. In the months following the storms, employment increased by 4.4%, a level greater than before the hurricane. The return of displaced residents and additional labor force participation during recovery efforts could explain the increase in the employment rate following Gustav and Ike. Hurricane Ida has had the most significant impact on this area’s employment, decreasing 4.6%. However, because of Ida’s recent landfall, its full effect cannot be observed. Although flooding did occur, the wind was the primary source of destruction in this MSA.

The employment rate of the Lafayette MSA was the least affected by all of these hurricanes. This area was outside of the hurricanes’ direct path, thus explaining this lack of change.

Gustav, Ike, and Laura had the most significant negative impact on the Lake Charles MSA. Laura had the most substantial negative impact, with an 8.8% decrease during the following month due to Laura’s intense flooding. As evacuees returned to the area, employment increased by 6.9%. It took nearly six additional months for the employment rate to return to near pre-storm levels. The extensive flooding presumably caused this slow progression. The employment rates were unaffected by Hurricane Katrina. Hurricane Rita caused a significant drop in employment following Hurricane Katrina. It would take the next 11 months for the employment rate to recover from Rita. In this MSA, there was both wind and flood damage.

There was minimal negative impact to the New Orleans-Metairie area by Hurricanes Andrew and Gustav/Ike. Laura had a positive effect on this MSA. In the months following Laura, the employment rate increased 0.1%. In stark contrast, Hurricane Katrina’s devastating floods had a catastrophic effect. A decline in the employment rate of 29.8% occurred over the two months following Katrina’s landfall. A drastic 21.6% decrease happened during the first month, with an additional 10.4% decrease in the following month. Katrina’s lasting impact illustrates the slow, prolonged employment recovery rate caused by disastrous storms. The employment recovery rate remained 15.2% below the pre-storm level two years later.

These figures illustrate the devastating effect that hurricanes can have on the employment rate of MSAs that lie in a hurricane’s path. Baton Rouge and Lafayette, the least affected areas, are farther inland and not on these storms’ direct paths. When comparing the employment levels of each hurricane in these MSAs, it is evident that wind damage causes some decline in employment. The figures also show that flooding has the most significant prolonged negative impact on the employment rate. Notably, there was an employment increase in the months following some storms. This increase may be attributable to evacuees returning home and increased workforce engagement during recovery efforts. Another compelling anomaly occurs in the rise in the employment rate in the New Orleans-Metairie area during the month of Laura’s landfall. While Laura devastated the Lake Charles area, the rise of New Orleans’ employment rate could have occurred from Lake Charles’ residents relocating to New Orleans. The full effects of the most recent hurricane, Ida, cannot be documented yet, as it has been only a few months since its landfall. This report found that hurricane wind damage caused less significant declines in employment than flood damages. Because wind caused most of Hurricane Ida’s destruction in the South, its long-term employment effects should be relatively small in all five MSA.

Graduation Rates and Education Funding in Louisiana: A Parish-Level Analysis

BY AMANDA WILDER

High school graduation rates can cause one to look at a city, area, or parish differently. When the rates are high, one might be led to conclude that there is higher economic growth in the area. On the other hand, if the graduation rates are lower, it might hint towards lower income and economic growth in the area. Because of these conjectures, a parish’s graduation rate, and in turn school funding, may shape one’s opinion of an area. As the information in this study suggests, the amount of funding in a particular school seems to impact the graduation rates in the parish. In 2019 there was about a 31% variation in graduation rates between all the schools which make up the 64 parishes in Louisiana (with an average state graduation rate of 81.1%), even though there were significant deviations in per student funding ranging from \$10,000 to \$30,000 per student, mainly caused by an outlier in West Feliciana Parish. Even though Red River and West Feliciana parishes have the highest funding in the state, many others appear above average in graduation rates, 46 out of the 64 parishes throughout Louisiana performed above average in 2019.

Juxtaposed to graduation rates, there is an obvious disparity in the funding gap that is much greater than average graduation rates. Figure 9 shows two outliers, Red River and West Feliciana parishes, with over \$25,000 per student individually. Although these parishes do seem to lie among the parishes with relatively high graduation rates – Red River (top 30 highest) and West Feliciana (top 10 highest) – they by no means have the highest graduation rates across the state. Figure 10 shows that in 2019, 72% of parishes had a graduation rate above the state average. This implies that the 18% below average are pulling the average down and are relatively further below the average than the 72% above the average. In contrast, over 60% of parishes in Louisiana receive around \$15,000 or less of total funding per student. Despite the two outliers mentioned above, only 56% of parishes are below the state average, implying a relatively normal distribution of funding.

Generally, school funding has a greater variance than graduation rates. This discrepancy poses questions about how funding is raised throughout the state, as well as how parishes may continue to gain funding. Schools

are funded through three main sources: federal, state, and local money. The majority of state contributions are through the Minimum Foundation Program, which is part of a budget passed yearly by the state legislature to ensure that schools in Louisiana are funded. Local funding comes through local property and sales taxes. Lastly, federal funds are gained by schools through entitlements, competitions, and other awarded funds. Schools that reach certain data markers automatically qualify for and receive entitlements. While funds that require an application with a deadline are competitive, as well as the school having to meet the qualifications of the specific funds, not all that apply will be chosen to receive them. In addition, other funds may be awarded based on other criteria. State funding contributes around 44% of annual school funding, local monies contribute about 43%, and federal dollars contribute approximately 13%. With so many avenues to receive funding, it shows that funding may be available, but not necessarily accessible to all parishes equally. If administrators are more aggressive about seeking out funding, their school may see an increase in funds. Schools that do not realize the funding opportunities they may have are less likely to see increased funds in the long run.

