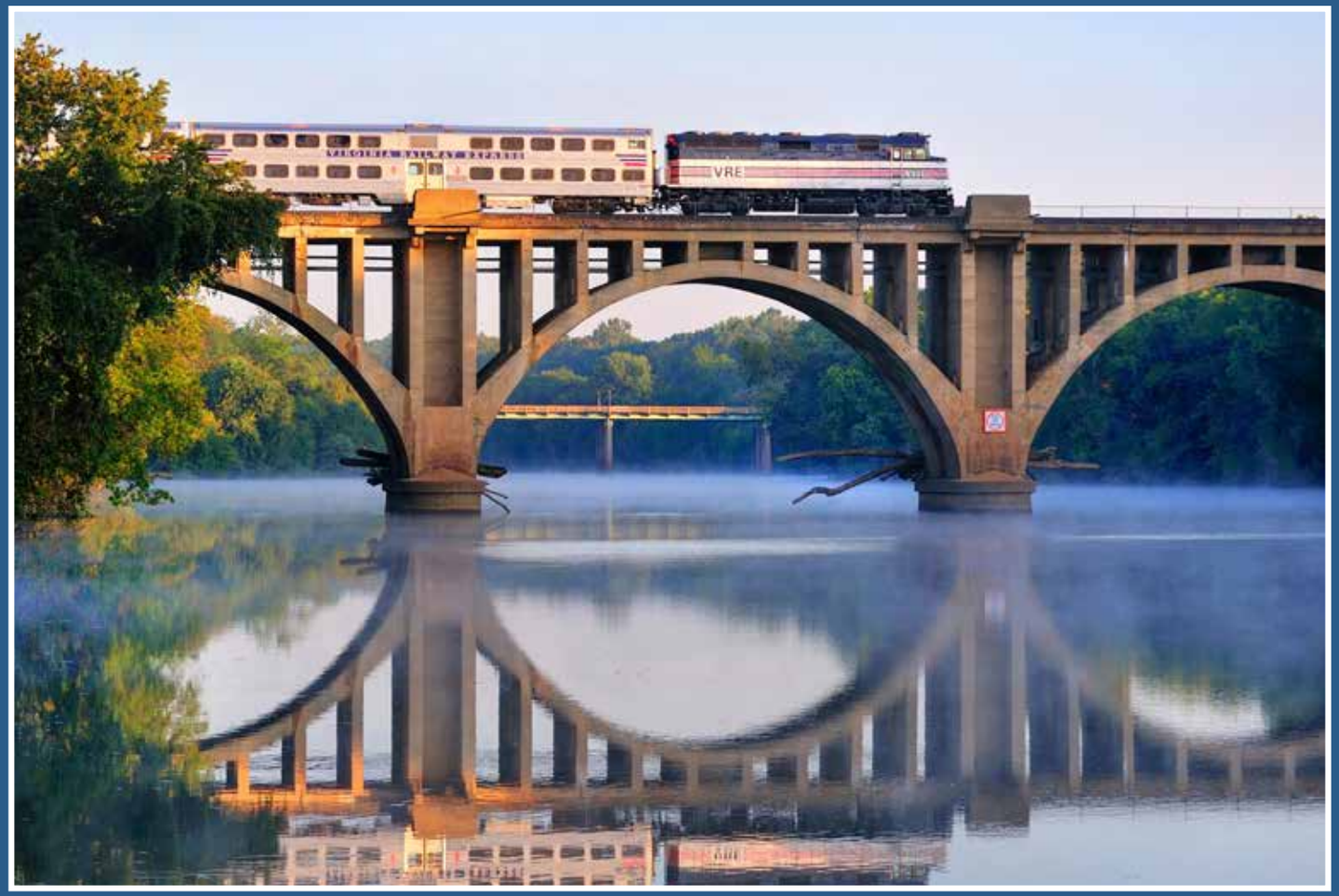
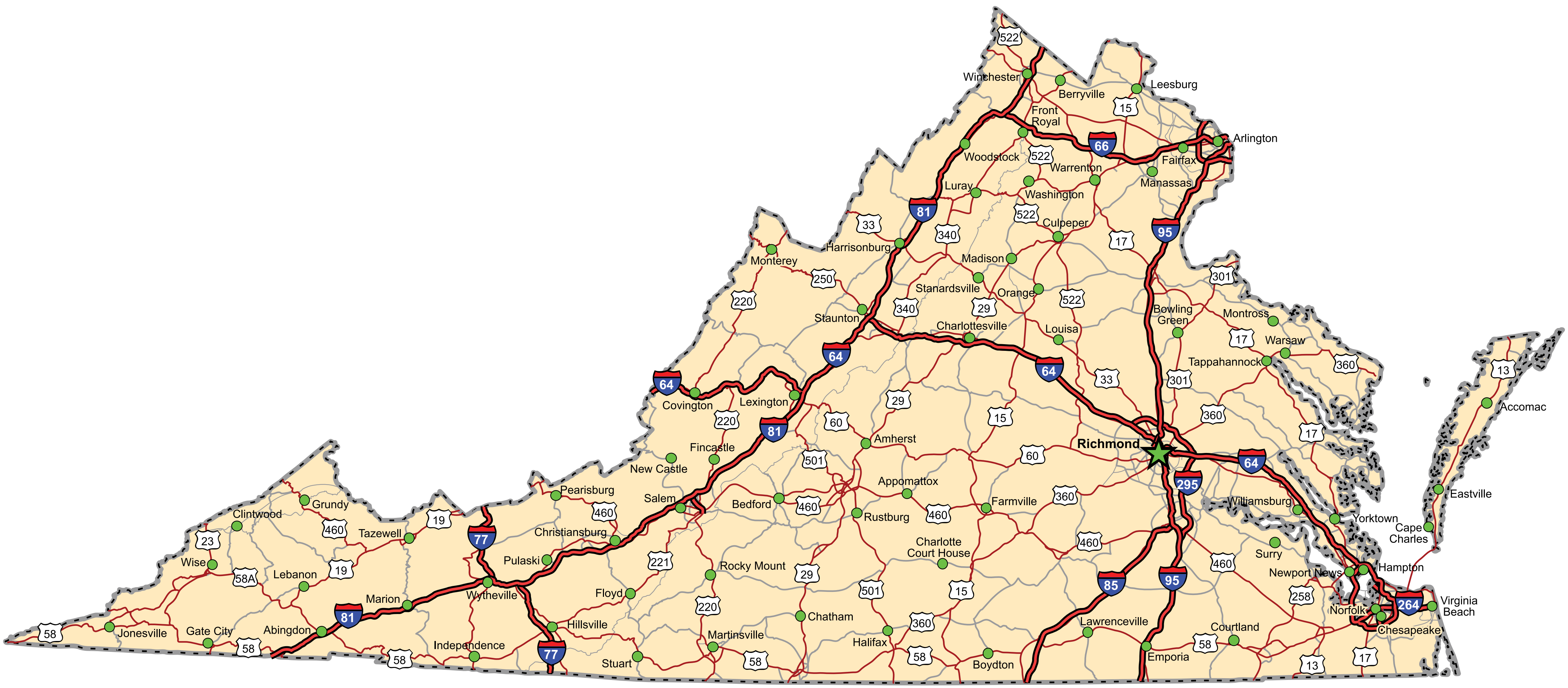


2022 State of the Commonwealth Report

■ DRAGAS CENTER FOR ECONOMIC ANALYSIS AND POLICY ■ STROME COLLEGE OF BUSINESS ■ OLD DOMINION UNIVERSITY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Charlottesville
Louisa
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Montross
Warsaw
Tappahannock
Covington
Lexington
Accomac
Amherst
Richmond
Fincastle
New Castle
Pearisburg
Salem
Bedford
Appomattox
Farmville
Rustburg
Eastville
Williamsburg
Yorktown
Cape Charles
Grundy
Clintwood
Tazewell
Christiansburg
Pulaski
Charlotte Court House
Surry
Hampton
Newport News
Wise
Lebanon
Rocky Mount
Floyd
Marion
Wytheville
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Chesapeake
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December 2022

Dear Reader:

This is Old Dominion University's eighth annual State of the Commonwealth Report. While it represents the work of many people connected in various ways to the university, the report does not constitute an official viewpoint of Old Dominion, 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.

Our work seeks to contribute to the conversation about how Virginia can foster growth across the Commonwealth over the coming decade without glossing over the challenges we face. Instead of retreating into partisan enclaves where affirmation is sought instead of information, we want to encourage difficult conversations to improve economic outcomes for all of Virginia's residents.

The 2022 State of the Commonwealth Report is divided into five parts:

Inflation, Uncertainty, and Volatility Undermine Virginia's Recovery

If the story of 2020 was the pandemic and the tale of 2021 was the recovery, then rising inflation and interest rates dominated the narrative of 2022. The economic recovery remained incomplete, with jobs returning to pre-pandemic levels but some Virginians remaining outside the labor force. Now, with the possibility of a recession in 2023 looming, we ask how Virginia fared over the last 12 months and what are the prospects for future growth?

Another Year in Recovery: Virginia's Metropolitan Areas

If Virginia is to continue its recovery from the pandemic economic shock of 2020, this growth will largely come from Virginia's metropolitan areas. We ask whether Virginians have returned to the labor force in the aftermath of the pandemic and explore how unemployment rates may not reflect the availability of labor. Lastly, we examine how population change may influence the future of Virginia's metro areas.

Who's at the Bedside? Does Virginia Have Enough Nurses?

In 2021, nurses ranked again as the most trusted profession in the United States. Yet, even though many Americans view them favorably, nurses have been the target of conspiracy theories, verbal abuse, and physical violence. As more nurses report symptoms of burnout and some are quitting the profession entirely, we explore the coming shortage of nurses in Virginia and ask what factors limit the supply of nurses.

Virginia's Lawyers Confront Tougher Times

While movies and television shows portray lawyers as members of high society, with expensive cars and tastes, the reality is grittier. In 2021, more than 90% of law students took out a loan to enable them to pay their costs, and the typical law school graduate owed $165,000 in loans. The crucial point of this report, however, is that significant proportions of law school graduates are destined to be disappointed if they pursue a career in law believing they will earn lots of money. In this chapter, we explore the supply of lawyers in Virginia and whether we are producing too many lawyers. We ask what the future may hold for the legal profession in Virginia and the nation.

A Deeper Dive into the Blacksburg-Christiansburg Metropolitan Area

The Blacksburg-Christiansburg metropolitan statistical area includes the counties of Giles, Montgomery, and Pulaski as well as the independent city of Radford. Virginia Tech, with over 37,000 full-time equivalent students in the 2021–2022 academic year, is not only the largest employer in the metro area, but it continues to expand its reach across the Commonwealth. We highlight how the metro region has fared over the last decade and discuss the prospects for future growth.

The Strome College of Business and Old Dominion University continue to provide support for the State of the Commonwealth Report. However, it would not appear without the vital backing of the private donors whose names appear below. They believe in Virginia and the power of rational discussion to improve our circumstances but are not responsible for the views expressed in the report.

Richard F. Barry III

The Aimee and Frank Batten Jr. Foundation

Jane Batten

R. Bruce Bradley

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The following individuals were instrumental in the writing, editing, design and dissemination of the report:

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Barbara Blake

Bojana Bolozan

Ashley DeSilva

Nikki Johnson

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Tim Komarek

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Sharon Lomax

Christian Manty

Janet Molinaro

Brendan O'Hallarn

Terry Parker

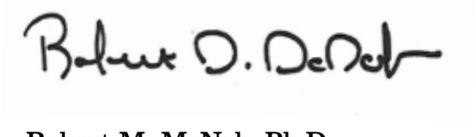
Matt Voegel

Suzanne Wright

All eight State of the Commonwealth Reports are available at www.ceapodu.com.

If you have comments or suggestions, please email us at rmcnab@odu.edu.

Sincerely,



Robert M. McNab, Ph.D.
Director, Dragas Center for Economic Analysis and Policy
Chair and Professor of Economics, Department of Economics
Strome College of Business
Old Dominion University

Contents

INFLATION, UNCERTAINTY, AND VOLATILITY UNDERMINE VIRGINIA'S RECOVERY

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of light, it was the season of darkness, it was the spring of hope, it was the winter of despair."

– Charles Dickens, Tale of Two Cities

As Virginians prepare for the new year, the opportunity presents itself to reflect on how the Commonwealth has fared this decade and to ask whether the future holds promise or despair. To say that the first 36 months of this decade have been distinctive would be an understatement. In 2020, the uncertainty surrounding the emergence of the COVID-19 virus led to restrictions on business and social activity throughout the Commonwealth. These restrictions, when combined with similar policies across the nation, produced a historical contraction in economic activity. The Federal Reserve responded by lowering the discount rate to 0.25% and created trillions of dollars in liquidity.[1] At the same time, the federal government provided trillions of dollars in stimulus to consumers and business, including expanded unemployment programs, direct payments to households, and forgivable loans to businesses. An equally historic recovery in economic activity started in the second half of 2020 and continued apace in 2021. Consumers increased their spending, business activity recovered swiftly in many industries, and employers sought to hire for positions shed in the early days of the pandemic.

As Virginia entered 2022, the prospects for a continued recovery remained strong, although there were warning signs on the horizon. Prices were rising more rapidly than prior to the pandemic although there was hope among some (specifically the Federal Reserve) that these

1 The discount rate is the interest rate charged to commercial banks and other depository institutions on loans received from their regional Federal Reserve Bank's lending facility—the discount window.

increases were transitory and would dissipate as the economy returned to "normal." Russia's invasion of Ukraine in February 2022 roiled global commodity markets, fueling a sharp rise in energy prices. Yet, even as inflation increased and real Gross Domestic Product decreased in the first two quarters of 2022, businesses continued to hire, profits remained strong, consumers kept spending, and home values continued to rise. It appeared to many that the economy was going in two directions at once, neither a full-blown recession nor a vigorous recovery.

As Virginia prepares to enter 2023, the question is how do we navigate these uncertain and volatile times? Can the Commonwealth put aside partisan differences, which are increasingly determined by geography, to foster growth across the state? An uneven and fitful recovery from the pandemic in 2022 has highlighted the need to create incentives for entrepreneurship and innovation across the state. If job growth and innovation are increasingly concentrated in Northern Virginia and, to a lesser extent, Richmond, then the sharp partisan divides that we have witnessed over the last decade will likely only increase. While wise investments in infrastructure and public schools can help improve Virginia's business climate, the increasing threat of sea level rise poses an existential challenge to the future of the state's economy. Improving economic resiliency is no longer a buzzword; it is a necessity for addressing how the Commonwealth will grow in the future.

We would be naïve to say these conversations will be easy or that change will be overnight. The relatively tepid growth of Virginia's civilian labor force requires solutions ranging from dealing with the opioid crisis to improving flows from institutions of higher education to the workforce. Outmigration of younger workers has been offset in the past by immigration, but immigration flows remain below pre-COVID levels. Institutions of higher education are facing an "enrollment cliff" in the next decade due to the demographic shifts in the population. We can hope that these problems resolve themselves or we can determine where we stand, where we want to go, and how to get there. Our work seeks to inform, to provide the common ground upon which to stand, so that we may work together for a better Virginia.

This chapter reviews the performance of the Virginia economy over the past 36 months and identifies challenges to growth in 2023 and beyond. We first discuss how the pandemic continues to shape our lives. We explore how inflation has challenged business and consumers and how rising interest rates will likely affect housing markets in the coming year. We explore changes in defense spending and how Russia's invasion of Ukraine highlighted Virginia's dependence on the production of legacy weapons systems. Lastly, we conclude with thoughts on how Virginia can address its challenges in the coming years.

Covid-19 Continues To Shape The Commonwealth

In previous reports, we highlighted the impact of COVID-19 on the lives of Virginians and economic activity in the Commonwealth. A cursory examination of public discourse in 2022, however, would suggest that many Virginians and Americans have "moved on" from COVID-19, even though it remains part of our daily lives. As attention on the disease has waned, data have become less reliable, especially regarding infections, due to the prevalence of at-home testing. A recent Ipsos survey found that 88% of respondents agreed with the statement that COVID-19 changed Americans' lives forever, and 85% of respondents believed that the virus would not be eradicated in their lifetimes.[2] The same survey found that 65% of respondents said there was little or no risk in returning to their normal, pre-pandemic lives.

Even though many of us may view COVID-19 as a virus in the rear-view mirror, data from the Centers for Disease Control and Prevention (CDC) and the Virginia Department of Health (VDH), suggest that it continues to change the lives of Virginians. According to the VDH, more than 53,000 hospital admissions could be attributed to COVID-19 from 2020 to mid-October 2022. More than 18,000 Virginians died from COVID-19 with another 3,700 cases being suspected as attributable to COVID-19.[3] Almost

2 https://www.ipsos.com/en-us/news-polls/axios-ipsos-coronavirus-index
3 https://www.vdh.virginia.gov/coronavirus/see-the-numbers/covid-19-in-virginia/

500 Virginians were hospitalized in mid-October 2022 for COVID-19, with 67 of those patients in intensive care units across the state.[4]

Graph 1 provides insight into how COVID-19 has impacted the lives of Virginians, using data from the Centers for Disease Control and Prevention (CDC) from January 2020 to October 2022. African Americans comprised 19.1% of Virginians over this period and accounted for 23.0% of deaths attributable to COVID-19. Virginians who identified as white, on the other hand, accounted for 60.8% of the Commonwealth's population and 68.1% of all COVID-19 deaths over the same period.

Were we to examine how these proportions have changed over time, however, we would reveal how the impact of COVID-19 has changed in Virginia. In the fall of 2020, African Americans and whites accounted for approximately 28.0% and 58.0% of COVID-19 deaths in Virginia, respectively. By the fall of 2021, African Americans accounted for 25.0% of deaths from COVID-19 in the Commonwealth while the proportion of white deaths increased to 64.8%. In the latest data, African Americans in Virginia accounted for 23.0% of all COVID-19 deaths while white Virginians accounted for 68.1% deaths. One explanation is that, early in the pandemic, deaths were concentrated in more densely populated areas of the Commonwealth. As the pandemic progressed, and vaccines became widely available, deaths per capita declined in more densely populated areas while increasing in less densely populated areas.[5]

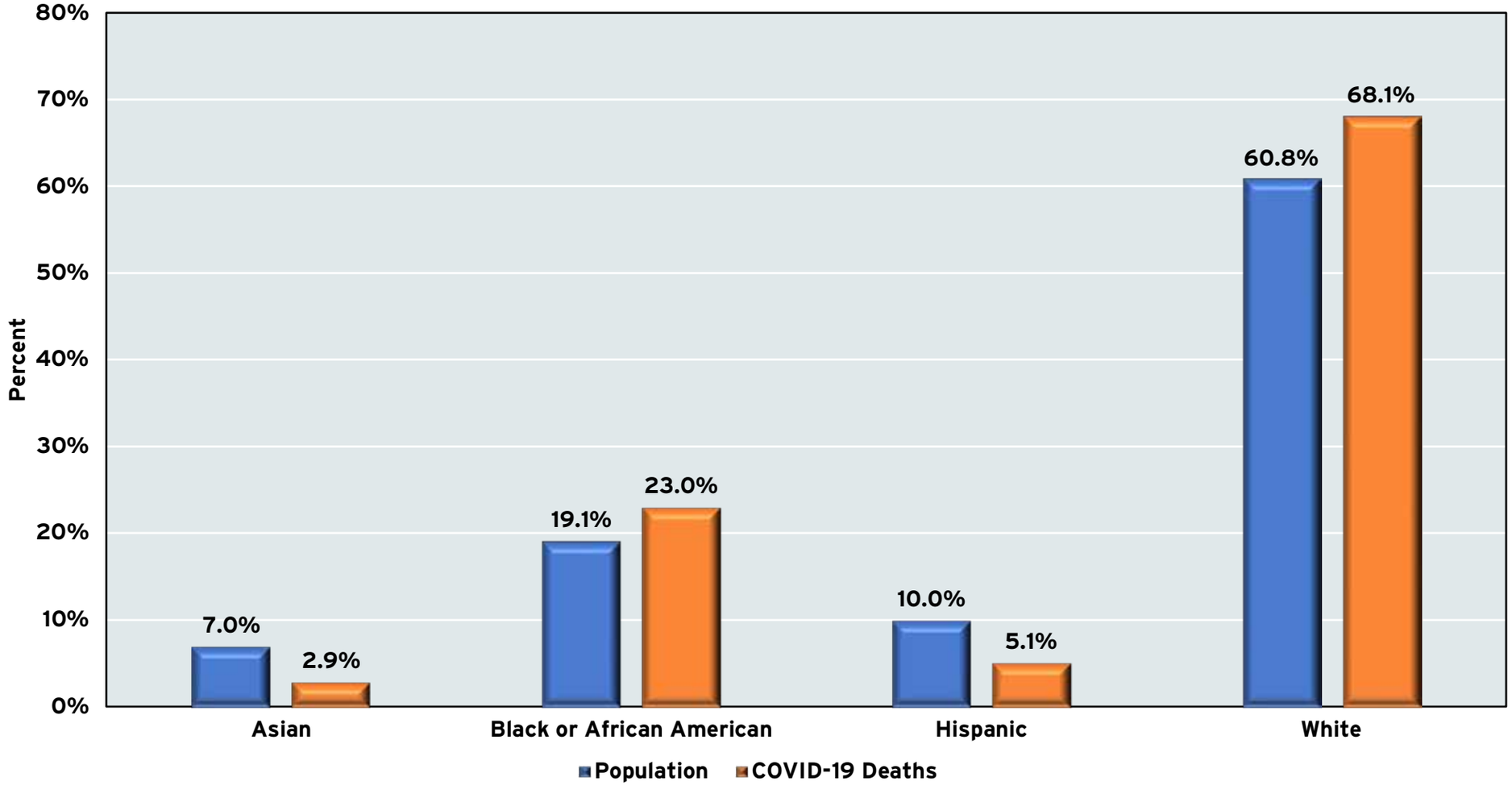
Graph 2 presents data from the Kaiser Family Foundation on vaccinations by race for Virginia and for 36 states (including Virginia).[6] The data provide insight into what proportion of the population has received at least one dose of a COVID-19 vaccine. Across all 36 states, from late April 2021 to mid-July 2022, the gap in vaccination rates between white and Black Americans declined by 14 percentage points. For Virginia, there was no longer any discernable difference in vaccination rates in the latest data.

Moving forward, COVID-19 will likely become a part of the tapestry of the Commonwealth and the nation instead of the dominant theme of our lives as it was in 2020. The costs of the pandemic, however, will continue to emerge over the coming years. We continue to observe higher levels of need for mental health services in emergency departments. Test scores highlight the learning losses due to extended school closures. As we discuss in the coming sections, there is increasing evidence that COVID-19 has impacted the ability of some Virginians to participate in the labor force. Domestic migration continues to be negative, that is, Virginians are leaving the state in greater numbers than residents of other states are moving to the Commonwealth. International migration remains well below pre-pandemic levels.[7] Whether we want to discuss it or not, COVID-19 will shape our lives in the years to come.

4 https://www.vdh.virginia.gov/coronavirus/see-the-numbers/covid-19-in-virginia/vhha-hospitalizations/
5 Hsueh-Fen Chen, Saleema A Karim, "Relationship between political partisanship and COVID-19 deaths: Future implications for public health," *Journal of Public Health*, Volume 44, Issue 3, September 2022, Pages 716–723, https://doi.org/10.1093/pubmed/fdab136 and https://www.pewresearch.org/politics/2022/03/03/the-changing-political-geography-of-covid-19-over-the-last-two-years/
6 https://www.kff.org/coronavirus-covid-19/issue-brief/latest-data-on-covid-19-vaccinations-by-race-ethnicity/
7 https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html

GRAPH 1

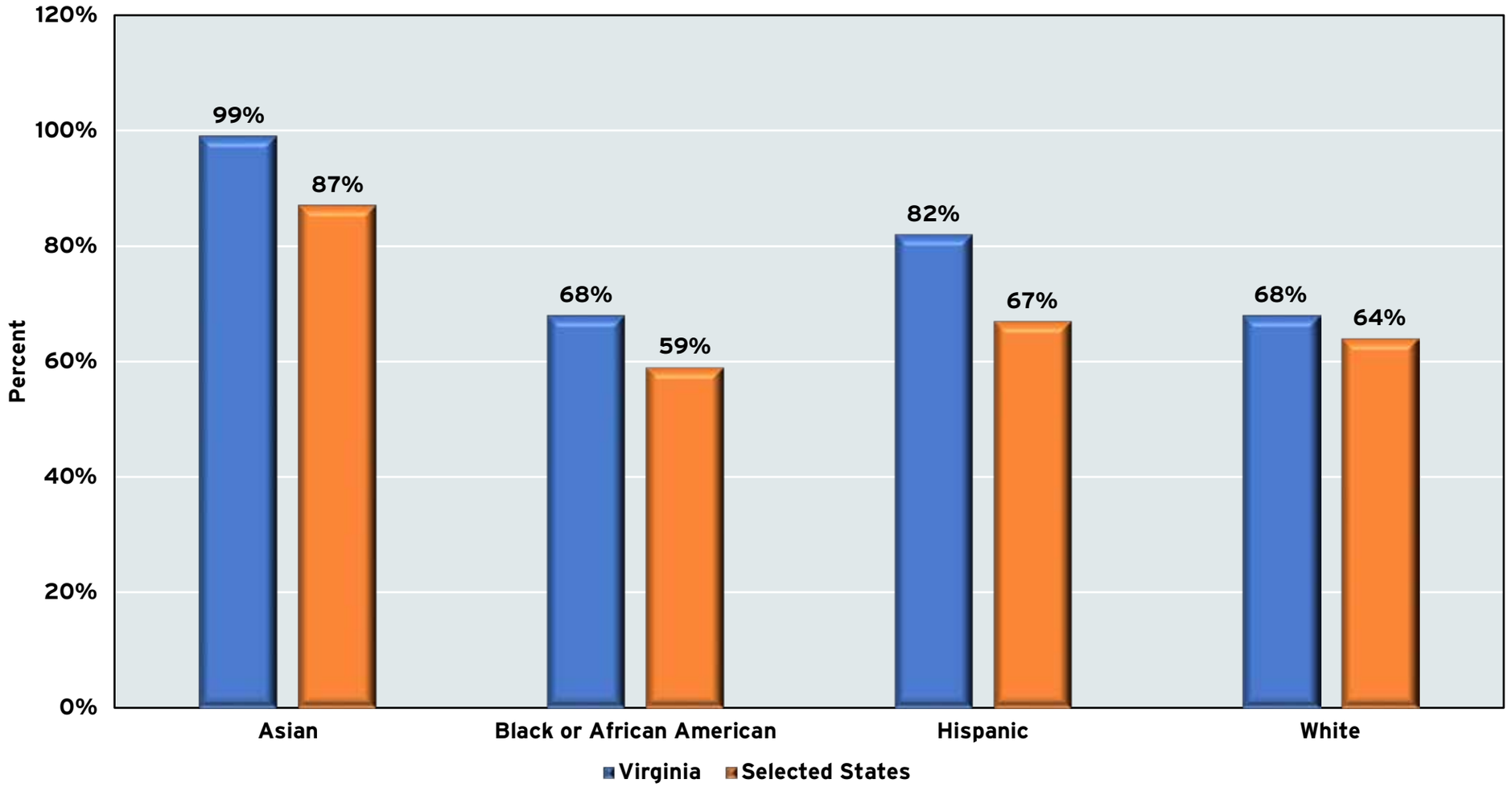
DISTRIBUTION OF POPULATION AND COVID-19 DEATHS BY RACE
VIRGINIA, JANUARY 2020 - OCTOBER 2022



Source: Centers for Disease Control and Prevention (2022) and Dragas Center for Economic Analysis and Policy, Old Dominion University.

GRAPH 2

VACCINATIONS BY RACE, VIRGINIA AND 36 SELECTED STATES AS OF JULY 11, 2022



Source: Kaiser Family Foundation (2022).

Gross Domestic Product: The Recovery Slows

Gross domestic product (GDP) is one of the headline measures of economic performance, as it estimates the dollar value of final goods and services produced in an area during a given period of time. GDP is an imperfect measure in that it does not capture nonmarket transactions (barter, for example), may understate the extent of the "gig economy," and does not place a value on household production. National data typically lag two to three months from the end of the most recent quarter. State data can lag four to six months from the end of the previous quarter. Quarterly data are also somewhat noisy (the data tend to have greater variation than annual data) and subject to revision, especially at the state level.

In Graph 3, we present data for nominal and real (inflation-adjusted) GDP for Virginia from the first quarter of 2005 to the second quarter of 2022. In the first quarter of 2005, Virginia's real GDP was approximately $405.4 billion, growing to about $493.8 billion in the fourth quarter of 2019. While the Commonwealth's real GDP did decline to $453.5 billion at the end of the second quarter of 2020, the recovery was swift. By the end of the first quarter of 2021, real GDP had recovered and continued to climb through the fourth quarter of 2021. However, economic activity in the state declined in the first two quarters of 2022.

Graph 4 shows the annualized quarterly change in real GDP for Virginia from the first quarter of 2019 to the second quarter of 2022. Prior to the onset of the pandemic, the Virginia economy had grown 13 out of the previous 14 quarters. In the first quarter of 2020, the economy contracted at an annualized rate of 3.9%. In the second quarter, when the restrictions on business and social activity were the most stringent, real economic activity in the state contracted at an annualized rate of approximately 26.0%. This historic shock was followed by a rapid recovery, with six straight quarters of positive growth. In the first two quarters of 2022, economic activity contracted at an annualized rate of 3.3% in the first quarter and 0.9% in the second quarter. Persistent inflation, geopolitical shocks, and continued supply chain woes will likely continue through the remainder of 2022.

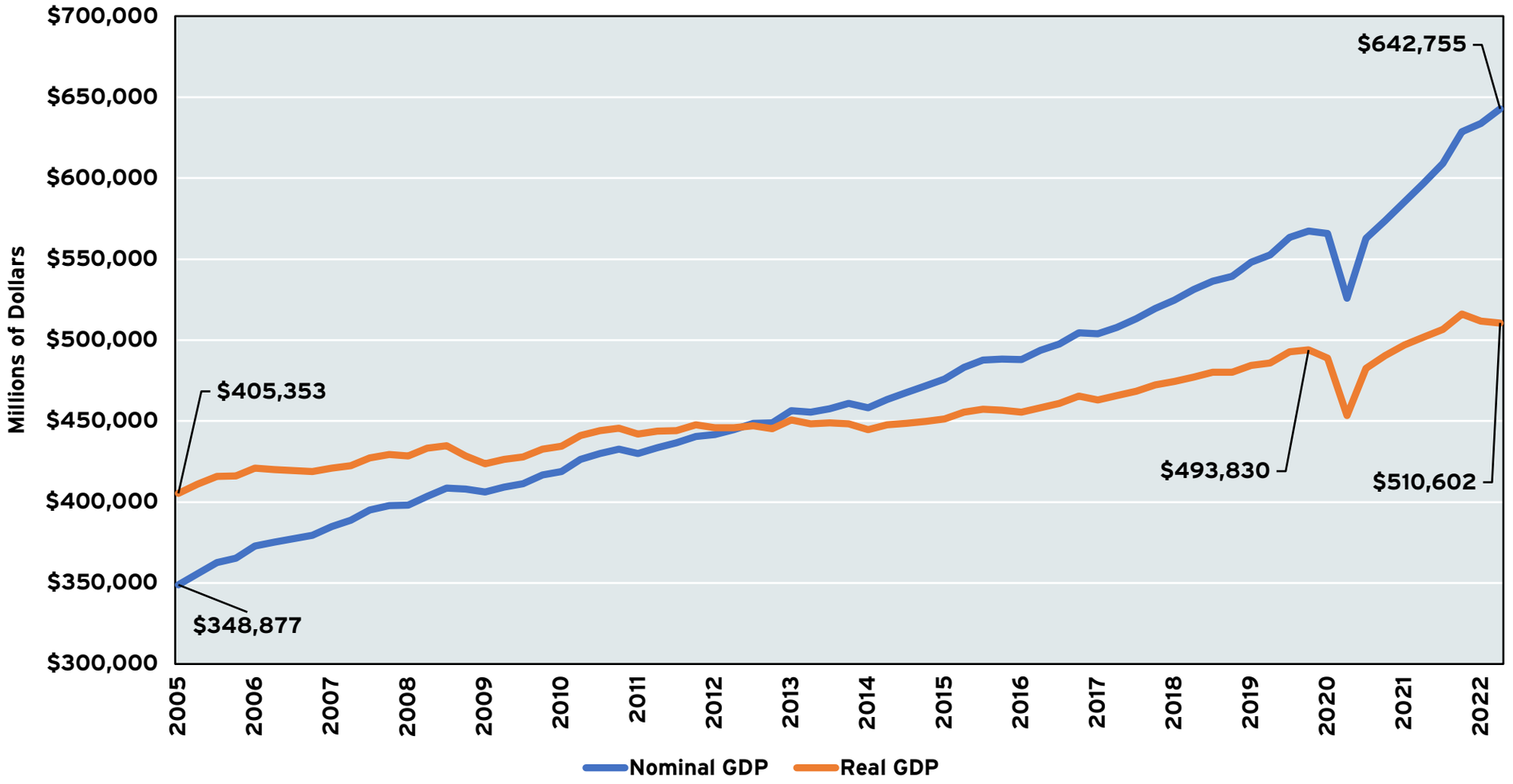
Graph 5 displays the performance of the Virginia economy relative to the states of North Carolina and Maryland as well as the nation from the first quarter of 2006 to the second quarter of 2022. In the decade prior to the pandemic, Virginia's economic performance was eclipsed by North Carolina, Maryland, and the nation. After the economic shock of 2020, North Carolina and the United States recovered at a faster pace than the Commonwealth. While Maryland's performance has fallen behind Virginia's recently, this is due more to a slowing recovery in Maryland than a faster pace of economic activity in Virginia.

To say that forecasting economic activity over the last 36 months has been challenging would be an understatement. In 2021, we forecast that Virginia would grow in the last two quarters of the year, but we also admit that we underestimated growth in the fourth quarter of 2021. Russia's invasion of Ukraine, OPEC's recent pivot to curtail production, and China's continued pursuit of a "zero COVID" policy continue to influence the pace of economic activity in Virginia and the United States. Domestically, the Federal Reserve's effort to rein in inflation will slow economic activity in 2023 and potentially into 2024. Whether domestic political uncertainty will increase as a result of the 2022 midterms also remains to be seen, as the new Congress may be even more unable to conduct its basic functions than any in recent memory.

In Table 1, we present our forecasts for real GDP for the nation and the Commonwealth for the remainder of 2022. We project that economic activity will increase slightly in the last two quarters of 2022, although we remain skeptical of whether these increases can be sustained in 2023. If anything, the contraction in the first two quarters of 2022 should be a cautionary tale for state and local governments. The revenue surpluses of 2021 and 2022 can disappear swiftly in the face of a recession.

GRAPH 3

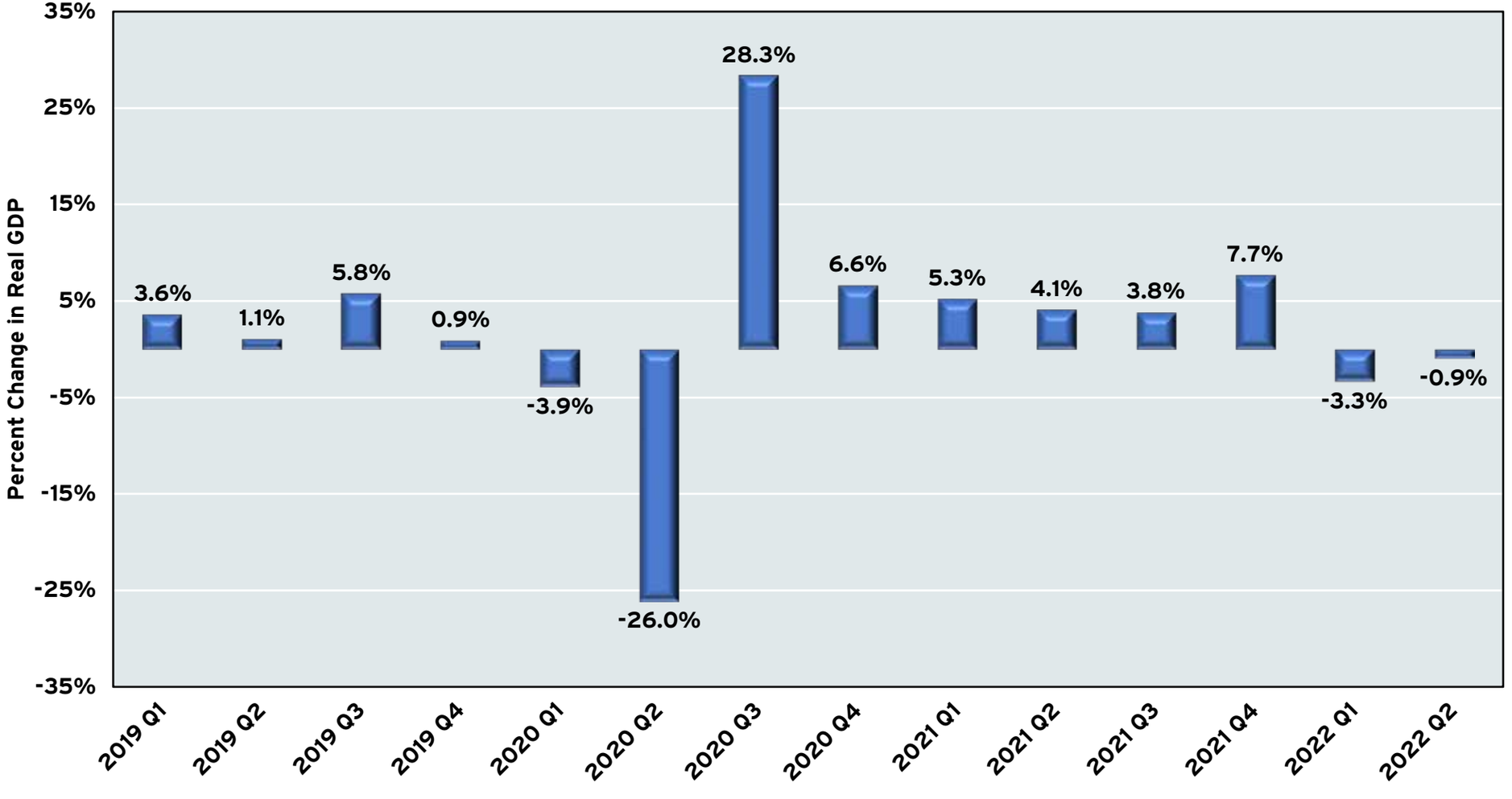
NOMINAL AND REAL GROSS DOMESTIC PRODUCT
VIRGINIA, 1ST QUARTER 2005 - 2ND QUARTER 2022



Source: Bureau of Economic Analysis (2022). Seasonally adjusted data at annual rate.

