2022 Annual Economic Forecast

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Strome College of Business
Old Dominion University

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Our forecasts and commentary do not constitute official viewpoints of Old Dominion University, its President, Brian O. Hemphill, Ph.D., the Board of Visitors, the Strome College of Business, or the generous donors who support the activities of the Dragas Center for Economic Analysis and Policy.
Vaccines continue to drive improvements in business and consumer sentiment.

Vaccine hesitancy and resistance will lead to outbreaks of COVID-19.

Supply-chain constraints will challenge sectoral growth through 2021.

A ‘relief cliff’ is coming in September as many COVID-19 emergency programs expire.

Additional stimulus is unnecessary and would increase inflationary expectations.

Disinformation and media-driven politics have created enclaves of Americans with separate worldviews.

Even with these challenges, the United States and Virginia will experience a robust expansion in economic activity and jobs in 2021.
7-Day Moving Average of Daily COVID-19 Infections
United States, February 9, 2020 - January 24, 2022

Source: Centers for Disease Control and Prevention, United States COVID-19 Cases and Deaths by State over Time.
7-Day Moving Average of Daily COVID-19 Deaths
United States, February 9, 2020 - January 24, 2022

Source: Centers for Disease Control and Prevention, United States COVID-19 Cases and Deaths by State over Time.
COVID-19 Infections by Vaccination Status, Virginia Health Regions
Rate Per 100,000 Per Vaccination Group, Week of January 15, 2022

<table>
<thead>
<tr>
<th>Region</th>
<th>Fully Vaccinated</th>
<th>Unvaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Region</td>
<td>84</td>
<td>3,033</td>
</tr>
<tr>
<td>Eastern Region</td>
<td>115</td>
<td>3,535</td>
</tr>
<tr>
<td>Northern Region</td>
<td>209</td>
<td>3,768</td>
</tr>
<tr>
<td>Northwest Region</td>
<td>177</td>
<td>2,656</td>
</tr>
<tr>
<td>Southwest Region</td>
<td>148</td>
<td>2,552</td>
</tr>
</tbody>
</table>

Sources: Virginia Department of Health, Centers for Disease Control and Prevention, and Dragas Center for Economic Analysis and Policy. 2019 NCHS population estimates.
Recovery and Resignation
Civilian Labor Force and Individual Employment
United States, January 2019 - December 2021

Thousands of Individuals

Source: Bureau of Labor Statistics, seasonally adjusted data.
Unemployment Rate
United States, January 2019 - December 2021

Source: Bureau of Labor Statistics, seasonally adjusted data. The U6 rate is the broadest measure of unemployment and includes persons marginally attached to the labor force and persons working part-time for economic reasons.
Unemployment Rate by Race and Ethnicity
United States, February 2020 - December 2021

- **Black or African American**
  - April 2020: 16.8% 
  - October 2020: 16.5% 
  - April 2021: 11.8% 
  - October 2021: 7.1%

- **Hispanic**
  - April 2020: 18.8% 
  - October 2020: 25.2% 
  - April 2021: 22.2% 
  - October 2021: 4.9%

- **White**
  - April 2020: 14.1% 
  - October 2020: 3.9% 
  - April 2021: 3.2% 
  - October 2021: 3.2%

Source: Bureau of Labor Statistics, seasonally adjusted data.
Nonfarm Payrolls (Jobs)
United States, January 2019 - December 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Change in Nonfarm Payrolls (Jobs)
United States, February 2020 - December 2021

- Leisure and Hospitality: -1,222,000
- Government: -927,000
- Education and Health Services: -761,000
- Manufacturing: -219,000
- Retail Trade: -158,000
- Wholesale Trade: -129,200
- Information: -119,000
- Construction: -88,000
- Prof. and Business Services: -35,000
- Financial Activities: 44,000
- Transport, Warehouse, Utilities: 218,200

Source: Bureau of Labor Statistics, seasonally adjusted data.
Employment-Population Ratio for Workers Aged 25 to 54

-1.9%

-13.5%

Source: Bureau of Labor Statistics, seasonally adjusted data.
Change in employment-population ratio from the start of each recession.
Job Openings and Quits
United States, January 2019 - November 2021

Thousands

Source: Bureau of Labor Statistics, seasonally adjusted data.
Rate of Job Quits by Industry
United States, November 2021

- Government: 1.0%
- Financial Activities: 1.7%
- Information: 2.0%
- Wholesale Trade: 2.3%
- Manufacturing: 2.3%
- Transport, Warehouse, Utilities: 2.7%
- Construction: 2.7%
- Education and Health Services: 2.8%
- Prof. and Business Services: 3.7%
- Retail Trade: 4.4%
- Leisure and Hospitality: 6.4%