Figure 9: 2019 Public School Funding per Student (Thousands of 2019 Dollars)

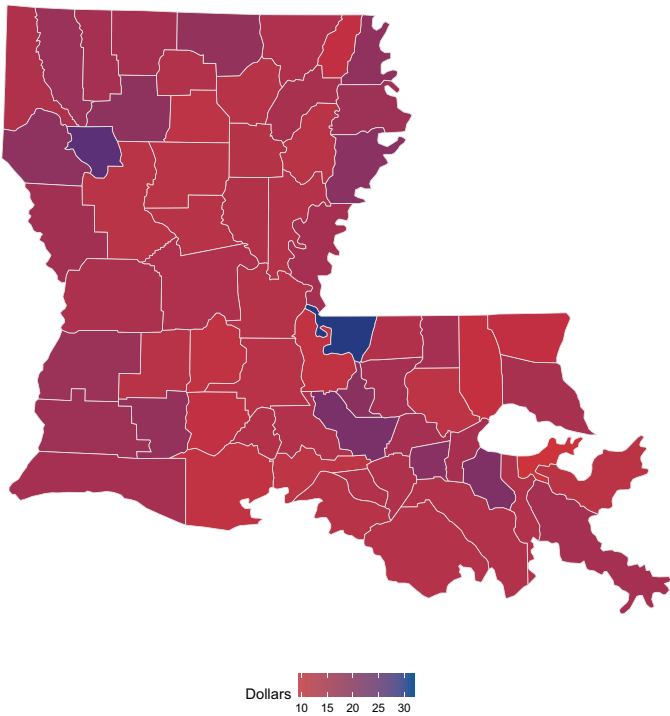
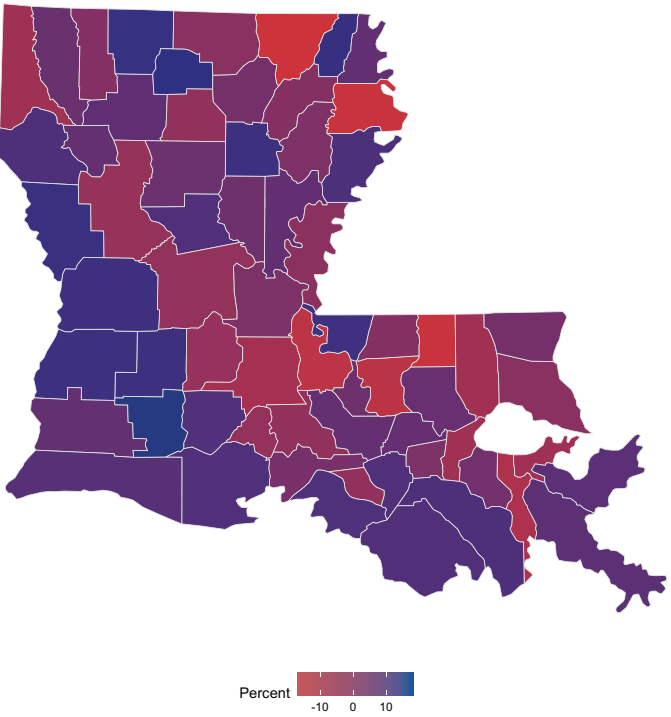


Figure 10: 2019 Public School Graduation Rates (Percent Above/Below LA Average)



In 2019, the vast disparity in funding versus graduation rates shows that more funding may correlate to higher graduation rates. Displayed by Figures 9 and 10, one can see there was a greater differentiation in school funding contrary to the higher dispersion of graduation rates. Since 46 parishes have graduation rates above the state average, funding is not everything in the success of a school. While funding may signal better resources, community engagement, and higher socioeconomic status in the surrounding area, the correlation between school funding and graduation rates at the parish level is not statistically significant.

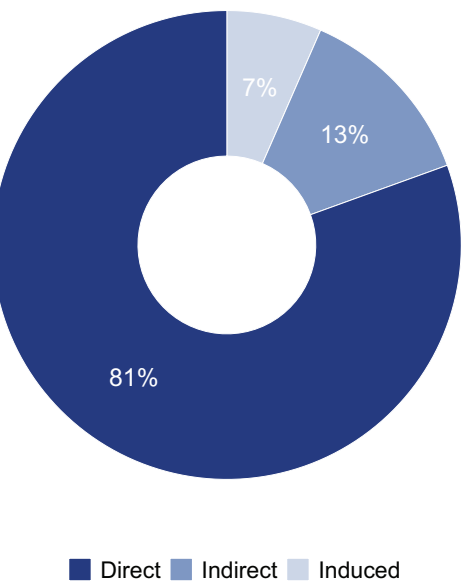
Though there are many factors which may influence the outlook of an area, state, or city, graduation rates and school funding are good indicators. However, funding and graduation rates themselves should not be held as the sole decision criteria when looking at the success and achievement of a school. Funding may impact what a school can offer the students who attend, but it cannot be held exclusively responsible for high school completion rates.