GRAPH 4

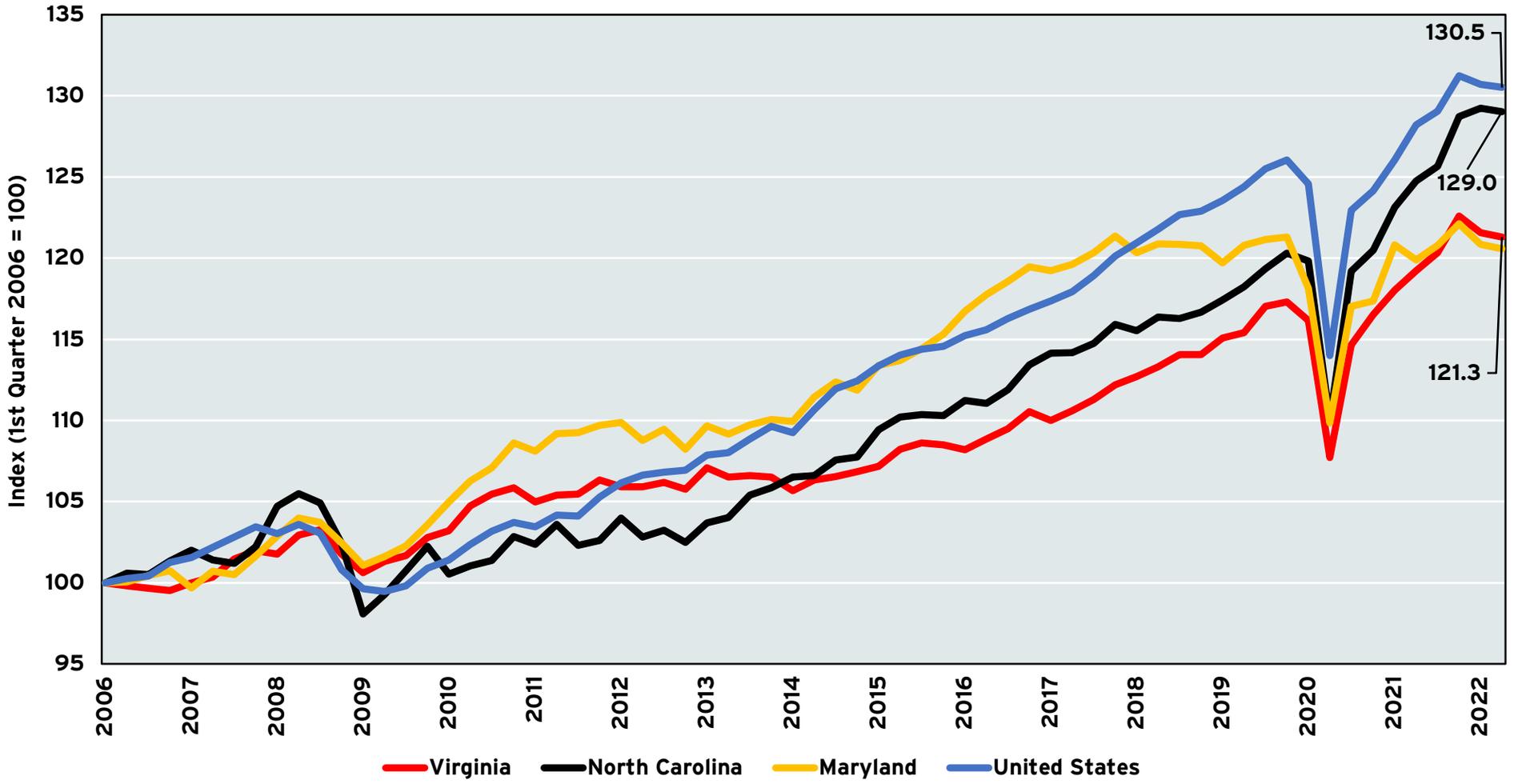
ANNUALIZED PERCENTAGE CHANGE IN QUARTERLY REAL GROSS DOMESTIC PRODUCT: VIRGINIA, 1ST QUARTER 2019 TO 2ND QUARTER 2022



Sources: Bureau of Economic Analysis, 2022, and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Table SQGDP9, real GDP by state. Millions of chained 2012 dollars.

GRAPH 5

INDEX OF REAL GROSS DOMESTIC PRODUCT:
VIRGINIA, NORTH CAROLINA, MARYLAND, AND THE UNITED STATES
1ST QUARTER 2006 – 2ND QUARTER 2022



Sources: Bureau of Economic Analysis, 2022, and the Dragas Center for Economic Analysis and Policy, Old Dominion University. U.S. data from Table T10106 of the National Income and Product Accounts. State data from Table SQGDP9, real GDP by state.

TABLE 1

QUARTERLY REAL GROSS DOMESTIC PRODUCT: VIRGINIA AND THE UNITED STATES, 1ST QUARTER 2019 TO 4TH QUARTER 2022 (MILLIONS OF DOLLARS)

Year	United States	Annualized Quarterly Real GDP Growth	Virginia	Annualized Quarterly Real GDP Growth
2019 Q1	18,835,411	2.2%	484,485	3.6%
2019 Q2	18,962,175	2.7%	485,794	1.1%
2019 Q3	19,130,932	3.6%	492,688	5.8%
2019 Q4	19,215,691	1.8%	493,830	0.9%
2020 Q1	18,989,877	-4.6%	489,003	-3.9%
2020 Q2	17,378,712	-29.9%	453,483	-26.0%
2020 Q3	18,743,720	35.3%	482,662	28.3%
2020 Q4	18,924,262	3.9%	490,490	6.6%
2021 Q1	19,216,224	6.3%	496,830	5.3%
2021 Q2	19,544,248	7.0%	501,883	4.1%
2021 Q3	19,672,594	2.7%	506,619	3.8%
2021 Q4	20,006,181	7.0%	516,072	7.7%
2022 Q1	19,924,088	-1.6%	511,784	-3.3%
2022 Q2	19,895,271	-0.6%	510,602	-0.9%
2022 Q3	20,021,271	2.6%	512,900	1.8%
2022 Q4	20,342,069	1.6%	514,951	1.6%

Sources: Bureau of Economic Analysis, 2022, and the Dragas Center for Economic Analysis and Policy, Old Dominion University. U.S. data from Table T10106 of the National Income and Product Accounts. Virginia data from Table SQGDP9, real GDP by state. Forecasted values for US real GDP for 2022 Q4 and Virginia real GDP for 2022 Q3 and 2022 Q4.

Inflation Adds To Economic Uncertainty

If there was one dominant theme of 2022, it was how inflation impacted the lives of Virginians. Higher prices for shelter, food, and gasoline changed consumer sentiment for the worse and undermined the recovery from the pandemic. Any hopes that inflation would be transitory in 2022 quickly disappeared in the face of continued supply chain woes and geopolitical shocks.

In Graph 6, we present the monthly rates for inflation and core inflation for the United States from January 2000 to September 2022.[8] From February 2010 (the trough in economic activity following the Great Recession of 2007–2009) to February 2022 (the end of the longest peacetime expansion in the nation's history), the average monthly rates of inflation and core inflation were 1.8% and 1.9%, respectively. The Federal Reserve, weighing the relatively tepid recovery in labor markets, leaned into an accommodative monetary policy during this period.

Facing the rapid decline in economic activity in the spring of 2020, the Federal Reserve lowered the discount rate (the overnight interest rate charged to banks who borrow from the Federal Reserve) from 2.25% to 1.75% on March 4, 2020, then again to 0.25% on March 16, 2020 (Table 2). Over the coming months, the Federal Reserve and federal government would inject trillions of dollars of stimulus in the economy to stave off a prolonged contraction in economic activity. By all accounts, these efforts, while at times inefficient, were successful as evidenced by the recoveries in real GDP and labor markets.

There is, as the saying goes, no such thing as a free lunch. Relatively low interest rates, coupled with the sudden shift of many high-income workers to work-at-home, increased the demand for single-family housing. Supply chain disruptions rippled throughout the economy, leading to more dollars chasing fewer goods, fueling inflation. In Graph 7, we present the monthly rate of inflation from the Bureau of Labor Statistics and a measure of

8 The Consumer Price Index (CPI) measures the average change in the prices paid by urban consumers for a market basket of consumer goods and services. The monthly inflation rate is equal to the percentage change in the CPI index over the previous 12 months. The core inflation rate represents the percentage change in the CPI index less food and energy.

inflationary expectations from the University of Michigan Survey of Consumers.[9] In February 2020, monthly inflation was 2.3% and consumers expected that inflation in February 2021 would be 2.4%. As inflation surged in 2021 and into 2022, consumer sentiments about future inflation soured. In September 2022, consumers expected inflation to be 4.7% in August 2023, illustrating how the Federal Reserve must work to get ahead of expectations.

One significant piece of evidence that the Federal Reserve is playing "catch up" is how quickly the discount rate has changed in 2022. On December 16, 2008, at the onset of the Great Recession, the Federal Reserve lowered the discount rate to 0.50%. It would take almost 10 years for the discount rate to rise 250 basis points (2.5%) on December 20, 2018. On March 16, 2020, at the onset of the pandemic, the Federal Reserve lowered the discount rate to 0.25%. Two years later, the Federal Reserve increased the discount rate by 25 basis points to 0.50%. Between May 5, 2022, and November 2, 2022, the Federal Reserve increased the discount rate 350 basis points, that is, the Federal Reserve has raised the discount rate more in 2022 than it did in the decade during and after the Great Recession.

While it may be popular among cable news hosts and politicians to claim that inflation in the United States is due to the policies of one administration or another, the data tell a different story. In Graph 8, we compare the annualized rate of inflation in January 2020 with the latest data available for several countries. The energy price shock is particularly acute in Europe, where prices of electricity and natural gas have been most significantly impacted by Russia's invasion of Ukraine and its subsequent attempts to wield its energy exports as a foreign policy weapon. Central banks have reacted by raising the cost of money. The European Central Bank (ECB), for example, maintained a **negative interest rate** on its deposit facility from June 11, 2014, to July 27, 2022.[10] However, on July 27, 2022, the ECB raised the deposit facility rate from -0.50% to 0.00% and again to 0.75% on September 14, 2022.[11] On November 2, 2022, the ECB increased the deposit facility rate to 1.5% (along with other rates) in the face of increasing inflation.

TABLE 2

DISCOUNT RATE, UNITED STATES
DECEMBER 16, 2008 - NOVEMBER 2, 2022

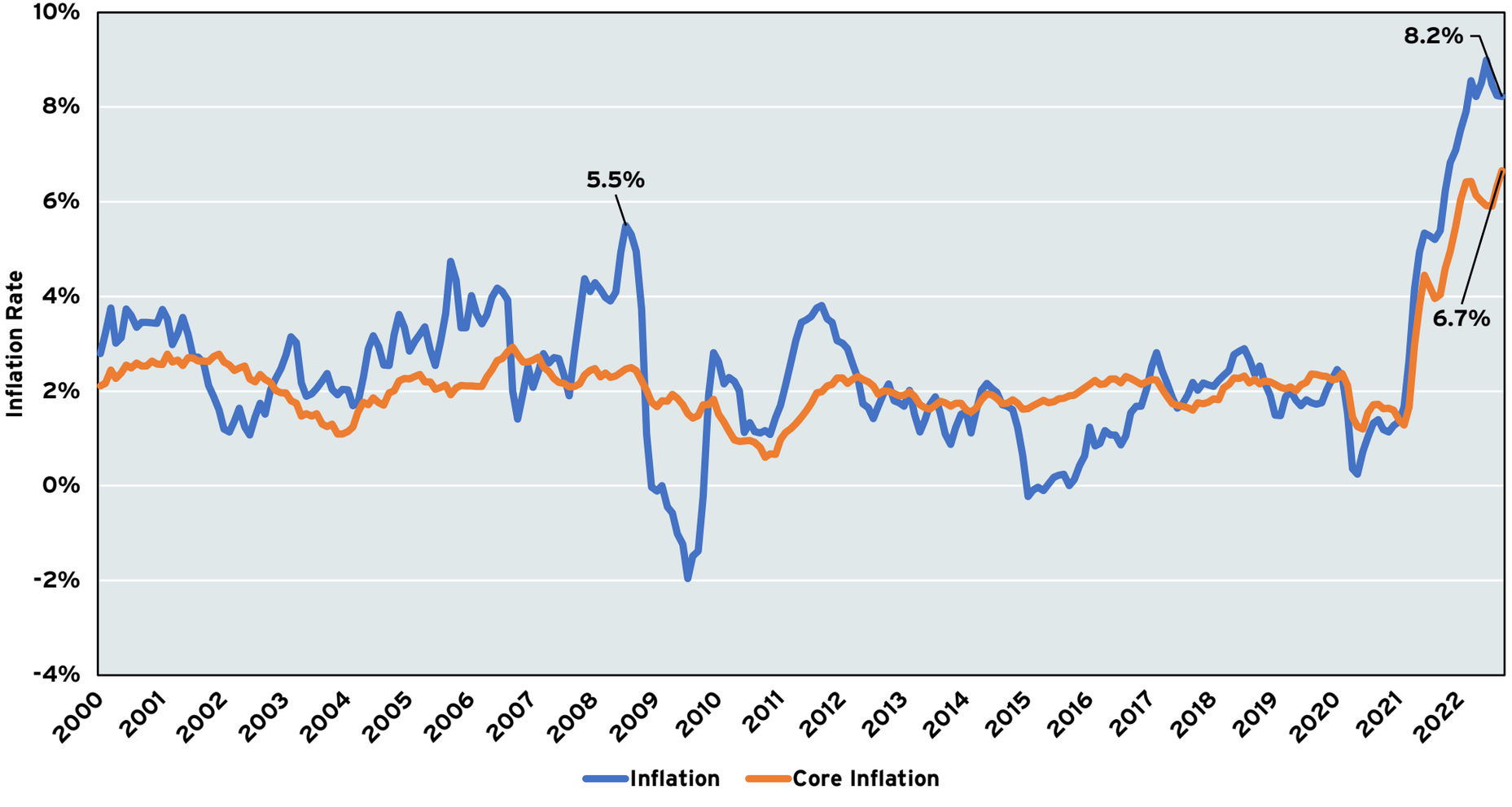
Date	Discount Rate (% per annum)
December 16, 2008	0.50%
February 29, 2012	0.75%
December 17, 2015	1.00%
December 15, 2016	1.25%
March 16, 2017	1.50%
June 15, 2017	1.75%
December 14, 2017	2.00%
March 22, 2018	2.25%
June 14, 2018	2.50%
September 27, 2018	2.75%
December 20, 2018	3.00%
August 1, 2019	2.75%
September 19, 2019	2.50%
October 31, 2019	2.25%
March 4, 2020	1.75%
March 16, 2020	0.25%
March 17, 2022	0.50%
May 5, 2022	1.00%
June 17, 2022	1.75%
July 28, 2022	2.50%
September 22, 2022	3.25%
November 2, 2022	4.00%

Source: Federal Reserve Bank, Discount Window. The discount rate is the interest rate on advances to member banks.

9 The inflationary expectations measure is the median expected price change for the next 12 months. For more information, see https://data.sca.isr.umich.edu/.
10 The deposit facility rate is the interest rate for banks that make overnight deposits with the Eurosystem.
11 https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html

GRAPH 6

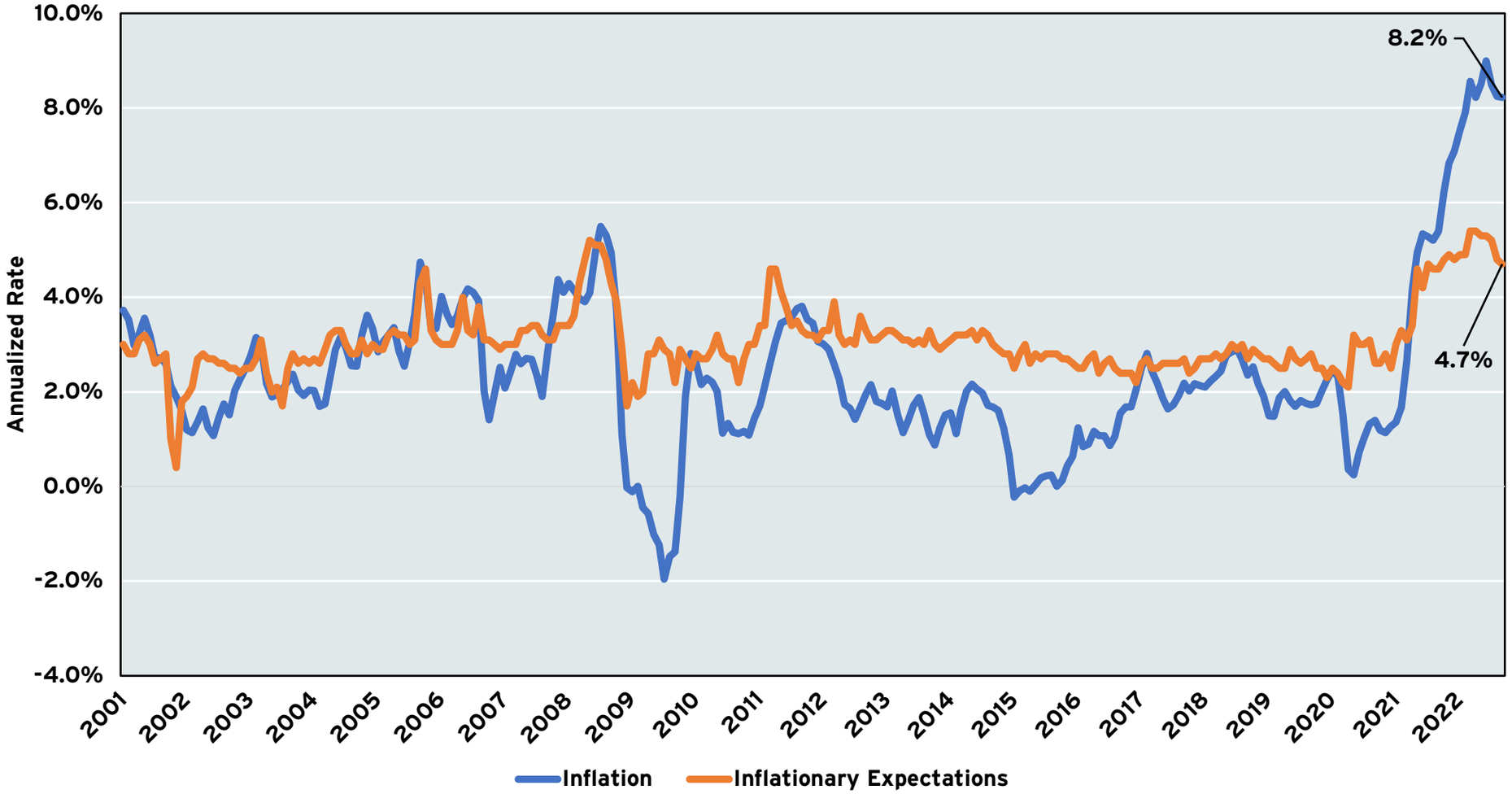
INFLATION AND CORE INFLATION, UNITED STATES
JANUARY 2000 - SEPTEMBER 2022



Source: Bureau of Labor Statistics. Data are seasonally adjusted.

GRAPH 7

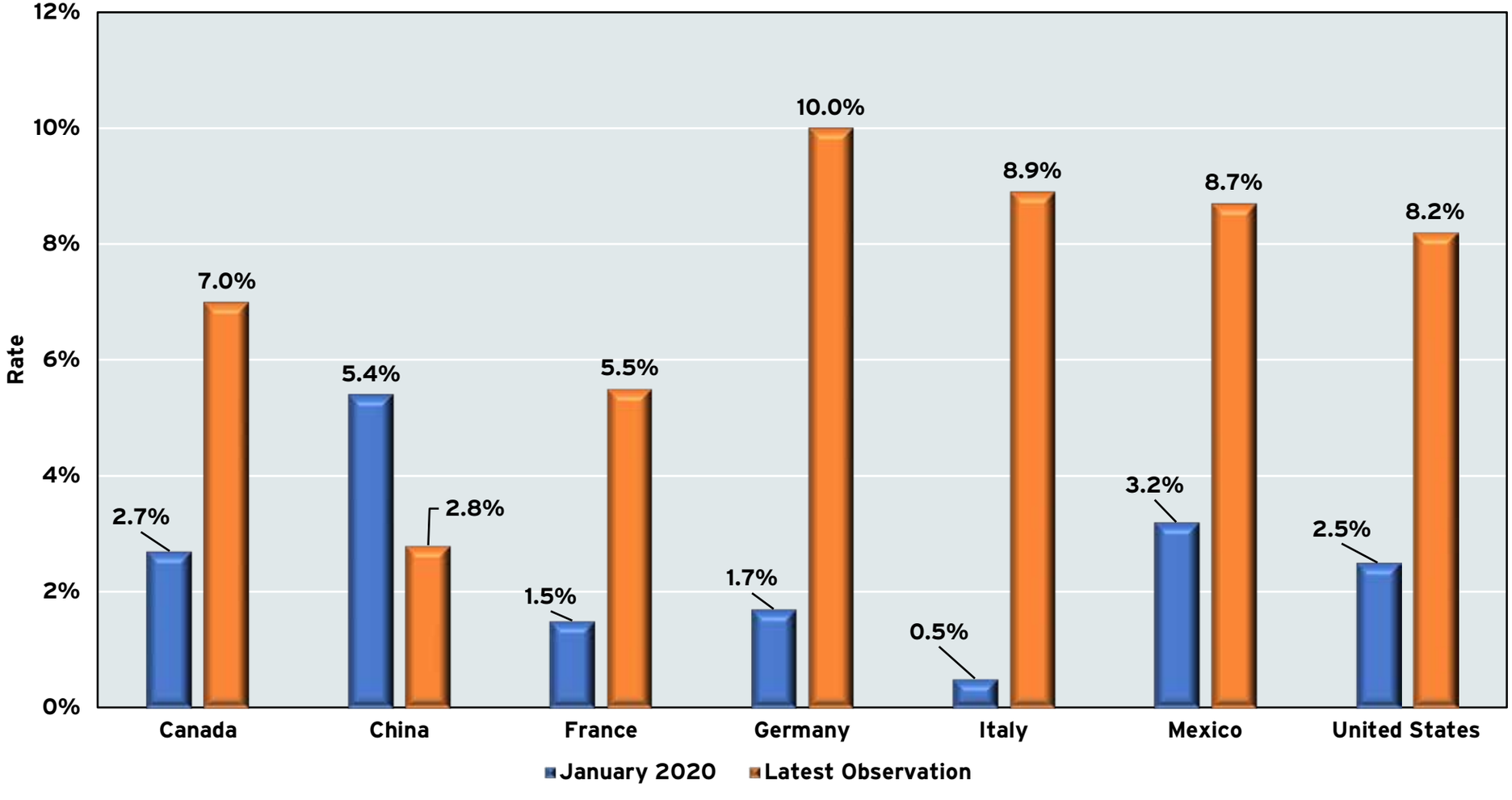
INFLATION AND INFLATIONARY EXPECTATIONS, UNITED STATES
JANUARY 2000 - SEPTEMBER 2022



Source: University of Michigan, Survey of Consumers and Bureau of Labor Statistics. Inflationary expectations are the median expected price change for the next 12 months.

GRAPH 8

INFLATION IN SELECTED COUNTRIES
JANUARY 2020 AND SEPTEMBER 2022



Source: World Bank, Bureau of Labor Statistics, and National Statistics Offices. Latest observations are all for September 2022. Annual percentage change in consumer price index.

One notable exception to the global rise of inflation has been China. While monthly inflation was lower in China in September 2022 than January 2020, this is more attributable to the attempts to maintain a "zero-COVID" policy than stellar macroeconomic management. The zero-COVID policy has required mass testing, stringent lockdowns involving millions of citizens, and even more draconian measures to limit public discourse. Shanghai endured a two-month lockdown in 2022,[12] reducing the pace of economic growth and contributing to supply-chain disruptions across the globe. However, even in China, draconian policies may have a limit. Even though the most recent Community Party Congress reaffirmed the commitment to a slate of zero-COVID policies, the resulting display of civil unrest across several major cities led to an unprecedented turn of events. In early December, China rolled back several zero-COVID policies, including forcing individuals with mild infections to be housed in large (and often unsafe) quarantine centers.[13] However, the government may still require entire buildings to be isolated in the case of an outbreak and the open question is whether, once infections start to rise, the government will revert to its previous slate of policies.

The question now is not whether the Federal Reserve will keep raising the discount rate, but rather by how much? We project continued increases until core inflation falls below 2%. We expect the Federal Reserve to increase the discount rate by another 75 to 125 basis points over the next six months unless there is a significant negative economic shock. Given that there is a substantial lag between raising interest rates and declines in consumer demand and economic activity, there is a high likelihood the Federal Reserve will "overshoot" and then tip the economy into a sustained recession. While we would prefer to be wrong on this point, we believe the Federal Reserve will accept higher unemployment and lower real GDP as the cost of breaking inflationary expectations.

Individual employment and establishment employment data attempt to measure how many people are working at a given time. These data are from two different surveys: the Current Population Survey (CPS) and the Current Establishment Survey (CES). The CPS asks the civilian noninstitutionalized population whether they are working, looking for work or not attached to the labor force. The civilian labor force represents the civilian noninstitutionalized population that is either working or actively looking for work, while individual employment reflects those in the labor force who are working. The CES asks employers about their employees. There is an important difference between the CPS and CES. An individual can only be employed once in the CPS – that is, an individual either is working, unemployed or not seeking to work. In the CES, an individual can show up multiple times if he or she has different jobs with different employers. For clarity, we present the CPS data as "individual employment" and the CES data as "jobs."

12 https://www.economist.com/china/2022/10/13/china-shows-few-signs-of-loosening-its-zero-covid-policy
13 https://apnews.com/article/health-business-china-covid-economy-e5559f6062cf052a71ad6ba1ceece693

An Incomplete Recovery as the Threat of Recession Looms

Graph 9 illustrates the civilian labor force and individual employment in the Commonwealth from January 2019 to September 2022. In December 2019, both the labor force and individual employment set records at 4.48 million and 4.36 million Virginians, respectively. We benchmark our analysis to February 2020, however, as this is generally accepted as the last month before the impact of the pandemic across the United States. We note that while individual employment declined rapidly in the spring of 2020, it also began its recovery in the summer months. On the other hand, the civilian labor force continued to trend downward in 2020 and into 2021, reaching its nadir in September 2021. In September 2022, the civilian labor force and individual employment in Virginia were 2.8% and 2.7% lower than February 2020.

The headline unemployment rate measures the ratio of unemployed individuals to the civilian labor force. In Virginia, the unemployment rate jumped from 2.7% in February 2020 to 11.6% in April 2020 (Graph 10). This was the highest recorded unemployment rate for the Commonwealth in recent memory. However, the sharp increase in the unemployment rate was short lived. By January 2021, the unemployment rate had declined to 4.8% and was 3.3% by the end of 2021. In 2022, the unemployment rate in the Commonwealth continued to decline, reaching 2.6% in September 2022. Unless there is a dramatic shift in economic fortunes, Virginia's unemployment rate will remain below 3% into the first half of 2023.

However, the unemployment rate can misrepresent the state of the labor market. In the best case, the civilian labor force is expanding, and the number of unemployed individuals is contracting. The unemployment rate also can decline because individuals drop out of the labor force or even never join it. This phenomenon has been occurring nationally. The percentage of adults employed or actively seeking a job fell from 67.2% in January 2001 to 62.3% in September 2022.

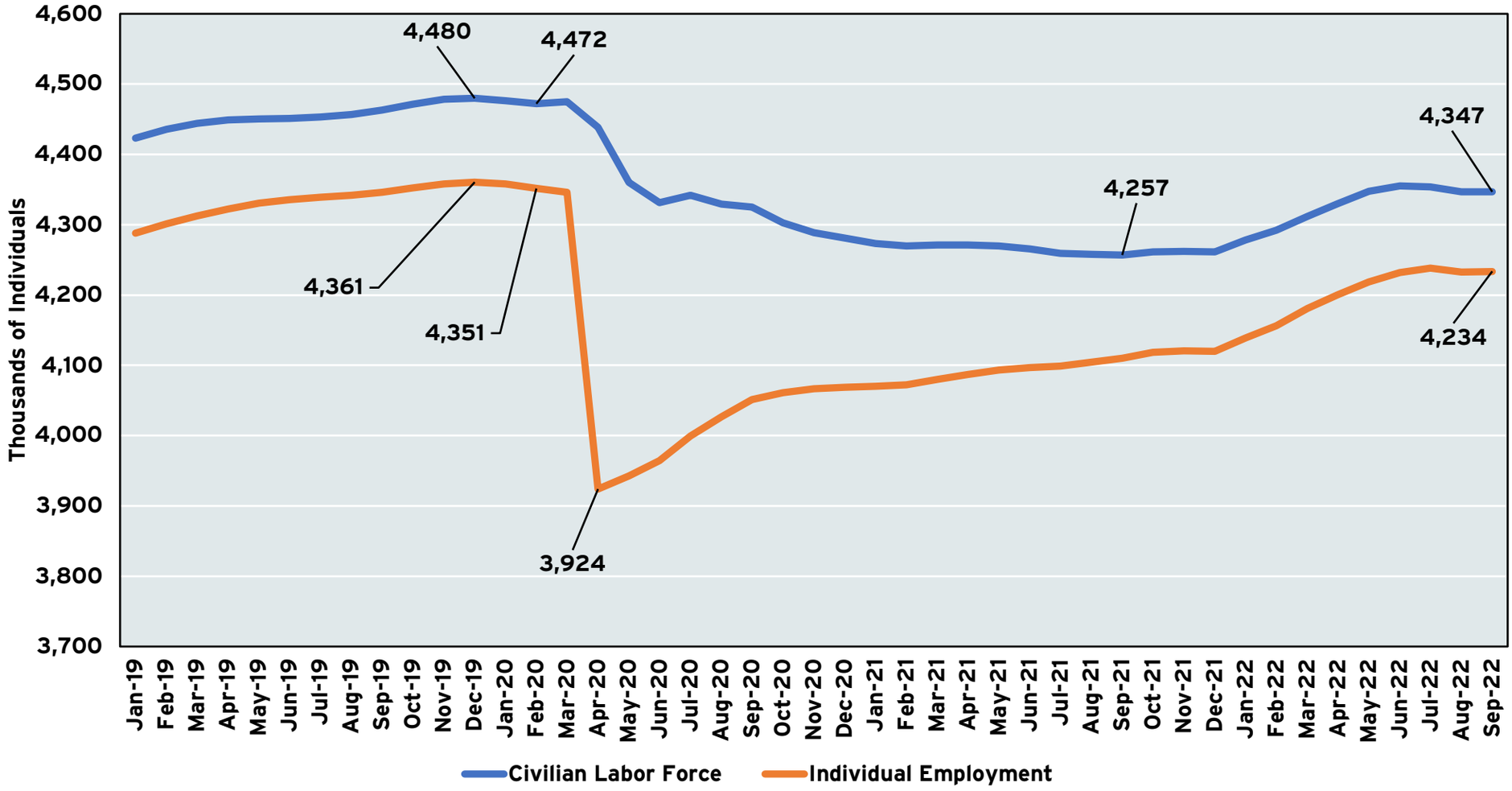
The unemployment rate can also decline when the civilian labor force declines and the number of unemployed individuals falls. This is what has occurred in Virginia. A smaller labor force and a smaller number of unemployed individuals masks the potential extent of unemployment.

In Graph 10 we suggest an alternative measure of unemployment that provides insight into this phenomenon. We treat exits from the labor force as unemployed individuals instead of removing them from the labor force entirely. While we understand that some departures from the labor force may be permanent (retirees, health conditions), this alternative measure provides an upper-bound on the extent of unemployment in the Commonwealth. In September 2022, the official unemployment rate was 2.6%. Treating departures from the labor force as unemployed yields an alternative measure of 5.3%. The true extent of unemployment in Virginia likely lies between these two data points, reflecting the challenge of inducing Virginians to return to the labor force and gainful employment.

How has Virginia fared relative to neighboring states and the nation? In Graph 11, we compare the labor force recoveries of Virginia with Maryland, North Carolina, West Virginia, and the United States. Virginia's labor force has recovered more fully than Maryland's but remains below pre-pandemic levels. West Virginia's labor force (-0.4%) nearly recovered but still lags the nation (0.1%), which saw more individuals in the labor force in September 2022 than February 2020. North Carolina's recovery stands out, with a labor force that was 2.2% higher in September 2022 than February 2020. If Virginia's labor force recovery continues to lag that of North Carolina, then its economic fortunes are likely to lag as well in the coming years.

GRAPH 9

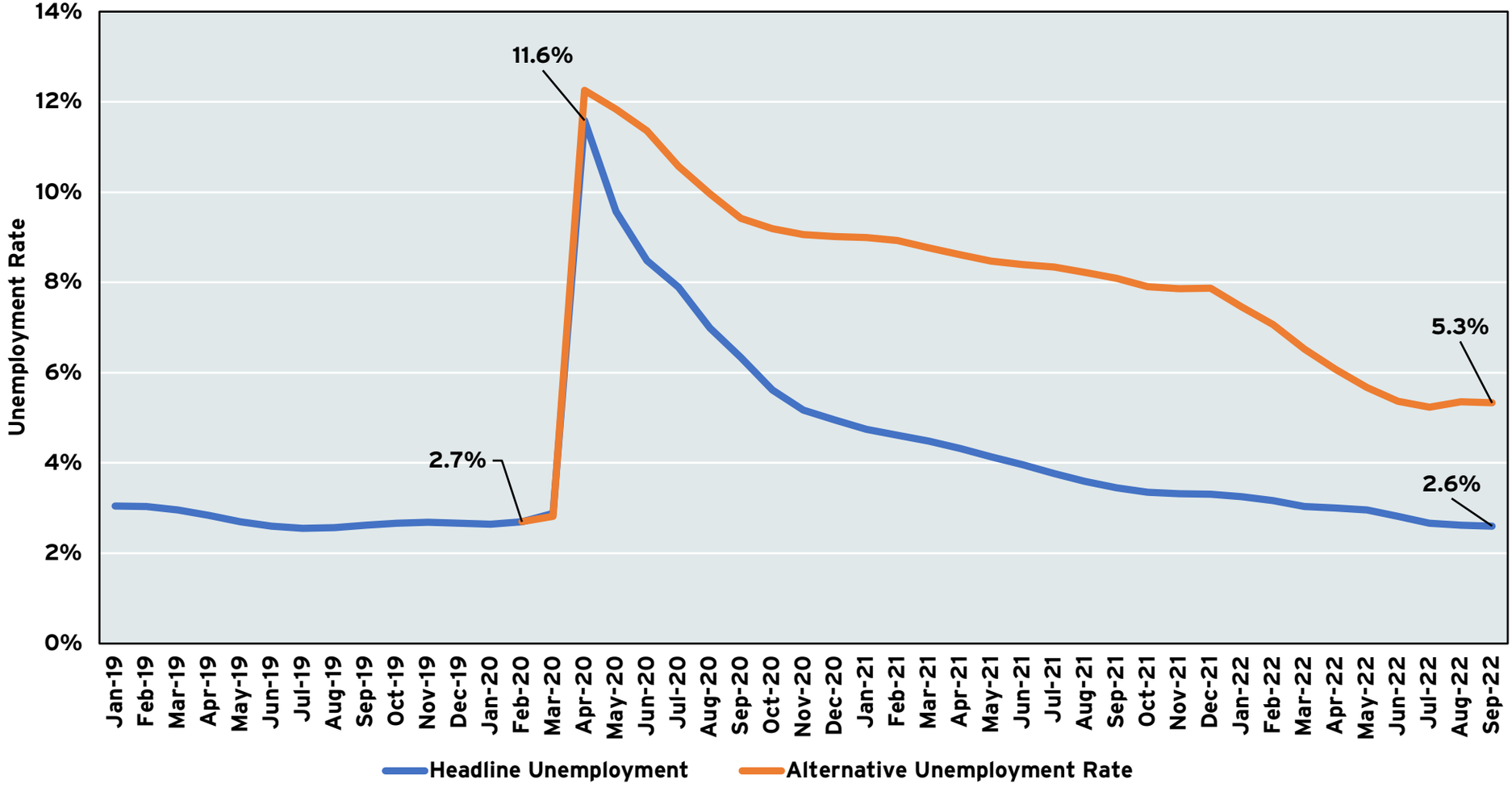
CIVILIAN LABOR FORCE AND INDIVIDUAL EMPLOYMENT: VIRGINIA, JANUARY 2019 TO SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

GRAPH 10

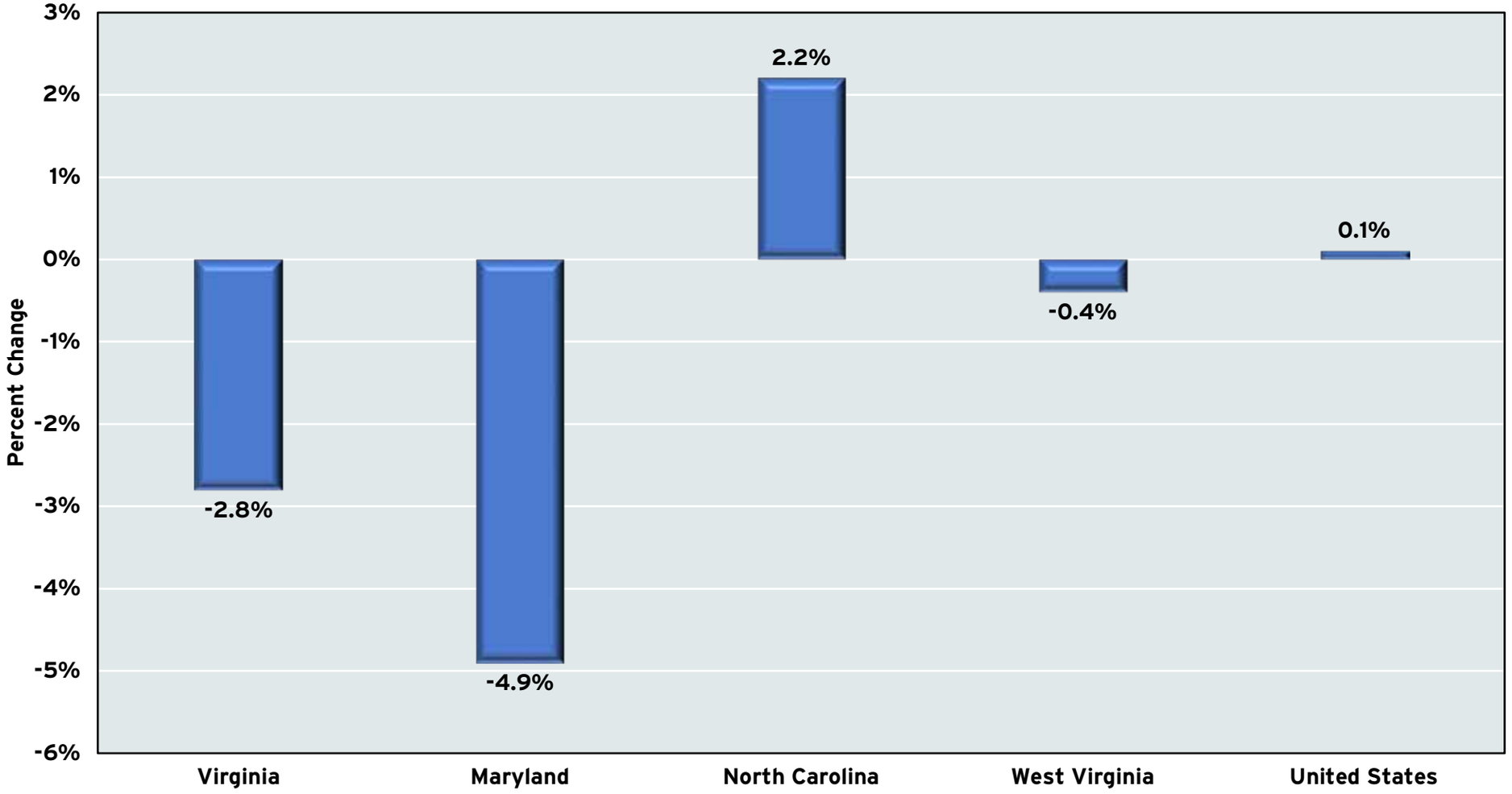
HEADLINE UNEMPLOYMENT RATE (U3) AND ALTERNATIVE MEASURE OF UNEMPLOYMENT
VIRGINIA, JANUARY 2019 TO SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

GRAPH 11

PERCENT CHANGE IN CIVILIAN LABOR FORCE
VIRGINIA, SELECTED STATES, AND THE UNITED STATES
FEBRUARY 2020 TO SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

Where Are The Workers?