Source: U.S. Department of Labor, seasonally adjusted data.
The quit rate is equal to ratio of total quits to total employment in each industry.
Civilian Labor Force and Individual Employment
Virginia, January 2019 - December 2021

Thousands of Individuals


4,454 4,400
4,344 4,300
3,896
4,226
4,262
4,125

Civilian Labor Force
Employment

Source: Bureau of Labor Statistics, seasonally adjusted data.
Nonfarm Payrolls (Jobs)
Virginia, January 2019 - December 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Job Openings and Quits
Virginia, January 2019 - November 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Inflation and Interest Rates
Advance Retail and Food Services
United States, January 2019 - December 2021

Source: U.S. Census Bureau, seasonally adjusted data.
All Transactions House Price Index
United States and Virginia, January 2000 - July 2021

Source: U.S. Federal Housing Finance Agency, not seasonally adjusted data. Index estimated using sales prices and appraisal data. Base year is chained (1980 Q1=100).
Real M1 and M2 Money Stock
United States, January 2000 - November 2021

Billions (1982-1984 Dollars)

Source: Board of Governors of the Federal Reserve System.
M1 is the sum of currency held by the public and transaction deposits at depository institutions.
M2 is M1 plus time deposits under $100,000 and balances in retail Money Market Funds net of IRA and Keogh balances.
Monthly Inflation
United States, January 2007 - December 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Monthly Inflation in Durables, Nondurables, and Services
United States, January 2007 - December 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Constant Maturity Rates of U.S. Treasuries
January 2007 - January 2022

Source: Board of Governors of the Federal Reserve System.
2022 and Beyond
Looking Ahead

- Vaccines continue to be effective at reducing the severity and mortality of COVID-19.
- Supply-chain constraints ease in the second half of 2022, but continue well into 2023.
- The 'Great Resignation' continues as baby boomers continue to leave the workforce.
- The Federal Reserve continues to lag behind inflationary expectations.
- Appropriations bills are unlikely to pass Congress until late Spring (if at all).
- National security issues may displace COVID-19 in 2022. How would the U.S. and NATO respond to a Russian invasion of Ukraine?
- Expect robust growth in 2022, but uncertainty continues to cloud forecasts.
<table>
<thead>
<tr>
<th>National and Virginia Forecast</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. Real GDP Growth</strong></td>
<td>-3.70%</td>
<td>5.20%</td>
<td>3.00%</td>
<td>2.80%</td>
</tr>
<tr>
<td><strong>Civilian Job Growth</strong></td>
<td>-5.70%</td>
<td>2.70%</td>
<td>2.40%</td>
<td>1.50%</td>
</tr>
<tr>
<td><strong>Unemployment Rate</strong></td>
<td>8.10%</td>
<td>5.40%</td>
<td>4.00%</td>
<td>3.30%</td>
</tr>
<tr>
<td><strong>Inflation Rate</strong></td>
<td>1.20%</td>
<td>4.70%</td>
<td>3.80%</td>
<td>2.80%</td>
</tr>
<tr>
<td><strong>Core Inflation Rate</strong></td>
<td>1.60%</td>
<td>3.60%</td>
<td>3.50%</td>
<td>2.40%</td>
</tr>
<tr>
<td><strong>Federal Funds Rate</strong></td>
<td>0.25%</td>
<td>0.25%</td>
<td>1.25%</td>
<td>1.75%</td>
</tr>
<tr>
<td><strong>10-year Treasury Bill</strong></td>
<td>0.89%</td>
<td>1.45%</td>
<td>2.00%</td>
<td>2.50%</td>
</tr>
<tr>
<td><strong>30-year Conventional Mortgage</strong></td>
<td>3.11%</td>
<td>2.96%</td>
<td>4.00%</td>
<td>4.50%</td>
</tr>
<tr>
<td><strong>Federal Deficit (Fiscal Year, Billions)</strong></td>
<td>-$2,777</td>
<td>-$1,200</td>
<td>-$1,000</td>
<td>-$1,000</td>
</tr>
<tr>
<td><strong>Virginia Real GDP Growth</strong></td>
<td>-2.80%</td>
<td>3.80%</td>
<td>3.00%</td>
<td>2.80%</td>
</tr>
<tr>
<td><strong>Virginia Civilian Job Growth</strong></td>
<td>-5.00%</td>
<td>2.50%</td>
<td>2.20%</td>
<td>1.50%</td>
</tr>
</tbody>
</table>
2022 Hampton Roads Economic Forecast
Defense Spending
In Hampton Roads
Through 2019
Military Employment
Hampton Roads, 2010 - 2019