Drip, Drip: How Hurricane Ida Washed out the Oil Industry

BY COLYN SEVARIO

On August 29, 2021, Hurricane Ida ripped through South Louisiana leading to catastrophic damages to the lives of residents in its path and totaling over \$30 billion in property damages. To add to the sting, Hurricane Nicholas followed 16 days later, compounding losses and delaying repairs. The oil and gas industry felt the brunt of the damages both physically and fiscally. The U.S. Department of Energy released that as of August 29, 96% of off-shore oil production and 94% of off-shore natural gas production were shut in. Twenty-four days later, 16% of off-shore oil production and 24% of off-shore natural gas production were still shut in. These breaks in production caused a direct impact to the refining and extraction industries, but also led to indirect and induced impacts in adjacent industries. Direct impacts are the loss of production within the oil industry because of Hurricane Ida’s destruction. Figure 11 illustrates that 81% of the total impact from Hurricane Ida is attributed to the direct impact on oil and gas extraction and refining. Diagnosing further, the lost production in the refining industry comprises 54% of total impacts and 66% of the direct effects amounting to \$1.1 billion in losses. The extraction industry, on the other hand, contributed to 27% of total impacts and 33% of direct effects on the Louisiana economy totaling \$556 million in losses. These direct effects are most of the total economic impact to Louisiana. The total direct effect of Hurricane Ida on Louisiana’s economy is approximately \$1.7 billion in lost output.

Figure 11: Economic Impact in Oil & Gas Extraction and Refining (Proportion)



Indirect effects stem from disturbances in the supply chain. The total indirect effect of 13% can be broken down to 5.24% or \$108 million in lost extraction production and 7.69% or \$159 million in lost refining production. Hurricane Ida indirectly impacted the management services industry, the wholesale - petroleum and petroleum products industry, and the computer programming services industry the most with amounts of \$22.7 million, \$20.7 million, and \$18.3 million in respective losses. Total indirect impacts from Hurricane Ida resulted in a loss of \$268 million. Lastly, Figure 11 shows that 7% of the total impact is induced effects. Induced effects are the economic impacts stemming from the loss of consumer spending due to the direct effects of Hurricane Ida. Two percent of the total economic impact is indirect outcomes from the refining industry and the remaining 5% from the extraction industry. The induced impacts of Hurricane Ida most specifically relate to the housing and real estate sector of Louisiana with the owner-occupied dwelling industry, other real estate industry, and electric power and distribution industry holding the largest losses of \$16.3 million, \$13.2 million, and \$12.9 million, respectively. Total losses from induced effects relating to Hurricane Ida are \$136 million.

Figure 12 details the indirect and induced impact on annual employment income from the loss in the refining industry due to Hurricane Ida. This figure focuses exclusively on the indirect and induced impacts rather than direct impacts because the direct employment impacts are assumed to be furloughs and not systemic unemployment. Some industries’ losses from Hurricane Ida are intuitively related to the refining process such as pipeline transportation, but others might be more difficult to visualize. For example, the hospital industry experienced a loss of \$1.4 million

Figures 12 and 13 illustrate that losses from Hurricane Ida also negatively effect many other industries through indirect and induced spending patterns.

indirect and induced effects from Hurricane Ida. The indirect effects from Hurricane Ida are relatively small in the hospital industry as oil and petroleum products are high enough on the supply chain that they are primary goods. Most of the impact on the hospital industry stems from the induced effects of Hurricane Ida. As employees at these oil refining companies lost income, a vicious economic cycle impacts the entire economy as those workers have less money to spend. As oil refining industry workers have less income, businesses that would usually profit from these workers lose income as well. The induced effect from Hurricane Ida on the hospital industry stems from the logic that individuals with less money are less likely to seek expensive

Figure 12: Indirect and Induced Employment Income Impacts from Refining Industry (2021 Dollars)