In 2020 and into 2021, some pundits and politicians pointed to the slow recovery in the civilian labor force and attributed it to expanded unemployment benefits and stimulus payments. However, these benefits have long since expired, and refrains that those stimulus payments somehow continue to inhibit labor force participation are, at best, naïve. What could explain the relatively tepid recovery of the civilian labor force in Virginia?

One possibility is that Virginia is merely returning to the path it found itself on prior to the pandemic. After the Great Recession, Virginia grew slower than its peers and the nation. The Commonwealth was (and continues to be) relatively dependent on federal government spending and thus was less responsive to surges in private sector economic activity. This argument would apply especially to Hampton Roads, where federal government spending accounts for approximately 40% of regional GDP.

Another emerging possibility is that some Virginians are experiencing long COVID and the symptoms of long COVID are inhibiting their ability to return or remain in the civilian labor force. First, we must caveat our discussion with the fact that there appears to be no specific definition of long COVID, and instead it is a collection of symptoms associated with post-COVID infection.[14] When researchers examined more than 2 million electronic health records, they found a marked difference between those who had been diagnosed with COVID-19 and those who never had been diagnosed with COVID-19. Among those who were diagnosed with the disease, 38% of patients reported symptoms associated with a long COVID diagnosis. For those not diagnosed with COVID-19, only 16% reported symptoms associated with long COVID. Another recent study of 3,800 patients who were thought to have long COVID found that symptoms persisted more than 35 weeks for more than 90% of patients.[15]

For those suffering with long COVID, the symptoms appear to undermine their ability to work. A 2021 study of long COVID patients found that 23% reported that they were unable to work and 46% reduced their work hours because of sickness. A 2022 study by the Brookings Institution estimated that long COVID reduced the civilian labor force in the United States by approximately 1.6 million full-time workers at any given time in the first 20 months of the pandemic. The Brookings study estimated that another 500,000 full-time jobs were empty due to long COVID causing reduced work hours.[16]

Following the Brookings methodology, we can estimate the number of working-age Virginians who have potentially left the labor force due to long COVID. The Census Bureau's Household Pulse Survey asks respondents whether they have had COVID and whether they are experiencing the symptoms of long COVID. In the September 2022 survey, approximately 7.2% (6.7% to 7.7% confidence interval) of adult Americans and 6% (4.1% to 8.5% confidence interval) of adult Virginians experienced long COVID. Given there were approximately 5.35 million Virginians in 2021 between the ages of 18 and 64 and using the lower bound of 4.1% of adults in Virginia with long COVID, we arrive at an estimate of 219,350 working-age Virginians with long COVID. **Given Virginia's average labor force participation rate was 62.9% in 2021, we estimate that approximately 138,000 working Virginians might be impacted by symptoms of long COVID.**

Continuing to follow the Brooking's methodology, we use the Federal Reserve Bank of Minneapolis' estimate that 25.9% of workers with long COVID reduced working hours and an estimate from the Lancet that approximately 22% of workers were unable to work due to ill health associated with long COVID. Pulling these estimates together, we find the number of working-age Virginians working reduced hours due to long COVID and the number of working-age Virginians who have exited the labor force entirely.[17] We must caveat that our results are indicative rather

14 Source: Post-COVID Conditions Among Adult COVID-19 Survivors Aged 18–64 and ≥65 Years — United States, March 2020–November 2021 by Bull-Otterson et al (2022).
15 Characterizing long COVID in an international cohort: 7 months of symptoms and their impact. DOI:https://doi.org/10.1016/j.eclinm.2021.101019
16 https://www.brookings.edu/research/new-data-shows-long-covid-is-keeping-as-many-as-4-million-people-out-of-work/
17 We recognize that this is an imperfect estimate, based on the use of other estimates. We use the lower bound of the confidence interval of Virginians experiencing long COVID symptoms to bias out estimates downward. We also use the annual average labor force participation rate from 2021, which is lower than the observed labor force participation rate in the summer and fall of 2022. We argue this conservative approach likely yields a more reasonable estimate of the number of working age Virginians impacted by long COVID.

than authoritative, but we are seeking insight into why there are fewer Virginians in the labor force now than prior to the pandemic.

In September 2022, it appears that approximately 36,000 Virginians worked reduced hours due to long COVID and another 30,000 Virginians had exited the labor force entirely. When coupled with reports of increased anxiety and depression and the continuing impact of the opioid epidemic, one can only conclude that the labor force in Virginia is under stress. While long COVID may not fully explain why Virginia's labor force has not fully recovered to pre-pandemic levels, its presence is likely to shape labor force participation in years to come.

WHERE ARE THE YOUNG WORKERS?

National level data on labor force participation by age helps shed some light on who has left the labor force since the start of the pandemic. For workers ages 25 to 54, labor force participation is almost completely recovered, with observed labor force participation in September 2022 only 0.3 percentage points below February 2020 (Graph 13). Labor force participation for workers aged 16 to 19 years was 0.1 percentage points higher in September 2022 than February 2020. Why then have workers not returned to the labor force?

The most significant declines in labor force participation are among workers 55 and older and workers 20 to 24 years old. For workers ages 55 and older, a decline in labor force participation during a pandemic does not seem unreasonable. Some older workers likely took advantage of gains in home values and equities to retire early. Some other older workers may have not returned to the labor force due to concerns about contracting COVID-19. However, the declining labor force participation among workers 20 to 24 years old is more puzzling.

The decline in labor force participation for workers ages to 20 to 24 is troubling. If these individuals were pursuing education at institutions of higher education or trade schools, this phenomenon might remedy itself in time. However, many institutions of higher education (including those in Virginia) reported declines in enrollments in the spring of 2022 and headcount enrollments in higher education have now declined 12 years in a row.[18] At the same time, the percentage of young Americans living at home with their parents has increased over the last decade.[19] There may be some truth to the claims that more young Americans are "adrift," unable to move out onto their own due to a combination of student debt, high housing prices, and the need to care for aging parents.

THE CONTINUING SEARCH FOR WORKERS

From the trough of the Great Recession in February 2010 to February 2020, Virginia added approximately 493,800 jobs (Graph 14). Within two months, the COVID-19 pandemic and associated contraction in economic activity resulted in the loss of 480,100 jobs, a decline of 11.7% from February 2020. After a sharp recovery in the summer of 2020, jobs returned, albeit at a slower pace in 2021. In 2022, job growth accelerated, and in September 2022, Virginia exceeded the pre-pandemic peak in nonfarm payrolls.

Graph 15 compares the performance of the Virginia and national economies in terms of creating jobs. If we benchmark ourselves to the trough in jobs in February 2010, we find that the Virginia economy had 13.7% more jobs in February 2020 than it did in February 2010. Nationally, there were 17.6% more jobs in February 2020 than in February 2010. However, the decline in jobs due to the pandemic was more significant nationally than in Virginia. By April 2020, job levels in the Commonwealth and nationally were essentially the same as during the trough following the Great Recession in February 2010.

In August 2022, the United States exceeded the number of jobs it had in February 2020, followed by the Commonwealth in September 2022. Essentially, with respect to the number of jobs, we have returned to the pre-pandemic starting position. Virginia's job creation performance in 2022, if sustained, would bode well for the state in 2023, allowing it to close the performance gap with the nation over the previous decade. If a recession materializes in 2023, it is likely that job losses will be lower in

18 https://www.forbes.com/sites/michaeltnietzel/2022/05/26/new-report-the-college-enrollment-decline-has-worsened-this-spring/ and Lyss Welding, U.S. College Enrollment Decline Statistics, www.bestcolleges.com/research/college-enrollment-decline

19 https://www.pewresearch.org/fact-tank/2022/07/20/young-adults-in-u-s-are-much-more-likely-than-50-years-ago-to-be-living-in-a-multigenerational-household/

the Commonwealth than the nation, due to Virginia's relatively higher dependence on federal spending. In this case, one of the limiting factors on economic growth in the Commonwealth may also buffer us during an economic downturn.

QUITS AND OPENINGS: THE GAP CONTINUES

Graph 16 displays job openings and job quits in Virginia from February 2010 to August 2022. At the trough in employment following the Great Recession in February 2010, there were almost as many job openings (75,000) as job quits (52,000). Combined with higher unemployment, this meant that employers typically had multiple applicants for every available job and were able to retain employees without offering additional compensation. As the recovery from the Great Recession continued, the number of job openings in Virginia increased, pulling ahead of job quits. By February 2020, there were approximately 216,000 job openings and 84,000 job quits across the Commonwealth.

After the initial shock of the pandemic waned, job openings surged across Virginia in 2020 while job quits remained below 100,000 a month. In 2021, there were an average of 278,000 openings a month while the job quits averaged about 104,000 a month. Through August 2022, job openings averaged approximately 321,250 a month while job quits rose slightly to an average of 104,333 a month. Another perspective is to compare the number of job openings to the number of unemployed individuals in the Commonwealth. In August 2022, there were approximately three job openings for every unemployed individual, which should be no surprise to employers who are fighting to attract and retain employees.

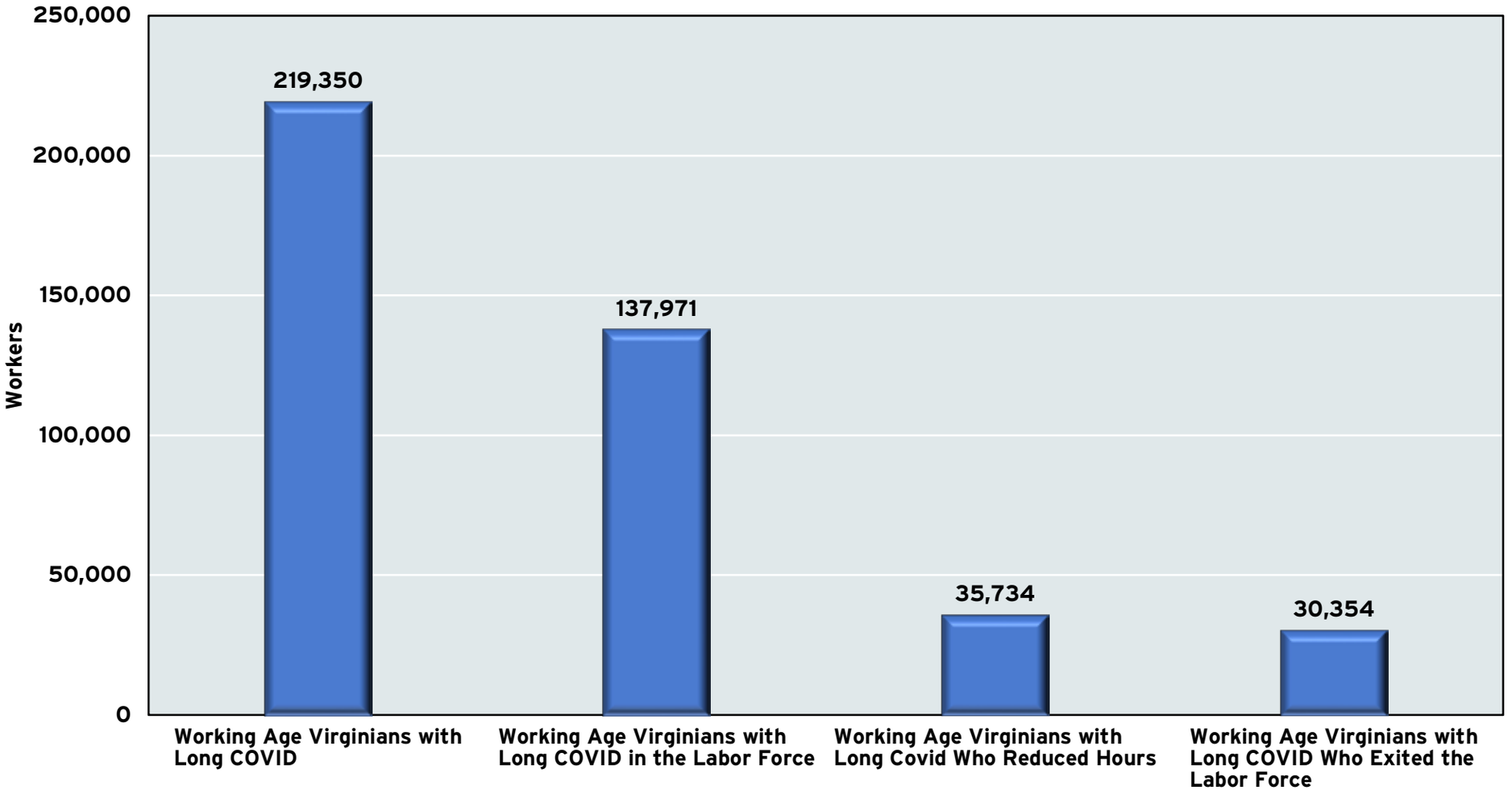
We can examine the national data on quits for insight into what sectors of the economy are experiencing the greatest number of quits. As illustrated in Graph 17, 5.3% of all employees in the leisure and hospitality industry quit their job voluntarily in September 2022. The quit rate for the leisure and hospitality industry has remained high when compared to other industries in Graph 17 since the start of the pandemic. Given the relatively low wages in the leisure and hospitality industry, low unemployment, and sustained demand of employers for employees, it should be no surprise that these workers are quitting at higher rates than other industries. However, if there is a modicum of good news for employers, it is that quit rates in September 2022 were, on average, lower than earlier in the year. If these decreases in quits are sustained, employers may find it easier to attract and retain talent in the coming months.

What are some of the possible explanations for the continued movement of employees from existing to new jobs? First, there is a strong financial incentive for some workers to move jobs. A recent Pew Research Center analysis suggested that workers who switched jobs saw inflation-adjusted wages increase by 9.7% while those who remained in current jobs saw their real wages decline by 1.7%.[20] Second, a number of workers shifted from in-office to at-home or hybrid work and do not wish to return to a full-time office environment. Third, there is a continued shortage of childcare and elder care workers (see Graph 17 for health care and social assistance quits), and some workers are searching for employers that will accommodate their other obligations. Until labor force participation recovers fully and price pressures ease, we are likely to see continued turmoil in labor markets unless there is a significant recession.

20 https://www.pewresearch.org/social-trends/2022/07/28/majority-of-u-s-workers-changing-jobs-are-seeing-real-wage-gains/

GRAPH 12

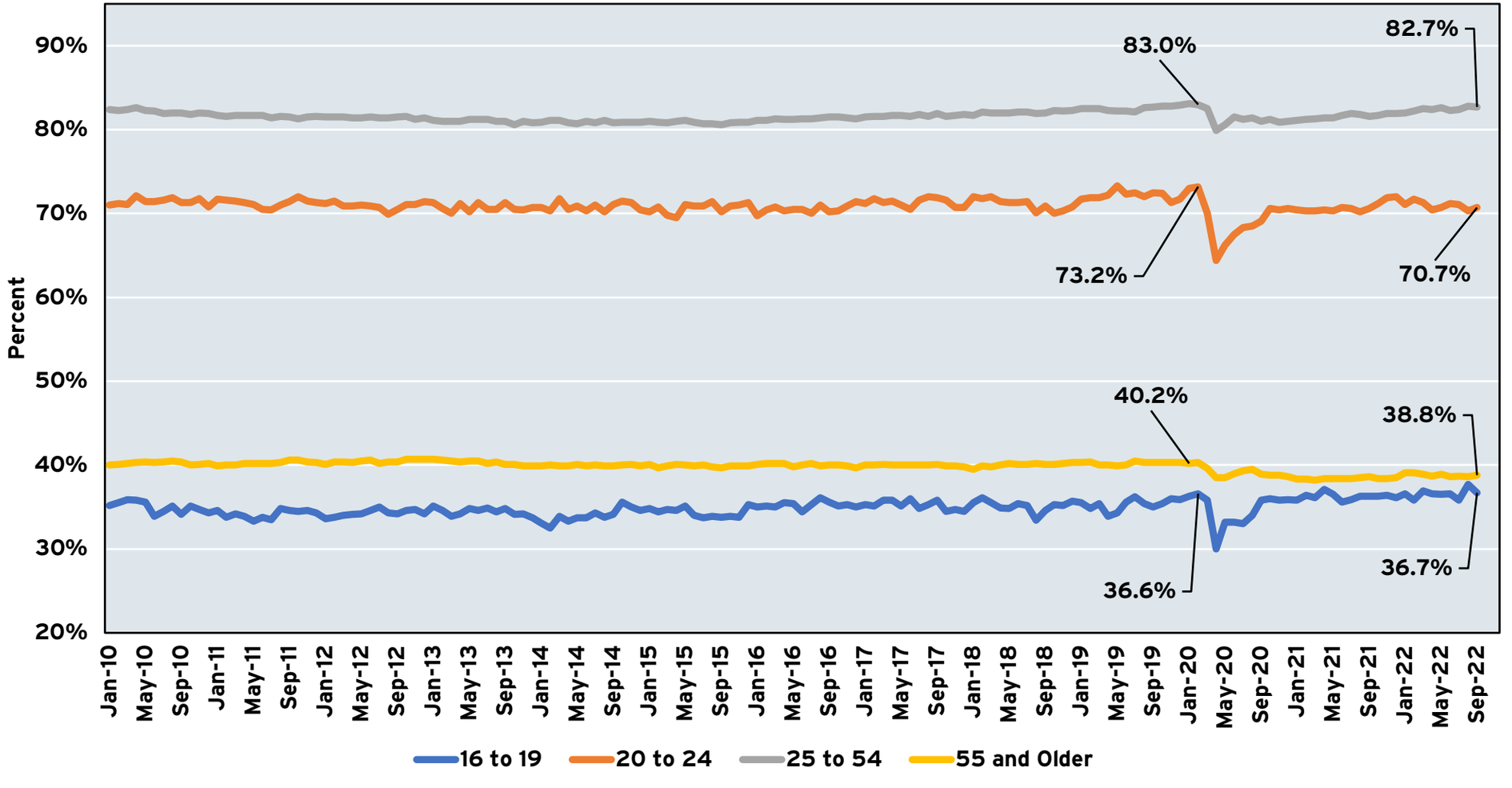
ESTIMATES OF WORKING-AGE VIRGINIANS IMPACTED BY LONG COVID
SEPTEMBER 2022



Source: U.S. Census Bureau Household Pulse Survey, Brookings Institution, Minneapolis Federal Reserve Bank, the Lancet, and Dragas Center for Economic Analysis and Policy, Old Dominion University.

GRAPH 13

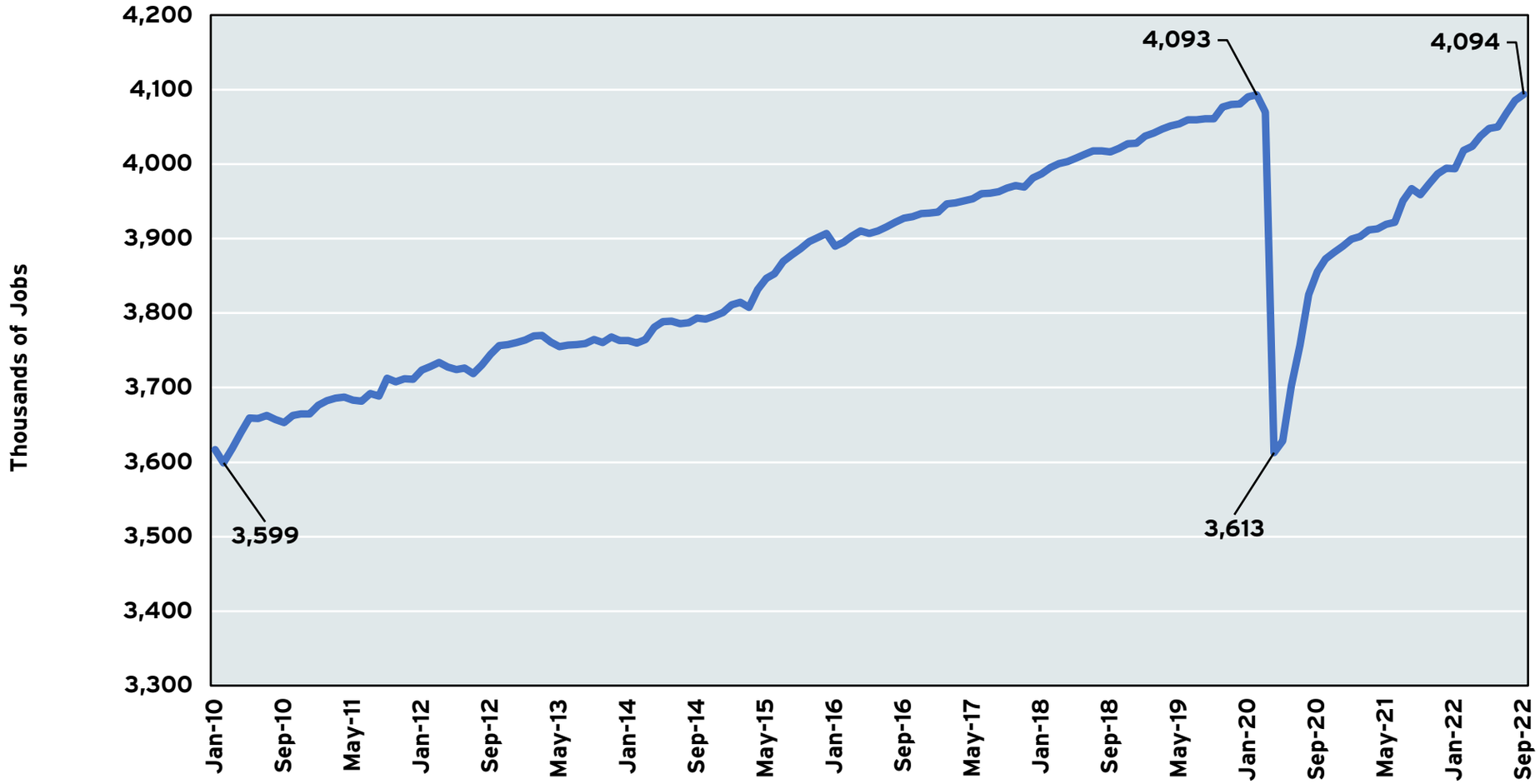
LABOR FORCE PARTICIPATION RATES BY AGE
UNITED STATES, JANUARY 2010 TO SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

GRAPH 14

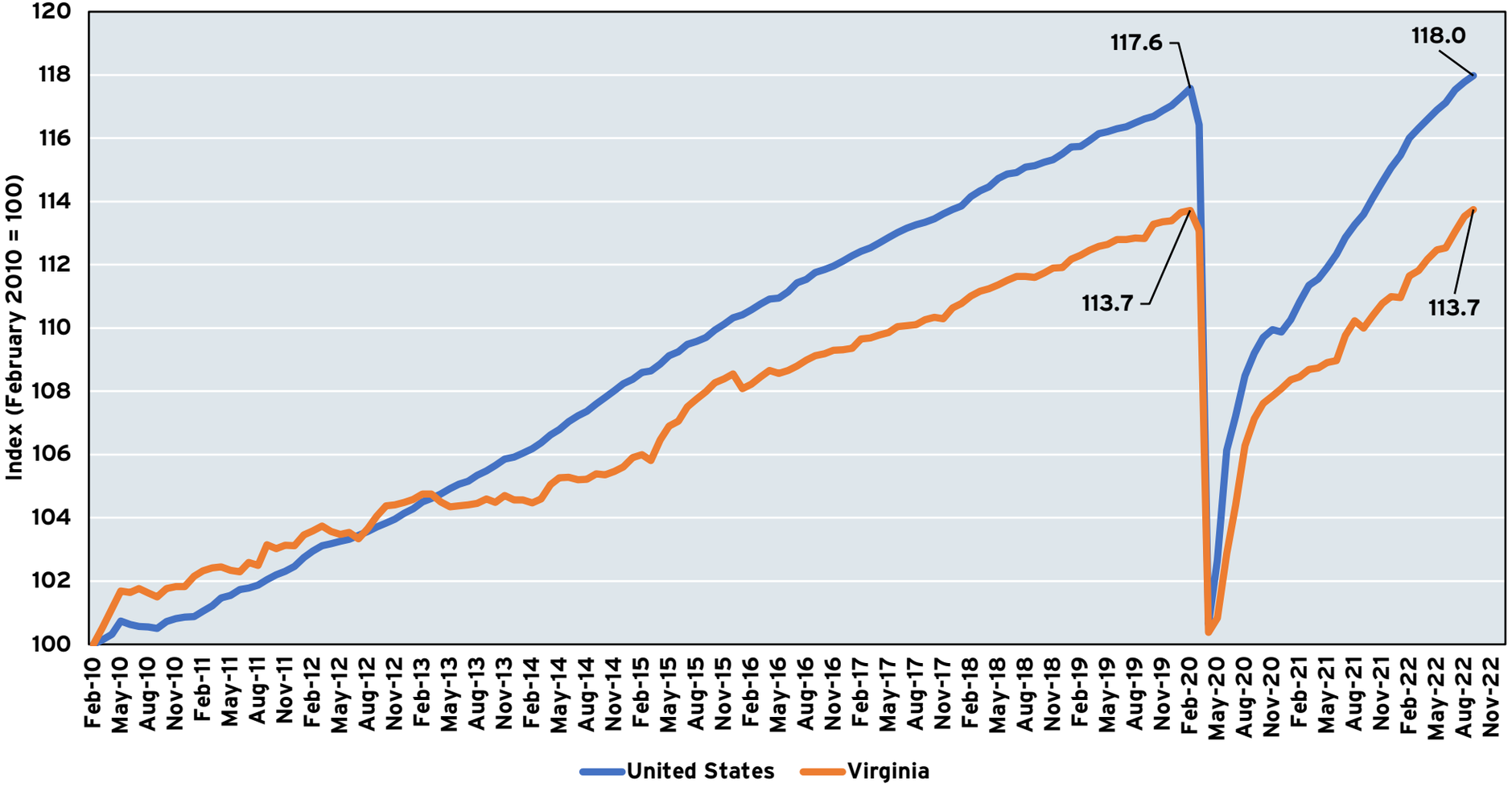
NONFARM PAYROLLS (JOBS): VIRGINIA, JANUARY 2010 TO SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

GRAPH 15

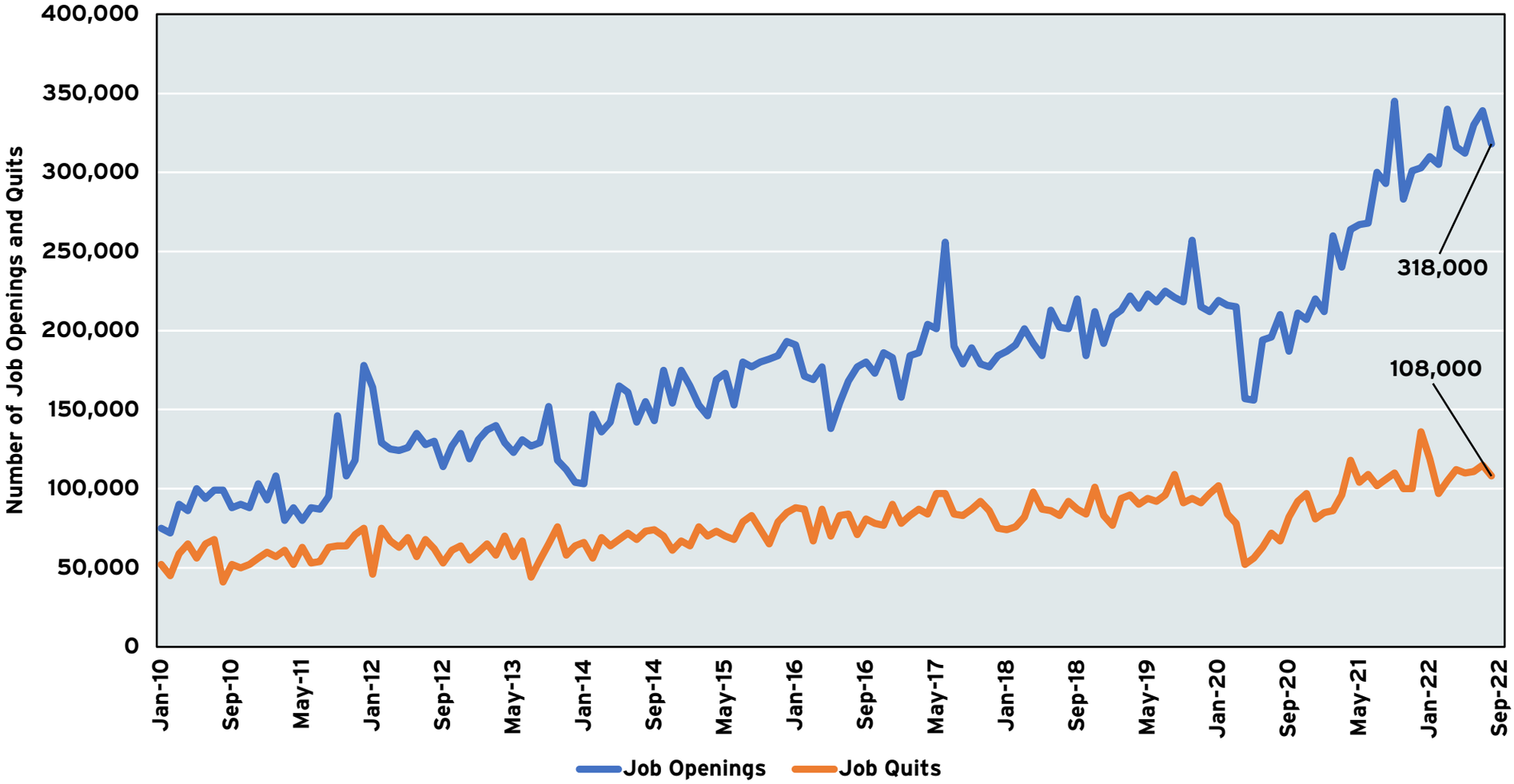
INDEX OF CUMULATIVE GROWTH IN NONFARM PAYROLLS (JOBS): VIRGINIA AND THE UNITED STATES, FEBRUARY 2010 TO SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

GRAPH 16

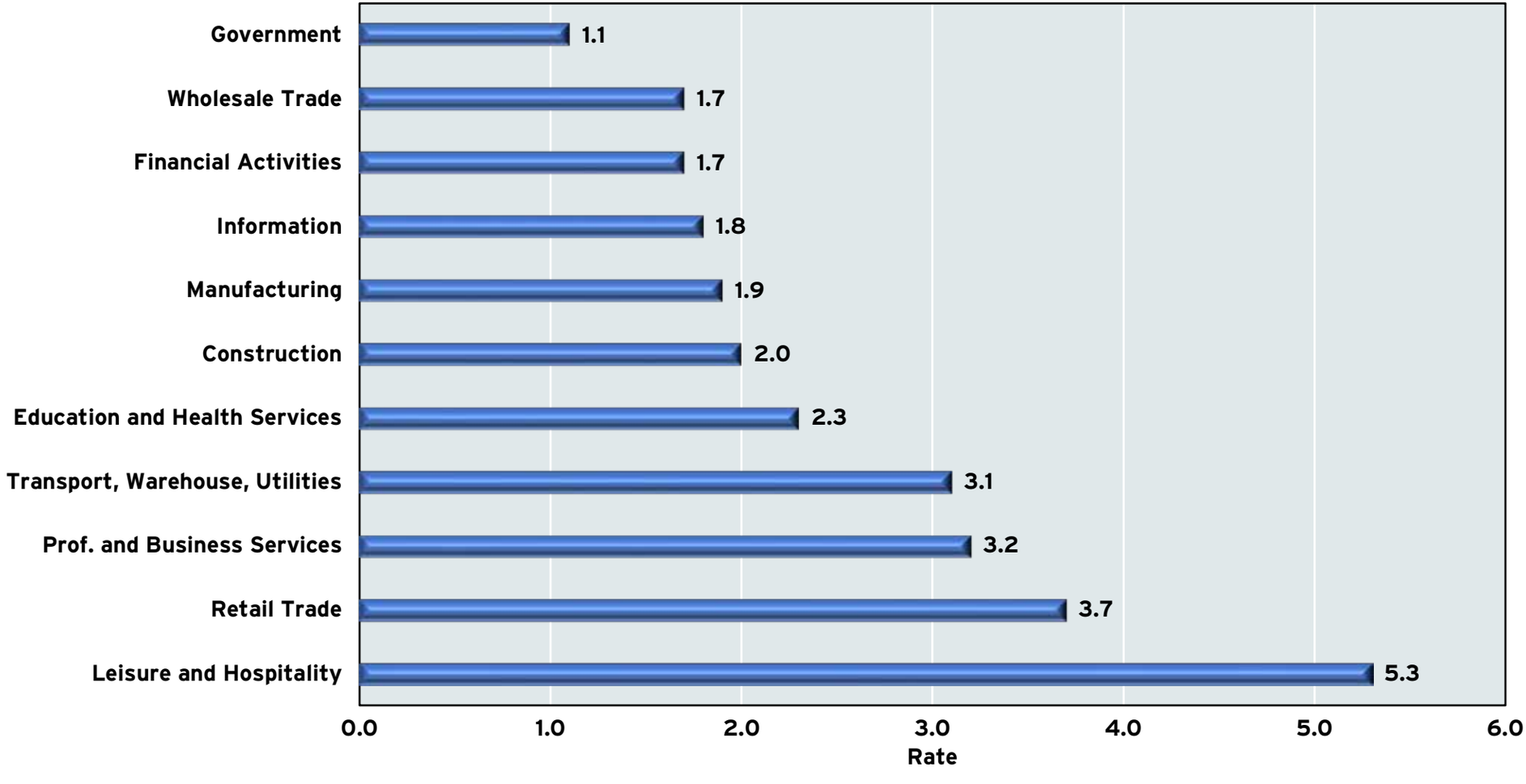
JOB OPENINGS AND JOB QUITS
VIRGINIA, FEBRUARY 2010 TO AUGUST 2022



Source: Bureau of Labor Statistics, Job Openings and Labor Turnover (JOLTS) Survey. Job openings for total nonfarm payrolls. Quits include employees who left voluntarily, with the exception of retirements. Data are seasonally adjusted.

GRAPH 17

JOB OPENINGS AND JOB QUITS BY INDUSTRY SECTOR
UNITED STATES, SEPTEMBER 2022



Source: Bureau of Labor Statistics, Job Openings and Labor Turnover (JOLTS) Survey. Quits include employees who left voluntarily, with the exception of retirements. The quits rate is the number of quits during the entire month as a percent of total employment. Data are seasonally adjusted.

Department Of Defense Spending

In the short term, we expect that Department of Defense (DoD) spending will continue to increase. In FY 2021, DoD's base budget was $703.7 billion, increasing to $742.3 billion in FY 2022 (Graph 18). When one includes supplemental appropriations for Operation Allies Welcome (the DoD response to the Afghanistan government's collapse and the subsequent withdrawal of U.S. forces) and assistance to Ukraine, the enacted DoD budget in FY 2022 was $756.6 billion. For FY 2023, President Biden proposed to increase the DoD base budget to $773 billion, a request that authorizers and appropriators in Congress have viewed as too low relative to the national security needs of the nation. In all likelihood, the DoD base budget will exceed $800 billion in nominal dollars in FY 2023.