Sources: U.S. Bureau of Economic Analysis and Dragas Center for Economic Analysis and Policy.
Previous series updated on November 17, 2020; revised series released on November 16, 2021.
Active Duty Navy Personnel
Hampton Roads, FY 2010 - FY 2019

<table>
<thead>
<tr>
<th>Year</th>
<th>Personnel in Thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>79.4</td>
</tr>
<tr>
<td>2011</td>
<td>80.0</td>
</tr>
<tr>
<td>2012</td>
<td>70.0</td>
</tr>
<tr>
<td>2013</td>
<td>65.7</td>
</tr>
<tr>
<td>2014</td>
<td>65.8</td>
</tr>
<tr>
<td>2015</td>
<td>65.9</td>
</tr>
<tr>
<td>2016</td>
<td>84.0</td>
</tr>
<tr>
<td>2017</td>
<td>84.0</td>
</tr>
<tr>
<td>2018</td>
<td>85.2</td>
</tr>
<tr>
<td>2019</td>
<td>85.2</td>
</tr>
</tbody>
</table>

Sources: Navy Region Mid – Atlantic Public Affairs Office: Statistical Reports for Fiscal Years 2010 to 2019, The Navy in Hampton Roads, and Dragas Center for Economic Analysis and Policy. Data reported here exclude students and other transients.
Estimated Direct Department of Defense Spending
Hampton Roads, 2010 - 2021*

Sources: U.S. Department of Defense and Dragas Center for Economic Analysis and Policy. *2021 is an estimate.
Real Gross Domestic Product (GDP)
Hampton Roads, 2002 - 2021

Sources: Bureau of Economic Analysis and Dragas Center for Economic Analysis and Policy.
Jobs and Employment
Nonfarm Payrolls (Jobs)
Hampton Roads, Virginia, and the United States, February 2010 - February 2020

Source: Bureau of Labor Statistics, seasonally adjusted data.
February 2010 was the trough of nonfarm payrolls for the United States, Virginia, and Hampton Roads.
Continued Claims for Unemployment Insurance
Hampton Roads, March 14, 2020 - January 15, 2022

Source: Virginia Employment Commission, non-seasonally adjusted data. Virginia cities and counties in MSA. Continued claims data in 2021 for weeks ending Nov. 13, Nov. 20, Dec. 11, Dec. 18, and Dec. 25 are not available.
Civilian Labor Force and Employment
Hampton Roads, January 2020 - November 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Headline and Alternative Unemployment Rate
Hampton Roads, January 2020 - November 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Alternative unemployment rate includes departures from the labor force and counted as unemployed.
Change in Nonfarm Payrolls (Jobs)
Hampton Roads, February 2010 - December 2021

Source: Bureau of Labor Statistics, seasonally adjusted data.
Growth in Nonfarm Payrolls
Selected Metropolitan Areas, February 2020 - December 2021

Richmond  -5.7%
Hampton Roads  -3.9%
Northern Virginia -1.9%
Charleston -1.9%
Charlotte  -1.2%
Nashville  -0.2%
Durham Chapel Hill  0.1%
Raleigh  0.4%
Jacksonville  1.6%
Greenville  2.5%

Change in Nonfarm Payrolls (Jobs)
Hampton Roads, 2019 - 2021

- Leisure and Hospitality: -13,308
- Education and Health Services: -8,383
- Local Government: -5,625
- Manufacturing: -3,050
- Other Services: -2,775
- State Government: -1,717
- Information: -1,292
- Financial Activities: -1,042
- Retail Trade: -800
- Wholesale Trade: -342
- Prof. and Business Services: -183
- Federal Government: 1,225
- Mining, Logging, and Construction: 1,200
- Transport, Warehouse, Utilities: 2,608

The Port of Virginia: Significant Growth in 2021
Twenty Foot Equivalent Container Units (TEUs)
Port of Virginia, 2010 - 2021

Sources: Virginia Port Authority and Dragas Center for Economic Analysis and Policy.
Total Loaded Twenty Foot Equivalent Container Units (TEUs)
Port of Virginia, January 2019 - December 2021

Thousands of TEUs

Jan 215
Feb 188
Mar 160
Apr 245
May 245
Jun 225
Jul 206
Aug 246
Sep 246
Oct 246
Nov 246
Dec 246

