Forecasting the Economic Impacts of COVID-19 in Northeast Florida: Utilizing REMI PI+ Model

Second Edition

Published on February 3, 2021

Northeast Florida Regional Council (NEFRC)
Jack Shad, Economic Development Project Manager
Sean Lahav, Resiliency Coordinator
Nicholas Cole, Regional Planner

Results Summary:

- Based on the best available data and information, the first edition REMI forecast results released in June 2020 were similar to actual outcomes reported by DEO in September 2021.
- According to the REMI model, Northeast Florida ended 2020 with a Gross Domestic Product 3.4% lower than 2019, although the region fared slightly better than Florida and the nation as a whole.
- Job losses were heavier than GDP losses – with employment in the region projected to be 5.8% lower at the end of 2020 than it was in 2019.
- Real Disposable Personal Income (i.e., income after taxes) actually rose during 2020, as a result of the stimulus checks and unemployment insurance in the CARES Act.
- Overall, the projections suggest that even after widespread vaccinations lead to greatly improved health conditions, the region's economy may be slower to recover than many people expect.

NORTHEAST FLORIDA REGIONAL COUNCIL (NEFRC)

The Northeast Florida Regional Council (NEFRC) is a dynamic network of local governance, serving seven counties – Baker, Clay, Duval, Flagler, Putnam, Nassau and St. Johns – and 26 municipalities since 1977. The Council is engaged on numerous issues around the Region and works to serve the needs of member local governments. The Council serves to communicate, convene and collaborate with a variety of stakeholders across the seven counties in Northeast Florida. Council staff, through work programs, calculate and analyze data and information and ultimately help to construct solutions. For more information, please visit: www.nefrc.org/

FIRST EDITION BACKGROUND

In March of 2020, during the onset of the COVID-19 pandemic, staff from the NEFRC began efforts to monitor declining economic conditions caused by shutdowns across the country, state, and region. Utilizing REMI PI +, staff applied vetted assumptions and input methodologies from the University of Michigan to the Northeast Florida REMI model. The final report was published in June of 2020. The report itself was widely circulated across Northeast Florida, received media attention, and was presented directly to elected officials in each county following individual requests. The first edition report can be accessed here.

Overall, the June 2020 model suggested that the economic effects of even a "best-case scenario" would be severe. It was suggested that Northeast Florida would see effects about 15% more severe than the national average. The model also suggested that a 2.7% decline in national GDP would result in a loss of more than 41,000 jobs across the 7-county Northeast Florida region, 4.2% of the overall workforce.

Regarding impacts to specific industries, the June 2020 model suggested that losses would most likely not be spread evenly across the regional economy, but would be concentrated in certain industries. The model suggested that the highest percentage of job losses would be in Construction, Finance & Insurance, Real Estate, Health Care, Accommodation & Food Services, and Other Services.

SECOND EDITION

In order to continue monitoring economic conditions caused by COVID-19, the NEFRC determined that staff would begin conducting economic forecasting research on a routine basis. In September of 2020, staff applied updated assumptions and methodologies from the University of Michigan to the same Northeast Florida REMI model.

In addition to updated economic modeling inputs and outcomes, staff compared actual job loss and unemployment data from the Florida Department of Economic Opportunity (DEO) with the results of the June 2020 forecast. The results of this updated analysis are provided below.

In comparing the results of the June 2020 REMI forecast with actual outcomes made available by the Florida Department of Economic Opportunity in September 2020, the following conclusions were drawn:

- June 2020 Forecast for Northeast Florida
    - 7-county REMI model: Loss of 41,451 jobs projected

- 2019-2020 Actual Job Losses for Jacksonville MSA (5-county)
    - September 2019 through September 2020
    - Loss of 40,426 jobs (According to Florida DEO)
    - 5.2% regional change in employment

Based on the best available data and information, the forecast results were similar to actual outcomes, within a certain degree of reason. Important to note is that the DEO employment loss numbers were listed for September 2019 through September 2020. The REMI model, on the contrary, is an annual model with different parameters for the date ranges of each year.

FORECAST METHODOLOGY

In preparation for a Fall 2020 economic forecast, the NEFRC consulted with REMI and the University of Michigan to identify the best available methodologies and data for an updated forecast. In preparing the updated forecast, staff utilized data from the Research Seminar in Quantitative Economics (RSQE) unit at the University of Michigan. In examining the assumptions that were utilized to inform the national forecast produced, the Fall 2020 University of Michigan study predicts:

"Real GDP growth returns at a 20.9 percent annualized rate in 2020-Q3 as consumer spending begins to recover. After the initial reopening, growth moderates to 8.2 percent in 2020-Q4, resulting in an annual GDP decline of 4.9 percent. About 58 percent of the output loss in 2020-H1 is recovered by 2020-Q4, but it takes until mid-2022 to reach the pre-pandemic output level."