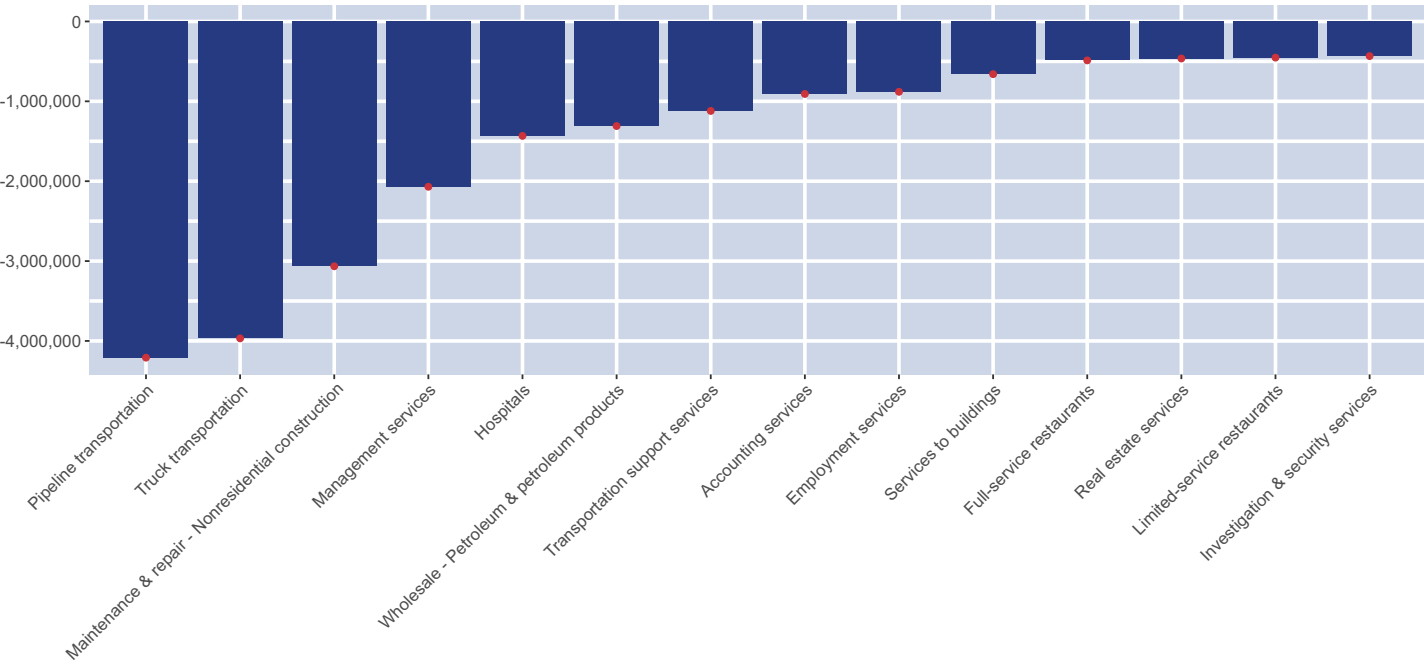
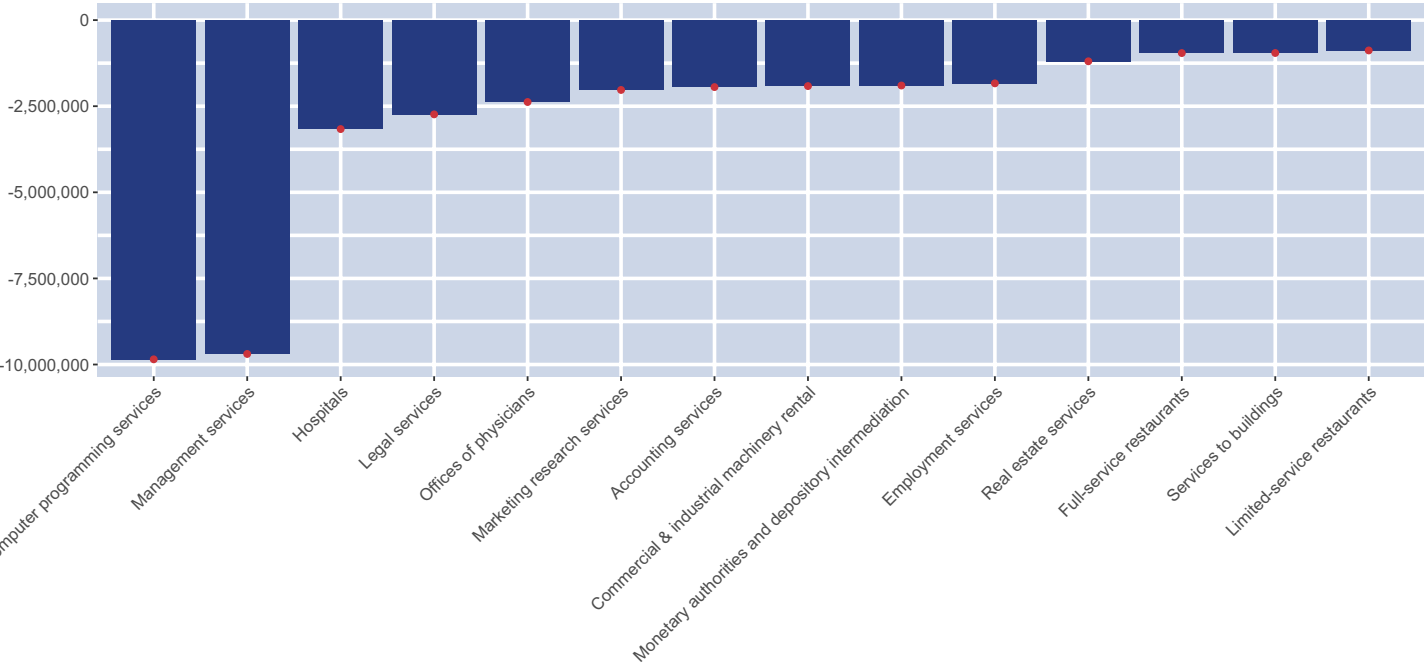


Figure 13: Indirect and Induced Employment Income Impacts from Extraction Industry (2021 Dollars)



Drip, Drip: How Hurricane Ida Washed out the Oil Industry (Cont.)

medical assistance or delay elective procedures. This same logic can be used for the limited-service restaurant industry in that consumers will purchase less goods with less income. The annual indirect and induced loss of employee wages pictured in Figure 12 is about \$21.5 million.