While the DoD base budget is increasing in nominal dollars, inflation will erode these gains by reducing the purchasing power of DoD dollars. In Graph 19, we compare the DoD base budget projections President Biden submitted to Congress with the same projections adjusted for the impact of inflation. In one scenario, we use the inflation estimates contained in the presidential budget submission. In the other scenario, we use more current data on inflation and assume that inflation will take time to moderate to pre-pandemic levels.

Our analysis reveals that, even if one uses the optimistic assumptions contained in the President's budget, DoD base spending will decrease in real terms over the coming years. Using a more realistic set of assumptions on the rate of inflation yields the startling realization: inflation will erode DoD purchasing power by billions of dollars by FY 2027. The impact of inflation on the DoD will be significant; it will not be able to sustain the current pace of operations, maintenance, and investments. Unless Congress increases the base budget at the rate of inflation, the DoD will have to cut personnel, weapons systems, and investments in future systems. As this happens, the flows of DoD dollars into Virginia will buy and operate less.

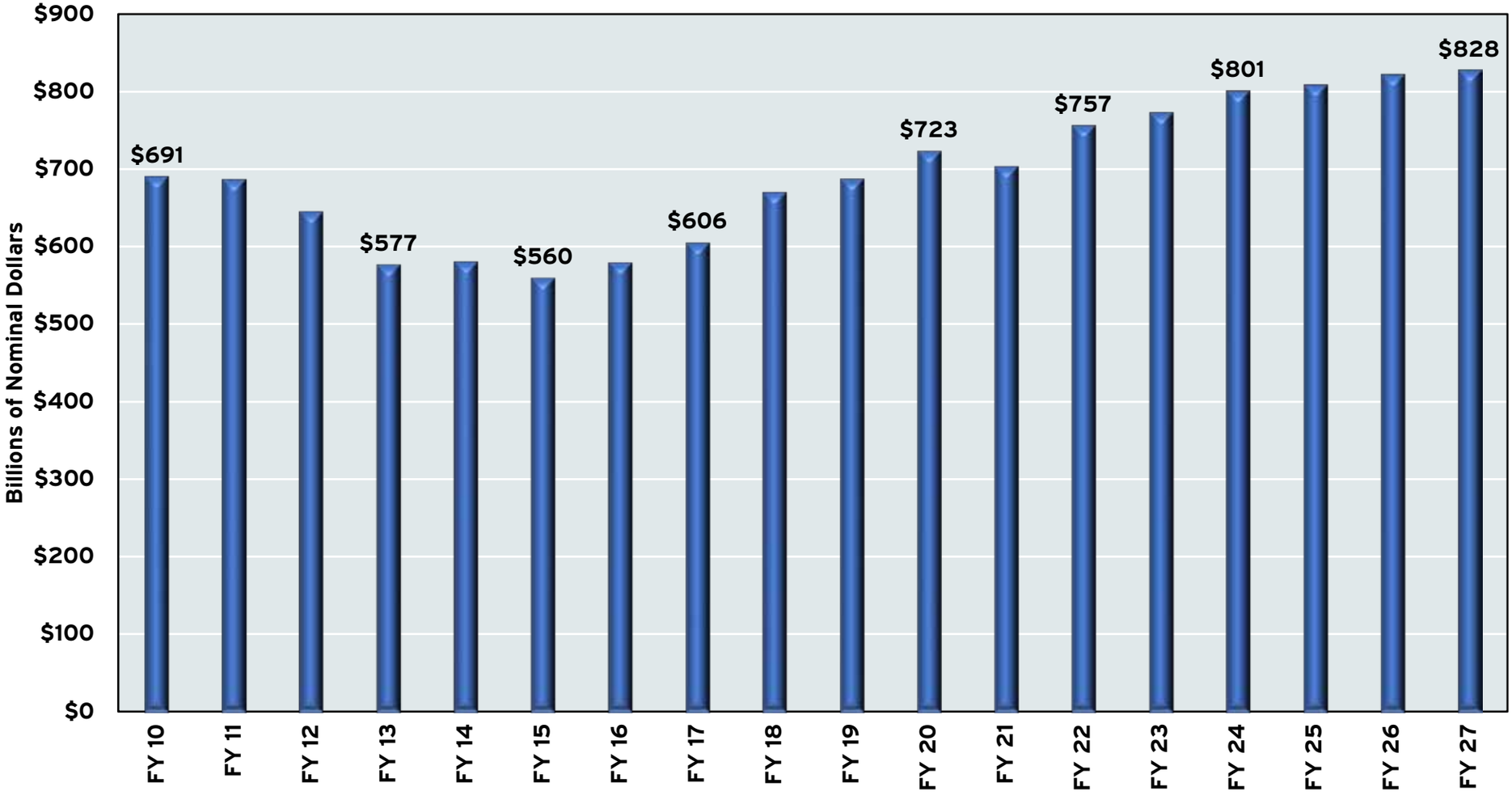
Even while the purchasing power of the DoD is being undermined by inflation, the federal government continues to spend more money than it brings in. The last federal government surplus in FY 2000 is a distant memory (Graph 20). Budget discipline has waned as Congress and successive Presidents have vacillated between increasing expenditures and reducing tax rates. The structural imbalance between revenues and expenditures only increased after the passage of the Tax Cuts and Jobs Act of 2017 and the abandonment of discretionary spending cuts. The fiscal response to the COVID-19 pandemic pushed the annual deficit to more than $3 trillion and $2.75 trillion in FY 2020 and FY 2021, respectively. While the federal deficit is projected to be "only" $1.03 trillion in FY 2022, it would be malpractice not to recognize that this would be the largest deficit in a non-recessionary period in the last 50-plus years. Even the President's FY 2023 budget submission recognizes that deficits will only increase over the remainder of the decade.

In 1946, in the aftermath of World War II, the public held $2.7 trillion in FY 2021 dollars of federal debt or 106.1% of GDP. In 1980, the federal debt held by the public was $2.0 trillion or 18.4% of GDP. Publicly held federal debt would steadily increase to $17.5 trillion or 79.4% of GDP in FY 2019. In the aftermath of the fiscal response to the pandemic, federal debt is projected to reach $23.9 trillion in FY 2023 and will likely top $30.0 trillion in FY 2030. Simply put, the federal government's debt held by the public will continue to exceed annual economic activity in the nation for the foreseeable future. While some economists believed that we had moved past inflation and the federal government could merely print more money to fund the expansion of social programs, 2022 has (hopefully) put these appealing but fanciful theories to rest.

The future does not look bright for increases in real DoD spending. Inflation will continue to erode DoD purchasing power. Interest costs are already the fastest growing part of the federal budget, and interest rates increases will raise the cost of borrowing for the federal government. At some point, whether by choice or by financial crisis, Congress will have to raise taxes and restrain expenditures. When it does so, the DoD, as the largest discretionary program in the federal government, will be squarely in the crosshairs.

GRAPH 18

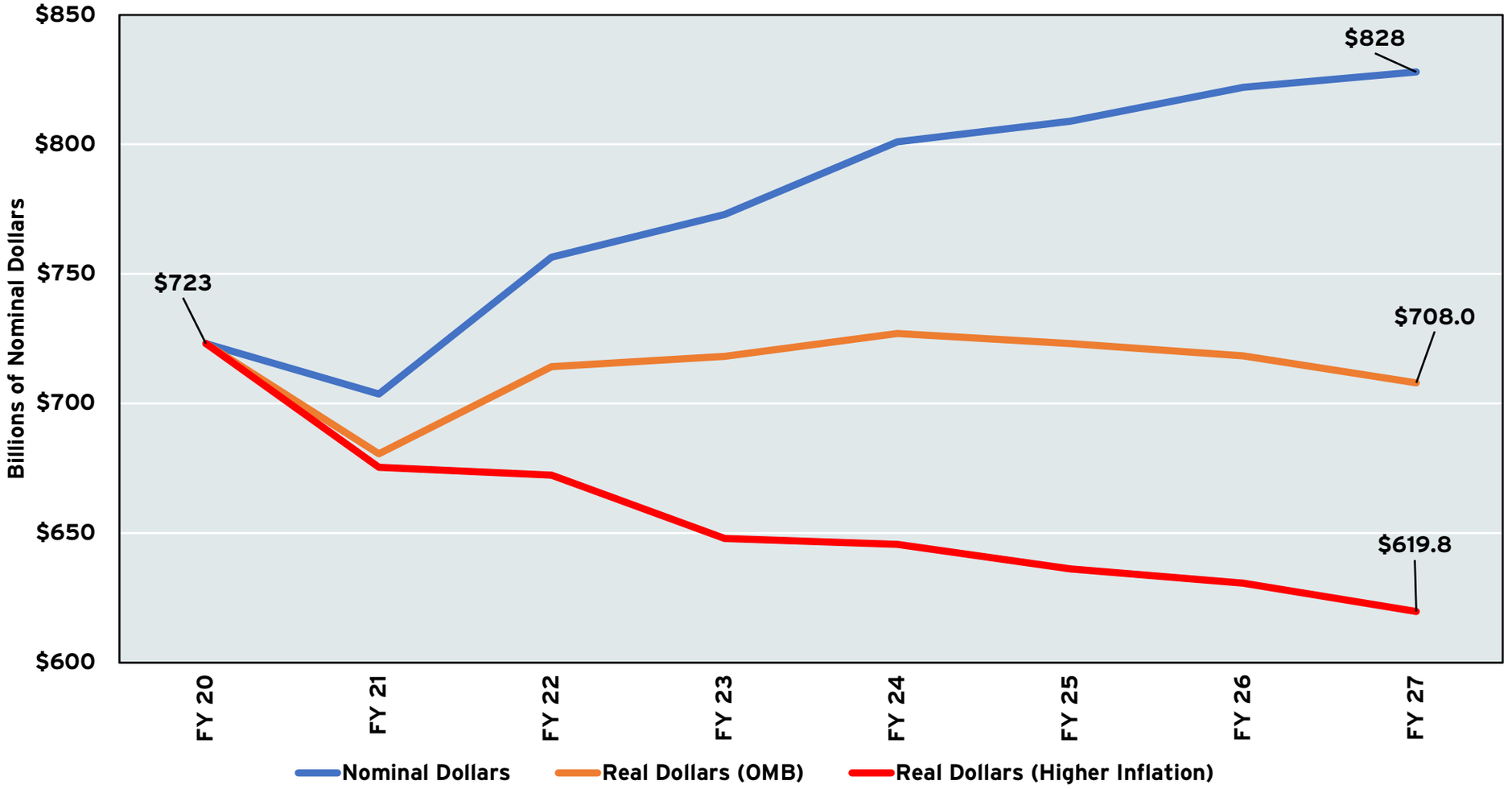
DEPARTMENT OF DEFENSE DISCRETIONARY BUDGET AUTHORITY, FISCAL YEAR 2010-FISCAL YEAR 2027



Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; Office of the Secretary of Defense (Comptroller) Department of Defense National Defense Budget Estimations for FY 2022 and Defense Budget Materials – FY 2023. The FY 2022 budget presentation includes overseas contingency operations (OCO) in the DoD base budget. For backwards comparison, we present the DoD base as the sum of base funding and OCO funding. Includes emergency budget authority.

GRAPH 19

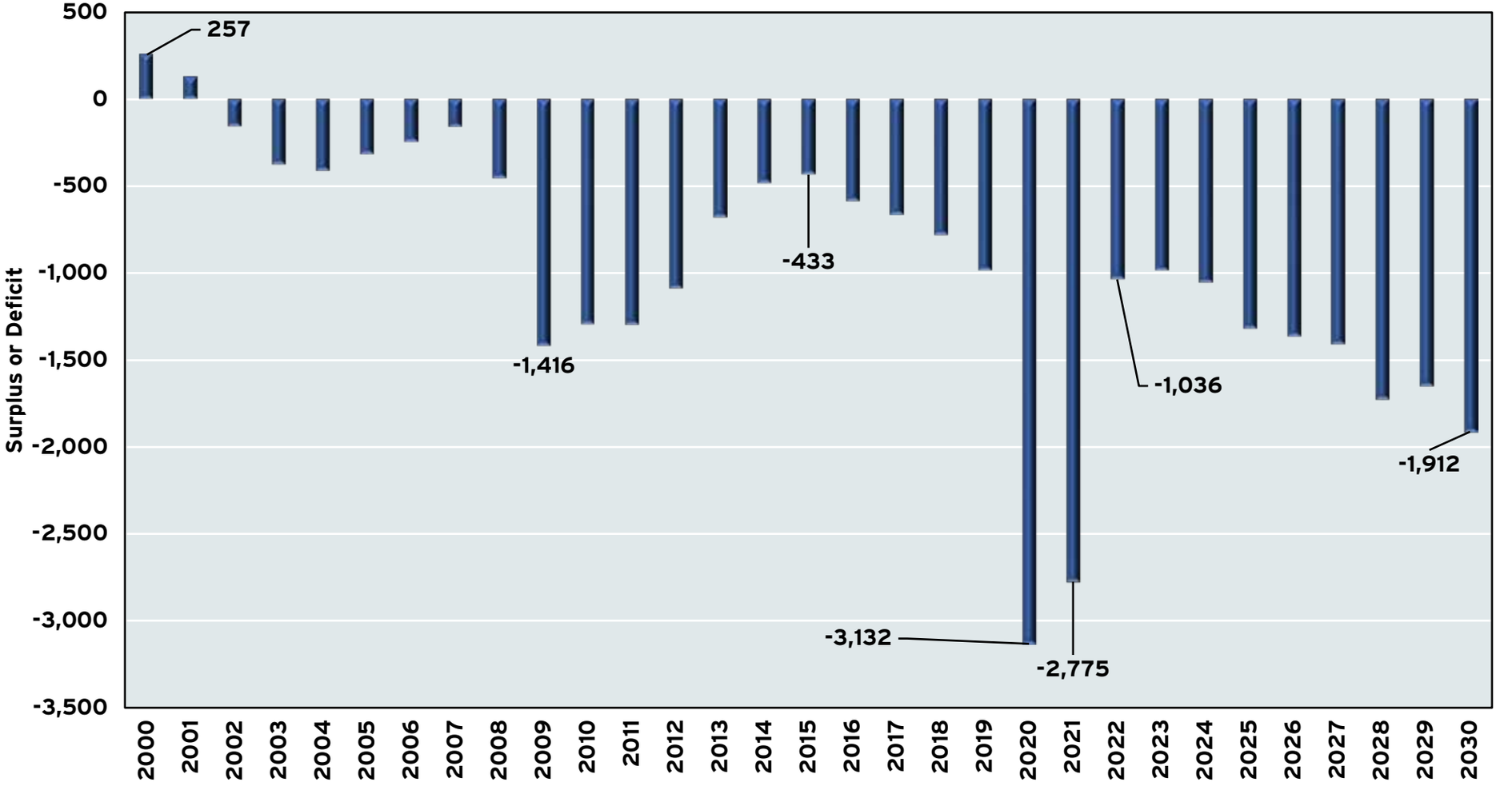
THE IMPACT OF INFLATION ON DEPARTMENT OF DEFENSE DISCRETIONARY BUDGET AUTHORITY, FISCAL YEAR 2020 – FISCAL YEAR 2027



Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; Office of the Secretary of Defense (Comptroller) Department of Defense National Defense Budget Estimations for FY 2022 and Defense Budget Materials – FY 2023. OMB inflation estimates from Table 2-1 Economic Assumptions in Economic and Budget Analyses for FY 2023 budget submission to Congress. Higher inflation scenario assumes 4.2% in FY 21, 8.0% in FY 22, 6.0% in FY 23, 4.0% in FY 24, and 2.5% in FY 25 – 27.

GRAPH 20

FEDERAL BUDGET SURPLUS OR DEFICIT IN BILLIONS OF NOMINAL DOLLARS, FISCAL YEAR 2000-FISCAL YEAR 2030



Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University, and Office of Management and Budget FY 2023 Presidential Budget Table 1.1 – Summary of Receipts, Outlays, and Surpluses or Deficits: 1789 – 2026 and Congressional Budget Office May 2022 Budget and Economic Update, Table 1-1.

Real Estate Prices: Higher (For Now)

In previous recessions, layoffs and business closures typically reverberated throughout housing markets, depressing prices, and increasing foreclosures. However, we have not observed a similar impact in the aftermath of the short-lived COVID-19 recession. Low interest rates, coupled with the ability of many high-salaried workers to shift to remote work, appeared to not only insulate the housing market from the pandemic but may have exacerbated the demand for single-family housing.

As illustrated in Graph 21, there appears to have been a structural shift in the number of building permits for single-family residences in response to the Great Recession. From 2000 to 2006, there were approximately 3,692 building permits authorized in the Commonwealth. From January 2007 to the trough in jobs in February 2010, the monthly average for permits fell to 1,597, a decline of almost 57%. Typically, as economic activity rebounded from recession, building permits (a signal of future building activity) would increase, but this did not occur in the aftermath of the Great Recession. From March 2010 to February 2020, a monthly average of 1,664 permits were authorized in Virginia, well below the pre-Great Recession average.

With fewer single-family units being built in Virginia after the Great Recession, where did people live? In Graph 22, we examine the vacancy rates in Virginia from 1990 to 2021 for rental and single-family housing. The vacancy rate is equal to the proportion of inventory that is available for rent or sale. What is apparent is that vacancy rates moved downward in the decade prior to the COVID-19 pandemic and sharply dropped in 2021. In other words, the shares of rental and single-family housing available declined, further constraining the supply side of the housing market.

At the same time, as the supply of single-family housing increased at a slower rate than prior to the Great Recession, the demand for single-family housing increased in response to relatively low interest rates.

As displayed in Graph 23, in the months prior to the Great Recession, the average rate for a 30-year fixed mortgage varied between 6% and 6.5%. In the months prior to the 2020 COVID-19 recession, at the end of the longest recorded peacetime expansion in the nation's history, the monthly average 30-year fixed mortgages varied between 3.0% and 3.6%. In December 2020, the average 30-year fixed mortgage rate in the United States was 2.7%. Demand surged in response.

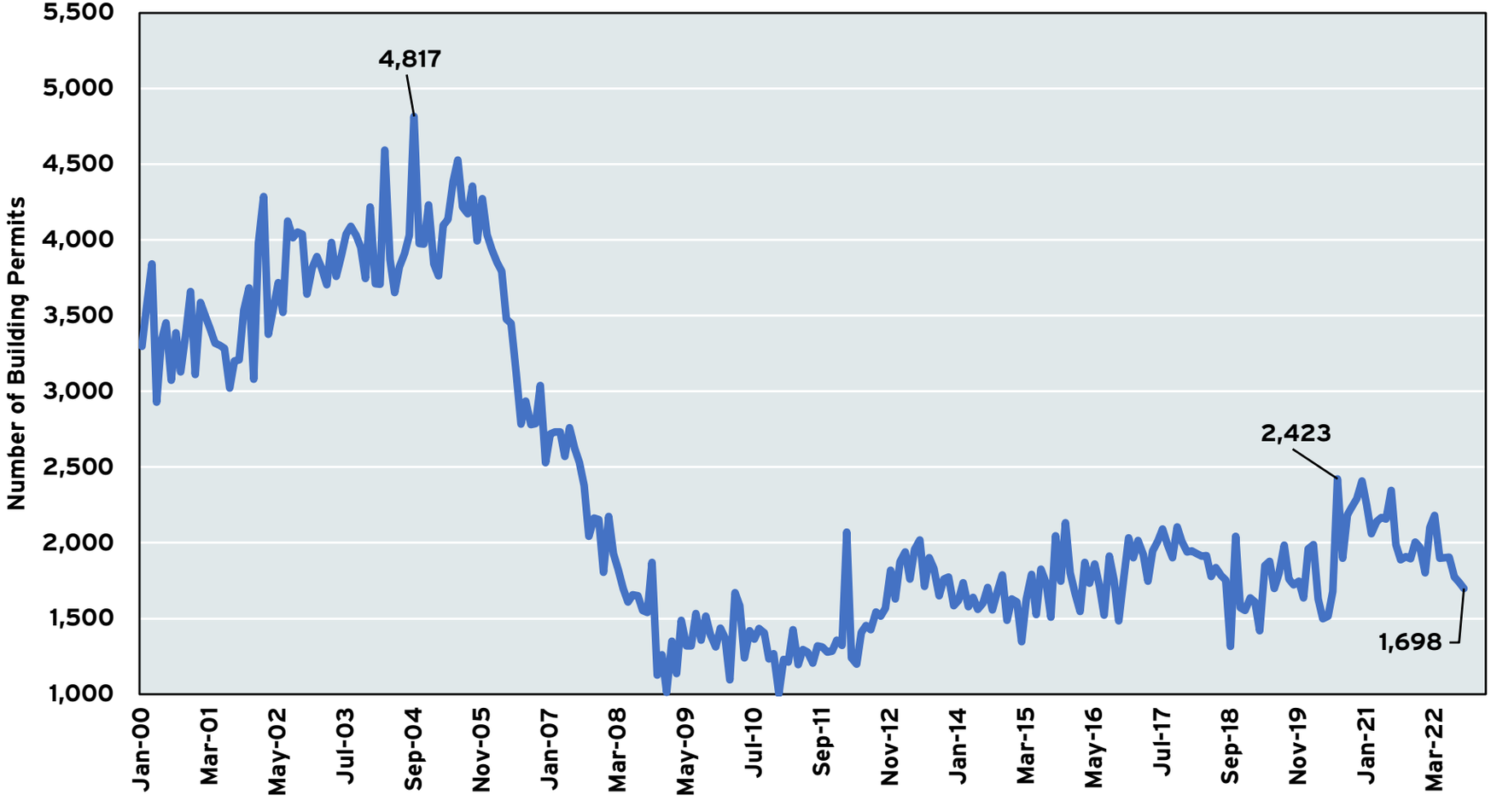
Housing values reflect the interaction between housing supply and demand. In Graph 24, we use the Zillow Home Value Index to measure housing values in Virginia.[21] At the end of January 2010, the estimated housing value in Virginia was $248,611. By the end of February 2020, the typical home value in the Commonwealth had risen to $298,507. A year later, at the end of February 2021, the estimated housing value was $324,445 and by February 2022, the typical housing value reached $370,168. In September 2022, the Zillow index of housing values in Virginia was $390,077, a 30.7% increase from February 2020.

The increases in housing prices are not limited to Virginia. The All-Transactions Home Price Index (HPI) reported by the Federal Housing Finance Agency (FHFA) is a broad measure of the movement of single-family house prices (Table 3). Compared to the Commonwealth and the nation, the HPI increased faster in Hampton Roads and Washington, D.C., prior to the Great Recession. After the Great Recession, however, housing prices increased more rapidly in other neighboring metro areas, with Nashville observing a 101.9% increase in the HPI from 2012 to 2021. So, relatively speaking, Virginia did not experience as rapid increases as many other states — small comfort to those struggling to find housing.

21 According to Zillow, the Zillow Home Value Index is "A smoothed, seasonally adjusted measure of the typical home value and market changes across a given region and housing type. It reflects the typical value for homes in the 35th to 65th percentile range." We refer to this index as the "typical housing value" instead of the "median housing value."

GRAPH 21

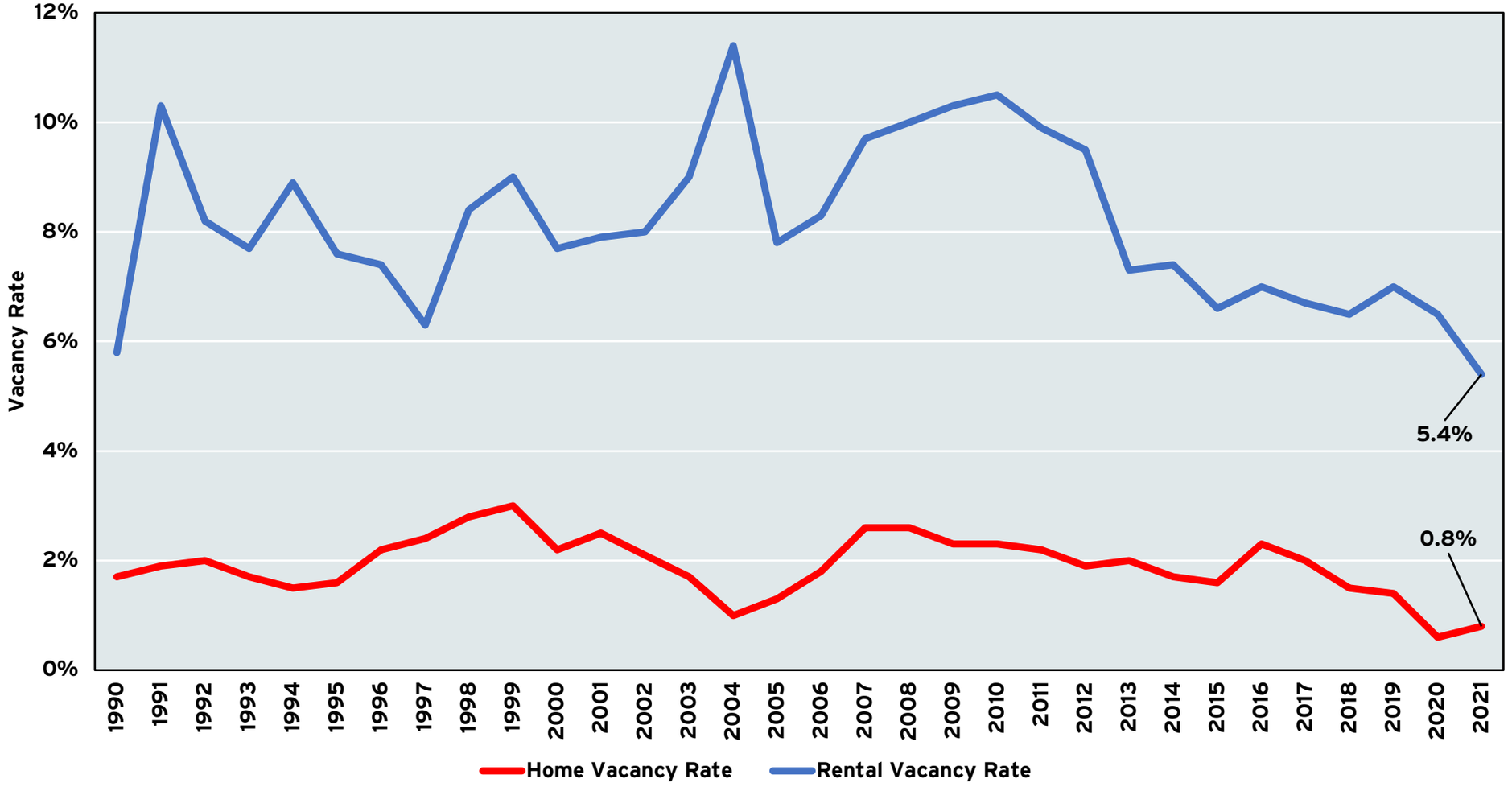
NUMBER OF ONE-UNIT SINGLE-FAMILY RESIDENTIAL BUILDING PERMITS: VIRGINIA, JANUARY 2000 - SEPTEMBER 2022



Source: U.S. Census Bureau, New Private Housing Units Authorized by Building Permits: 1-Unit Structures for Virginia [VABP1FHSA], retrieved from FRED, Federal Reserve Bank of St. Louis. Data are seasonally adjusted.

GRAPH 22

HOME AND RENTAL VACANCY RATES
VIRGINIA, 1990 - 2021



Source: U.S. Census Bureau and Dragas Center for Economic Analysis and Policy. The rental vacancy rate is the proportion of the rental inventory which is vacant for rent. The homeowner vacancy rate is the proportion of the homeowner inventory which is vacant for sale.

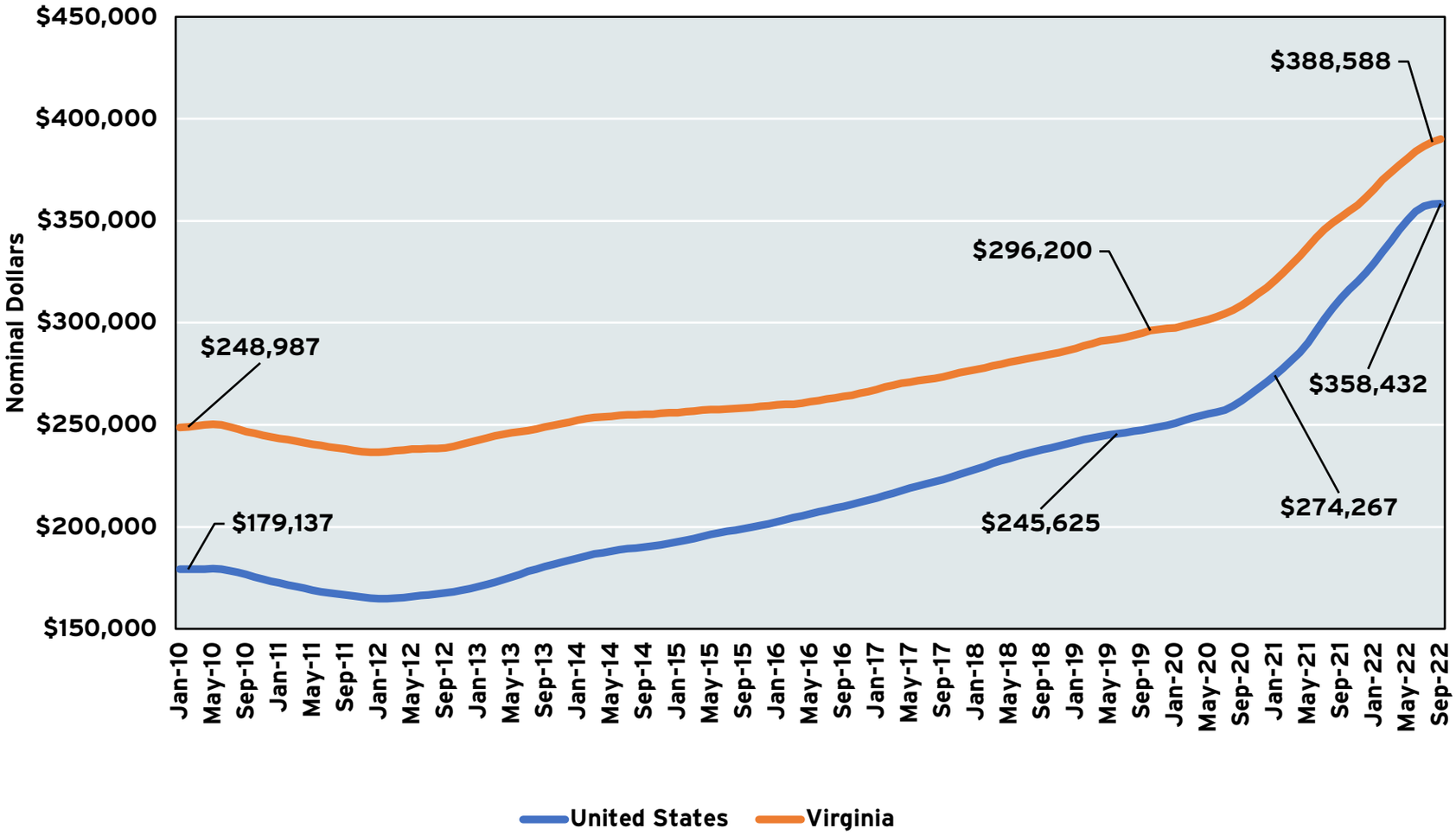
GRAPH 23

AVERAGE MONTHLY 30-YEAR FIXED MORTGAGE RATE
UNITED STATES, JANUARY 2000 - AUGUST 2022

Sources: Freddie Mac, 30-Year Fixed Rate Mortgage Average in the United States [MORTGAGE30US], retrieved from FRED, Federal Reserve Bank of St. Louis. Data are not seasonally adjusted.

GRAPH 24

ZILLOW HOME VALUE INDEX OF SINGLE-FAMILY RESIDENTIAL HOMES: UNITED STATES AND VIRGINIA, JANUARY 2010 TO SEPTEMBER 2022



Source: Zillow (2022) and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Zillow Home Value Index (ZHVI) for single-family residence. Data are not seasonally adjusted. For more information about the Zillow Home Value Index, see https://www.zillow.com/research/zhvi-methodology/

TABLE 3

PERCENT CHANGE IN ALL TRANSACTIONS FHFA PRICE INDEX SELECTED METROPOLITAN AREAS, NORTH CAROLINA, VIRGINIA, AND THE UNITED STATES 2000 TO 2021

Metro	2000-2007	2007-2012	2012-2021
Charleston, SC	75.9%	-19.7%	89.5%
Charlotte, NC	35.1%	-12.7%	85.5%
Durham-Chapel Hill, NC*	34.1%	-3.8%	66.3%
Greenville, SC*	29.8%	-3.9%	66.4%
Jacksonville, FL	100.9%	-35.9%	99.9%
Nashville, TN*	41.7%	-6.8%	101.9%
Raleigh, NC	32.4%	-6.3%	72.1%
Richmond, VA	79.2%	-18.4%	54.8%
Hampton Roads, VA	114.2%	-18.3%	33.9%
Washington, DC*	127.0%	-21.7%	50.7%
North Carolina	40.0%	-10.6%	62.3%
United States	60.2%	-17.6%	67.8%
Virginia	97.1%	-16.0%	41.8%

Source: Federal Housing Finance Agency. The HPI is a weighted, repeat-sales index, showing the average price change in repeat sales or refinancing on the same homes. The index incorporates repeat mortgage transactions on single-family homes whose mortgages have been purchased or securitized by Fannie Mae or Freddie Mac since January 1975. 1st quarter 1995 = 100 and data are not seasonally adjusted. Data represent annual averages of the quarterly index. * Denotes areas where the lowest post-recession value of the HPI was in 2011.

Now, with mortgage rates increasing, the demand nationally for refinancing existing mortgages plummeted by 85% in late October 2022 when compared with the same period in October 2021. Purchasing demand also appears to be declining, as home builders are reporting that buyers are canceling contracts, and home inventories and days-on-the-market measures are surging. Pulte Construction, for example, reported that their cancellation rate for the second quarter of 2022 was 15%, more than double that of the second quarter of 2021. We should expect housing demand will continue to soften well into 2023 and the declines in demand will offer some relief to homebuyers and renters.

Final Thoughts

With 2022 ending, we can pause and reflect on the experience of the last 12 months and, drawing back, over the last decade. There was an abundance of good economic news to consider: more Virginians were at work in 2022 than in 2021. There were more jobs in the Commonwealth than prior to the pandemic. Housing values remained strong, even in the face of increasing interest rates, which produced a boon for local government revenues. Consumer spending remained resilient, as evidenced by gains in sales taxes. Public and private schools were back in full session and the sounds of youth sports echoed in neighborhoods throughout the year.

On the other hand, we cannot view our economic performance with rose-colored glasses. High housing values and low vacancy rates have increased the percentage of Virginians that pay more than 30% of their income for shelter, a percentage that defines them as "housing cost burdened." Higher inflation eroded the wage and salary gains of many Virginians over the last 24 months and diminished expectations for 2023. Political partisanship continued to increase as policy debates were lost in the scramble for the next tweet, Tik-Tok video, or appearance on a cable news channel.

In this environment, we project that the odds of a recession in 2023 are steadily increasing and that we should batten the proverbial economic hatches as stormy weather approaches. We do not mean that we should immediately act as if a recession is here, but we should prepare our state, and personal finances, for an event that is likely to occur. We would be happy to be proven wrong on this point, but it is better to be prepared than to ignore the warning signs and hope that economic conditions improve. If there is one lesson to be drawn from the last decade, it is that hope is not policy.

What then can be done?

First, the Commonwealth must avoid the temptation to rapidly expand public spending or cut taxes without clear analysis of the costs and benefits. While returning surpluses to taxpayers is often viewed as a "win-win," we must recognize the foregone opportunities to generational physical investments that would power the next decade of growth in the Commonwealth. Accelerating the construction of I-87 continues to be one opportunity that would leverage the Port of Virginia and potentially create a corridor for jobs and innovation between Virginia and North Carolina. Improving East-West traffic corridors by widening existing roads and improving rail service would bind the Commonwealth together more strongly. Continuing to invest in the Port of Virginia, rural broadband, and aligning higher education with the needs of employers are all potential policies that would set up Virginia for success in the future.

Second, Virginia must continue to focus on improving its business climate and avoid increasing the regulatory burden for businesses that operate in the Commonwealth. The state should seek to modernize its antiquated tax system to harmonize tax administration at the state and local level across Virginia. To ensure wide acceptance of these efforts, the state could first promise to hold local governments harmless for the elimination of antiquated taxes. Any tax reform should also be revenue neutral, that is, an effort to improve efficiency rather than increasing tax burdens.

Third, even though some would like to think that the COVID-19 pandemic is receding in the distance (or merely a rationale for settling political scores), the data illustrate its continued impact on the lives of Virginians. When we compare the deaths from COVID-19 per 1 million residents across states, Virginia ranks 36th out of 50 states and the District of Columbia with 2,586 deaths per 1 million compared to the national average of 3,330 deaths per 1 million. Continuing to work to improve vaccination efforts, especially in more rural parts of the Commonwealth, is in everyone's interest. We must also recognize that the physical and mental health toll of the pandemic only now is emerging into view. Increasing mental health services for children and young adults is a conversation worth having now to avoid increasing costs in the future.

There is promise and peril for 2023, much of which is beyond our control. We can, however, choose to fall apart or come together and work to improve the lives of all Virginians. We can choose to make decisions, not anchored by the past, but oriented to the promise of the future. Now, we argue, in the face of a looming recession, is the time to set aside our arguments and act.

ANOTHER YEAR IN RECOVERY: VIRGINIA'S METROPOLITAN AREAS

"It does not matter how slowly you go, as long as you do not stop."

– Confucius

If 2020 was the year that COVID-19 shocked Virginia's metropolitan areas and 2021 was the year that the recovery took hold, 2022 has been a year that has, to a large extent, produced conflicting data on the recovery of Virginia's metropolitan areas. From one perspective, there were more people employed across the Commonwealth in 2022 than in 2021, the unemployment rate declined across the state, and state and local coffers appeared to be flush compared to projections made in 2020. Others would point out that Virginians were struggling to buy groceries and fill their gas tanks as inflation took hold despite the attempts of the Federal Reserve to quell inflationary expectations. Higher housing prices and rents for multifamily housing squeezed family budgets and soured sentiments about the future. And, looming on the horizon, were the increasing prospects for a recession in 2023.

