# Economic Impacts of COVID-19: Estimates for Hampton Roads

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# Introduction and Background

In early January of 2020, the Chinese health authorities confirmed that a cluster of cases of pneumonia in people associated with the Hunan Seafood Wholesale Market in Wuhan, Hubei Province was linked to a novel coronavirus, or new strain that has not been previously identified in humans. The virus, now named SARS-CoV-2, spread quickly throughout the world causing a disease subsequently named COVID-19. The first confirmed infection in the United States was reported on January 20, 2020, in Snohomish County, Washington after the patient had returned from travel in Wuhan, China (more recent testing suggests that the virus may have been present in the U.S. earlier than January 20). Over the next several months, the novel coronavirus continued to spread throughout the United States, with outbreaks in densely populated areas like Los Angeles, New York City, New Orleans, Detroit, Washington DC, and others. The Commonwealth of Virginia reported its first confirmed case of COVID-19 on March 7, 2020, and soon after on March 10, the first confirmed case was reported in Hampton Roads.

In attempts to slow the spread of the coronavirus, government response across the nation has been varied, beginning piecemealed with local governments closing schools and limiting travel, expanded by state and the federal governments issuing various guidelines and restrictions that changed almost daily. On March 12, Virginia Governor Ralph Northam declared a State of Emergency for the Commonwealth, and on March 23, Governor Northam issued Executive Order 53, which included the banning of all gatherings of more than 10 people, closing schools for the remainder of the academic year, closing dining and congregation areas in restaurants, breweries (excluding curbside pickup), and closing all public access to recreational and entertainment businesses. On March 30, Governor Northam issued Executive Order 55, expanding on E.O. 53, which required everyone to remain at their place of residence through June 10 unless amended or rescinded, as well as requiring people using shared or outdoor spaces to maintain social distancing of at least six feet.

At present, any attempt to discern the regional impacts of this pandemic is met with numerous "unknowns." Businesses are shuttered, travel restricted, events canceled, beaches closed, leaving a great deal of uncertainty with respect to how or when Hampton Roads will enter into a phase of "the new normal." In addition, there remains questions as to the medical response to the virus in terms of therapies and vaccines federally and locally, the amount of aid that reaches Hampton Roads from the CARES Act and any further stimulus from the federal or state government. In a word, this event has been unprecedented, making it very difficult to formulate basic assumptions with which to frame a sound economic impact analysis. However, various financial and academic institutions have attempted national macroeconomic forecasts estimating the potential impact of COVID-19. This report takes the results of some of those economic predictions to national gross domestic product (GDP) and uses the Hampton Roads REMI PI+ (Regional Economic Models, Inc. Policy Insight Plus)[i] as an initial attempt to understand the potential economic impacts of COVID-19 on our region. This report provides estimates for two scenarios, moderate and severe, based on the most recent macroeconomic forecast completed by University of Michigan's Research Seminar in Quantitative Economics (RSQE).

# Estimating the economic impacts of COVID-19

The impact of COVID-19 on national GDP levels has not yet been reflected in data that is released on a quarterly basis, and as the bulk of the impacts will likely be realized in Q2 of 2020, data will not be released until well into the summer months. As stated in the introduction, there are several financial and

academic institutions that have released forecasts of potential GDP growth rates on a national-scale, so the regional modeling of the pandemic undertaken in this report depends on national-level data inputs. These GDP growth forecasts vary widely depending on the reporting institution, falling somewhere between -2% and -10% annual growth in GDP for 2020.

It is important to note that economists are not epidemiologists. University of Michigan's Research Seminar in Quantitative Economics (RSQE) believes that the course of the pandemic will be the most important driver of the economy over the remainder of the year, with the federal policy response also playing a major role. This forecast assumes that the public health situation will improve sufficiently for the economy to begin reopening in early June, and that future outbreaks of the disease will not cause similarly widespread disruptions to economic activity going forward. Although the range of possible outcomes remains very wide, it is RSQE's hope that their forecast is informative as readers form their own judgments on the economic outlook. The same sentiment is shared by the HRPDC regarding the figures posited in this study.