Sources: Virginia Port Authority and Dragas Center for Economic Analysis and Policy.
Shares of Total Loaded TEUs
Selected East Coast Ports, 2010 - 2021*

Percent of TEUs


Charleston New York/NJ Savannah Virginia

Sources: American Association of Port Authorities, websites of ports, and Draga Center for Economic Analysis and Policy.
*Data through November 2021.
Hotels Rebound but Challenges Remain
Nominal and Real (Inflation-Adjusted) Hotel Revenue
Hampton Roads, 2000 - 2021

$302 (2000)  $360 (2025)
$283 (2008)  $349 (2022)
$223 (2016)  $578 (2021)

Sources: STR Trend Reports January 2017 and January 2021, STR Monthly Reports, and Bureau of Labor Statistics (base year is chained; 1982-84=100), and Dragas Center for Economic Analysis and Policy.
### Percent Change in Selected Key Performance Indicators of Hotels in USA, Virginia, and Hampton Roads: 2019 to 2020

<table>
<thead>
<tr>
<th></th>
<th>Hotel Revenue</th>
<th>RevPAR</th>
<th>Hotel Rooms Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>-49.4%</td>
<td>-47.5%</td>
<td>-35.7%</td>
</tr>
<tr>
<td>Virginia</td>
<td>-47.9%</td>
<td>-46.7%</td>
<td>-34.2%</td>
</tr>
<tr>
<td>Hampton Roads</td>
<td>-35.2%</td>
<td>-34.7%</td>
<td>-23.3%</td>
</tr>
<tr>
<td>Chesapeake/Suffolk</td>
<td>-21.5%</td>
<td>-21.4%</td>
<td>-11.5%</td>
</tr>
<tr>
<td>Newport News/Hampton</td>
<td>-29.0%</td>
<td>-29.2%</td>
<td>-15.9%</td>
</tr>
<tr>
<td>Norfolk/Portsmouth</td>
<td>-32.7%</td>
<td>-34.2%</td>
<td>-20.7%</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>-28.9%</td>
<td>-30.2%</td>
<td>-20.4%</td>
</tr>
<tr>
<td>Williamsburg*</td>
<td>-64.0%</td>
<td>-60.6%</td>
<td>-53.3%</td>
</tr>
</tbody>
</table>

*Williamsburg market includes City of Williamsburg and James City County. Sources: STR Trend Report January 2021, and Dragas Center for Economic Analysis and Policy.*
Percent Change in Monthly Hotel Revenue
United States, Virginia, Northern Virginia, and Hampton Roads, 2019 to 2021

Sources: STR Monthly Trend Reports and Dragas Center for Economic Analysis and Policy.
### Percent Change in Selected Key Performance Indicators of Hotels in USA, Virginia, and Hampton Roads: 2019 to 2021

<table>
<thead>
<tr>
<th>Region</th>
<th>Hotel Revenue</th>
<th>RevPAR</th>
<th>Hotel Rooms Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>-16.0%</td>
<td>-16.8%</td>
<td>-11.8%</td>
</tr>
<tr>
<td>Virginia</td>
<td>-17.9%</td>
<td>-18.0%</td>
<td>-11.4%</td>
</tr>
<tr>
<td>Hampton Roads</td>
<td>9.3%</td>
<td>7.7%</td>
<td>-1.4%</td>
</tr>
<tr>
<td>Chesapeake/Suffolk</td>
<td>11.4%</td>
<td>11.3%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Newport News/Hampton</td>
<td>0.5%</td>
<td>0.6%</td>
<td>-3.9%</td>
</tr>
<tr>
<td>Norfolk/Portsmouth</td>
<td>5.2%</td>
<td>-0.9%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>21.2%</td>
<td>14.4%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Williamsburg*</td>
<td>-6.0%</td>
<td>-0.7%</td>
<td>-15.5%</td>
</tr>
</tbody>
</table>

* Williamsburg market includes City of Williamsburg and James City County. Sources: STR Monthly Trend Reports, and Dragas Center for Economic Analysis and Policy.
Airbnb & Vrbo Revenue as a Percent of Hotel Revenue
Hampton Roads, January 2015 - December 2021

Annual Revenue of Airbnb & Vrbo Private Rooms and Whole House Rentals
Hampton Roads, 2016 - 2021

Source: AirDNA data received in January 2022; excludes shared rooms.
Taxable Sales
Hampton Roads, 2007 - 2021