To understand where Virginia's metropolitan areas are today, we need to look forward and ask how they have recovered from the pandemic economic shock of 2020. While many Virginians would like to put COVID-19 in the proverbial rearview mirror, the disease continues to shape our lives. Choices made at the beginning of the pandemic in the spring of 2020 are likely to have lingering impacts on labor force participation, the workforce pipeline, and mental and physical health for years to come. For some of those suffering with the symptoms associated with long COVID, the ability to gainfully participate in the

workforce is limited, constraining their ability to earn an income and, in aggregate, constraining the available pool of labor in the Commonwealth. Disinformation continues to run rampant on social media, permeating our public discourse, and creating the perception that many Virginians live in separate realities.

While metropolitan area measures of Gross Domestic Product (GDP) are not available for 2022, the data for 2020 and 2021 highlight the economic shock and recovery. Labor market data show the recovery that began in the second half of 2020 continued through 2021 and into 2022. In some metropolitan areas, individual employment recovered in 2022 to pre-pandemic levels, while other areas continued to struggle. The reported declines in the unemployment rate across the Commonwealth must be balanced against the declines in the civilian labor force since the beginning of the pandemic. Population growth was uneven, at best, and, in some metropolitan areas, there was an outright decline in the population. Domestic outmigration continues to be a signal that Virginians are "voting with their feet" and moving to other locations in the state, if not outside of the Commonwealth entirely. Addressing these undercurrents is necessary for the state to grow in the coming years, or we face a future where economic activity is increasingly concentrated along the I-95 corridor, to the detriment of outlying metro areas in the state.

Some of Virginia's future is out of its hands. Hampton Roads, for example, is heavily dependent on federal spending, and a change in national security strategy could undermine future growth. Institutions of higher education pour hundreds of millions of dollars into many of Virginia's metro areas, and future enrollments may decline as colleges and universities face a "demographic cliff" in the latter half of this decade. Increasing economic resiliency by promoting economic development across the Commonwealth is crucial to sustaining a vibrant economy in the future. The challenges, including the existential challenge of sea level rise, will not be overcome by partisan banter or social media likes, but by doing the hard, bipartisan work to find the common ground to solve uncommon problems.

To explore how Virginia is faring at the metropolitan level, we examine a number of measures of economic performance: median household income, poverty, employment, wages, and population. Each of these measures is available on a more frequent basis than GDP, and they provide a more current picture of the economic activity in each metro area. We also present the most recent (but significantly lagged) data for metropolitan area Gross Domestic Product. From these measures, we work to construct a clearer picture of the health of Virginia's metropolitan area economies.

A Crisis Averted: Changing The Definition Of What Is A Metro Area

The concept of a metropolitan statistical area is that of an area containing a large population nucleus and adjacent communities that have a high degree of integration with that nucleus. If a geographical area has a smaller nucleus, it is classified as a micropolitan statistical area. A metropolitan statistical area must contain a U.S. Census Bureau-delineated urban area with a population of 50,000 or more, while a micropolitan area must contain an urban area with a population between 10,000 and 49,999. Both metropolitan and micropolitan areas comprise entire counties, which, in Virginia, includes independent cities. While the Office of Management and Budget (OMB) established and updated these areas for statistical purposes, numerous public and private sector organizations use these concepts for the allocation of funds, personnel, and goods and services.

In January 2021, the Metropolitan and Micropolitan Statistical Area Standards Review Committee submitted a recommendation to the OMB to change the minimum urban area population to qualify for metropolitan area status from 50,000 to 100,000.[1] This proposed change would have impacted several metropolitan areas in the Commonwealth of Virginia where the urban core's population is less than 100,000. The metropolitan

1 https://www.regulations.gov/docket/OMB-2021-0001

areas of Blacksburg-Christiansburg, Charlottesville, Harrisonburg, and Staunton would have become micropolitan statistical areas if the OMB had accepted the recommendation of the committee.

Across the United States, the proposed change would have altered the status of 142 metropolitan areas comprised of 251 counties and approximately 19 million people.[2] According to the Brookings Institute, the change would have impacted federal and state funding for counties currently located in metro areas affected by the proposed change. The use of metropolitan area status to guide federal and state programs and regulations is so complex that it appears to befuddle those who have attempted to inventory how this change may impact federal and state spending. The proposal sparked outcry and a concerted lobbying effort by leaders of smaller metropolitan areas from across the nation. According to the Associated Press, of the 734 public comments received by the OMB about the proposal, 97% were in opposition.[3] In July 2021, the OMB announced that it would not raise the population threshold for what qualifies as a metropolitan area.[4] While the issue appears to be settled, the OMB will likely revisit the population standard in the 2030s when it considers new standards for metropolitan areas.

Population Growth In A Pandemic

The latest U.S. Census Bureau population estimates for 2021 give us a first look into the pandemic's impact on population growth. From July 1, 2020, to July 1, 2021, the nation's total population rose 0.1%, the slowest rate of growth in more than two centuries. As illustrated in Graph 1, population growth in the Commonwealth mirrored the nation. To put this slowdown in population growth into perspective, from 2010 to 2019 Virginia added, on average, around 55,600 residents each year. In 2021, population growth fell to just 10,230 residents.

Over the same period, total population declined in three Virginia metropolitan areas: Roanoke (-0.2%), Blacksburg-Christiansburg (-0.5%), and Washington-Arlington-Alexandria (-0.5%). The contraction of the total population in the Washington, D.C., metro area warrants comment. In 2021, Virginia localities accounted for 48% of the Washington-Arlington-Alexandria metro area's population and comprised approximately 36% of Virginia's total population. Most of the decline in the Washington-Arlington-Alexandria metro population occurred outside of Virginia. Focusing on the Virginia portion of the metro area, the total population declined by nearly 3,400 residents from 2020 to 2021.

The U.S. Census Bureau defines the natural change in the population as births minus deaths. Domestic migration occurs when individuals move from one locality to another within the United States. International migration is when individuals move from another country to the United States or vice versa. Net domestic migration and net international migration are equal to the difference between arrivals and departures from the geographical area of interest.

Table 1 highlights the components of population change for Virginia's metros, the Commonwealth, and the nation from 2020 to 2021. For Virginia, the natural increase in the population was positive, as births were greater than the number of deaths. On the other hand, domestic

2 https://www.brookings.edu/research/the-new-rural-the-implications-of-ombs-proposal-to-redefine-nonmetro-america/
3 https://apnews.com/article/sd-state-wire-john-thune-80a420cb30d0658c4280e4d35af41000
4 https://www.whitehouse.gov/omb/briefing-room/2021/07/13/office-of-management-and-budget-announces-2020-standards-for-delineating-core-based-statistical-areas/

migration was negative, indicating that more Virginians moved out to other locations in the United States than moved in from other states and territories. The consistent movement of Virginians to other states is troubling as it may be indicative of residents "voting with their feet" about economic conditions in the Commonwealth.

While net international migration was positive for the nation and state, there is not much to be cheerful about in the most recent data. Net international migration peaked nationally in 2016 with a net arrival of over 1 million individuals. By 2019, net international migration was below 600,000 and fell below 250,000 in 2021. Changes in migration policy, declining immigration of the foreign born, increasing emigration of the foreign born, and COVID-19 contributed to the declines in net international migration.[5] It remains to be seen whether net international migration will recover in the coming years.

COMPONENTS OF CHANGE: THE VIRGINIA PORTION OF THE WASHINGTON, D.C., METRO

In Graph 2, we focus on the components of population change from 2011 to 2021 for the Virginia localities in the Washington, D.C., metropolitan area. For these Virginia localities, total population growth peaked at 59,782 in 2011 but declined over the decade to approximately 30,000 in 2019. In 2021, the total population of these localities declined by 3,349 residents. While the natural increase in the population remained positive during the period, it declined from an annual average of 26,000 net residents over the previous decade to about 16,000 net new residents in 2021.

Net domestic migration in the Virginia portion of the Washington-Arlington-Alexandria metro area has been negative since 2014, averaging about 14,000 residents a year. In 2021, net domestic migration fell to -26,149. At the same time, net international migration has fallen, from more than 22,000 new arrivals in the middle of the last decade to less than 7,000 in 2021. Some of the domestic departures are for other locations in Virginia. The largest contributor to net domestic migration to the Richmond and Winchester metro areas from 2015 to 2019, for example, was the Washington-Arlington-Alexandria metro area.

5 https://www.census.gov/library/stories/2021/12/net-international-migration-at-lowest-levels-in-decades.html

TABLE 1

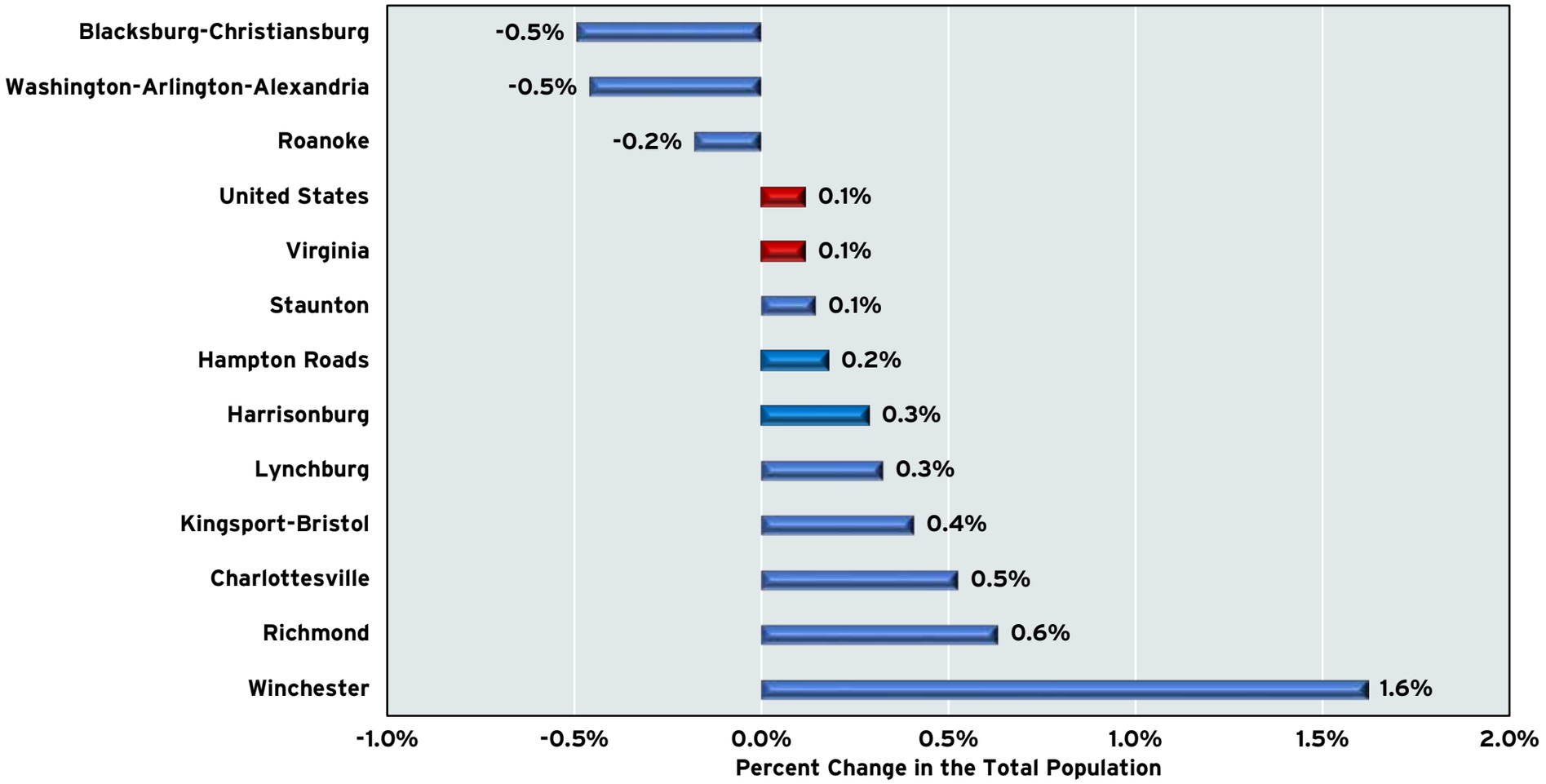
COMPONENTS OF POPULATION CHANGE, 2020 - 2021 VIRGINIA'S METROPOLITAN STATISTICAL AREAS, VIRGINIA, AND THE UNITED STATES

	Natural Change	Net Domestic Migration	Net International Migration	Population Change
United States	148,043	-	244,622	392,665
Virginia	8,340	-8,995	10,930	10,230
Blacksburg-Christiansburg	-478	-494	150	-818
Charlottesville	53	851	275	1,166
Hampton Roads	2,341	-321	1,208	3,247
Harrisonburg	143	-6	253	391
Kingsport-Bristol	-2,343	3,595	18	1,255
Lynchburg	-626	1,287	173	850
Richmond	201	6,788	1,334	8,328
Roanoke	-1,186	420	202	-561
Staunton	-524	617	87	183
Washington-Arlington-Alexandria	25,520	-66,811	12,600	-29,280
Winchester	-147	2,384	92	2,314

Source: U.S. Census Bureau, Vintage 2021 Population Estimates. National, State, and Metropolitan and Micropolitan Statistical Areas Totals: 2020-2021. The 2021 Vintage incorporates 2020 Census results.

GRAPH 1

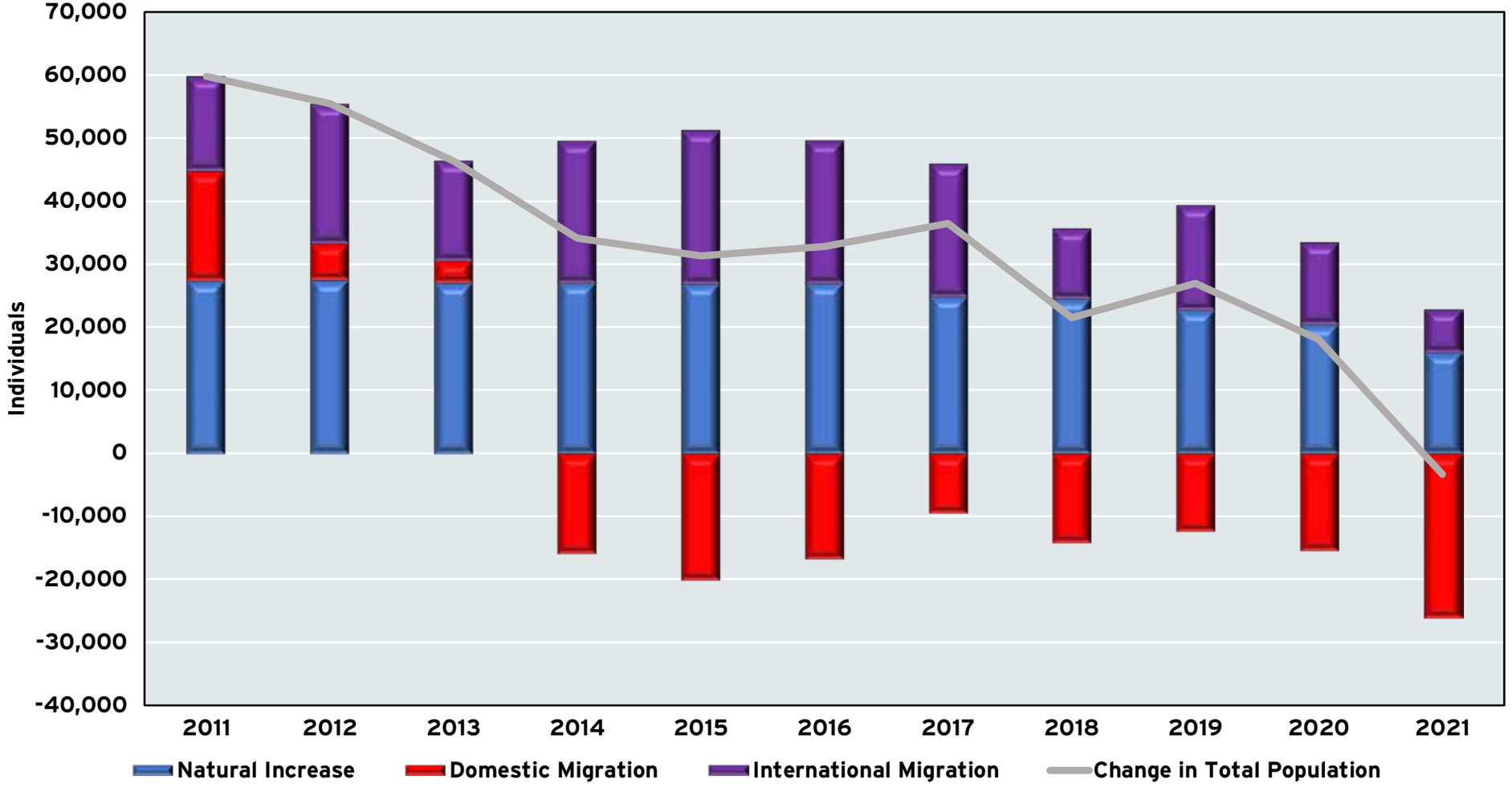
POPULATION CHANGE
VIRGINIA'S METROPOLITAN AREAS, VIRGINIA, AND THE UNITED STATES
JULY 1, 2020 – JULY 1, 2021



Source: U.S. Census Bureau Population Estimates. National, State, and Metropolitan and Micropolitan Statistical Areas Totals, 2021 Vintage. The 2021 Vintage incorporates 2020 census results. Hampton Roads is the Virginia Beach–Norfolk–Newport News metropolitan statistical area.

GRAPH 2

COMPONENTS OF POPULATION CHANGE AND CHANGE IN TOTAL POPULATION
WASHINGTON-ARLINGTON-ALEXANDRIA MSA, VIRGINIA PORTION
2011 - 2021



Source: U.S. Census Bureau Population Estimates. National, State, and Metropolitan and Micropolitan Statistical Areas Totals: 2021 Vintage and 2020 Vintage (2010-2020). Data for 2011-2020 reflect Vintage 2020 and does not incorporate the 2020 Census. Data for 2021 reflect the 2021 Vintage which incorporates 2020 census results. Migration components include a statistical residual and may not sum to net migration as a result.

Real Gross Domestic Product: A Lagged Measure of Economic Activity

Table 2 presents real (inflation-adjusted) rates of growth for gross domestic product, a measure of economic activity. The Bureau of Economic Analysis, (BEA) produces the national, state, metropolitan area, and county estimates of GDP, which provide a benchmark for economic activity over time. The latest metropolitan area estimates for 2021 should (as we always note) be viewed with an abundance of caution. The BEA released the "advance" 2021 estimates for metropolitan-area GDP in December 2022. The advance estimates for 2021 are likely to be significantly revised in December 2022 and in subsequent years. With such a lag, we advise the reader to examine the underlying trends and focus less on the estimates for a specific year, which are likely to change in the next release.

The estimates in Table 2 illustrate the economic shock of 2020 and the recovery of 2021. In 2020, the national and Virginia economies shrank by 2.8% and 2.1%, respectively. Real GDP declined in each Virginia's metros, with the exception of Winchester (1.3%) and Harrisonburg (0.0%), in 2020. In 2021, real economic activity rebounded by 5.9% nationally and 5.5% in Virginia. The advance metropolitan area estimates also point to a jump in economic activity across Virginia's metros, ranging from a low of 3.1% growth in Lynchburg to a high of 8.5% in Blacksburg-Christiansburg. The advance estimates suggest that while Hampton Roads outpaced the nation, Richmond and the Washington, D.C. metro grew but at slower rate than the United States. The relatively slower performance in Richmond and the Washington,D.C. metro area explain, in part, Virginia's lagging economic performance when compared to that of the nation

TABLE 2

REAL (INFLATION-ADJUSTED) GROSS DOMESTIC PRODUCT: YEAR-ON-YEAR RATES OF GROWTH, 2010 – 2021

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	CAGR (2010-2021)
United States	2.7%	1.5%	2.3%	1.8%	2.3%	2.7%	1.7%	2.2%	2.9%	2.3%	-2.8%	5.9%	2.3%
Virginia	3.2%	0.7%	0.4%	0.7%	-0.3%	1.7%	1.1%	1.6%	2.3%	2.4%	-2.1%	5.5%	1.4%
Blacksburg-Christiansburg	1.5%	3.3%	-1.6%	0.6%	0.5%	3.1%	-0.1%	2.3%	5.1%	-1.5%	-3.6%	8.5%	1.6%
Charlottesville	5.5%	0.0%	1.0%	0.5%	0.5%	3.0%	1.7%	5.1%	2.5%	0.8%	-3.9%	6.5%	1.7%
Harrisonburg	6.4%	0.5%	1.1%	2.2%	-4.6%	-3.1%	-3.7%	2.1%	2.3%	3.3%	0.0%	7.9%	0.7%
Kingsport-Bristol	-0.4%	2.4%	0.6%	-2.1%	-3.5%	1.7%	1.2%	3.8%	0.7%	-1.5%	-3.0%	5.6%	0.6%
Lynchburg	4.7%	-2.1%	-2.8%	0.0%	-1.1%	0.2%	-1.2%	1.2%	4.7%	-0.2%	-5.2%	3.1%	-0.4%
Richmond	2.6%	2.5%	1.8%	2.3%	0.8%	3.6%	1.4%	1.8%	1.9%	2.6%	-2.4%	5.0%	2.1%
Roanoke	1.6%	-0.4%	-0.5%	1.8%	1.4%	1.9%	-1.7%	-1.0%	1.3%	-1.1%	-1.7%	4.8%	0.5%
Staunton	1.6%	-3.2%	-4.4%	3.0%	-1.0%	-0.2%	-0.5%	0.6%	0.9%	1.2%	-3.4%	5.1%	-0.2%
Hampton Roads	0.4%	-0.6%	-1.2%	0.7%	-1.3%	1.4%	0.6%	0.0%	-1.3%	1.4%	-2.5%	6.3%	0.3%
Washington-Arlington-Alexandria	4.7%	1.8%	0.5%	-0.1%	1.0%	2.0%	2.6%	1.8%	2.1%	1.4%	-2.4%	5.0%	1.5%
Winchester	3.6%	0.3%	-0.1%	2.8%	-0.7%	4.1%	1.7%	0.0%	2.3%	2.5%	1.3%	4.7%	1.9%

Source: Bureau of Economic Analysis, 2021. Base year for real GDP is 2012. CAGR is the Compound Annual Growth Rate.

Civilian Labor Force: Where Is Everyone?

A common refrain over the last 24 months has been there are not enough Virginians willing and able to work relative to the number of open jobs. If Virginia's metros have recovered from the pandemic shock of 2020, then we would observe the same (if not more) number of Virginians in the civilian labor force in 2022 as we did prior to the pandemic. On the other hand, if there are fewer Virginians in the labor force, the recovery is, at best, incomplete. An expanding labor force is a sign that more workers are available for work or working in a geographical area and is typically correlated with economic growth. A stagnant or declining labor force may be a signal that a region is struggling to attract and retain labor; simply put, workers are seeking better fortunes elsewhere.

Graph 3 compares the size of the civilian labor force from February 2020 to September 2022 in Virginia's metro areas, Virginia, and the United States. Nationally, there were slightly more workers in September 2022 than February 2020, a data point that suggests the national economy has largely recovered from the 2020 recession. The same story cannot be told for Virginia's metropolitan areas. The labor force was smaller in September 2022 than February 2020 for every metro area except the Blacksburg-Christiansburg metro area, where the labor force was essentially the same size it was prior to the onset of the pandemic.

We would be remiss if we did not point out that even if each metro's labor force fully recovers to its pre-pandemic level, there is not much cause for celebration. Let us look at Virginia's labor force participation rate, which is equal to the proportion of the civilian non-institutional population 16 and older that is in the labor force. As shown in Graph 4, Virginia's labor force participation rate trended upward in the 1980s, peaking in 1992 at 70.9%. The rate dipped in the mid-1990s and then increased again in the 2000s, reaching 69.9% in the summer months of 2008. After the Great Recession, the labor force participation rate in the state trended downward, bottoming out at 64.9% in the first half of 2016. As Virginia's recovery from the Great Recession improved in the latter half of the last decade, the labor force participation rate climbed to 66.5% before falling during the early months of the pandemic.

To determine who is in the civilian labor force, who is employed, and who is unemployed, we rely on employment data from the Bureau of Labor Statistics (BLS). The BLS, in conjunction with the U.S. Census, conducts monthly surveys of a sample of the national population, focusing on the civilian noninstitutional population age 16 and older.[6] The civilian noninstitutional population excludes active-duty members in the U.S. Armed Forces and people confined in or living in prisons, jails, or residential nursing facilities. The civilian noninstitutional population age 16 or older consists of two groups: those in the civilian labor force and those not in the civilian labor force.

The civilian labor force, or labor force, consists of all people 16 and older who were employed or unemployed and can be thought of as the number of people who are working or actively looking for work. An individual is considered employed if, in the reference week of the monthly survey, they: (1) worked at least one hour as a paid employee, (2) worked at least one hour in their own business, profession or trade, (3) were temporarily absent from their job, business, or farm, or (4) worked without pay for 15 hours in a business or farm owned by a family member. A person would be classified as unemployed if they met all the following criteria during the survey week: (1) they were not employed, (2) they were available for work except for temporary illness, and (3) they made at least one attempt to find a job in the previous four weeks or were temporarily laid off and expected to be recalled to their job.[7] If an individual does not meet these three criteria, they are not in the civilian labor force.

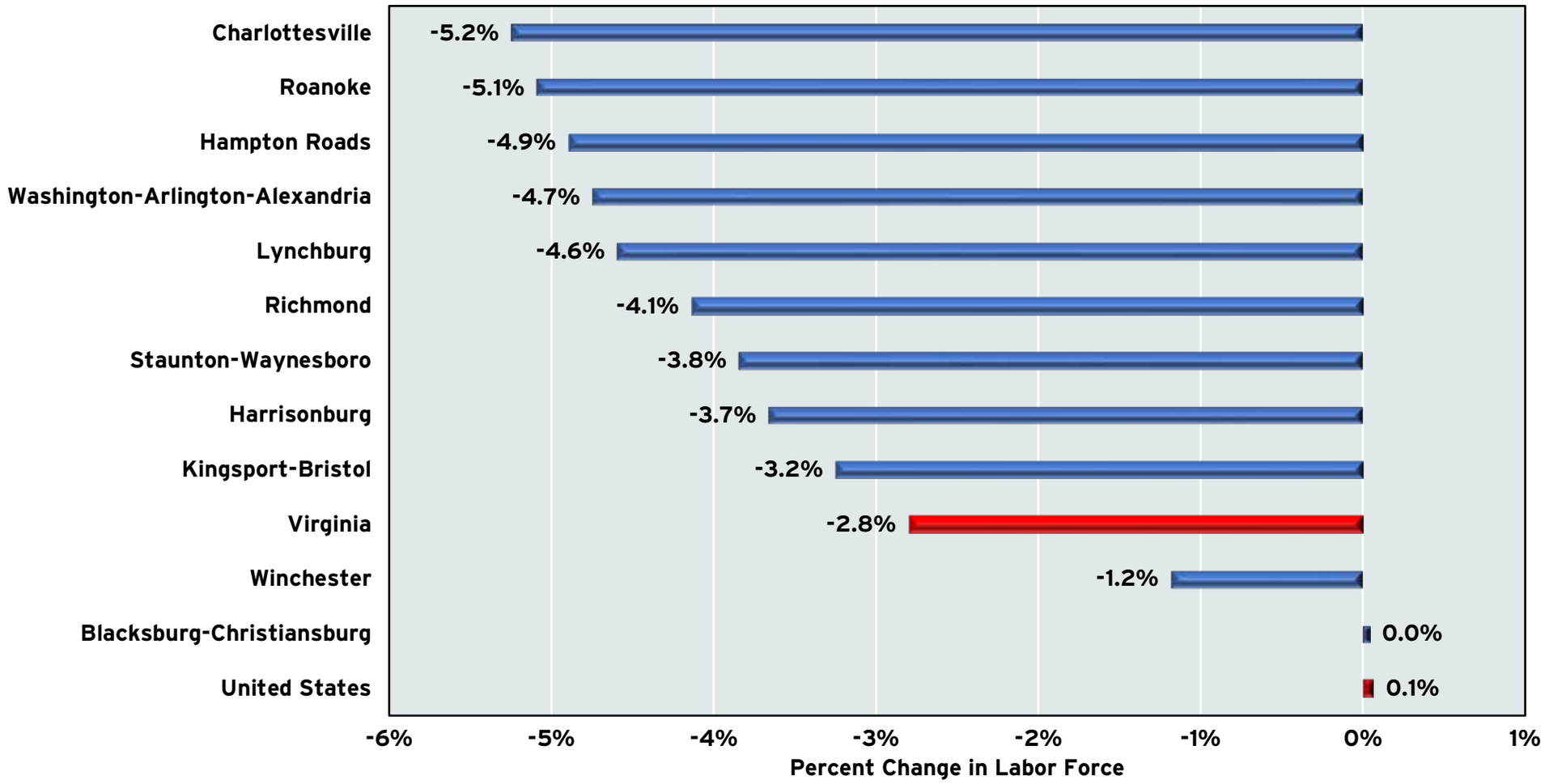
6 The Current Population Survey (CPS) covers households and asks whether an individual was employed or actively seeking employment. The Current Establishment Survey (CES) covers businesses and reports the number of jobs. An individual who is employed with two jobs would be counted once in the CPS and twice in the CES.
7 https://www.bls.gov/cps/definitions.htm#laborforce

What is noticeable is that even while economic activity was improving during the second half of 2020 and through 2021, Virginia's labor force participation rate continued to fall. In other words, Virginians were leaving the labor force even while opportunities for employment were continuing to improve. After falling to 62.6% in December 2021, the labor force participation rate in Virginia improved to 63.6% in September 2022, 2.1 percentage points below the pre-COVID peak, and 7.3 percentage points below the record observed in 1992.

The departure of individuals from the civilian labor force in Virginia is a puzzle that has generated much discussion, but little resolution. Individuals who have left the labor force entirely do not qualify for unemployment benefits, and the last federal government stimulus payments are a distant memory. Long COVID, child and elder care constraints, the continuing opioid epidemic, and the mental health toll of the pandemic may explain, in part, the disappearance of some Virginians from the labor force. We do know there is no "quick fix" to pulling more Virginians back into the labor force and solutions will take time, effort, and resources.

GRAPH 3

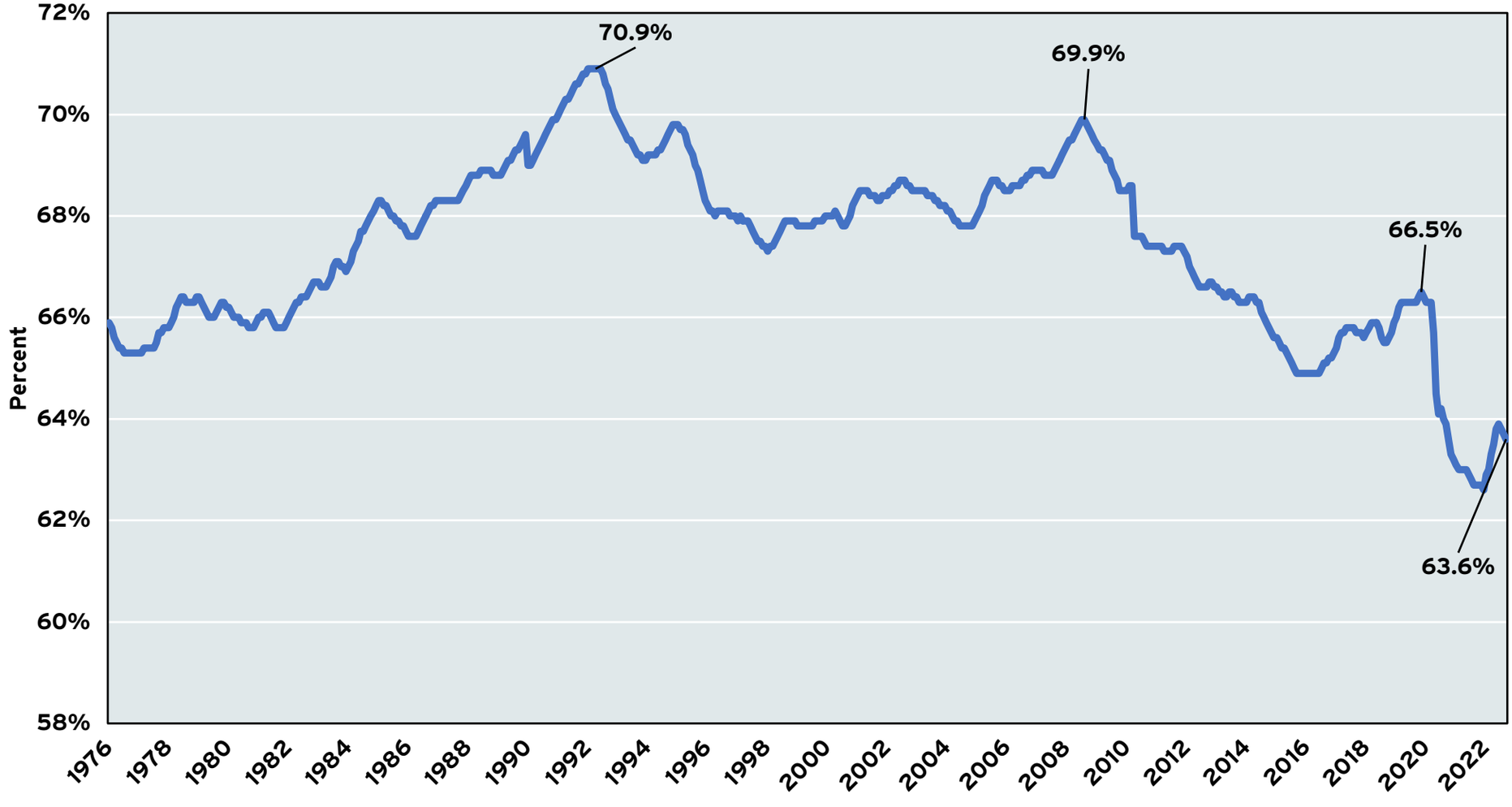
PERCENT CHANGE IN THE CIVILIAN LABOR FORCE
VIRGINIA'S METROPOLITAN STATISTICAL AREAS, VIRGINIA, AND THE UNITED STATES
FEBRUARY 2020 – SEPTEMBER 2022



Source: Bureau of Labor Statistics, Current Population Survey and Local Area Unemployment Statistics, seasonally adjusted data. Hampton Roads refers to the Virginia Beach–Norfolk–Newport News MSA.

GRAPH 4

VIRGINIA'S LABOR FORCE PARTICIPATION RATE
JANUARY 1976 - SEPTEMBER 2022



Source: Bureau of Labor Statistics, Labor Force Participation by State.

Employment And Unemployment Among Virginia's Metros

If we look at the recovery in individual employment, the story remains the same: All but one of Virginia's metropolitan areas lag the nation. Graph 5 shows the percent change in individual employment from February 2020 to September 2022 for Virginia's metropolitan areas, Virginia, and the United States. Individual employment was down 5.5% in Charlottesville and Hampton Roads and down 5.2% in Roanoke and 5.1% in the Washington, D.C., metro area. Employment was down by more than 4% in Richmond (-4.7%), Lynchburg (-4.7%), and Staunton-Waynesboro (-4.3%) from February 2020 to September 2022. In fact, only the Blacksburg-Christiansburg metro area outperformed the nation, with individual employment up by 0.3% over the period compared to 0.0% nationally and down 2.7% for the Commonwealth.

Graph 6 displays the headline unemployment rate for Virginia's metro areas, the Commonwealth, and the nation for September 2022. At first glance, it may appear that Virginia is outperforming the nation with regards to the unemployment rate, as the unemployment rate is lower in each of Virginia's metro areas than the nation. However, care must be taken when interpreting the unemployment rate, which is equal to the ratio of unemployed individuals to the civilian labor force.

As noted previously, the civilian labor force was smaller in September 2022 than February 2020 in all but one (Blacksburg-Christiansburg) of Virginia's metro areas. Individuals who exit the labor force are not counted as unemployed, so the unemployment rate does not capture the decline in the labor force across many of Virginia's metros. The unemployment rate measures the pool of available labor that is actively seeking work, not the potential pool of labor that is actively seeking work and those who have decided not to seek gainful employment.