First, national macroeconomic forecasts of COVID-19 are needed to create a new national control model, and this study used the most recent macroeconomic forecast completed by RSQE, with input from REMI to establish industry-based conversion rates, as the pandemic is not expected to impact each industry the same. Second, a new regional forecast for Hampton Roads is built off the new national forecast built out with the REMI PI+ model apportioning national impacts to the regional economy using its model data, parameters and architecture.

Two scenarios were modeled in this study – a moderate impact of -2.98% decline in annual GDP for 2020 and a high impact of -5.96% decline in annual GDP for 2020. The assumptions for each scenario are explained in more detail below.


## Moderate Impact Scenario – RSQE 2.98% GDP Decline 2020

This study's moderate scenario for a new national control uses the GDP forecast completed by University of Michigan's RSQE. The RSQE forecast estimates an overall annual 2.98% decline in GDP for 2020, with various industries being impacted differently due to this shock to the economy. The model assumes an overall annual growth of 2.9% in 2021, 2.57% in 2022, and a standard 2% growth across all industries in 2023 and each year beyond. The updated regional control for Hampton Roads was run under the changes made to the national control with no specific additional simulations for individual industry impacts in the region.


## High Impact Scenario – RSQE 5.96% GDP Decline 2020

This study's high impact scenario for a new national control doubles the GDP forecast completed by University of Michigan's RSQE. This scenario estimates an overall annual 5.96% decline in GDP for 2020, with various industries being impacted differently due to this shock to the economy. With this more severe slowdown in 2020, this scenario assumes a slower rebound with 2.18% overall annual growth in 2021, 1.93% growth in 2022, returning to a standard 2% growth across all industries in 2023 and each year beyond. The updated regional control for Hampton Roads was run under the changes made to the national control with no specific additional simulations for individual industry impacts in the region.

# Results

As can be expected, for both the moderate and high impact scenarios, employment and GDP estimates for 2020 in Hampton Roads are down significantly from 2019 actual values. Table 1 summarizes the estimated impacts of both Moderate and High Impact Scenarios to both employment and GDP relative to the Baseline (modeled prior to COVID-19 pandemic), while Figures 1 and 2 respectively depict the estimated impacts graphically.

**COVID-19 Economic Impact on Hampton Roads: Employment and Gross Regional Product estimates compared to Baseline, 2020-2025**

|  | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|
| **Moderate Impact Scenario** | | | | | | |
| Total Employment | -35,409 | -8,812 | -8,042 | -8,728 | -9,709 | -10,432 |
| Gross Regional Product (Billions of 2012 $) | -$2.77 | $0.31 | $0.22 | $0.14 | $0.03 | -$0.06 |
| | | | | | | |
| **High Impact Scenario** | | | | | | |
| Total Employment (Thousands of Jobs) | -50,181 | -45,895 | -48,316 | -40,862 | -35,096 | -29,520 |
| Gross Regional Product (Billions of 2012 $) | -$3.57 | -$2.67 | -$3.06 | -$2.12 | -$1.38 | -$0.67 |

Table 1: Employment and Gross Regional Product estimated impacts compared to baseline scenario