Sources: Virginia Department of Taxation and Dragas Center for Economic Analysis and Policy.
Housing Values Surge and Rents Rise
Existing Residential Homes Sold and Average Days on the Market
Hampton Roads, 2010 - 2021

Sources: Real Estate Information Network Inc. and Dragas Center for Economic Analysis and Policy.
Estimated Months of Supply of Existing Homes
Hampton Roads, January 2010 - December 2021

Average = 5.45 months

Months of Supply

Sources: Real Estate Information Network Inc. and Dragas Center for Economic Analysis and Policy.
Months of supply is based on average sales in the last 12 months.
Median Sales Price of Existing Homes
Hampton Roads, 2010 - 2021

Sources: Real Estate Information Network Inc. and Dragas Center for Economic Analysis and Policy. Information deemed reliable but not guaranteed.
<table>
<thead>
<tr>
<th>City</th>
<th>2020</th>
<th>2021</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesapeake</td>
<td>$282,000</td>
<td>$315,000</td>
<td>11.7%</td>
</tr>
<tr>
<td>Norfolk</td>
<td>$229,000</td>
<td>$258,000</td>
<td>12.7%</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>$182,250</td>
<td>$210,000</td>
<td>15.2%</td>
</tr>
<tr>
<td>Suffolk</td>
<td>$275,000</td>
<td>$312,500</td>
<td>13.6%</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>$285,000</td>
<td>$310,000</td>
<td>8.8%</td>
</tr>
<tr>
<td>Hampton</td>
<td>$193,000</td>
<td>$225,000</td>
<td>16.6%</td>
</tr>
<tr>
<td>Newport News</td>
<td>$209,000</td>
<td>$230,000</td>
<td>10.0%</td>
</tr>
<tr>
<td>Williamsburg*</td>
<td>$323,000</td>
<td>$350,000</td>
<td>8.4%</td>
</tr>
<tr>
<td>Hampton Roads</td>
<td>$255,000</td>
<td>$279,000</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

*Williamsburg represents Poquoson, Williamsburg, James City County, York County and Gloucester County. Source: Real Estate Information Network and Dragas Center for Economic Analysis and Policy.
Estimated House Rental and Principal, Interest, and Taxes for a House Payment
Hampton Roads, 2010 - 2021

Monthly Payment

$1,500
$1,250
$1,200
$1,100


Median Monthly Rent  Monthly PI&T Payment

Sources: H.U.D. and Dragas Center for Economic Analysis and Policy.
The Outlook
Estimated Direct Department of Defense Spending
Hampton Roads, 2016 - 2022*

Billions of Nominal Dollars

2016: $19.3
2017: $19.9
2018: $20.8
2019: $22.0
2020: $23.5
2021: $24.5
2022: $25.3

<table>
<thead>
<tr>
<th></th>
<th>2019 Actual</th>
<th>2020 Actual</th>
<th>2021 Estimated/Actual</th>
<th>2022 Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hampton Roads Real GDP</td>
<td>1.9%</td>
<td>-2.5%</td>
<td>3.0%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Civilian Job Growth</td>
<td>0.6%</td>
<td>-5.3%</td>
<td>1.1%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>3.0%</td>
<td>7.1%</td>
<td>4.8%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Taxable Sales</td>
<td>4.9%</td>
<td>6.7%</td>
<td>16.8%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Hotel Revenue</td>
<td>1.8%</td>
<td>-35.2%</td>
<td>68.5%</td>
<td>6.4%</td>
</tr>
<tr>
<td>General Cargo Tonnage</td>
<td>-0.2%</td>
<td>-3.9%</td>
<td>20.3%</td>
<td>8.7%</td>
</tr>
<tr>
<td>General Cargo TEUs</td>
<td>2.9%</td>
<td>-4.2%</td>
<td>25.2%</td>
<td>12.8%</td>
</tr>
<tr>
<td>One-Unit Housing Permit Value</td>
<td>3.5%</td>
<td>10.9%</td>
<td>3.1%</td>
<td>5.2%</td>
</tr>
</tbody>
</table>
2022: COVID-19 and Prospects

- Consistent with the national forecast, regional economic growth in 2022 is forecasted to be lower than its growth in 2021.

- Defense spending will continue to provide a boost for the Hampton Roads economy.

- Port of Virginia is expected to hit new cargo records in 2022.

- Despite anticipated increases in mortgage rates, single-family home prices in 2022 will continue to increase at a moderate pace.
Our presentation materials can be found at our website: www.ceapodu.com

If you would like to receive economic updates and have immediate access to our reports, please send us an email.

You may also text CEAPODU to 66866 to join our email list.

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