MORE JOBS: EMPLOYERS CONTINUE HIRING

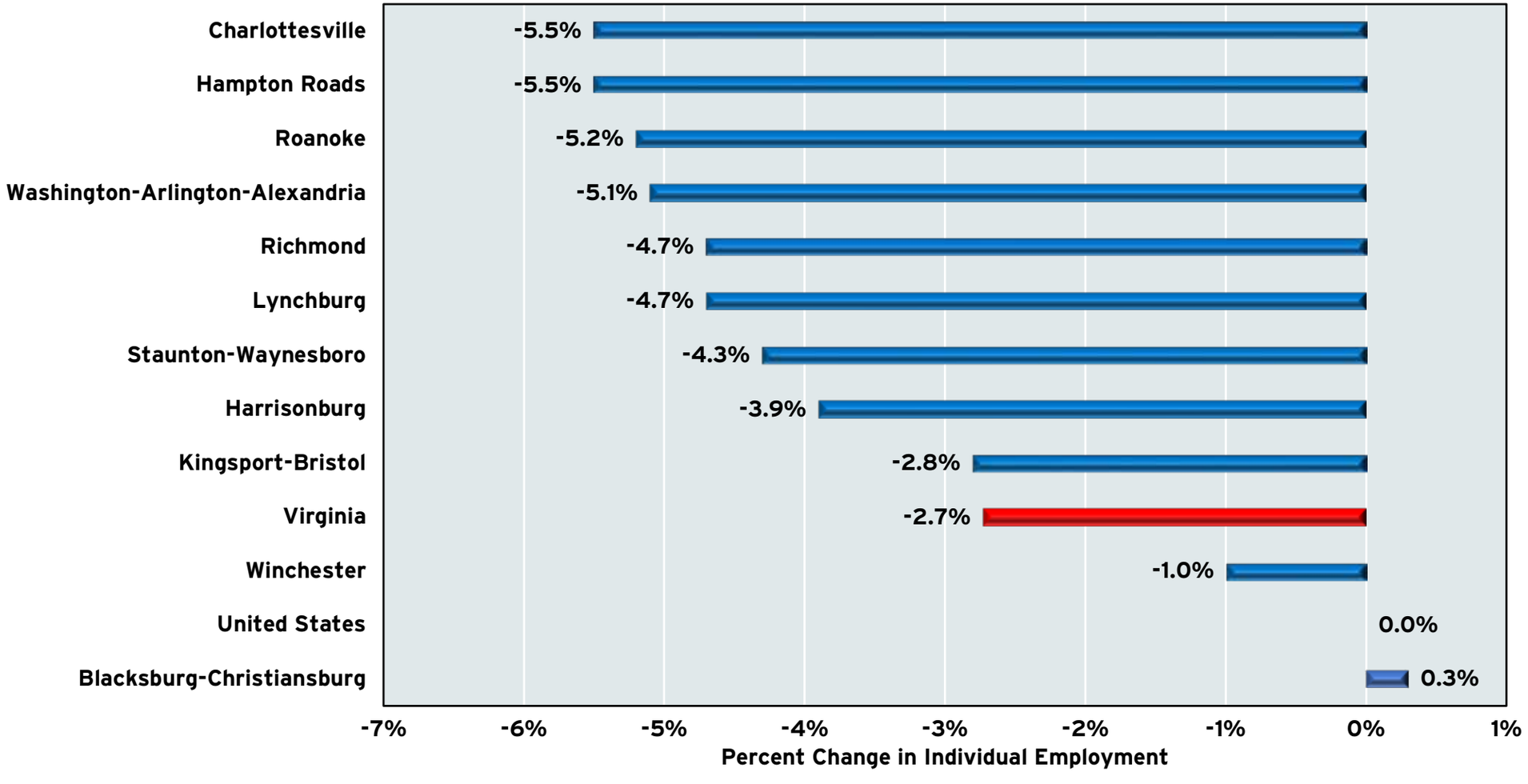
Graph 7 presents the percent change in nonfarm payrolls (jobs) for Virginia's metros, Virginia, and the United States from February 2020 to September 2022. While the responses to the household survey suggest that the labor force and individual employment have yet to recover for most of Virginia's metros, the employer survey data tell a different story. The data suggest that the pool of available labor is smaller than prior to the pandemic and that employers have continued to create jobs in 2021 and 2022. With the pool of individuals actively seeking employment largely exhausted across the Commonwealth, the challenge to continued job growth remains enticing Virginians outside the labor force back to gainful employment.

The clear leader in 2022 is the Blacksburg-Christiansburg metro area. In September 2022, the labor force and individual employment were larger than February 2020. Employers also reported 4.8% more jobs in September 2022 than February 2020. In the Winchester metro area, the labor force and employment remained below pre-pandemic levels, but employers reported 2.4% more jobs in September 2022 than February 2020.

The labor market data point to an incomplete recovery for many of Virginia's metros. While employers created jobs in 2022, the evidence continues to accumulate that Virginia businesses would like to hire even more employees than are readily available. Job openings at the state level remain well above job quits and the number of unemployed in the Commonwealth, pointing to a scarcity of labor. Until Virginians return to the labor force in sufficient numbers to fill these jobs, the recovery will remain relatively slow in the Commonwealth, even as the risks of a recession in 2023 continue to rise.

GRAPH 5

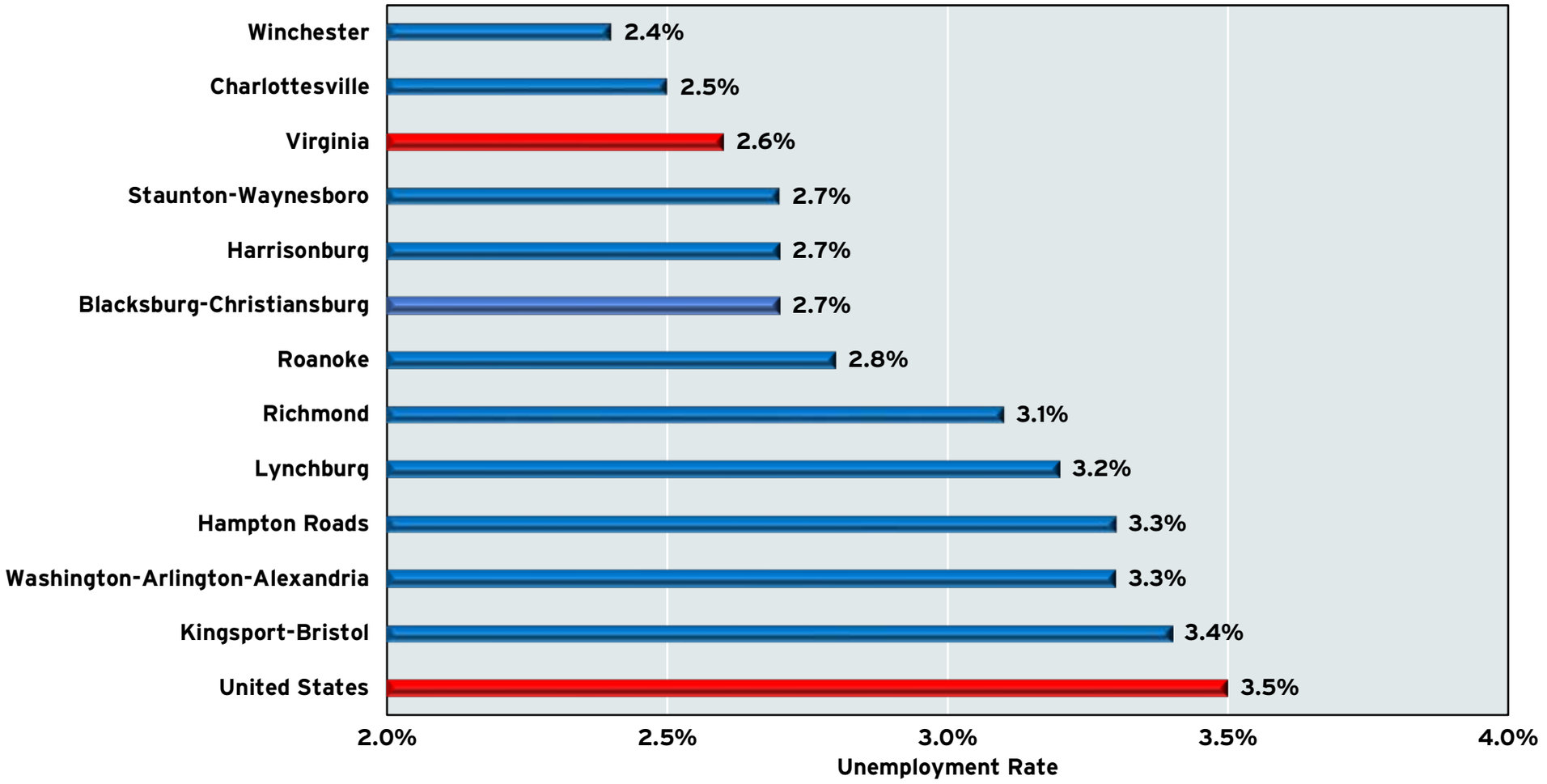
PERCENT CHANGE IN INDIVIDUAL EMPLOYMENT
VIRGINIA'S METROPOLITAN STATISTICAL AREAS, VIRGINIA, AND THE UNITED STATES
FEBRUARY 2020 – SEPTEMBER 2022



Source: Bureau of Labor Statistics, Current Population Survey and Local Area Unemployment Statistics, seasonally adjusted data. Hampton Roads refers to the Virginia Beach–Norfolk–Newport News MSA.

GRAPH 6

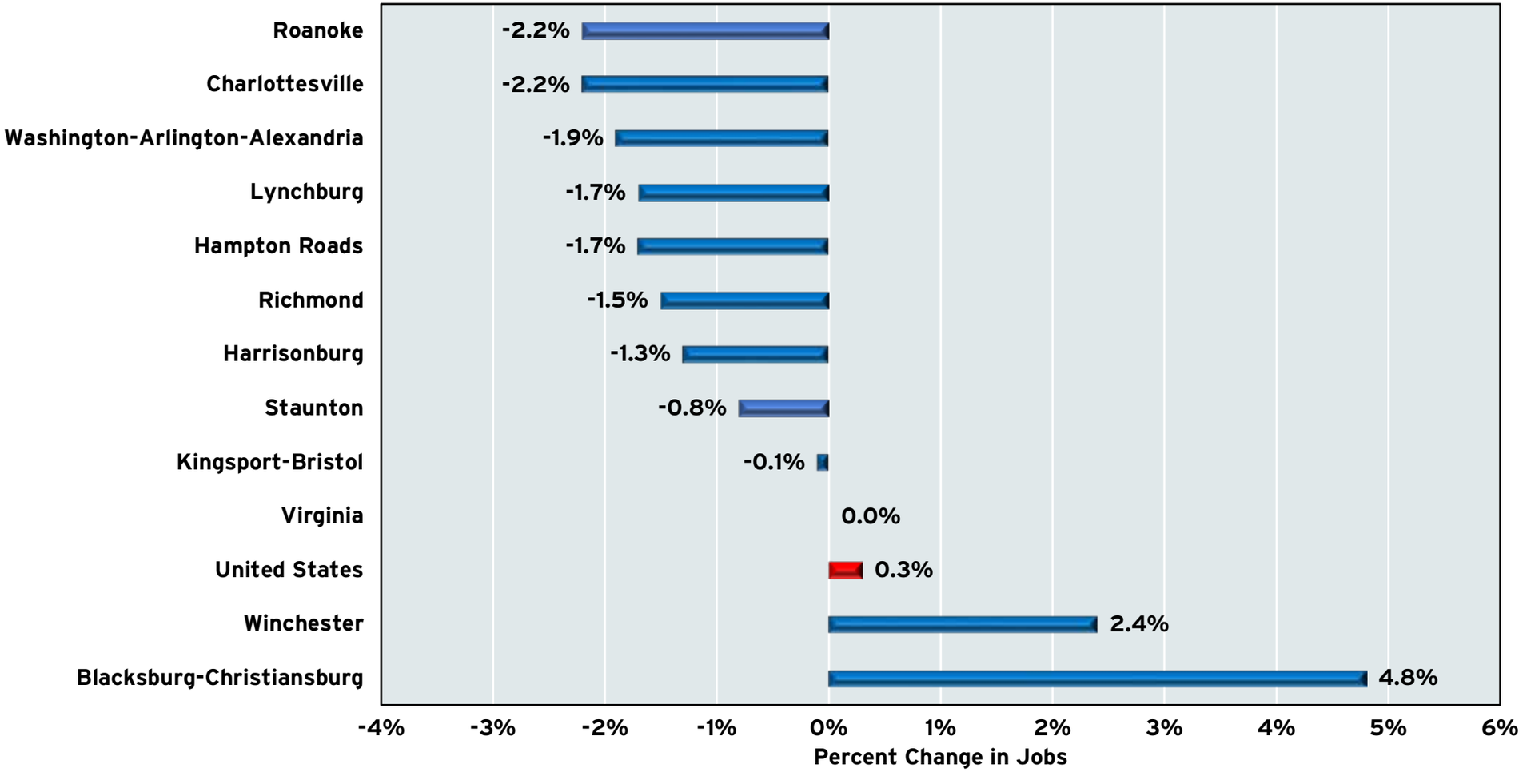
UNEMPLOYMENT RATE
VIRGINIA'S METROPOLITAN STATISTICAL AREAS, VIRGINIA, AND THE UNITED STATES
SEPTEMBER 2022



Source: Bureau of Labor Statistics, Current Population Survey and Local Area Unemployment Statistics, seasonally adjusted data. Hampton Roads refers to the Virginia Beach–Norfolk–Newport News MSA.

GRAPH 7

PERCENT CHANGE IN NONFARM PAYROLLS (JOBS)
VIRGINIA'S METROPOLITAN STATISTICAL AREAS, VIRGINIA, AND THE UNITED STATES
FEBRUARY 2020 – SEPTEMBER 2022



Source: Bureau of Labor Statistics, Current Establishment Survey and State Employment and Unemployment, seasonally adjusted data.

Individual employment and establishment employment data attempt to measure how many people are working at a given time. These data are from two different surveys: the Current Population Survey (CPS) and the Current Establishment Survey (CES). The CPS asks the civilian noninstitutionalized population whether they are working, looking for work or not attached to the labor force. The civilian labor force represents the civilian noninstitutionalized population that is either working or actively looking for work, while individual employment reflects those in the labor force who are working. The CES asks employers about their employees. There is an important difference between the CPS and CES. An individual can only be employed once in the CPS – that is, an individual either is working, unemployed or not seeking to work. In the CES, an individual can show up multiple times if he or she has different jobs with different employers. For clarity, we present the CPS data as "individual employment" and the CES data as "jobs.

For comparability purposes across Virginia and with other states, we rely on publicly available data from the BLS, U.S. Census, and other sources. We acknowledge that private employers who choose not to participate in state unemployment systems may not be captured by the CES data but we also note that the CPS data will capture data on the number of individuals employed and unemployed in a metro region. We believe our approach provides transparency and allows the reader to replicate our analysis if their opinion on the economic environment differs from our conclusions. As always, one should examine a number of variables rather than 'hanging their hat' on one indicator of economic activity that affirms their priors.

Final Thoughts

The ongoing recovery from the COVID-19 pandemic-induced economic shock has varied across Virginia's metropolitan areas. In some of the smaller regions, the recovery in labor markets is mostly complete. In other regions, most notably the largest metros, the labor force has yet to recover to pre-pandemic levels. Now, with interest rates increasing and forecasts for 2023 growing increasingly gloomy, the question is this: Can the recovery be completed before a recession occurs in 2023?

For regions dependent on federal spending, questions abound regarding the ability of Congress to function in any semblance of normality. When representatives and senators are more focused on appearances on cable news or making impressions on social media, appropriations bills languish in committee. If Congress flirts with a default on federal government debt, interest rates on U.S. government debt will increase, financial markets will be shaken, and we will all pay the price. A federal government shutdown would, if it dragged on, significantly impact economic activity in Hampton Roads and Northern Virginia, and, by extension, the Commonwealth as a whole.

We can be hopeful, but wary, about the prospects for the future for Virginia's metro areas. For now, the state government is enjoying a significant budget surplus. This surplus represents an opportunity to make generational investments to improve growth across the Commonwealth. Investing in a portfolio of energy sources — such as wind, solar, and nuclear — builds economic resilience. Improving transportation options, expanding rail service from the west to the east and along the I-95 corridor, can increase investment in exurban and rural areas of the Commonwealth. At the same time, we continue to highlight the need to reform Virginia's antiquated tax system to attract and retain businesses. Reducing administrative burdens by eliminating nuisance taxes that have outlived their usefulness and encouraging localities to share administrative functions can yield benefits for taxpayers.

To accomplish these tasks will require Virginians, in an increasingly partisan environment, to give up a little to gain a lot. Politics can be a zero-sum game, or it can be a mechanism by which no one gets all of what we want, but we all get something we desire. Perhaps these are hopeful thoughts in a cynical time, but we know that the path forward requires cooperation. If we are to improve the lot of Virginians across the Commonwealth, we must put Virginia, not party, first.

WHO'S AT THE BEDSIDE? DOES VIRGINIA HAVE ENOUGH NURSES?

"Save one life, you're a hero. Save 100 lives, you're a nurse."

– Unknown

Nursing is a critical profession within the health care sector focused on the care of individuals, families, and communities for an ideal quality of life. The nursing field is composed of many specialties, and nurses take on the critical duties of patient education, needs assessment, patient care, and many other types of health care support. It was no surprise that nursing was rated as the most trusted profession in the latest Gallup poll of honesty and ethics.[1] In fact, nursing has been among the most trusted professions, if not the most trusted profession, since Gallup first asked Americans the question.

In the 2021 Gallup poll, 81% of respondents viewed nurses as having "very high/high" honesty and ethics, a full 14 percentage points over the next highest profession, medical doctors, and 76 percentage points over the lowest ranked profession, lobbyists. Yet even though many Americans believe nurses are to be trusted and have high ethical standards, the profession has been the target of disinformation during the COVID-19 pandemic. Social media is awash with conspiracy theories that nurses, along with doctors, are mistreating COVID-19 patients, resulting in long-term injury and death.

1 Lydia Saad, "Military Brass, Judges Among Professions at New Image Lows," Gallup, January 12, 2022. https://news.gallup.com/poll/388649/military-brass-judges-among-professions-new-image-lows.aspx

A 2020 study across 173 countries found that health care workers were more likely to experience stigma and bullying from working with COVID-19 patients than from individuals outside of health care settings.[2] As disinformation rises, many nurses feel under attack, with too many patients to care for, too many demands on the profession, and not enough support from a system that would grind to a halt without their efforts. The onset of the COVID-19 pandemic appears to have only intensified these outbreaks of verbal and physical abuse. In October 2021, a patient at Riverside Regional Medical Center in Newport News was arrested and charged with malicious assault, assault, shoot/stab in the commission of a felony, and battery on a health care provider in connection with an attack on an Emergency Department nurse.[3] Karen Mitchell, chief nursing officer at the Children's Hospital of The King's Daughters in Norfolk, noted that nurse resignations and transfers increased as the pandemic wore on. "At the beginning of the pandemic, a lot of nurses didn't leave their jobs because of the uncertainty. ... We feel these increases in resignations and transfers are due to a backlog from mid-2020. ... Stress, burnout; it's challenged the typical resiliency we've had in the past."[4]

The prevalence of aggression against nurses is, unfortunately, nothing new. In 2020, there were 78,740 cases of nonfatal workplace injuries and illnesses that resulted in at least one day away from work among registered nurses employed by private industry. Presented in Graph 1, this was a 291% increase, about four times as many cases as recorded in 2019. The shocking impact of COVID to the work environment can also be seen in the meteoric rise of days away from work due to harmful exposure, from 660 in 2019 to 55,750 days out in 2020. The impact of a lack of personal protection equipment will be discussed later in the chapter.

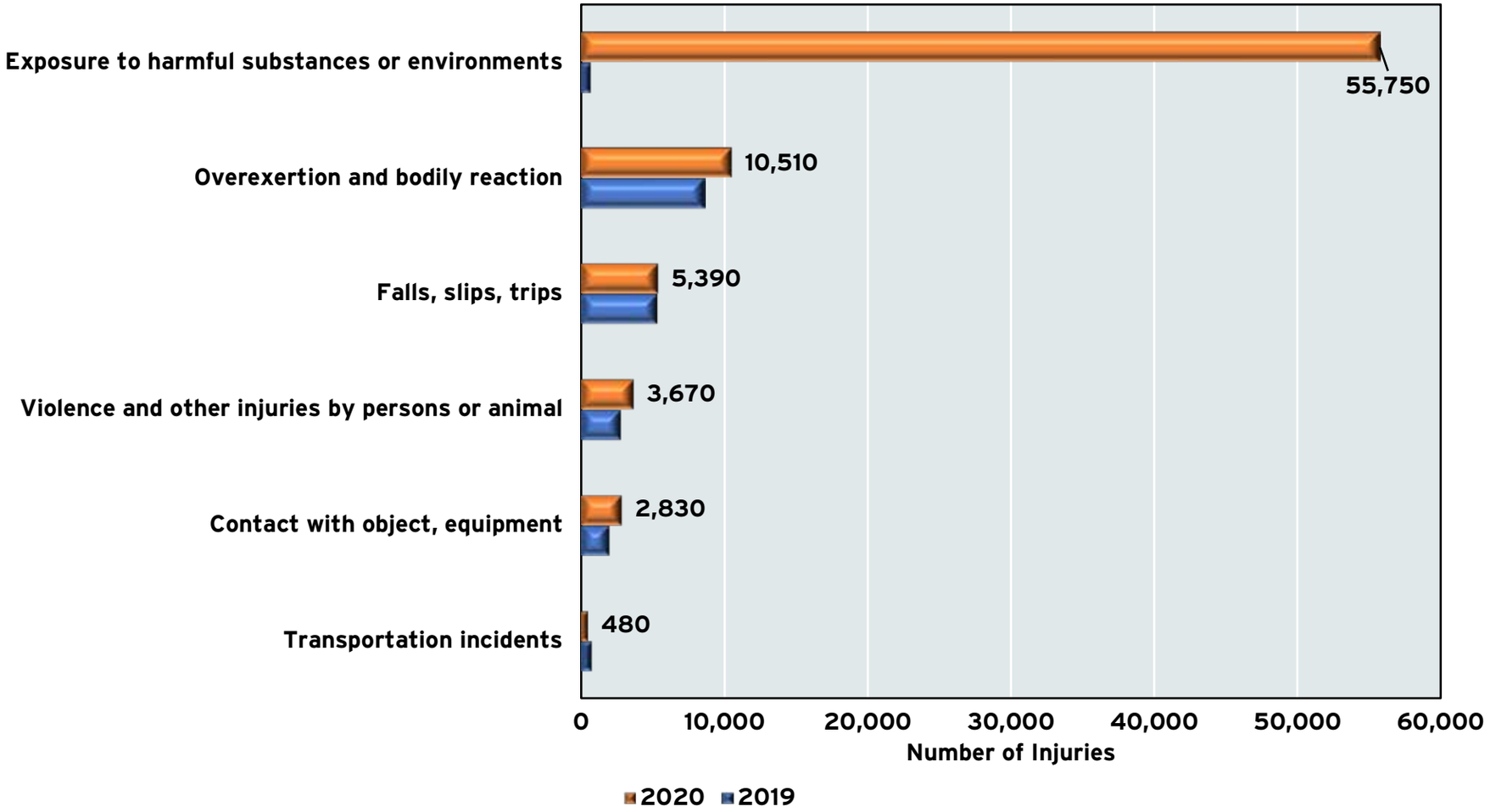
As nursing shortages increase across the state and nation, the competition for existing nurses and new graduates will only intensify. The Commonwealth of Virginia is likely to see the rise of "nurse deserts" where some rural areas across the state may not have immediate access to a registered nurse. Without sufficient access to health care, the urban-rural divide will only increase, further exacerbating health care inequalities in Virginia.

In this chapter, we examine the role of registered nurses in the Commonwealth and ask how demands on the profession have changed over time. We then examine whether there is a nursing shortage in the Commonwealth and the United States. We discuss nurses' education levels in Virginia and what barriers prevent more nurses from entering the state workforce. We conclude with thoughts on the role and prospects for the nursing profession in Virginia.

2 Dye TD, Alcantara L, Siddiqi S, et al. "Risk of COVID-19-related bullying, harassment and stigma among health care workers: an analytical cross-sectional global study." BMJ Open 2020 (10):e046620. Available at: doi:10.1136/bmjopen-2020-046620
3 https://www.13newsnow.com/article/news/local/mycity/newport-news/police-investigate-stabbing-by-riverside-regional-medical-center-newport-news/291-e76a4418-83b8-4614-a335-99c7a4b4ef2c
4 https://www.13newsnow.com/article/news/health/stress-burnout-national-nursing-shortage-impacting-virginia/291-71ff0f4c-6f73-4f1e-b9c0-01b8af2706f6

GRAPH 1

NUMBER OF NONFATAL RN WORKPLACE INJURIES AND ILLNESSES RESULTING IN DAYS AWAY FROM WORK, BY SELECTED EVENTS, PRIVATE INDUSTRY, 2019 AND 2020



Source: Bureau of Labor Statistics, May 6, 2022, https://www.bls.gov/opub/ted/2022/nonfatal-injuries-and-illnesses-resulting-in-days-off-work-among-nurses-up-291-percent-in-2020.htm

Registered Nurses: A Primer

The history of modern professional nursing traditionally begins in the mid-19th century with Florence Nightingale, the daughter of wealthy British parents, who challenged social conventions and became a nurse. At that time, providing health care to citizens either in hospitals or in their homes was not viewed as a respectable career for the affluent. However, Nightingale, who organized women to care for soldiers during the Crimean War, believed that well-educated women, using scientific principles and information about health and well-being, could dramatically improve health outcomes of the sick and injured. She also believed that nursing provided women an avenue for intellectual and social freedom. Nightingale's influence on her patients' health and well-being established many of today's nursing care models. Today, the nursing profession spans from certified nursing assistants to licensed practical nurses, and registered nurses to non-bedside nursing jobs in business, education, or research.

Registered nurses (RNs), however, both men and women, are among the most highly educated and respected members of the health care delivery team. With about 4 million nurses across all fields, nursing is the largest of the health professions in the United States. Registered nurses' roles continue to change and expand with the demands of an increasingly complex health care industry, advanced education in nursing, greater patient longevity, and advancements in health care and technology.

According to the International Council of Nurses (ICN), the scope of nursing practice "encompasses autonomous and collaborative care of individuals of all ages, families, groups, and communities, sick or well and in all settings." As clinicians, RNs develop and implement individual plans of care, monitor and record patients' health care needs and changing physiological conditions, administer, monitor the effects of, and at times prescribe medications and treatments, educate patients on self-care and the prevention of illness, conduct health screening tests and procedures, and supervise other nursing personnel.

Registered nurses with additional education and training can specialize as advanced practice nurses. There are four types of advanced practice nurses in the U.S.: nurse practitioners, nurse midwives, clinical nurse specialists, and nurse anesthetists. RNs can also work as educators, administrators, executives, consultants, and researchers.

According to the Bureau of Labor Statistics, there were approximately 3 million RNs in the United States in May 2021. Other jobs in the nursing profession, such as certified nursing assistants (CNAs) and licensed practical nurses (LPNs) offer support in patient care. CNAs provide basic care to patients and help them with daily activities they might have trouble doing on their own, such as bathing and getting dressed. LPNs, who provide higher level care than CNAs, may assist RNs and physicians. Graph 2 depicts the median annual wage for RNs, LPNs, and CNAs in the United States in 2021.

In 2008, the Robert Wood Johnson Foundation (RWJF) and the Institute of Medicine (IOM) launched a two-year initiative to assess and transform the nursing profession. As a result, in 2011 the IOM released the report *The Future of Nursing: Leading Change, Advancing Health,* which recommended that nurses: 1) practice to the full extent of their education, training, and licensure; 2) achieve higher levels of education and training through an improved educational system that promotes seamless academic progression; and 3) become full partners, with physicians and other health professionals, in redesigning health care in the U.S.

There are essentially three traditional degree pathways to becoming a registered nurse: associate, bachelor's, and nursing diploma programs. Nursing diploma programs differ from the more traditional college or university-based associate and bachelor's degree programs in that they are typically run by (or in close conjunction with) hospital systems, lasting one to three years, to prepare students for licensure as a registered nurse. Graph 3 displays the number of postsecondary awards in the United States from 2009 to 2019. What immediately stands out is that while the number of associate degrees has remained relatively constant over this period, the number of other degrees has increased significantly. Bachelor's, master's, and doctoral degree awards increased by 101.1%, 153.4%, and 462.5%, respectively, from 2009 to 2019. In our conversations with nurses,

these shifts can be partly explained by the preference of employers to hire nurses with four-year (or higher) degrees and the need for continuing education among the existing nursing workforce. Research has also highlighted the quality and safety educational gaps between associate and bachelor's nursing graduates, a factor that may influence the demand for bachelor's programs among higher quality students over time.[5]

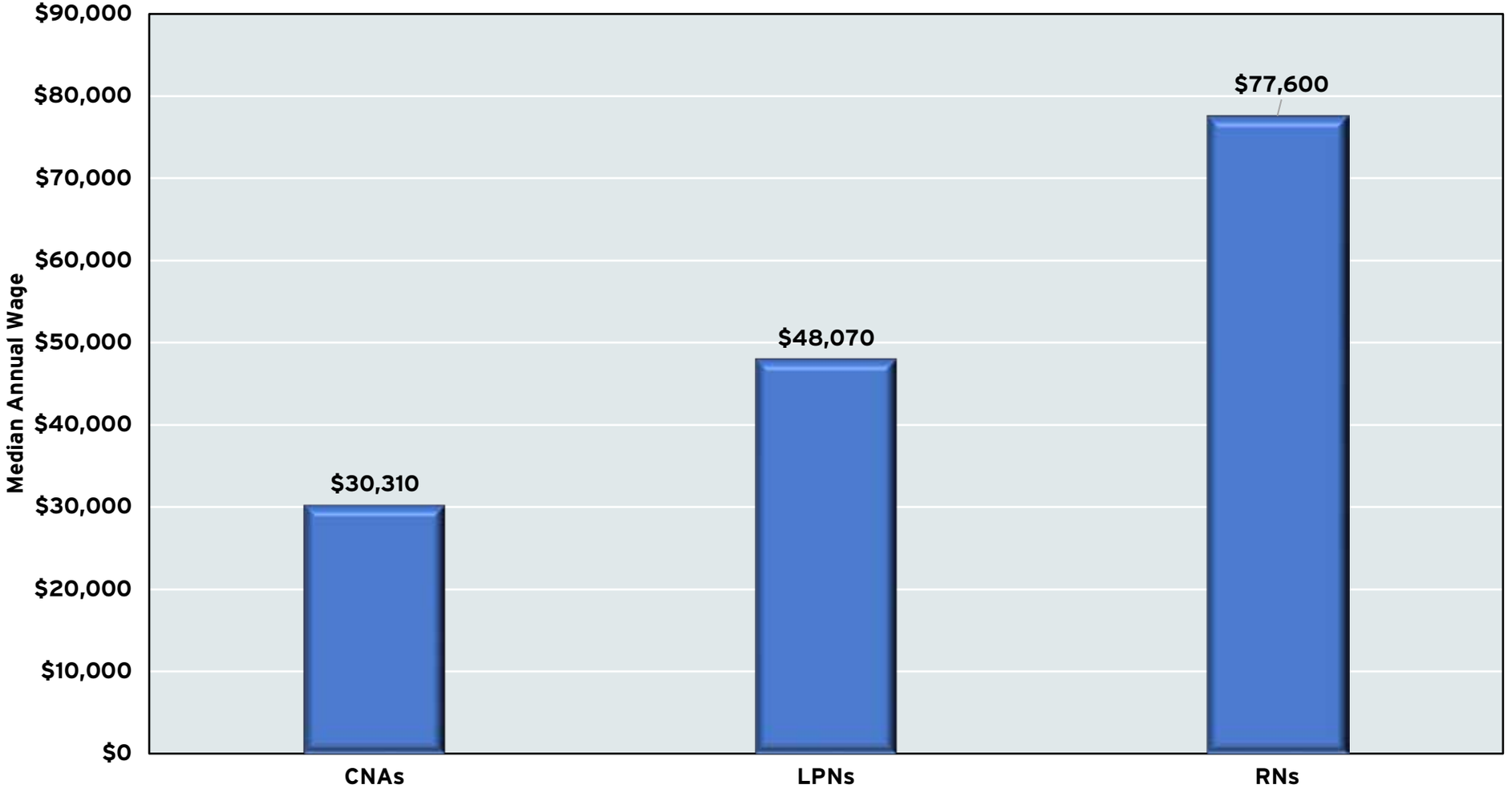
Graph 4 displays nursing awards in Virginia from 2009 to 2019. First, the number of bachelor's degrees awarded to students, 1,681 in the 2009–2010 academic year (AY) increased to 2,915 in the 2019–2020 AY. The number of associate degrees also increased from 1,726 in the 2009–2010 AY to 2,560 in the 2019–2020 AY.

In 2021, according to the Virginia Department of Health Professions, there were 81 registered nursing programs in the Commonwealth. Thirty-eight of these programs awarded an associate degree and 30 awarded a bachelor's degree. Eleven programs offered an accelerated baccalaureate and master's degree. Two programs were online and allowed students to earn an associate or bachelor's degree. Thirty-six of the 81 programs in Virginia also offered a Registered Nurse–Bachelor of Science (RN-BSN) pathway. Virginia does not appear to lack nursing programs, with multiple institutions offering degrees ranging from associate to doctoral degrees. In Table 1, we present data for several of the largest nursing programs in the Commonwealth. However, as we discuss later in the chapter, the supply chain of new nurses faces critical bottlenecks that limit the Commonwealth's ability to increase supply in the near term.

5 Maja Djukic, Amy Witkoski Stimpfel, Christine Kovner. (2019). "Bachelor's Degree Nurse Graduates Report Better Quality and Safety Educational Preparedness than Associate Degree Graduates." *The Joint Commission Journal on Quality and Patient Safety*, Volume 45, Issue 3, 180-186, https://doi.org/10.1016/j.jcjq.2018.08.008.

GRAPH 2

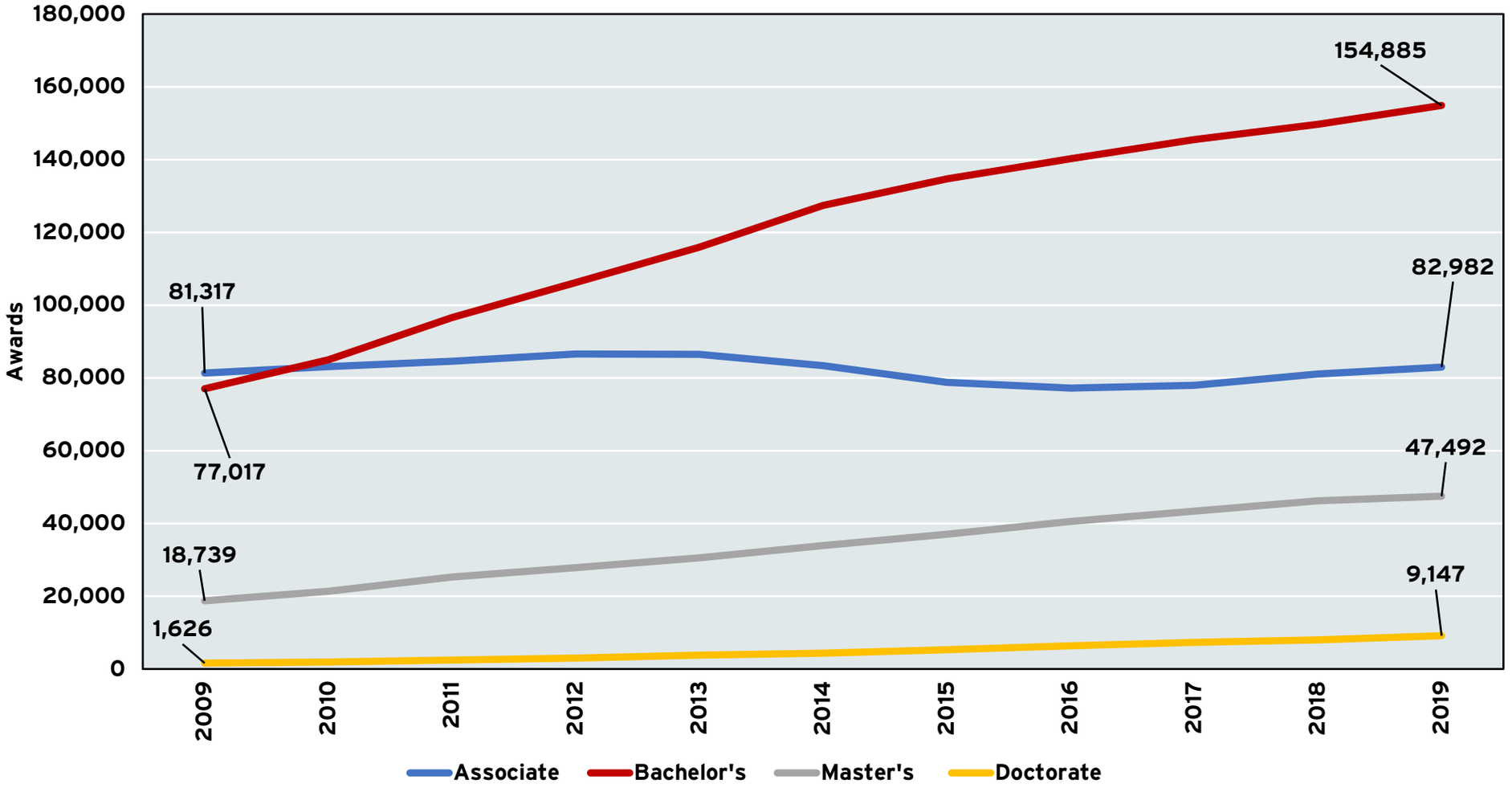
MEDIAN ANNUAL WAGE FOR NURSING PROFESSIONS
UNITED STATES, 2021



Source: Bureau of Labor Statistics, Occupational Employment and Wage Statistics (OEWS), May 2021.