## Employment

Employment levels in Hampton Roads are expected to see a significant reduction in 2020 compared to the baseline scenario in both the moderate and high impact scenarios, as shown in Figure 1. Compared to pre-COVID-19 projections for the region, Hampton Roads is predicted to lose an estimated 35,000 to 50,000 jobs in 2020 under the modeled scenarios. In the moderate impact scenario modeled in this study, employment is predicted to bounce back relatively quickly and stabilize somewhere between 2018 and 2019 levels by 2022, but remain significantly below baseline levels for the foreseeable future. If the country experiences the more severe scenario modeled, it may take much longer for employment to rebound, and results show that employment levels could remain below pre-COVID levels well past 2025, without a recovery trending upwards until the beginning of 2022.
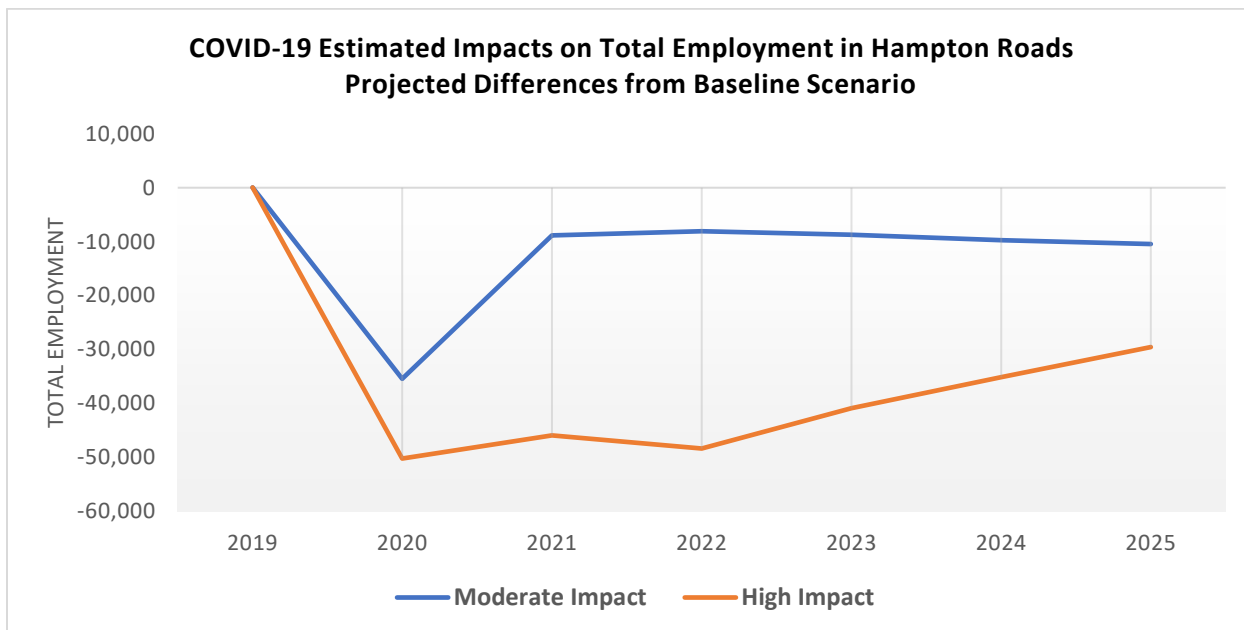
**Figure 1: COVID-19 Estimated Impacts on Total Employment in Hampton Roads. Source: REMI, RSQE, HRPDC.**

In both scenarios, the most negatively impacted industries in the immediate aftermath are those in the accommodation and food services industry, retail trade, and real estate, all with a long recovery period. Unsurprisingly (due to the nature of this pandemic, which hits the economy from both the supply and demand sides), very few industries are expected to see an increase in employment due to the economic slowdown, but results for both moderate and high impact scenarios show state and local government, federal military, and fishing and hunting industries to experience a surge. The most impacted industry occupations by 3-digit NAICS code are listed in table 2.

## Gross Regional Product

Gross Regional Product levels in Hampton Roads are also expected to see a significant reduction compared to the baseline scenario in 2020 for both the moderate and high impact scenarios, as shown in Figure 2. GDP estimates for 2020 are projected to be between $2.77 billion and $3.57 billion below the pre-COVID baseline, a gigantic hit to an economy that has been steadily on the rise, even projected to outpace the national economy for the first time in 2020. In the moderate impact scenario, regional GDP bounces back quickly by 2021, even surpassing baseline projections due to the strong rebound growth input. This scenario sees GDP leveling off with the baseline scenario by 2021. The high impact scenario paints a different picture, with a steeper initial national decline and slower growth recovery, GDP in

| Estimated Industry Employment Impacts by 3-Digit NAICS Code, relative to baseline Moderate Impact Scenario |
| --- |
| **Highest number of employment losses** |
| Food services and drinking places |
| Real estate |
| Offices of health practitioners |
| Hospitals; private |
| Religious organizations; Grantmaking and giving services and social advocacy organizations |
| Individual and family services; Community and vocational rehabilitation services |
| Nursing and residential care facilities |
| Personal care services |
| Employment services |
| Services to buildings and dwellings |
| Amusement, gambling, and recreation |
| |
| **Highest number of employment gains** |
| Local government |
| Federal military |
| State government |
| Textile mills and textile product mills |
| Apparel, leather and allied product manufacturing |
| Beverage manufacturing |
| Other food manufacturing |
| Other miscellaneous manufacturing |
| Fishing, hunting, and trapping |
| Animal slaughtering and processing |