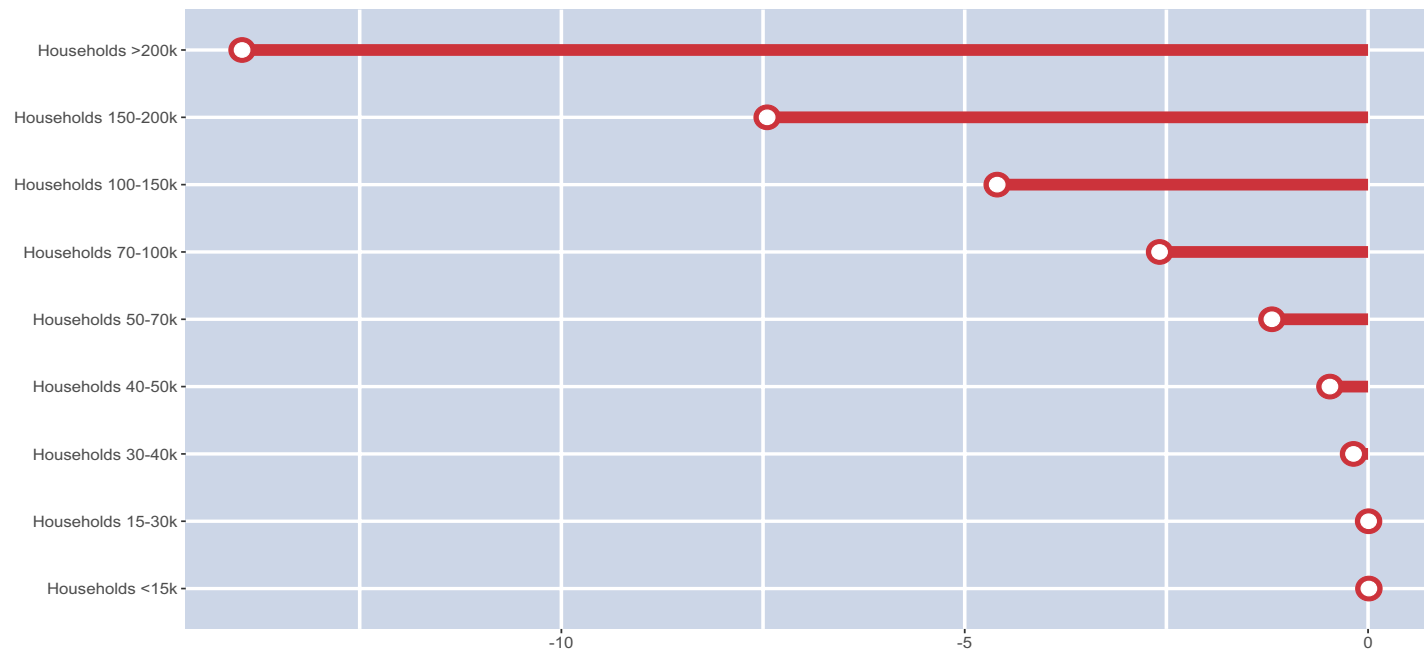
Figure 13 demonstrates the indirect and induced impact on annual employment income from the loss in the extracting industry. Both the computer programming services industry and the management services industries faced shocks from lost employment income originating in the oil refining industry. Again, these effects are mostly induced rather than indirect due to the ripple effect of lost income. The computer programming services industry lost \$9.8 million in employment income. Likewise, the management services industry lost \$9.7 million stemming from the lost income in the oil extracting industry, which led to decreased demand for both computer programming services and management services. The annual indirect and induced loss of employee wages pictured in Figure 13, due to Hurricane Ida, total \$41.4 million. Most permanent job losses due to Hurricane Ida likely occur not in the oil industry but rather in adjacent industries since many of the oil industry jobs will or have returned since the end of the storm.

Figure 14 displays the economic effect of Hurricane Ida on income taxes per household in each income bracket. Lost

employment leads to lost income thus loss of state income tax dollars. Due to Hurricane Ida, Louisiana lost a total of \$3.6 million in income taxes, which could have been used for education, research and development, and much more for Louisiana. Taking a deeper look at these losses, though, reveals that consumers in higher tax brackets lost far more than those in lower tax brackets. Consumers in the top three tax brackets lost income that contributed to \$2.6 million of the total losses or 73% of the revenue shortfall. On the other hand, the bottom three tax brackets lost approximately \$26,000 or 0.7% of total losses. The bottom two brackets featuring incomes below \$30,000 even increased in income with an increased income tax amount of \$5,113.96 for all households in these brackets. This highlights that Hurricane Ida more negatively affected those with high incomes than those of low incomes when only considering the income tax implications.

Hurricane Ida created tremendous impacts on Louisiana in a variety of ways totaling at \$2.1 billion in lost economic output. Employment losses led to lost income of \$59.1 million in industries that Hurricane Ida impacted. These losses in income translated to \$3.6 million in lost income tax dollars on the state level. Although these measures depict a specific picture of the impacts of Hurricane Ida, the real impacts will be seen for years to come.

Figure 14: Income Tax Impacts per Household by Income Bracket (2021 Dollars)



One Year Delayed: The Impact of COVID-19 on Air Travel

BY PATRICK MILLER

The aviation industry connects tourists, business travelers, and residents across Louisiana. During the COVID-19 pandemic, air travel in Louisiana decreased by 59.9% from 8.2 million passengers in 2019 to 3.3 million in 2020. These numbers represent air travel across every airport with commercial air service within Louisiana. The most significant decline in passenger numbers was seen at New Orleans Louis Armstrong International Airport (MSY), with a loss of 61.7%, or 4.2 million passengers. Additionally, the decline in passenger numbers for New Orleans includes the 2020 Mardi Gras season, which afterwards, the COVID-19 pandemic caused business operations within Louisiana to halt. Decreased passenger travel translates to lost revenue for numerous industries across Louisiana, such as tourism, travel services, hospitality, and others.

Since the beginning of COVID, Louisiana has lost 1,598 jobs tied directly to the aviation industry. This produces a multiplier effect across Louisiana's economy as household income and spending decreases and as the direct shock ripples up the supply chain. Utilizing input-output modeling, we estimate another 1,457 indirect jobs lost, as well as 1,116 induced jobs lost. Figure 17 shows the industry pattern of the job losses for the indirect and induced effects. In terms of labor income (Figure 16) Louisiana lost approximately \$286 million in wages

due to the dramatic drop in the aviation industry. These lost jobs and wages stem directly from airlines and airports themselves as well as support staff, hospitality, and leisure employees. Employees most impacted by the decline of air travel include employees in the sightseeing and tourism industry, food services industry, and commercial and industrial equipment sales and leasing industry as seen in Figures 16 and 17.