In particular, the RSQE model assumed that there would be another stimulus bill in the fall of 2020, with additional stimulus funds being received by households by the end of the year, and that health care workers and vulnerable populations would begin receiving COVID vaccines in the first quarter of 2021 and that vaccines would be generally available by the third quarter of 2021. Congress did pass a stimulus bill, but not until January of 2021, while the vaccine rollout appears to be matching up (so far) with the schedule anticipated in the projection. These detailed assumptions, which were provided in a quantitative format by RSQE, were applied by NEFRC staff as inputs to the Northeast Florida REMI model. NEFRC staff was then able to produce

outputs that provide a perspective on where the region currently stands in face of a still-evolving public health crisis.

ECONOMIC IMPACT FORECAST DATA & ANALYSIS

According to the REMI model, Northeast Florida ended 2020 with a Gross Domestic Product 3.4% lower than 2019, although the region fared slightly better than Florida and the nation as a whole. The model suggests that the region will regain the 2019 level of GDP early in 2022.
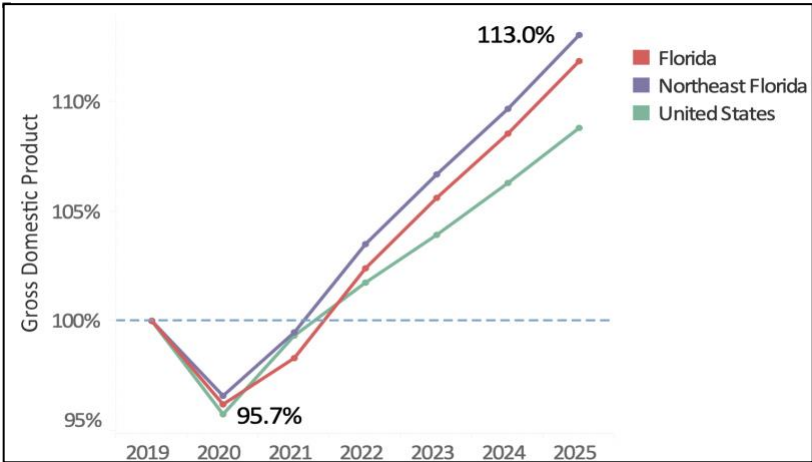

Job losses were heavier than GDP losses – with employment in the region projected to be 5.8% lower at the end of 2020 than it was in 2019. One reason why job losses are higher than GDP losses is that the jobs lost are more likely to pay a lower wage. While GDP is expected to regain 2019 levels by early 2022, employment is not expected to recover until the 2nd quarter of 2023. It is important to remember that the region's population continues to grow, so the actual recovery of the job market will take even longer.
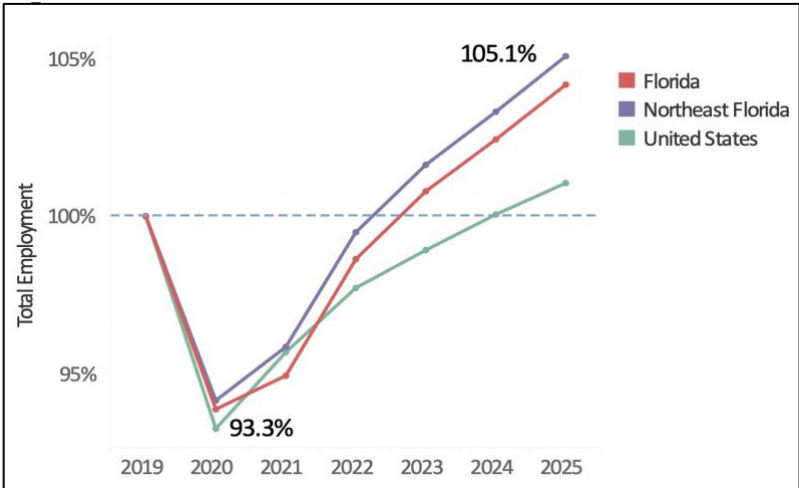
Interestingly, Real Disposable Personal Income (i.e., income after taxes), included on the next page, actually rose during 2020, as a result of the stimulus checks and expansion of unemployment insurance in the CARES Act. Without these efforts in place in 2021, personal