**Table 2: Estimated industry employment impacts by 3-digit NAICS code, relative to baseline.**
**\*Note: high impact scenario showed almost identical results, not shown to reduce redundancy. Source: REMI, RSQE, HRPDC.**

Hampton Roads would begin trending upward again in 2022, and not catch back up to the baseline model until after 2025.
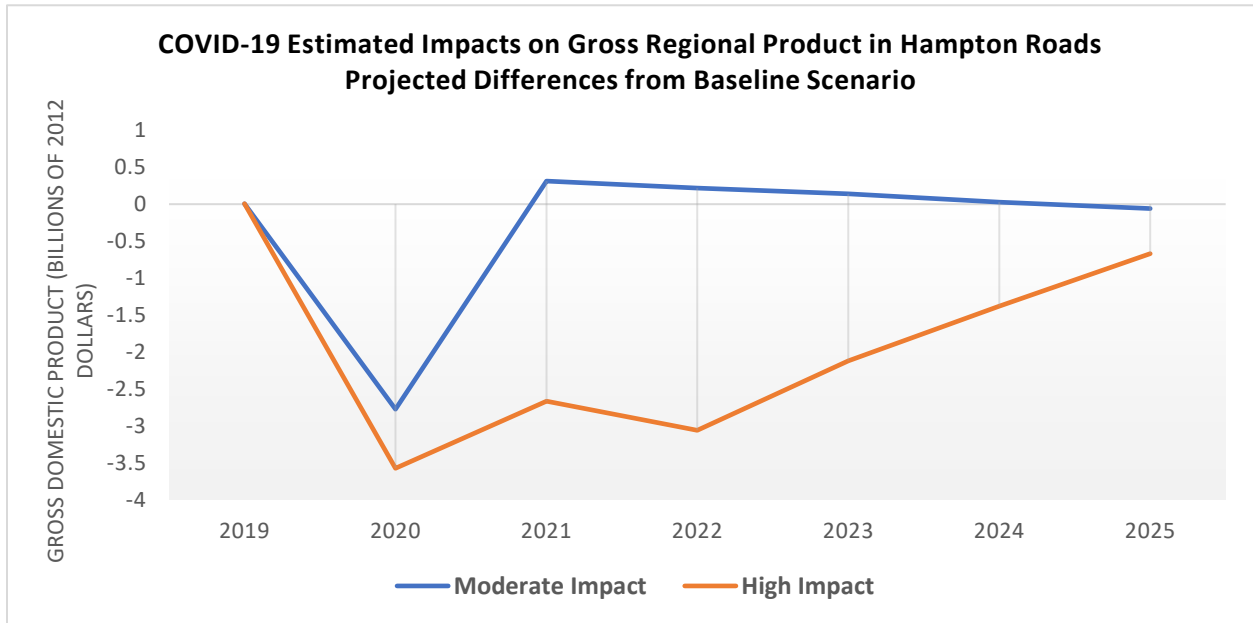