Figure 15: Lost Tax Revenue by Tax Type (2021 Dollars)

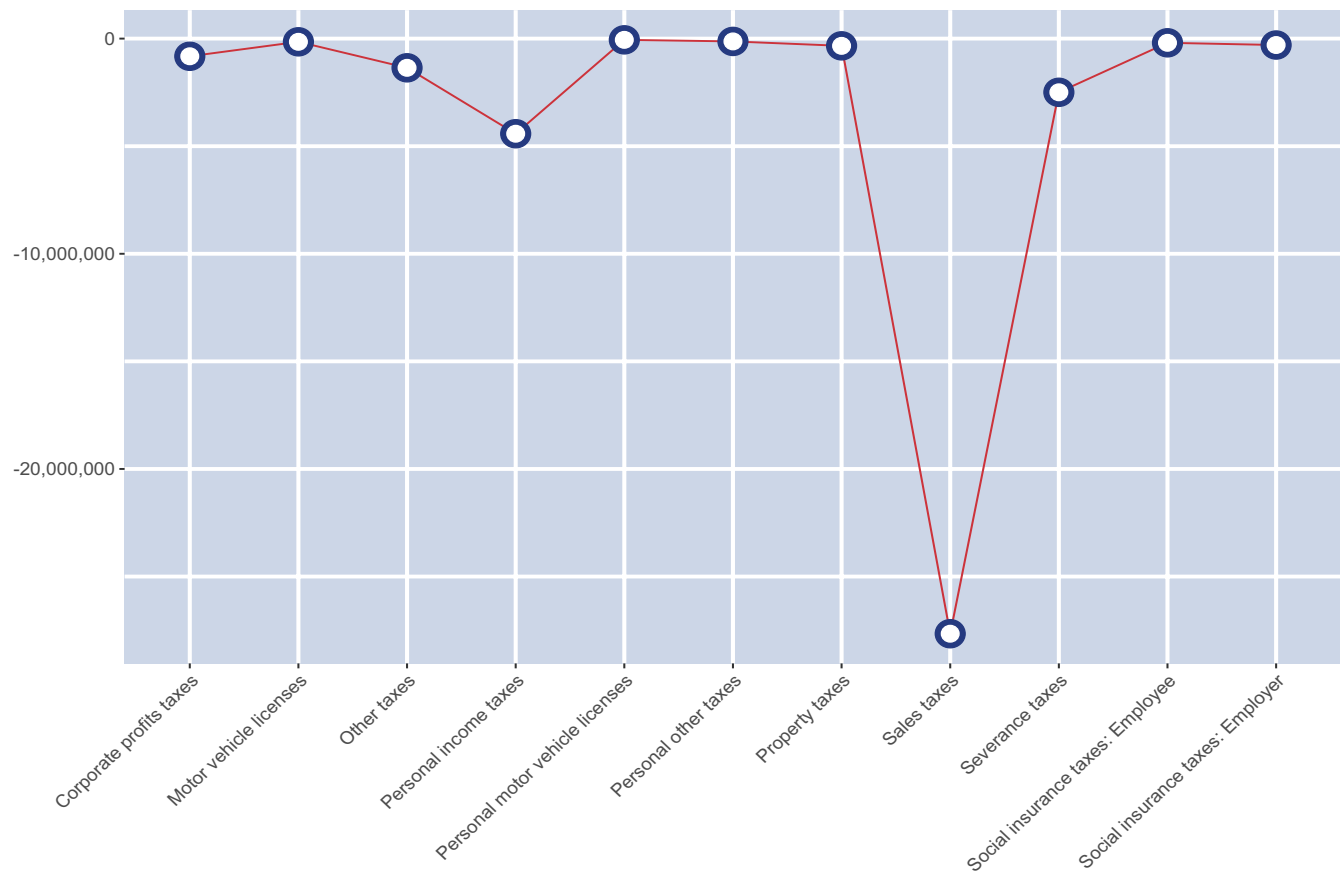


Figure 16: Lost Wages by Industry (Indirect and Induced Effects) (2021 Dollars)