GRAPH 3

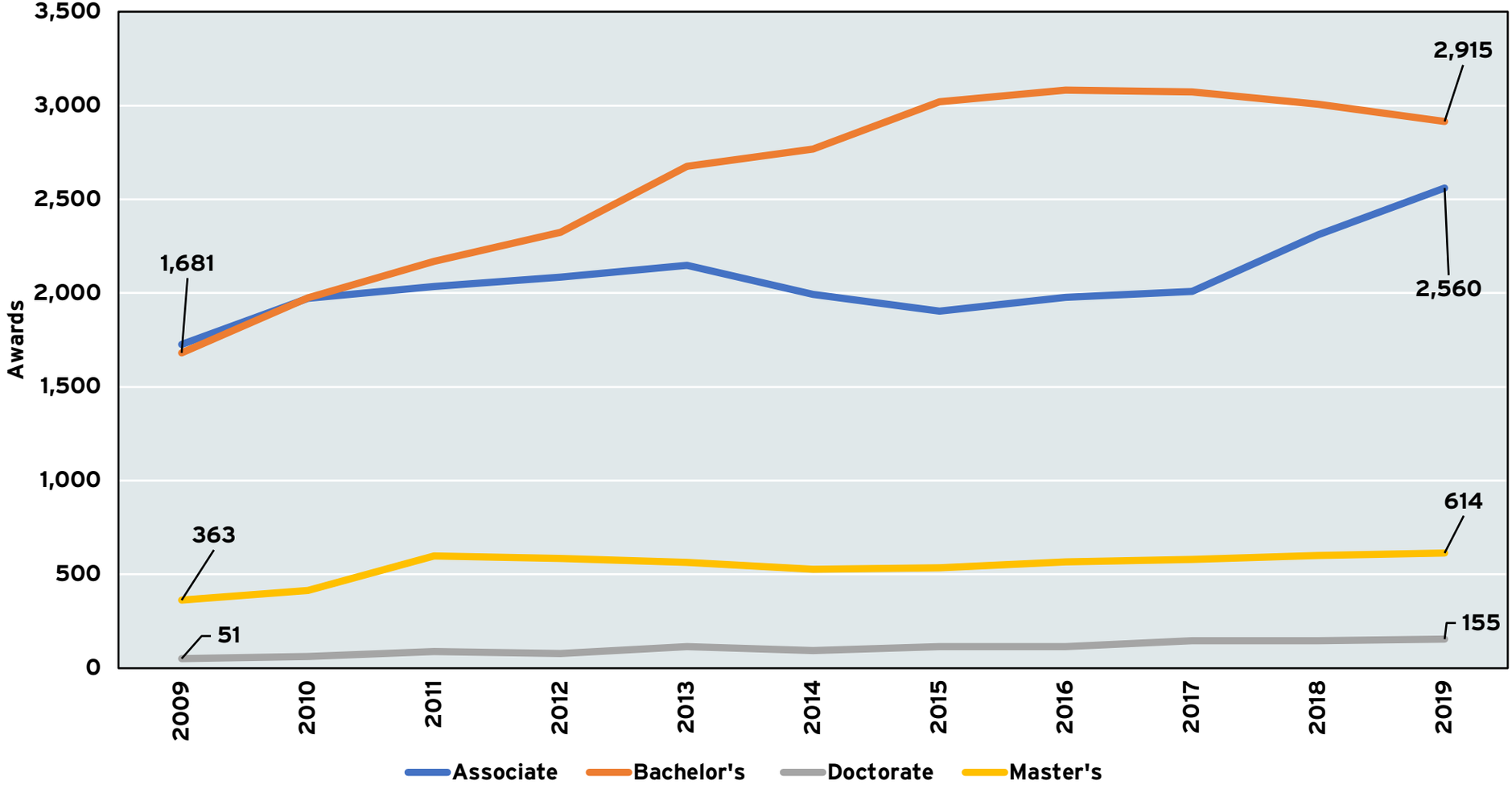
AWARDS IN POSTSECONDARY DEGREE PROGRAMS FOR REGISTERED NURSING
UNITED STATES
ACADEMIC YEARS 2009-10 TO 2019-20



Source: IPEDS Awards by 6-digit CIP code. Reflects awards for 17 post-secondary degree programs linked to the Registered Nursing Occupation as defined by the National Center for Education Statistics (NCES) and Bureau of Labor Statistics (BLS) CIP-SOC Crosswalk. Years reflect academic years, that is, 2009 is the 2009 – 2010 academic year.

GRAPH 4

AWARDS IN POSTSECONDARY PROGRAMS FOR REGISTERED NURSING
VIRGINIA INSTITUTIONS
ACADEMIC YEARS 2009-10 TO 2019-20



Source: IPEDS Awards by 6-digit CIP code. Reflects awards for 17 postsecondary degree programs linked to the Registered Nursing Occupation as defined by the National Center for Education Statistics (NCES) and Bureau of Labor Statistics (BLS) CIP-SOC Crosswalk.

TABLE 1

LARGEST REGISTERED NURSING PROGRAMS, SELECTED INSTITUTIONS, VIRGINIA, 2019-2020 ACADEMIC YEAR

	Associate	Bachelor's	Postbaccalaureate Degrees*
ECPI University	504	152	18
Liberty University	-	369	161
Virginia Commonwealth University	-	216	112
James Madison University	-	252	40
Old Dominion University	-	196	92
George Mason University	-	167	100
University of Virginia-Main Campus	-	100	159
Radford University	-	219	36
Bryant & Stratton College-Virginia Beach	196	1	-
Rappahannock Community College	97	-	-

Source: Dragas Center for Economic Analysis and Policy (2022) and Integrated Postsecondary Education System (IPEDS). Top 10 institutions estimated as the largest awards by type for CIP codes linked to the registered nursing occupation (29-1141). *Post-baccalaureate degrees include post-baccalaureate or post-master's certificate, master's and doctoral degrees.

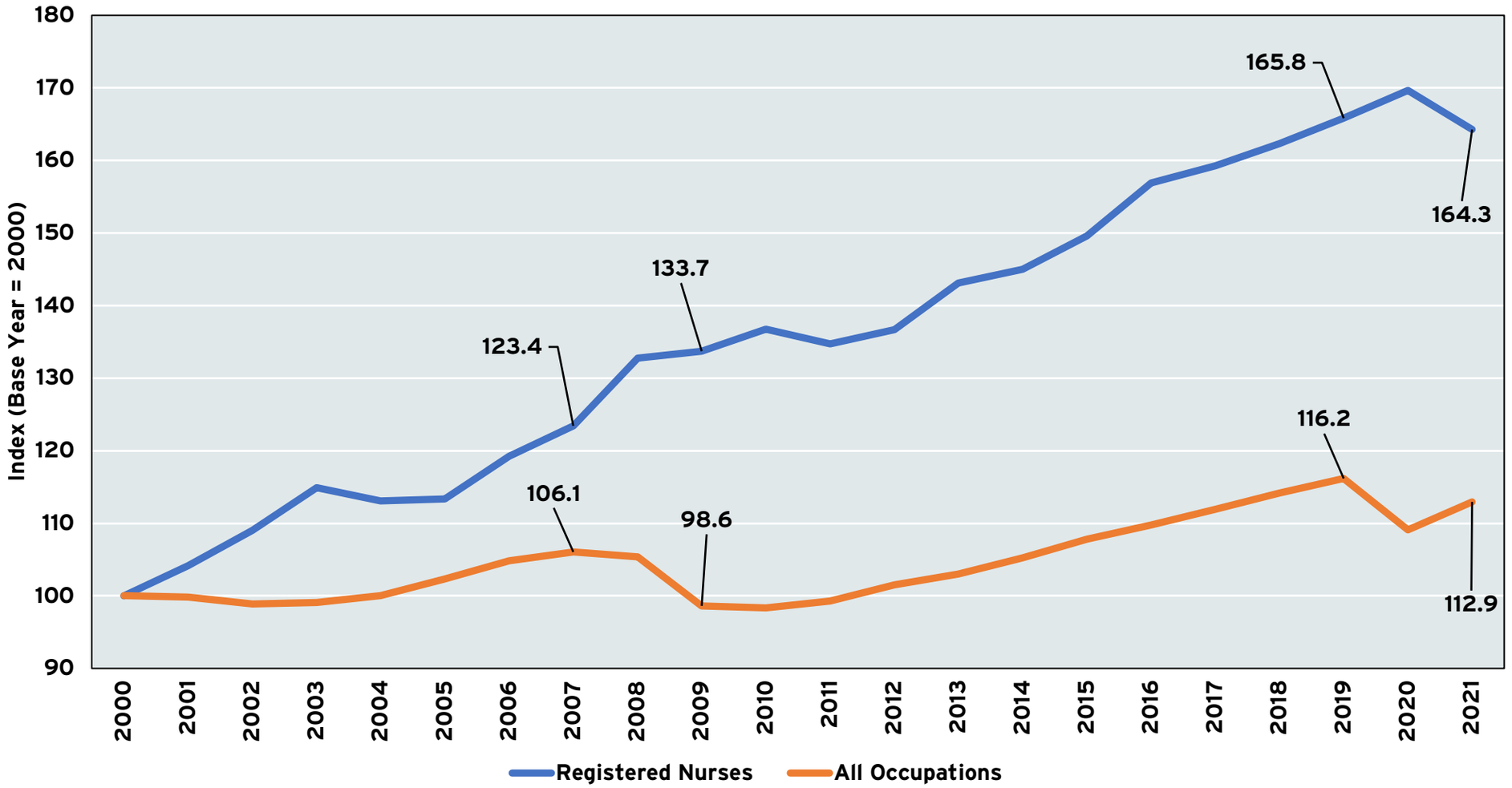
Before COVID: A Younger Profession in Demand

Even before the COVID-19 pandemic increased the strain on the health care system in the United States, registered nurses were in high demand. Graph 5 compares the employment growth of RNs and all occupations in the United States from 2000 to 2021. A familiar story emerges with an increase in overall employment prior to the Great Recession of 2007 to 2009. In the aftermath of the Great Recession, full-time employment declined by 7.3% in 2010. From this trough, the longest peacetime economic expansion would occur, as full-time employment rose by 18.1% from 2010 to 2019. There were 16.2% more full-time wage and salary workers in 2019 than 2000, and full-time employment was 9.5% higher than the previous pre-recessionary peak.

For RNs, on the other hand, employment surged over the past two decades. From 2000 to 2007, employment grew by 23.4% and increased another 10.8 percentage points during the Great Recession. RN employment continued to grow over the previous decade, and by 2019, there were 65.8% more employed nurses than there were in 2000. As the employment of nurses increased, it should be no surprise that nurses have gotten younger, on average, over time. Graph 6 shows the median age of registered nurses and all workers in the United States from 2011 to 2019. Over this period, the median age of registered nurses in the United States declined from 44.7 years to 43 years while the median age of all workers increased from 42.1 years to 42.3 years.

GRAPH 5

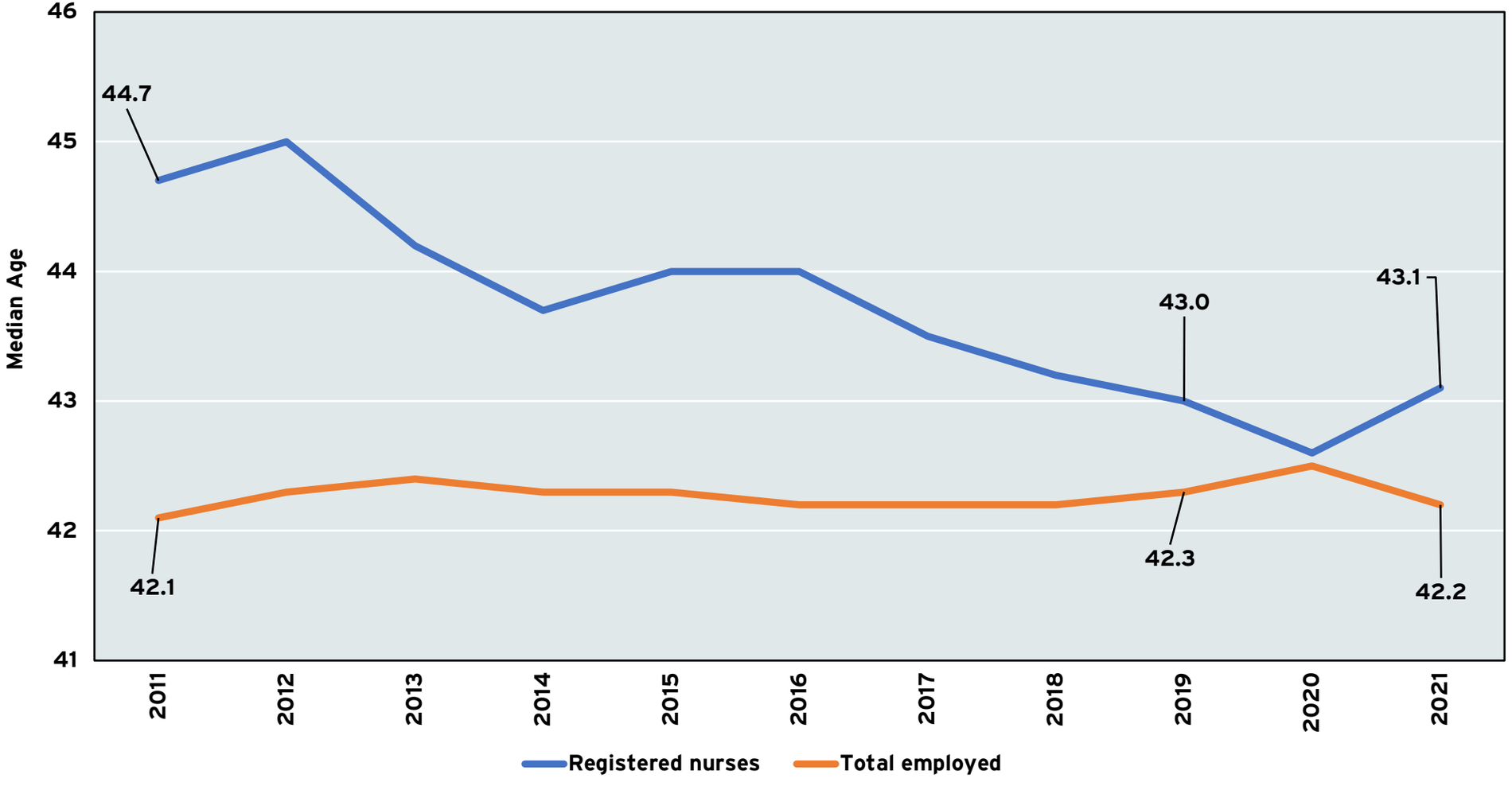
EMPLOYMENT GROWTH OF FULL-TIME WAGE AND SALARY WORKERS
REGISTERED NURSES AND ALL OCCUPATIONS
UNITED STATES, 2000 - 2021



Source: U.S. Bureau of Labor Statistics, employed full time: Wage and salary workers: Registered nurses occupations: 16 years and over [LEU0254487900A], retrieved from FRED. Non-seasonally adjusted data.

GRAPH 6

MEDIAN AGE OF WORKERS
REGISTERED NURSES AND ALL OCCUPATIONS
UNITED STATES, 2011 - 2021



Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS). Table 11b. Employed persons by detailed occupation and age.

Stress, Overwork, and Burnout: The Impact of COVID-19

Limited empirical data are currently available about the impact of COVID-19 on the nursing workforce in Virginia. Anecdotally, the COVID-19 pandemic has had a significant and long-lasting impact on the supply of nurses and demand for nursing services across the Commonwealth and nationwide. We can start by identifying nurse burnout as a human condition that results from excessive and prolonged emotional, physical, and mental stress points, leaving nurses feeling depleted, exhausted and, at times, traumatized.

Between March of 2020 and March of 2022, an already overtaxed nursing workforce was asked to do a whole lot more; one study estimated that COVID-19 hospital staffing demands increased by 245%, or 50,000 nurses' worth, from September 2020 to December 2020.[6] As a result, hospital systems in Virginia reported nurses moving to non-bedside jobs or leaving the profession altogether.

In an equal but opposite scenario, nearly 100,000 registered nurses nationwide found themselves unemployed through furloughs or terminations because non-COVID staffing needs in areas such as elective surgeries, procedures, and other health care operations were down. This resulted in many nurses experiencing financial and emotional distress, for perhaps the first time ever, given the otherwise recession-proof nature of the job. In the Commonwealth, RNs are slightly less likely to be employed in the profession today than they were in 2016 (89% vs. 90%) and only 1% of licensees report being involuntarily unemployed, likely because of the coronavirus pandemic.[7] Even with COVID-19 cases decreasing in 2022, there are reports now of chronic burnout and persistent understaffing in some areas.

The lack of adequate personal protection equipment (PPE) throughout the pandemic had an adverse impact on nurses. These basic and routinely scarce items included masks, face shields, hand sanitizer, sneeze guards, and disinfecting wipes. Nurses reported feeling betrayed by management who they felt did not prioritize their safety.[8] The unavailability of basic PPE during the onset of the pandemic and beyond caused some nurses to resign, retire, or leave the profession, which exacerbated workforce shortages across the nation.[9] Get us PPE[10] is a 501(c)(3) nonprofit organization that emerged during the pandemic in March 2020 to assist health care professionals in obtaining scarce protective gear. The agency reports that from March 20, 2020, to July 2, 2021, 23,001 total individual requests for PPE were received and over 17 million pieces of PPE were delivered at no cost to frontline workers in the United States. Get Us PPE listed N95 masks as the No. 1 requested item from the Commonwealth of Virginia. In 2020 and 2021, the organization delivered 33,660 pieces of PPE to Virginia, with gowns being the top delivered protective gear. Although large hospital systems were more likely to purchase PPE directly from suppliers, Get Us PPE met the dire need for PPE in under-resourced facilities such as nursing homes, Title I schools, and clinics. The organization stopped registering requests for donated PPE and coordinating PPE deliveries after July 2, 2021. Get Us PPE is now focused on advocating for the creation of a national PPE clearinghouse to solve supply issues for small and underserved communities as well as for the prevention of counterfeit PPE and price gouging.

While limited data are currently available on the exact number of nurses in Virginia who suffer ongoing health issues or have died from COVID-19, it is estimated that thousands of nurses nationwide suffer ongoing adverse effects after caring for COVID-19 patients.[11] Through their Lost on the

6 Teriakidis,A., McNitt, J., McAllister, M., Sizemore, O., Lindemann, P. (January 5, 2021). "COVID-19 Impact on Nurse Staffing and ICU Beds." Epic Research, https://epicresearch.org/articles/covid-19-impact-on-nurse-staffing-and-icu-beds

7 Department of Health Professions.

8 8 Arnetz JE, Goetz CM, Sudan S, Arble E, Janisse J, Arnetz BB. "Personal Protective Equipment and Mental Health Symptoms Among Nurses During the COVID-19 Pandemic." J Occup Environ Med. 2020 Nov;62(11):892-897. doi: 10.1097/JOM.0000000000001999. PMID: 32804747.

9 Chan, G.K., Bitton, J.R., Allgeyer, R.L., Elliott, D., Hudson, L.R., Moulton Burwell, P., (May 31, 2021). "The Impact of COVID-19 on the Nursing Workforce: A National Overview" OJIN: The Online Journal of Issues in Nursing Vol. 26, No. 2, Manuscript 2.

10 For more information, visit https://getusppe.org/data/

11 "The Toll of COVID-19 on Health Care Workers Remains Unknown." AJN, American Journal of Nursing: March 2021 Volume 121 - Issue 3 - p 14-15 doi: 10.1097/01.NAJ.0000737240.67253.9e

Frontline project, which aims to document the life of every U.S. medical worker who dies from COVID-19 after helping patients during the outbreak, The Guardian and Kaiser Health Network estimates that nurses comprise 32% of all health care worker deaths due to COVID-19.[12]

Are Registered Nurses Leaving the Profession?

Even though we are two-plus years into the COVID-19 pandemic, quantifying the impacts on registered nurses remains a story in progress. In Graph 7, we examine the growth in RNs in the United States. In 2018 and 2019, the number of full-time RNs increased by 1.9% and 2.2%, respectively. In 2020, not surprisingly, employment grew by another 2.3%. However, in 2021, the number of employed full-time RNs in the United States fell by 3.2% even while full-time employment for all occupations increased by 3.5%.

One possibility is that the demand for health care workers (and by extension, registered nurses) declined as the pandemic grinded into its second year. However, as Graph 8 illustrates, the demand for health care workers continued to outstrip the supply of available workers. In 2019, the gap between job openings and hires averaged about 560,000 a month. In 2020, this gap declined to approximately 410,000 as attempts to contain the pandemic led to reductions (if not outright stoppages) in elective medical procedures. However, in 2021, the average gap between job openings and hires widened to 947,000 a month and jumped again to approximately 1.2 million in 2022. There does not appear to be much support for the argument that the demand for health care workers has fallen over time.

Another possibility is that registered nurses are quitting faster than they can be hired. The data are, again, somewhat limited, but we can examine the age distribution of registered nurses to gain insight into this question (Graph 9). In 2021, the proportion of nurses in the youngest age group, 25 years to 34 years, declined a full percentage point to 25.7%. Likewise, the percentage of nurses in the next age group, 35 to 44 years, declined as well, from 25.6% in 2020 to 24.1% in 2021. On the other hand, in the same year, the proportion of nurses in the 45 to 54 age group increased by one percentage point, from 21.1% in 2020 to 22.2%. While one year does not make a trend, it may be a signal that younger registered nurses are leaving the profession. The decline in the median age of the profession (observed in Graph 6) may halt and reverse if this becomes a full-fledged flight by the youngest members of the profession. Without a steady influx of new registered nurses, the stresses on existing RNs will only increase over time.

Looking to the future, the demand for registered nurses is likely to outpace supply. Over the next decade, the average difference between the increase in the supply of nurses and the increase in demand for nurses in the United States will exceed 20,000 a year (Table 2). In other words, on average, there will be more than 20,000 unfilled RN positions a year because there will not be sufficient entrants into the nursing profession. We caution that these projections do not account for the toll that COVID-19 has taken on the profession. If anything, these workforce gap estimates may be optimistic.

TABLE 2

POTENTIAL AVERAGE ANNUAL OCCUPATION GAPS FOR REGISTERED NURSES UNITED STATES, 2022-2032

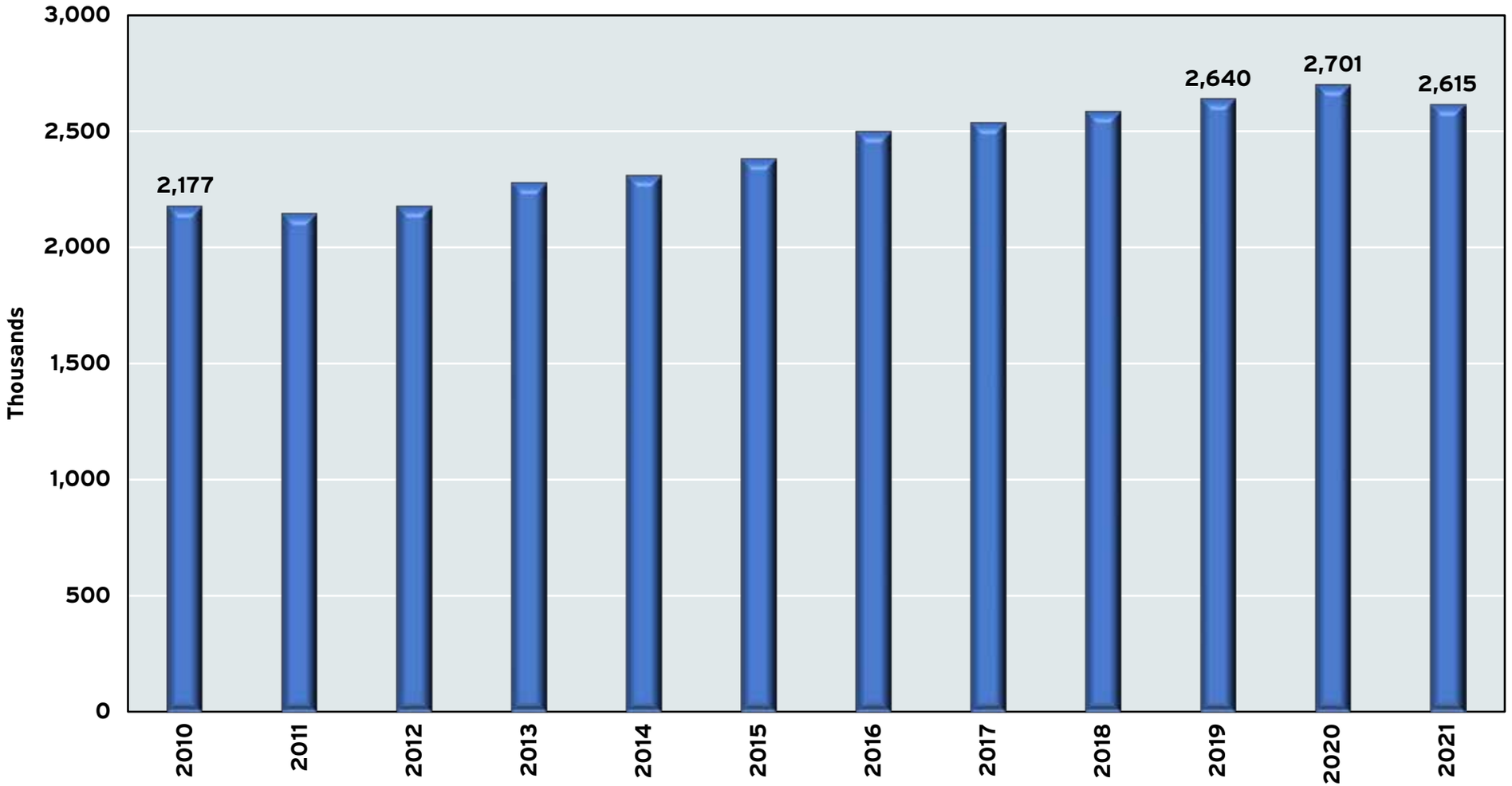
Current Employment 2022 Q1	Projected Employment 2032	Annual Employment Growth	Average Annual Supply	Average Annual Demand	Annual Supply Gap
3,114,311	3,346,326	0.8%	124,464	144,628	-20,164

Source: JobsEQ. Annual employment growth reflects the compound annual growth rate. Annual supply and demand estimates reflect the annual average accumulated supply and demand projections.

12 Kaiser. https://khn.org/news/lost-on-the-frontline-health-care-worker-death-toll-covid19-coronavirus/

GRAPH 7

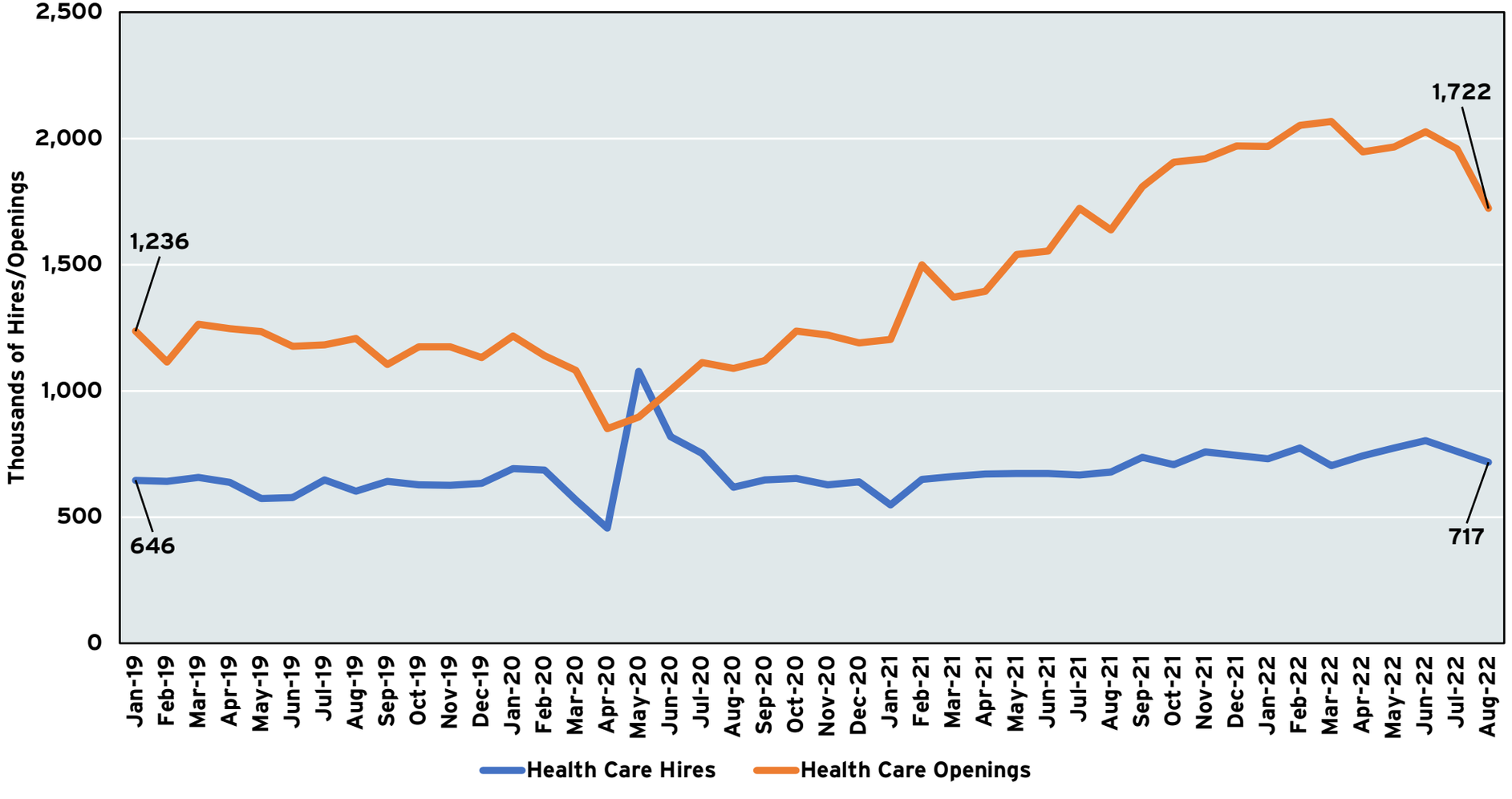
FULL-TIME REGISTERED NURSES
UNITED STATES, 2010-2021



Source: U.S. Bureau of Labor Statistics, employed full time: Wage and salary workers: Registered nurses occupations: 16 years and over [LEU0254487900A], retrieved from FRED.

GRAPH 8

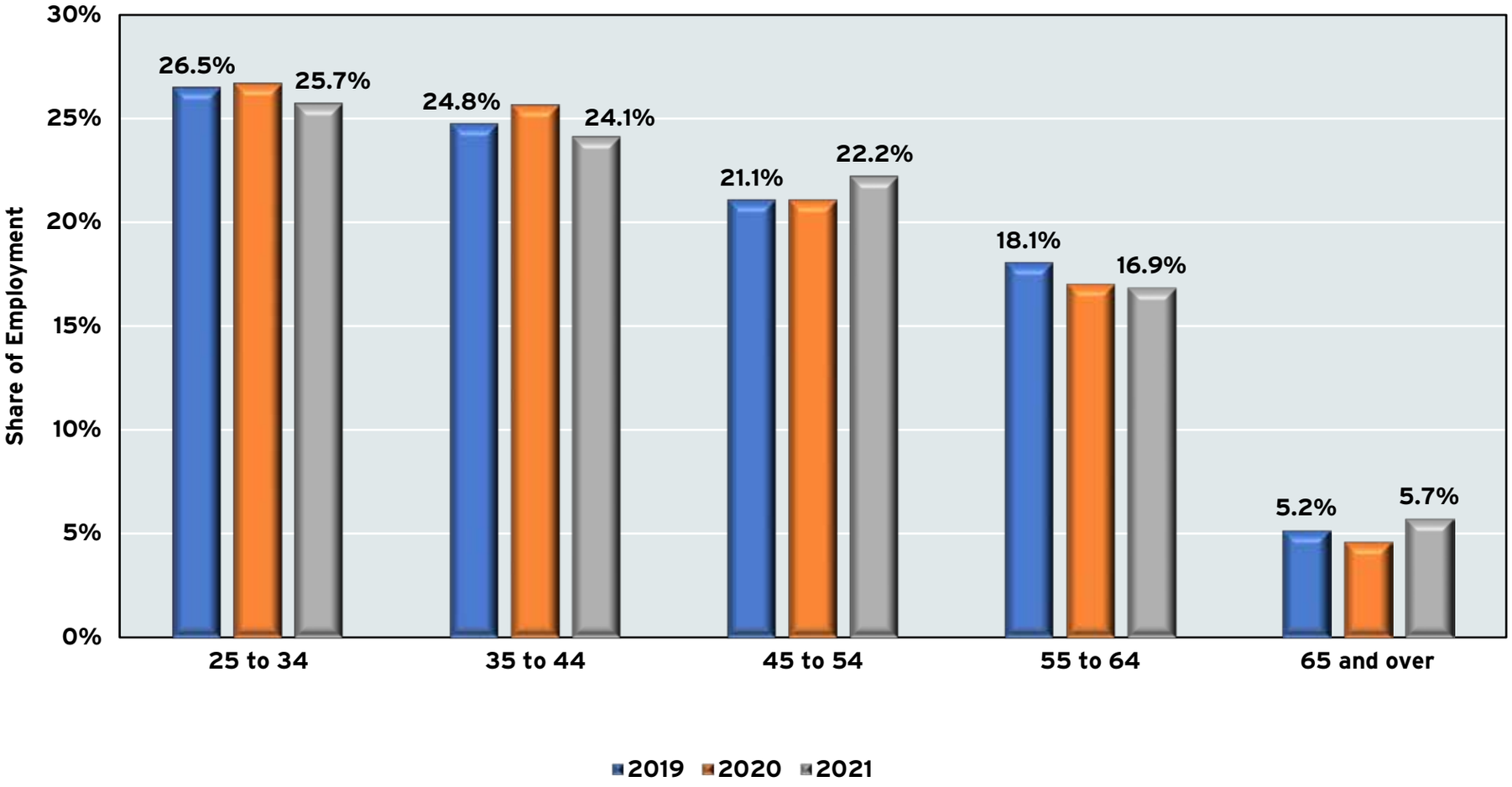
HEALTH CARE INDUSTRY JOB OPENINGS AND HIRES
UNITED STATES, JANUARY 2019 – AUGUST 2022



Source: U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS), seasonally adjusted data

GRAPH 9

REGISTERED NURSE EMPLOYMENT BY AGE GROUP
UNITED STATES, 2019, 2020, AND 2021



Source: U.S. Bureau of Labor Statistics, Current Population Survey (CPS). Table 11b. Employed persons by detailed occupation and age. Excludes age groups 16 to 19 years and 20 to 24 years.

Registered Nurses in Virginia

Given the impact of the COVID-19 pandemic, the national shortage of registered nurses, and the projected imbalance between the supply of new nurses and new jobs for those nurses, we need to analyze and ask what the future may hold for the Commonwealth.

Graph 10 displays data from the BLS on the employment of registered nurses in Virginia from the first quarter of 2012 to the first quarter of 2022. From 2012 Q1 to 2022 Q1, the average annual rate of employment growth for registered nurses in the region was higher than the overall rate of employment growth over the period.[13] However, the recovery in registered nursing employment has been somewhat tepid, significantly below the pre-COVID average rate of growth.

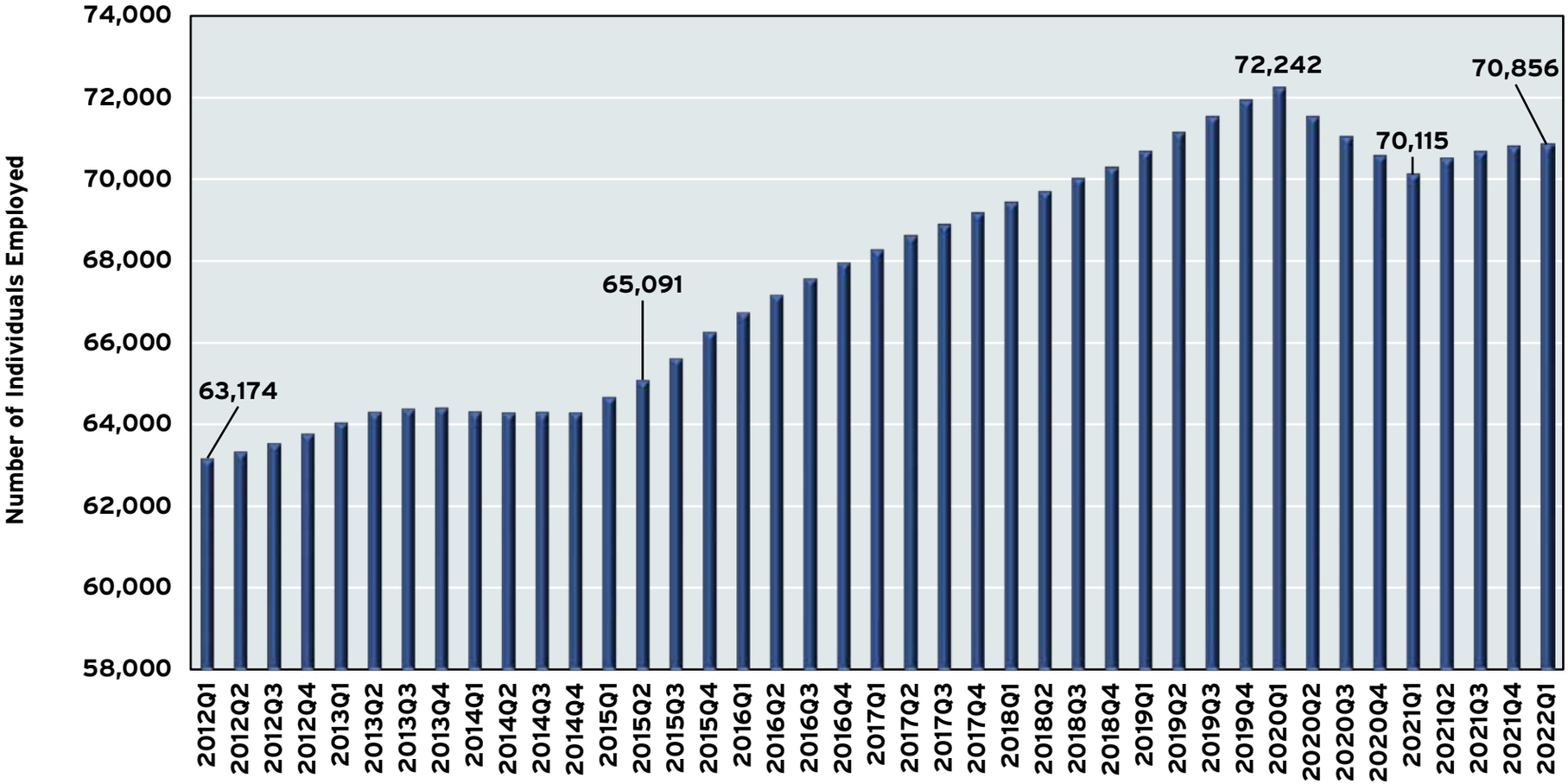
Graph 11 compares the growth in employment for registered nurses and all occupations in Virginia from 2012 Q1 to 2022 Q1. Registered nurses experienced less of a shock to employment than most workers in Virginia. Since the 2021 Q1 trough in employment, overall employment increased more than four times that of RNs. However, we must note that the estimated unemployment rate for registered nurses in 2021 Q4 was 1.3% compared to 4.6% for all employees. It should be no surprise that tepid economic growth and the relatively tight labor market for RNs has limited the pace of employment recovery.