**COVID-19 Estimated Impacts on Gross Regional Product in Hampton Roads Projected Differences from Baseline Scenario**

**Figure 2: COVID-19 Estimated Impacts on Gross Domestic Product in Hampton Roads. Source: REMI, RSQE, HRPDC.**

# Discussion – Regional vs. National Recoveries

When comparing the regional recovery to the national recovery, some positive news for the region emerges. In both moderate and high impact scenarios, the impacts to both employment and GDP in Hampton Roads when compared to the baseline scenario are expected to be far less than the same at a national scale. In the moderate scenario, Hampton Roads is expected to see a 3.25% decrease from the baseline in employment in 2020, while the national results are nearly a 5% decrease from the baseline. From 2021 through 2025, regional employment levels are still projected to be roughly 1% below baseline projections each year, compared to the national expectations which hover between 3-4% below baseline projections at the moderate scenario, as depicted in Figure 3. The high impact scenario estimates a similar relationship between national and regional recoveries, and points to the unique stability of the workforce in the region with a heavy emphasis on federal employees and imports/exports.
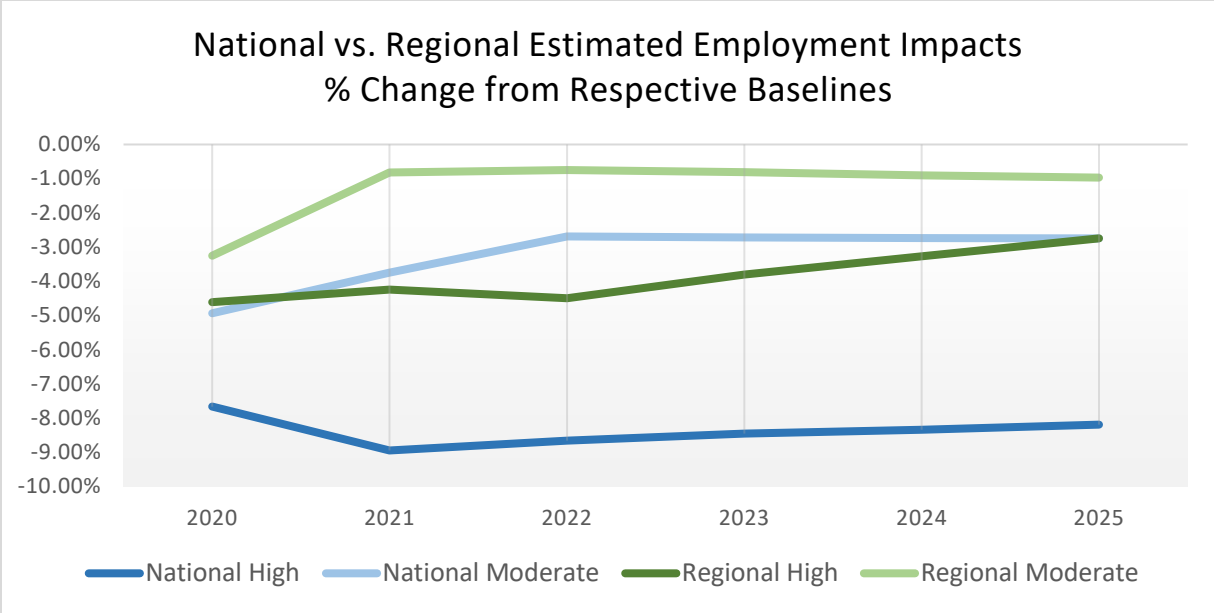
**Figure 3: COVID-19 Estimated Impacts on Employment compared to baseline, National vs. Hampton Roads. Source: REMI, RSQE, HRPDC.**