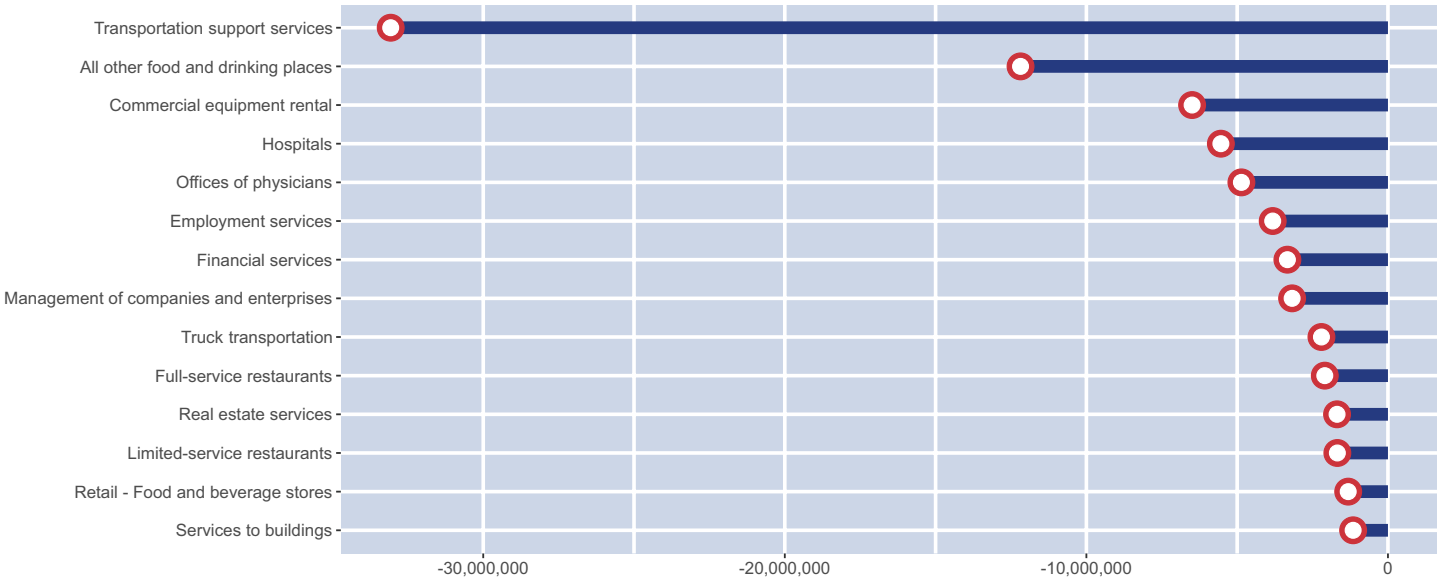
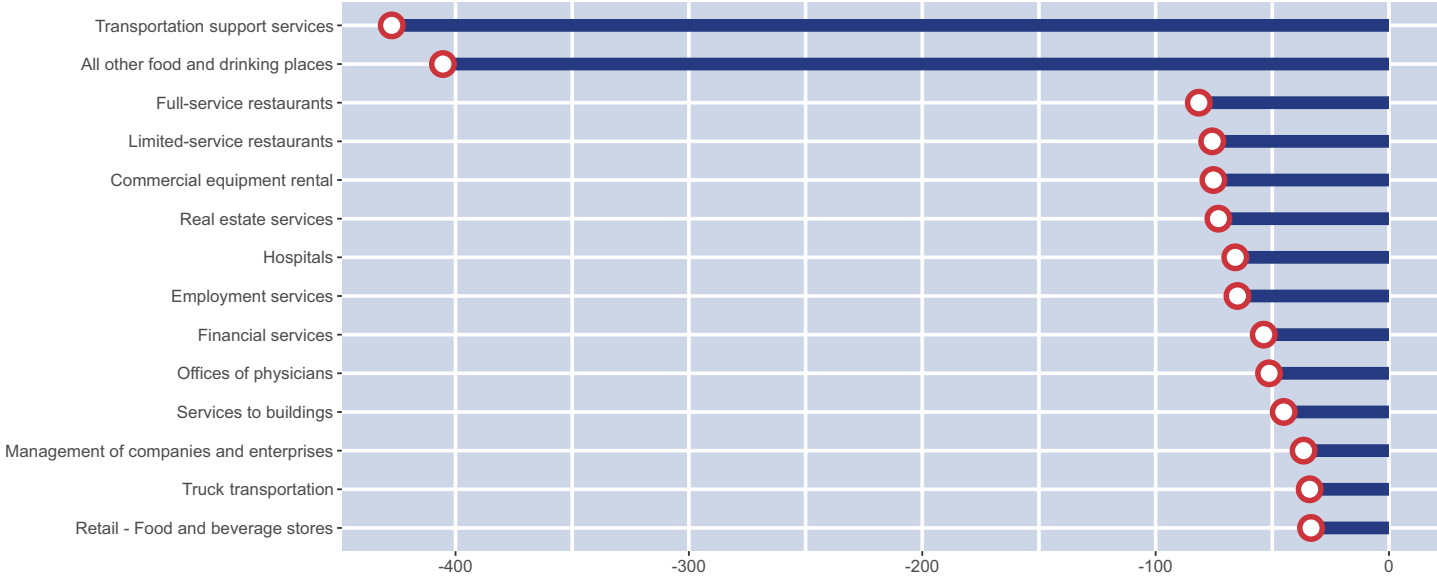


Figure 17: Lost Employment by Industry (Indirect and Induced Effects) (Workers)



Passenger demand benefits sectors across Louisiana by contributing valuable income for business owners across the state. As shown in Figure 18, the air transportation industry had a direct loss of approximately \$570 million in 2020. Moreover, supporting services like sightseeing and tourism services lost approximately \$67 million dollars in revenue due to the decrease in passenger numbers. Additionally, the petroleum and refineries industries lost approximately \$65 million dollars. The petroleum and refinery industry also suffered losses this year as explained by Colyn Selvario on page 14 of this report. As a result of the decline in air travel during the pandemic, Louisiana’s economy lost a total of over \$1 billion.

The resulting loss in revenue for supporting industries as illustrated in Figure 18 also correlates to lost wages as illustrated in Figure 16. As demand fell across several industries, firms’ employment needs also decreased. While some may believe the airline industry is an isolated sector, the airline industry spans across many different sectors which caused a negative ripple effect felt across the Louisiana economy. It is important to note that airlines provide commercial freight services, lease heavy equipment, fill our state’s hotel rooms with passengers and crew members alike, and act as a catalyst for direct investment. As the number of airline passengers declined, sectors across the state felt the impact of fewer tourist and business travelers, resulting in lost revenue and increased unemployment.