income is expected to fall below the levels seen in 2019, and then begin rising again. As the chart shows, the COVID pandemic is occurring in the context of income equality within the region, which is likely to complicate recovery efforts in some counties.
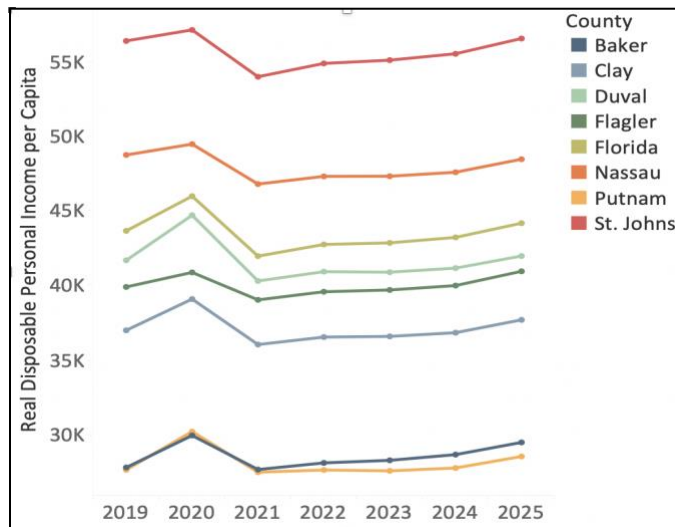
CONCLUSION & NEXT STEPS

Overall, the projections suggest that even after widespread vaccinations lead to greatly improved health conditions, the region's economy may be slower to recover than many people expect. There are several reasons for this. First, many small businesses have gone out of business during the pandemic, each one representing years of work and investment on the part of their owners. The Small Business Development Center surveyed 4,842 small business owners and found that 40% of respondents had closed their small business in 2020. Reports from commercial landlords suggest that many small businesses, particularly in the entertainment, fitness, retail and restaurant fields, were still not able to pay their full monthly rent as of November. Finally, many renters and homeowners have been unable to pay their housing costs. The New York Times reported that 33% of households in August made no payment or only a partial payment towards their rent or mortgage. While the state and national government have extended eviction moratoria, these costs will eventually have to be paid, either by renters and homeowners or by landlords and banks, with negative economic effects either way.

Moving into the Spring of 2021, the principal objective for the NEFRC will be to work with the Northeast Florida Economic Resilience Taskforce on utilizing the results of these REMI forecasts to better inform the Northeast Florida COVID-19 Economic Recovery Plan that is currently being developed and vetted. The NEFRC remains committed to communicating the results and outcomes of these economic forecast studies to elected officials and local government decision-makers over the next several months.

For questions about this study, please contact:

Jack Shad, Economic Development Project Manager (jshad@nefrc.org)
Sean Lahav, Resiliency Coordinator (slahav@nefrc.org)

Table 1
### 2019-2024 Northeast Florida Forecasted REMI Projections

Category	2019	2020	2021	2022	2023	2024
Total Employment (Thousands)	1020.46	960.941	978.266	1015.31	1037.09	1054.23
Gross Domestic Product (Billions)	87.5703	84.5756	87.1102	90.638	93.4232	96.0451
Population (Thousands)	1756.22	1795.15	1829.29	1866.75	1903.19	1937.65
Labor Force (Thousands)	864.044	870.164	879.378	896.097	912.973	929.017
Real Disposable Personal Income per Capita (Thousands)	42.7335	45.0329	41.3656	42.0084	42.0627	42.3828

Table 2
2019-2023 Northeast Florida Forecasted REMI Projections Across Industries