Similarly, the estimated impacts to GDP in the region are not as severe as that of the nation for both moderate and high impact scenarios when compared to the pre-COVID baselines. In the moderate scenario, Hampton Roads is expected to see a 2.52% decline from the baseline in GDP in 2020, while the national results are a 4.53% decrease from the baseline. From 2021 through 2024, regional GDP is projected to rebound strongly to slightly above the baseline model, while the national expectations hover between 3.15%-2.25% below the baseline, as depicted in Figure 4. The high impact estimates show a similar relationship between the national and regional recoveries, with national GDP projected to remain 7% below the baseline in 2025. Again, it would seem Hampton Roads is poised to get back on track more quickly than the nation overall.
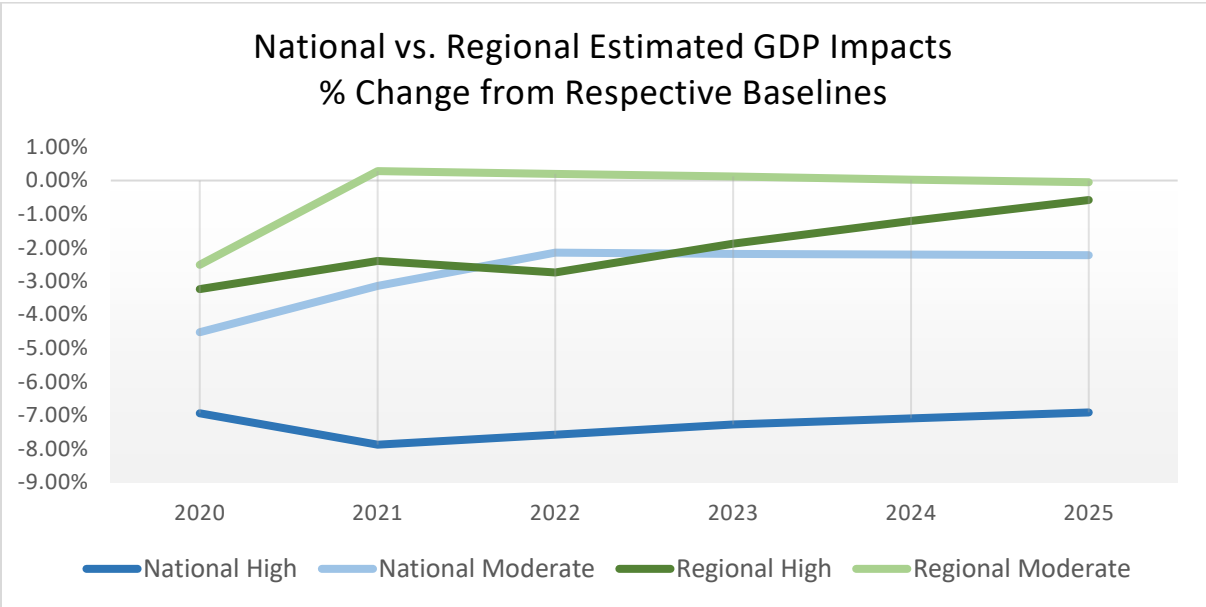


**Figure 4: COVID-19 Estimated Impacts on GDP compared to baseline, National vs. Hampton Roads. Source: REMI, RSQE, HRPDC.**

As Dr. Anthony Fauci of the National Institute for Allergy and Infectious Diseases said recently about the epidemiological models that estimate the course of the virus, models are only as good as the assumptions that you put into the model. The same can be said for economic models, and the results outlined in this study are estimates based on assumptions that have been postulated about the decline and subsequent growth of the economy on a national scale.

One thing is certain – the world has never seen an economic slowdown quite like the one being experienced today. A recent report from the International Monetary Fund, suggests that the world economy is expected to contract by 3% in 2020 as the coronavirus pandemic causes nations around the world to close down, compared with a global contraction of 0.1% in 2009, the worst year of the previous recession. As we wade into these uncertain waters, unemployment claims have reached unprecedented numbers, over 22 million in one month at the time of this study. But as doctors and epidemiologists continue to discover information about how to treat this disease and control the spread, as hospitals figure out how to manage the influx of new types of patients, and as social distancing measures continue, the country should see the number of new cases per day decrease. As businesses either remain closed or open slowly over time, and as people get back to work or remain unemployed, the economic data will continue to flow, allowing for more specific and accurate economic impact analysis. With more reliable data at our fingertips, the economics team at HRPDC will continue to refine and revise these models to get a better understanding of what we might expect in the coming years due to the impact of the coronavirus in Hampton Roads.

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[i] The REMI PI+ (Regional Economic Models, Inc. Policy Insight Plus) is a dynamic forecasting and policy analysis tool, sometimes referred to as an econometric model or an input-output model. The model forecasts the future of a regional economy and predicts the effects on that same economy when a user implements a change – often referred to as a shock. The model used in this analysis is calibrated to model economic impacts in the Hampton Roads region.

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