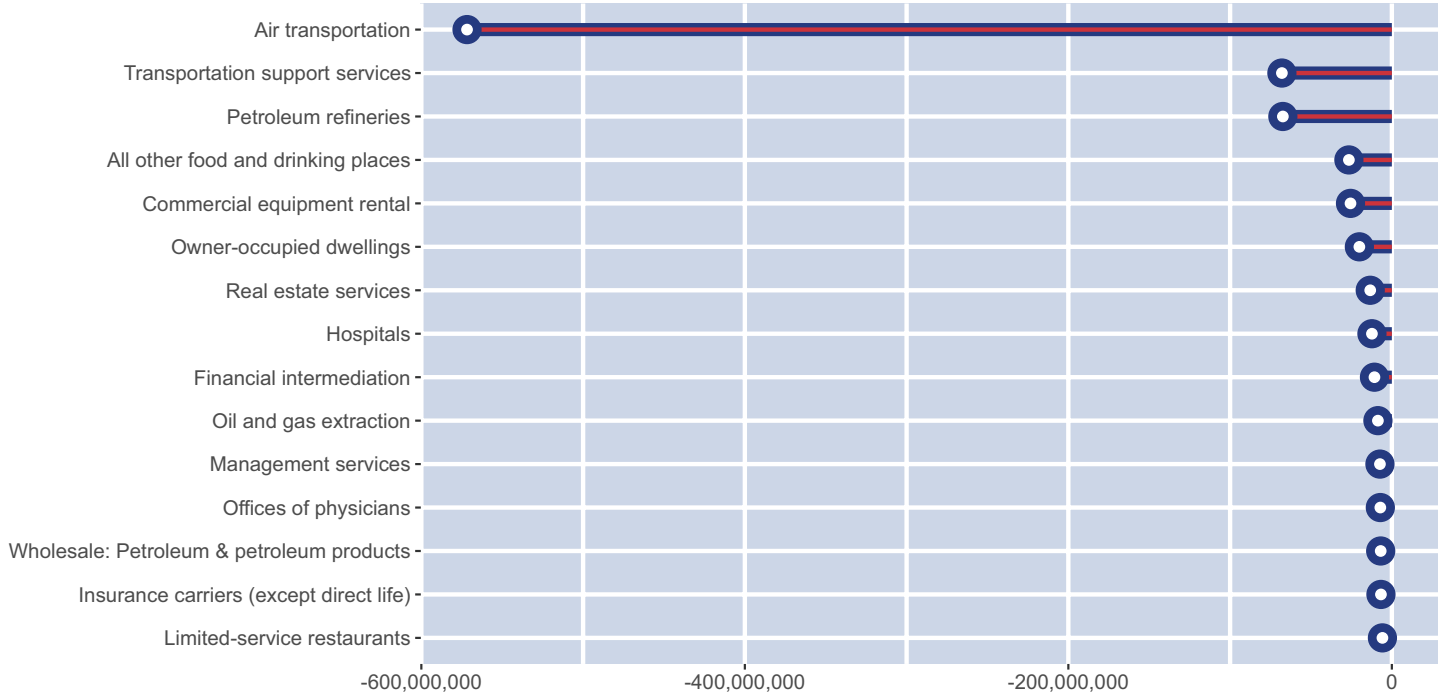
Louisiana’s loss in tax revenue induced by a decrease in passenger spending, airport revenue, and custom duties is commonplace throughout the rest of the country. Figure 15 outlines the reduction of tax revenue by types in 2021 dollars. Approximately \$60 million in federal tax revenue, \$12 million in parish tax revenue, and \$38 million in state tax revenue were lost due to the decline in demand. In total, this decline resulted in a total loss of approximately \$129 million across all tax types.

In an interconnected world, Louisiana counts on the air travel industry to connect Louisiana to business travelers, tourists, and other consumers. Every MSA in Louisiana suffered as the COVID-19 virus prevented tourists and residents from traveling. New Orleans (MSY) saw the most drastic loss, losing approximately \$507 million. Baton Rouge (BTR) lost approximately \$141 million, while Lafayette (LFT) lost approximately \$153 million. Lake Charles (LCH) is estimated to have lost approximately \$117 million as both COVID-19 and Hurricane Laura shook this market. Loss in the Shreveport (SHV) market was offset with the addition of Allegiant Airlines to their flight network, but still lost approximately \$45 million. Monroe (MLU) lost approximately \$18 million. Moreover, with the departure of United Airlines from the Monroe market, further losses are expected in the coming months. Alexandria (AEX) saw the least amount of lost revenue with approximately \$16 million dollars in lost revenue. The multiplier effect of this impact is estimated at 1.86; it spreads to hotel services, transportation services, petroleum, and countless other industries causing a ripple effect diminishing Louisiana’s economy.

In recent months airlines, most notably Breeze Airways, expanded services to Louisiana’s largest market, New Orleans. Breeze Airways opened an operations hub at Louis Armstrong New Orleans International Airport (MSY), promising to add over 1,000 jobs to the New Orleans economy. Furthermore, British Airways announced a return of international service to London’s Heathrow Airport this December from New Orleans. However, direct services to Latin America have yet to return to the New Orleans market.

As the number of vaccinated individuals increases, major events such as Mardi Gras are returning. Professional and collegiate athletic events such as Saints and Pelicans games have returned to in-person attendance, drawing thousands of tourists to Louisiana. Additionally, the return of business conventions and festivals such as Essence Festival and Jazz Fest, which draw millions of tourists annually, will also help Louisiana recover economically. While Zoom may continue to substitute business meetings, Louisiana has the unique opportunity to see airline growth after COVID. Our state’s unique culture is something Zoom will never capture. As the pandemic begins to subside, tourists will once again feel confident in traveling to the Pelican State. As passenger demand continues to trend upwards across the country, I feel confident that Louisiana will recover, in terms of passenger numbers, after the COVID-19 pandemic.

Figure 18: Lost Revenue by Industry (2021 Dollars)





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