Industries	Change 2019-2020	% Change 2019-2020	2019	2020	2021	2022	2023
Total	-59.518	-5.8%	1020.459	960.941	978.266	1015.315	1037.092
Health care and social assistance	-10.376	-8.9%	117.143	106.768	112.241	118.583	123.074
Accommodation and food services	-7.477	-8.5%	87.951	80.473	84.210	88.595	91.511
Finance and insurance	-7.043	-8.9%	79.173	72.130	73.977	76.259	77.452
Administrative, support, waste management	-5.009	-6.2%	80.997	75.987	78.389	81.354	83.140
Other services (except public administration)	-4.943	-8.1%	60.838	55.895	57.882	60.721	62.414
Transportation and warehousing	-4.126	-6.7%	61.358	57.232	58.611	60.435	61.222
Real estate and rental and leasing	-4.071	-8.7%	47.067	42.995	44.412	46.483	47.797
Professional, scientific, and technical services	-3.342	-4.8%	70.219	66.877	68.530	71.663	73.552
State and Local Government	-2.187	-3.2%	68.786	66.599	66.551	67.519	68.900
Wholesale trade	-2.068	-7.1%	29.243	27.176	28.009	28.494	28.523
Arts, entertainment, and recreation	-1.908	-8.0%	23.849	21.941	22.686	23.777	24.392
Construction	-1.446	-2.3%	61.930	60.484	56.693	60.745	63.498
Educational services; private	-1.272	-7.3%	17.515	16.242	17.012	17.870	18.457
Manufacturing	-1.262	-3.4%	37.621	36.359	36.326	36.646	36.309
Retail trade	-1.081	-1.0%	113.531	112.449	111.372	114.197	114.945
Information	-0.792	-5.8%	13.697	12.905	13.216	13.630	13.827
Federal Civilian	-0.708	-3.8%	18.633	17.925	17.335	17.130	16.841
Management of companies and enterprises	-0.538	-6.2%	8.675	8.136	8.398	8.567	8.637
Forestry, fishing, and hunting	-0.116	-4.7%	2.502	2.385	2.438	2.405	2.364
Utilities	-0.113	-9.2%	1.219	1.107	1.138	1.175	1.196
Mining	-0.013	-0.9%	1.443	1.430	1.382	1.465	1.502
Farm	0.113	3.8%	2.977	3.091	2.958	2.986	2.981
Federal Military	0.261	1.9%	14.092	14.353	14.500	14.615	14.557

Appendix: About REMI PI+ Model

REMI PI+ is a structural economic forecasting and policy analysis model. It integrates input-output, computable general equilibrium, econometric, and economic geography methodologies. The model is dynamic, with forecasts and simulations generated on an annual basis and behavioral responses to compensation, price, and other economic factors. The model consists of thousands of simultaneous equations with a structure that is relatively straightforward. The exact number of equations used varies depending on the extent of industry, demographic, demand, and other detail in the specific model being used. The overall structure of the model can be summarized in five major blocks: (1) Output and Demand, (2) Labor and Capital Demand, (3) Population and Labor Supply, (4) Compensation, Prices, and Costs, and (5) Market Shares. The blocks and their key interactions are shown in Figures 1 and 2.
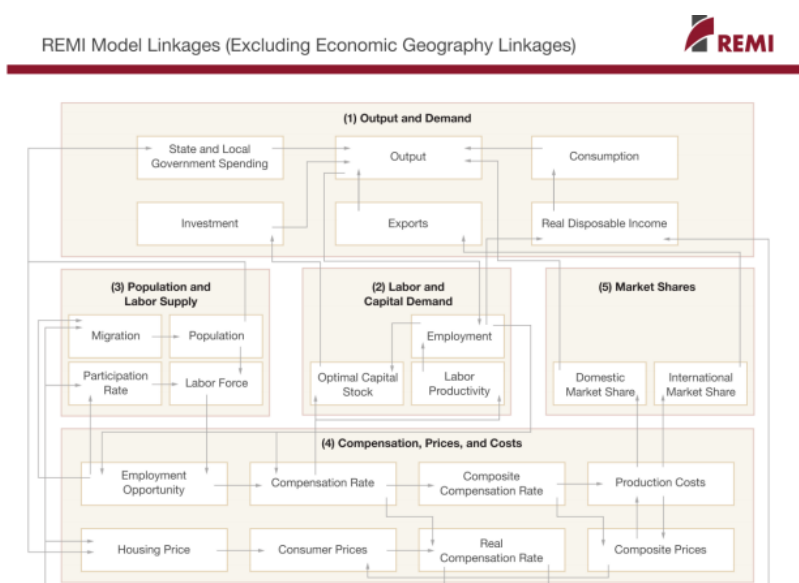
The Output and Demand block consists of output, demand, consumption, investment, government spending, exports, and imports, as well as feedback from output change due to the change in the productivity of intermediate inputs. The Labor and Capital Demand block includes labor intensity and productivity as well as demand for labor and capital. Labor force participation rate and migration equations are in the Population and Labor Supply block. The Compensation, Prices, and Costs block includes composite prices, determinants of production costs, the consumption price deflator, housing prices, and the compensation equations. The proportion of local, inter-regional, and export markets captured by each region is included in the Market Shares block. Models can be built as single region, multi-region, or multi-region national models. A region is defined broadly as a sub-national area, and could consist of a state, province, county, or city, or any combination of sub-national areas. Single-region models consist of an individual region, called the home region. The rest of the nation is also represented in the model. However, since the home region is only a small part of the total nation, the changes in the region do not have an endogenous effect on the variables in the rest of the nation. For more information, please visit: www.remi.com