We draw upon two sources to examine the state of the nursing profession, the Bureau of Labor Statistics (BLS) and the Virginia Department of Health Professions (DHP). The BLS administers the Occupation Employment Survey, a semiannual nationwide survey that is conducted with state employment agencies. The DHP collects feedback on an annual survey of nurses renewing their license in Virginia. License renewal is completed every two years, so for any given year, only half of the nurses will have access to the survey. More than 80% of nurses who are eligible to renew their nursing license responded to the survey, which provides one of the best opportunities to understand our regional nursing workforce.

13 The compound annual growth rate (CAGR) is equal to ((Last Period/Initial Period)^(1/number of periods))-1

GRAPH 10

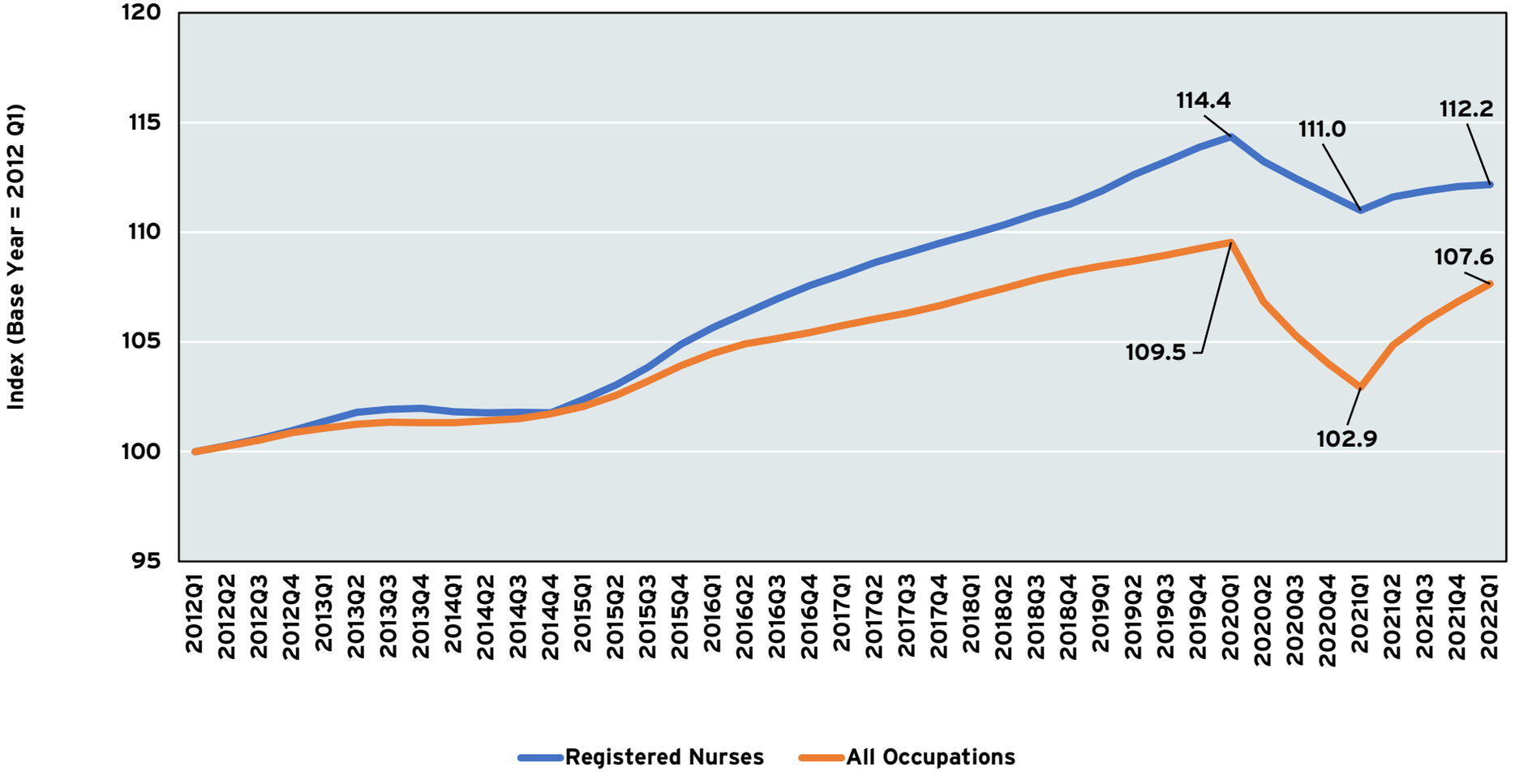
REGISTERED NURSES EMPLOYMENT
VIRGINIA, 2012 Q1 - 2022 Q1



Source: JobsEQ, four-quarter moving average. Employment by place of work. SOC 29-1141. Data as of 2022Q1.

GRAPH 11

GROWTH IN EMPLOYMENT
REGISTERED NURSES AND ALL OCCUPATIONS
VIRGINIA, 2012 Q1 - 2022 Q1



Source: JobsEQ, four-quarter moving average. Employment by place of work. Data as of 2022 Q1.

Will There Be Enough Nurses in Virginia?

One factor driving the demand for nurses over the coming years will be the aging of the national, state, and regional populations. Graph 12 displays the proportion of the population age 65 and older in Virginia and the United States in 2020 and the projected proportions for 2030 and 2040. In 2020, approximately 1 in 6 of the state's population was 65 or older. By 2030, it is anticipated that almost than 1 in 5 residents of Virginia will be age 65 or older.

As the population ages, the demand for health care and, consequently, registered nurses will increase as well. The population projections also do not account for the increase in the demand for health care for those suffering from long COVID-19. Concerns about the workload facing nurses may also lead to many stricter limits on patient-to-nurse ratios as research has shown that higher patient-to-nurse ratios are causally related to worse patient outcomes.[14] Other research has shown that as nurse activities (workload) increase, patient mortality in intensive care units increases.[15] In either case, restricting the number of patients a nurse can care for or limiting nursing workload (which would reduce the number of patients also) would increase the number of registered nurses required to maintain normal operations.

Table 3 provides estimates of the annual gap between the supply of and demand for registered nurses from 2022 to 2032. Even before we account for stress, burnout, and retirements, the supply of nurses falls short of anticipated demand. Virginia faces an average shortfall of 412 nurses a year over the coming decade. Compounding the state shortage of nurses is the likelihood of national shortages, leading to increased competition for nurses across the United States. Even if the Commonwealth increases its supply of new nurses, other states are likely to attract some (if not many) due to higher prevailing wages.

TABLE 3

POTENTIAL AVERAGE ANNUAL OCCUPATION GAPS FOR REGISTERED NURSES VIRGINIA, 2022-2032

Current Employment 2022 Q1	Projected Employment 2032	Annual Employment Growth 2022 - 2032	Average Annual Supply	Average Annual Demand	Annual Supply Gap
70,856	74,030	0.5%	2,729	3,140	-412

Source: JobsEQ. Annual employment growth reflects the compound annual growth rate. Annual supply and demand estimates reflect the annual average accumulated supply and demand projection.

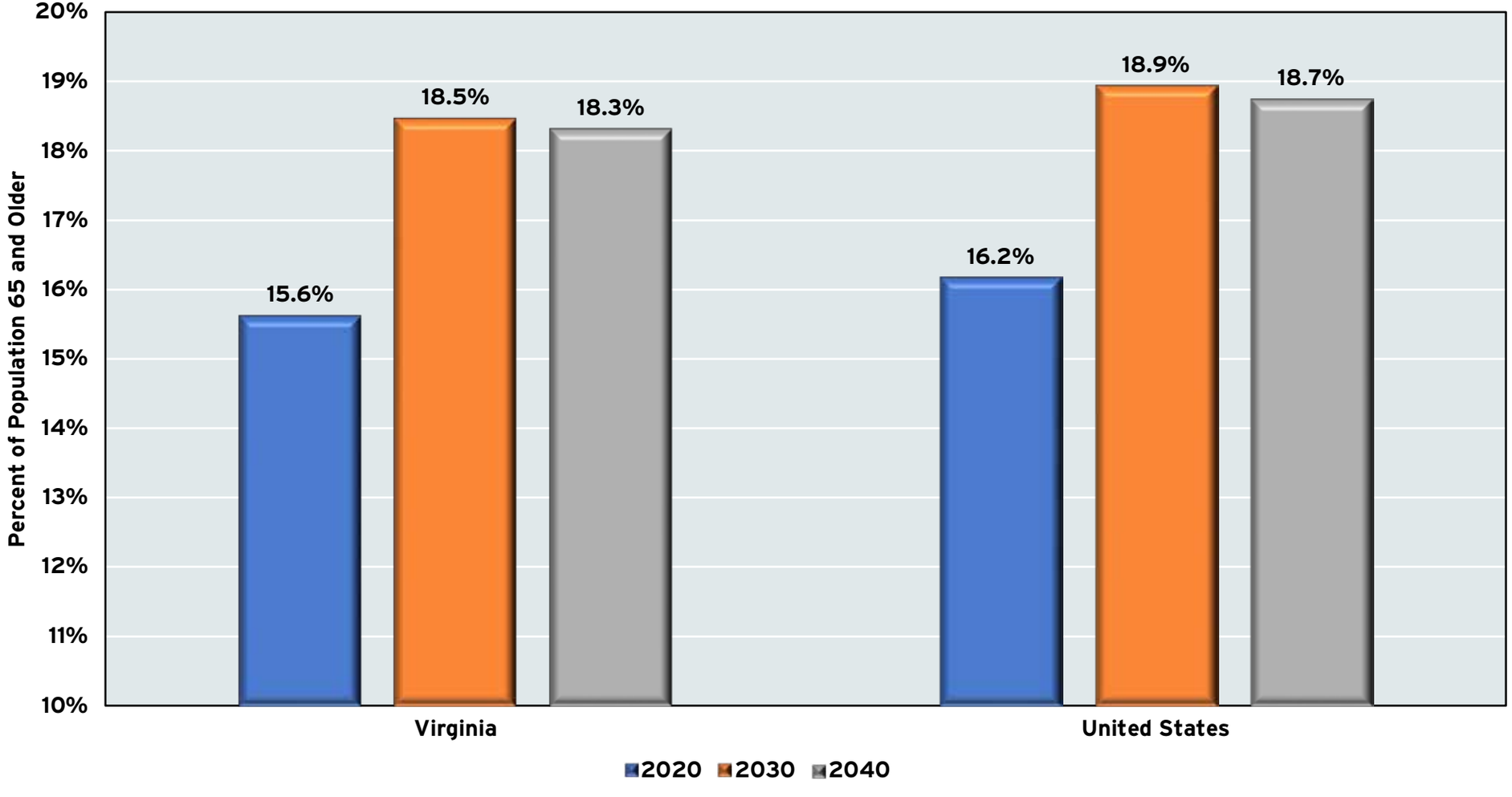
The gap between the supply of nurses and the demand for nurses is not merely a question of academic importance. As illustrated in Table 4, more rural areas of Virginia are likely to face increasing shortages of registered nurses over the coming decade. As the wage gap between urban and rural areas continues to increase, registered nurses (and other health professionals) will gravitate toward higher paying jobs in urban areas of the Commonwealth and nation. Much like we now observe "food deserts" in some areas of the region, we will see the rise of "nurse deserts" in the coming years.

14 Driscoll, A., Grant, M. J., Carroll, D., Dalton, S., Deaton, C., Jones, I., Lehwaldt, D., McKee, G., Munyombwe, T., & Astin, F. (2017). The effect of nurse-to-patient ratios on nurse-sensitive patient outcomes in acute specialist units: A systematic review and meta-analysis. *European Journal of Cardiovascular Nursing*, 17(1), 6-22.

15 Margadant, C., Wortel, S., Hoogendoorn, M., Bosman, R., Spijkstra, J. J., Brinkman, S., & de Keizer, N. (2020). The nursing activities score per nurse ratio is associated with in-hospital mortality, whereas the patients per nurse ratio is not*. *Critical Care Medicine*, 48(1), 3-9.

GRAPH 12

CURRENT AND PROJECTED SHARE OF THE POPULATION 65 AND OLDER
UNITED STATES AND VIRGINIA
2020, 2030, AND 2040



Source: Weldon Cooper Center for Public Service's Age and Sex Estimates, University of Virginia, and the Dragas Center for Economic Analysis and Policy, Old Dominion University.

TABLE 4

CURRENT AND PROJECTED EMPLOYMENT GROWTH OF REGISTERED NURSES
UNITED STATES, VIRGINIA, AND VIRGINIA METROPOLITAN AREAS
2022 Q1 - 2032 Q1

	RN Employment 2022 Q1	RN Share of Total Employment 2021 Q4	Location Quotient	Share of Population Age 65 and Older (2020)	10-Year Forecast Growth Rate	Retirements (Annual)	Retirement Rate (Annual)	2020 Median Annual Wage
Blacksburg-Christiansburg	1,208	1.7%	0.86	15.2%	2.0%	17	1.5%	$61,800
Charlottesville	3,732	3.2%	1.64	17.7%	1.5%	57	1.8%	$78,000
Harrisonburg	932	1.4%	0.69	15.0%	12.1%	15	1.7%	$63,100
Kingsport-Bristol	2,203	1.8%	0.91	22.0%	2.1%	44	1.9%	$59,800
Lynchburg	2,159	2.1%	1.04	18.8%	1.8%	43	1.9%	$71,700
Richmond	13,179	2.0%	1.00	15.6%	7.1%	217	1.8%	$75,900
Roanoke	4,725	3.0%	1.52	20.2%	-1.1%	73	1.9%	$67,500
Staunton	1,177	2.3%	1.15	20.4%	5.3%	24	2.1%	$74,200
Hampton Roads	15,268	1.9%	0.98	14.7%	2.0%	271	1.8%	$75,900
Washington-Arlington-Alexandria	48,857	1.5%	0.75	13.1%	4.0%	836	1.6%	$82,400
Winchester	1,450	2.1%	1.07	18.1%	5.1%	22	1.8%	$78,200
Virginia	70,856	1.7%	0.86	15.4%	4.5%	1,263	1.8%	$76,900
USA	3,114,311	2.0%	1.00	16.0%	7.4%	52,638	1.7%	$77,600

Source: JobsEQ, Census Bureau, American Community Survey (ACS), and the Dragas Center for Economic Analysis and Policy.

Why Don't We Have More Registered Nurses?

According to the American Association of Colleges of Nursing's (AACN) report, *2019-2020 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing*, nursing schools across the nation turned away over 80,000 qualified applications from baccalaureate and graduate nursing programs in 2019. In the 2020 – 2021 academic year, 19,666 individuals applied to registered nursing programs in the Commonwealth (Graph 13). Of these applicants, 13,333 were academically qualified, 9,219 were admitted, but only 7,580 ended up enrolling in the programs. In other words, about 1 in 2 qualified applicants were not admitted into a nursing program.

If we need more nurses, why can't we just rapidly expand the supply of new nurses in the Commonwealth and nation? Unfortunately, the supply of new registered nurses is limited by bottlenecks in the nursing supply chain. Much like how a district shutdown in China or Russia's invasion of Ukraine can ripple through supply chains to limit goods at the local store in the United States, the supply of new nurses is constrained by a lack of qualified instructors, inefficient processes, and limits on the conventional factors of production. Let's briefly explore how these bottlenecks occur and the impact on the supply of new nurses.

HUMAN RESOURCE SHORTFALLS

Schools of nursing across the Commonwealth and nation are functioning with significant faculty shortages because of budget constraints, retirements (aged faculty), and increased competition with clinical practice. In one undergraduate program in Virginia, for example, workload calculations demonstrate the need for 26 full-time faculty where there are 14 currently employed. This significant gap is addressed through the process of continuously hiring, scheduling, calculating compensation, and evaluating over 50 adjunct faculty throughout the academic year. Adjunct faculty are essential in nursing education, but they do not traditionally have the capacity to assume other critical roles essential to growing enrollment including mentors, committee members, advisers, tutors, alumni developers, recruiters, or ambassadors of programs because of their commitment to their clinical practice. Table 5 shows the distribution of full and part-time faculty by type of registered nursing program in Virginia. The use of adjunct faculty is not a new phenomenon in academia, but unlike many faculty, nursing faculty can transition quickly to new jobs.

Within the next 10 years, it is anticipated that 23% of the current nursing workforce in the Commonwealth will retire. The five-year periods with the most anticipated retirements are 2020-25 and 2025-30. Among RNs who are age 50 and over, 30% expect to retire by the age of 65. Should a large portion of baby boomer faculty RNs exit the workforce earlier than expected, the supply would decrease more precipitously and disrupt this niche of the labor market.

TABLE 5

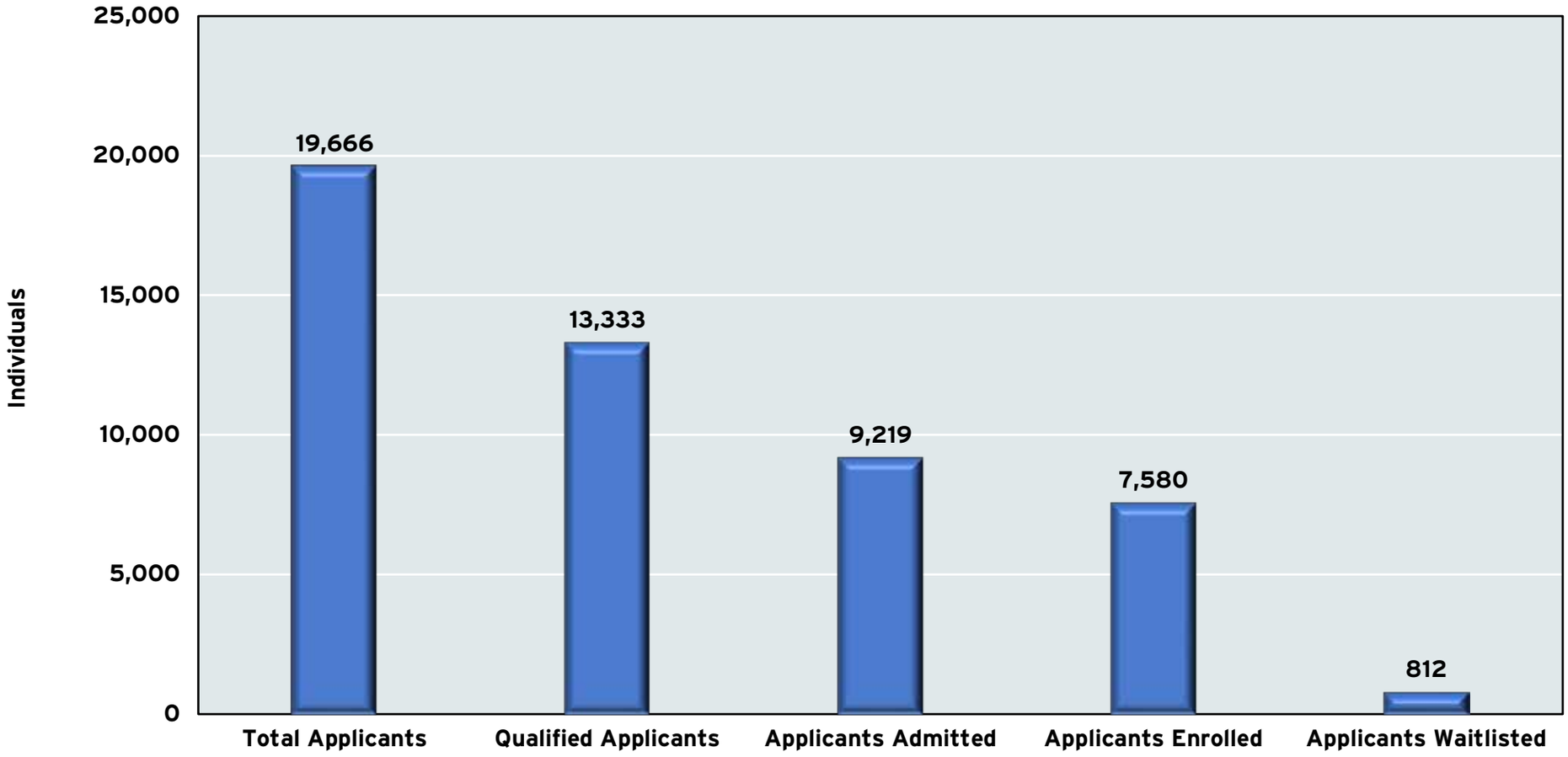
FACULTY EMPLOYMENT
RN PROGRAMS IN VIRGINIA
2020-2021 ACADEMIC YEAR

Program Type	Full Time	Part Time	Total	Percent Full Time
Accelerated Baccalaureate	77	122	199	38.7%
Associate	328	396	724	45.3%
Baccalaureate	435	506	941	46.2%
Associate Online	4	3	7	57.1%
Baccalaureate Online	36	21	57	63.2%
Accelerated Master's	10	0	10	100.0%
All Programs	890	1,048	1,938	45.9%

Source: Department of Health Professions, Virginia's Nursing Education Programs: 2020 - 2021 Academic Year. https://www.dhp.virginia.gov/media/dhpweb/docs/hwdc/nurse-ed/NurseEducation_2020-2021.pdf

GRAPH 13

APPLICATIONS TO REGISTERED NURSING PROGRAMS
VIRGINIA, 2020-2021 ACADEMIC YEAR



Source: Department of Health Professions, Virginia's Nursing Education Programs: 2020 – 2021 Academic Year. https://www.dhp.virginia.gov/media/dhpweb/docs/hwdc/nurse-ed/NurseEducation_2020-2021.pdf

With rising wages for nurses in clinical practice, it is becoming more and more difficult to recruit nurses as faculty. The average salary of a registered nurse working as a full-time employee in clinical practice in Virginia is, on average, $70,000-$80,000 annually.[16] By contrast, the average salary for a nurse working as a full-time faculty member in an undergraduate nursing program is around $65,000. With the growing number of travel nursing opportunities that carry a higher wage, this disparity can be substantially larger. Degree requirements also contribute to faculty shortages. To work as a faculty member in an undergraduate nursing program at a four-year university in the Commonwealth, the Virginia State Board of Nursing requires a minimum of a master's degree in nursing. To work in clinical practice, nurses are required to have an associate degree, with a bachelor's degree preferred.

INEFFICIENT REGULATIONS

Virginia law and Board of Nursing regulations require approval and oversight of all pre-licensure registered nursing programs located in Virginia and go to great lengths to ensure program quality. Once a program has been granted full approval, Board of Nursing regulations require an onsite survey of non-accredited programs every five years and accredited programs every 10 years. Programs must comply with several requirements including a minimum of 500 hours of direct patient care supervised by qualified faculty, that every faculty member must hold a graduate degree, and that preceptors must be licensed at a level at or above the level for which the students are preparing. While the purpose of the Board of Nursing is to ultimately ensure that nurses have the necessary knowledge and skills to practice safely and keep ethical standards, rigid compliance standards limit growth in academic enrollment.

In 2021, the AACN shared a new vision for academic nursing education derived in part from a review of current trends and "relevant assumptions regarding registered nurse preparation and practice."[17] Competency-based education is linked to explicitly defined performance expectations, based on observable behavior to a degree greater than it already is, and will require an increase and more frequent return for demonstrations and performance assessments using advanced technology and simulation. It is anticipated that the adoption of a competency-based educational model to maintain accreditation will require smaller faculty-to-student ratios as well as additional simulation and administrative support staff. These and other concerns related to accreditation requirements, such as impact on faculty development and resources and the financial impact on programs, have the potential to restrict growth in enrollment.

Further, many schools of nursing throughout the Commonwealth struggle to establish reliable partnerships with health systems and other affiliates to firmly secure clinical training opportunities for students. For example, there is stiff competition among nursing programs for required clinical training experiences and preceptors, especially in the specialized areas of pediatrics, obstetrics, and psychiatric and mental health. Further compounding the impact of such competition is the fact that proprietary schools of nursing are better positioned to compensate clinical sites for training; this strategy is of little advantage to programs housed at four-year public universities. The clinical training processes employed in professional nursing education are often inefficient; significant growth in enrollment is not likely to occur unless this problem is addressed.

LIMITS ON OTHER PRODUCTION FACTORS

Given the physical nature of professional nursing, programs are conducted with a significant degree of face-to-face, hands-on learning; this requires classroom and laboratory space. Faculty teaching in face-to-face educational nursing programs need private offices to counsel students and carry out their work in a distraction-free work environment. Programs require administrative offices for staff and other professionals whose work supports programmatic success. Large classrooms are necessary for large groups of learners to convene. Space is finite and limits on the same restrict growth in enrollment. The growth in nursing programs has primarily come from new entrants, not from the expansion of existing

16 Department of Health Professions.
17 American Association of Critical-Care Nurses (AACN)

programs; however, this is not a sustainable path forward to increasing the supply of new nurses in the future.

The Economic Cost of Nursing Shortages

Analyzing medical death rate data over an eight-year period, Johns Hopkins patient safety experts have calculated that more than 250,000 deaths per year are due to medical error in the U.S.[18] This figure surpasses the Centers for Disease Control and Prevention's (CDC's) third-leading cause of death, respiratory disease, which kills close to 150,000 people per year. While the health care system in the U.S. does not employ robust error-reporting mechanisms from which we can learn, patient safety experts have identified the root causes of many preventable medical mistakes. These include poor systems, inadequate communication, ineffective teamwork, and low levels of provider situation awareness. High levels of situation awareness are essential to quality care and patient safety in nursing and amounts to having a really good understanding of any given clinical situation. Inadequate situation awareness is a result of fatigue, distractions, stressful situations, high workload, vigilance failures, poorly presented information, forgetting key information and poor mental models.[19] In nursing, inadequate situation awareness is more likely to occur when nurse staffing is low relative to the number of patients needing care.

There is a growing body of evidence that demonstrates a relationship between low RN staffing levels and changes in the quality and quantity of patient care interventions, indicating that a reduction in nurse staffing adversely affects care quality. Nurses' vigilance at the bedside is essential to their ability to ensure patient safety. Assigning increasing numbers of patients to each nurse eventually compromises his or her ability to provide safe care.[20]

Nurses' education and training appear to be linked to patient outcomes. One study showed lower inpatient mortality rates for a variety of surgical patients in hospitals with more highly educated nurses. This finding has resulted in calls for all nurses to have at least a baccalaureate education, which was one of four key recommendations of the landmark Institute of Medicine report, *The Future of Nursing: Leading Change, Advancing Health*.[21]

High-quality professional nursing care is a vital component of the economy and the health care system in Virginia. More than 70,000 registered nurses are employed in Virginia. As health care costs continue to increase, concerted efforts to improve the efficiency and effectiveness of the health care system must consider nurses' contributions to the same.

18 Makary, M. A., & Daniel, M. (2016). Medical error—The third leading cause of death in the US. *BMJ*, 353, i2139. https://doi.org/10.1136/bmj.i2139
19 Endsley, M. R. (1995). Toward a Theory of Situation Awareness in Dynamic Systems. *Human Factors*, 37(1), 32–64. https://doi.org/10.1518/001872095779049543
20 Phillips, J., Malliaris, A. P., & Bakerjian, D. (2021, April 21). Nursing and patient safety. Patient Safety Network. Retrieved December 9, 2022, from https://psnet.ahrq.gov/primer/nursing-and-patient-safety
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Travel Nursing and COVID: A Complicated Market Response to the Increased Demand for Nurses

The rise of contract or travel nursing has also become a major challenge for the health care industry. The wage disparities between travel nurses and nurses that work as full-time employees of hospitals can create disharmony in the workplace as it is common for these two providers to work side by side. As COVID-19 hotspots and unprecedented nursing shortages emerged across the country, staffing agencies aggressively recruited and contracted with nurses to 'travel' to areas to provide care at much higher wages than they would earn as full-time hospital employees. Some hospitals were left with no options but to bring travel nurses on board to fill the workforce gap without the capacity to offer competitive wages to their full-time staff.

However, as Covid hospitalization rates began to stabilize federal and state Covid relief funding dissipated, and the travel nurse contracts that were once lucrative started to vanish by late 2022. In fact, a class action lawsuit was filed in August 2022 against a national health care staffing agency, Aya Healthcare, Inc. accusing the company of running a "bait and switch" program by routinely reducing pay halfway through the nursing contract.

Final Thoughts

We recommend expanded efforts to identify and quantify the economic value of nursing in Virginia because greater utilization of nurses in health care services has significant potential to control or possibly reduce costs related to care. These costs are distributed among different groups, including federal and state governments, who provide support for nursing education and research and pay for health care services provided through public health insurance programs; employers, who pay nurses' wages and pay much of the cost of health benefits; and health care consumers, who bear some costs of their own health care services and premiums.

Nursing also provides services with economic value in that nursing care generates payments to hospitals, home health agencies, nursing homes, clinics, and other providers. Nursing services output decreases hospital lengths of stay, prevents illness, and reduces preventable errors, complications, and readmissions, all of which save money for providers and health plans.[22] Similarly, excellent nursing care facilitates rapid recovery from illness and injury and decreases overall mortality, resulting in increased productivity.

There is significant potential for schools of nursing to develop nurse faculty residency-type programs that emphasize strategies to improve faculty recruitment, preparation, development, and retention. Schools should further develop their distance learning infrastructure to include programs that advance faculty competencies in the pedagogy of teaching and the evidence-based use of technology, simulation, and distance learning and teaching techniques. Educational programs with the capacity to do so can develop and operate nurse-led interprofessional primary care clinics in collaboration with community partners to serve homeless, uninsured, and Medicaid-eligible members of the community; these clinics will also double as robust clinical training sites for nursing and other related health sciences students.

It is imperative that institutions of higher education develop strong, committed, and long-lasting partnerships with health care providers to create additional training sites in Virginia to sustain growth in enrollment.

22 Keepnews, David. (2013). "Mapping the Economic Value of Nursing: A White Paper." Seattle: Washington State Nurses Association.

Academic-practice partnerships are mechanisms for advancing nursing practice to improve the health of the public. Intentional and formalized relationships are based on mutual goals, respect, and shared knowledge between a nursing education program and a care setting. Such relationships are defined broadly and may include partnerships between nursing and other professions, corporations, government entities, and foundations.

One recommendation to increase the number of nurses in Virginia is to make nursing more attractive as a profession. Hospital systems and other employers can extend some of the privileges afforded to physicians to their nursing staff. Housing allowances for physicians? How about housing allowances for nurses? Educational loan forgiveness programs for physicians? How about educational loan forgiveness programs for nurses? Hospitals often declare the important roles of nurses, but actions may speak louder than words. When some members of the team are treated differently from other members of the team, a hierarchy is established which communicates that some members have higher value than others. All health care providers play a critical role on the team and should be treated and recognized accordingly.

Professional nurses are counted on by the U.S. health care system as essential to expanding access to care for all, reducing costs related to health care, and improving health and the quality of health care for a thriving economy and enhanced quality of life. The National Academy of Medicine's *Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity* report identifies professional nurses as powerful agents to help all Americans live longer, healthier lives which, by default, boosts the economy. Academic institutions, the health care community, insurance companies, and government and community members must work together to create an efficient production process to connect those interested in becoming a nurse to the thousands of nursing jobs waiting to be filled.

VIRGINIA'S LAWYERS CONFRONT TOUGHER TIMES

"Law is certainly one of the most prestigious professions practiced in the world today and has remained so since time immemorial."[1]

– Destination Scanner Web Site

If one surfs the internet, it is not difficult to find many quotations that express sentiments similar to those of Destination Scanner, a website that provides career advice. Destination Scanner, however, goes further and tells its readers that law is "one of the most paying jobs in the world and thus the most sought after," as well as one of the "most prestigious jobs" available. [1]

Many hold the view that lawyers are highly regarded, well respected, and generously compensated. Law Crossing advises its readers that the law is at the top of any list that purports to list the most prestigious professions.[2] Reflective of this supposition, most law schools continue to receive far more applications for admission than they have student spots available.

Many individuals aspire to be lawyers. This is true even though attending a law school is an expensive proposition, and many law schools offer only minimal financial assistance to financially needy students. This means that a student who pursues a Juris Doctor (J.D.) degree (the coin of the realm if one wishes to become a lawyer) and who receives no financial aid will incur out-of-pocket expenses that will range between $200,000 and $600,000 over a typical three-year program. By way of illustration, Columbia University's law school advertises a 2022 tuition of $72,360 per

1 Destination Scanner, "18 Pros and Cons of Being a Lawyer"
2 June, D. (2022, April 28). Is law still a prestigious and profitable business? LawCrossing.com. Retrieved June 15, 2022.

student. Even a public university such as the University of Illinois quotes $54,782 as its 2022 tuition.

Imposing as these numbers are, students compete for the privilege of paying these costs. Yale University's law school offered admission to only 7.4% of its applicants in 2020, and even less selective institutions such as the University of Connecticut rejected more than one-half of their law school applicants.[3] Table 1 reports acceptance rates and related data at law schools in Virginia and provides an eclectic sample of other law schools to provide context. Suffice it for us to observe that most law schools do not lack for applicants, and obtaining a seat at the typical law school can be a challenging task.

Students compete for the privilege of attending law schools even though the typical law school is pricey and offers surprisingly little financial aid. **In 2021, more than 90% of law students took out a loan to enable them to pay their costs, and the typical law school graduate owed $165,000 in loans.**[4] Five years previous, the U.S. Department of Education estimated that debt number to be $145,500; expected student debt rose about $4,000 annually during that half decade.[5]

U.S. News and World Report reported that in 2021, only 0.4% of students attending the University of Minnesota's law school received a grant as large as their tuition costs.[6] Weigh this circumstance against the price one must pay to be a law student there – the annual cost for an in-state Minnesotan to attend the institution's well-regarded law school (98%+ of its graduates pass the Minnesota law board examination) approaches $75,000 annually.[7] Here in the Commonwealth of Virginia, the University of Virginia's top ten-ranked law school advertises a $92,000 annual cost of attendance if one can claim in-state residency but an even higher price for those who are non-residents.[8] Bear in mind that both of these examples relate to public sector law schools. Students attending private sector law schools can expect to pay more.

Despite the costs of attending law school and the likelihood that this will result in students accumulating substantial debt, the typical law school does not lack for students who are willing to dive into this situation. Earning a law degree is an expensive proposition, but one must observe that this has not deterred many from attempting to do so. This is *prima facie* evidence of the considerable prestige and charisma that remain connected to the legal profession.

The crucial point of this report, however, is that significant proportions of law school graduates are destined to be disappointed if they pursue a career in law believing they will earn lots of money. We do not doubt that law remains a prestigious profession and that it continues to attract many individuals interested in making it their career. **Nevertheless, the real (price-adjusted) median income of a lawyer has been declining for a decade or more. This condition holds true nationally, in Virginia, and inside its major metropolitan regions.**[9]

As we will see, the real (inflation-adjusted) income of the average worker in the United States increased between 2005 and 2021. But this did not hold true for lawyers, and this point deserves discussion. When the real incomes of a particular type of worker decline for an extended period of time, it signals an oversupply of workers relative to the demand for those workers' services. Since this holds true among lawyers, **it leads us to conclude that the nation's law schools (and those in Virginia) appear to be producing more graduates than society can usefully absorb.**[10]

At the same time law schools may be graduating more potential lawyers than needed, the demand for several services that lawyers traditionally provide has stagnated or declined. Thus, the decline in the real median income of lawyers reflects classic textbook supply and demand influences in action.

Let's probe deeper.

3 Joshua Craven, "Law School Acceptance Rates: The Hardest & Easiest Law Schools to Get Into," Lawschooli (September 21, 2021), Law School Acceptance Rates: The Hardest & Easiest Law Schools to Get Into - LawSchooli.
4 Bankrate.com, "Average Law School Loan Debt," https://www.bankrate.com/loans/student-loans/average-law-school-debt/
5 National Center for Education Statistics, U.S. Department of Education, "Trends in Student Loan Debt for Graduate School Completers," May 2018, COE - Trends in Student Loan Debt for Graduate School Completers (ed.gov).
6 U.S. News and World Report, "Public Law Schools with the Most Financial Aid," https://www.usnews.com/best-graduate-schools/top-law-schools/finaid-public-rankings
7 See College Factual, University of Minnesota, www.collegefactual.com/colleges/university-of-minnesota-twin-cities/paying-for-college/student-loan-debt.
8 "J.D. Program Budget, 2022-23," Admissions and Financial Aid, University of Virginia Law School, www.law.virginia.edu/facts-and-stats/overview.
9 This is a point made by James V. Koch and Barbara Blake in "Why Have Lawyer Real Median Incomes Been Declining?" J Econ Finan (July 2022). https://doi.org/10.1007/s12197-022-09588-6
10 "Usefully absorb" is a normative term but can be given more objective meaning by applying the following condition. If lawyers' real (price-adjusted) incomes are reduced by the inflow of newly minted lawyers, then plausibly there already are too many lawyers and/or the flow of new lawyers into labor markets is more than needed.

TABLE 1

ADMISSION CHARACTERISTICS OF VIRGINIA LAW SCHOOLS COMPARED TO OTHERS: 2020

	Full-Time Applicants	Full-Time Admission Offered	Percent Admitted	Full-Time Enrolled First Year	Percent of Admitted Who Enrolled	Full-Time 50th Percentile LSAT	All First-Year Students UG GPA	Percent Pass State Law Board Exam First Time Minus State Average
Appalachian School of Law	607	272	44.81%	72	26.47%	147	3.17	-40.37%
George Mason U (Scalia)	1,820	415	22.80%	149	35.90%	164	3.77	16.00%
Liberty U	518	287	55.41%	198	37.98%	151	3.4	7.32%
Regent U	436	224	51.38%	97	43.30%	155	3.45	4.90%
U Richmond	1,361	592	43.50%	151	25.51%	161	3.62	9.74%
U Virginia	5,458	767	14.05%	281	36.64%	170	3.9	18.01%
Washington and Lee U	1,993	732	36.73%	118	16.12%	163	3.63	12.01%
William & Mary	2,332	981	42.07%	227	23.14%	163	3.6	16.00%
Catholic U	1,214	508	41.85%	118	23.23%	156	3.4	11.95%
Georgetown U	9,980	2,006	20.10%	580	28.91%	168	3.78	15.13%
George Washington U	7,836	2,676	34.15%	537	20.07%	166	3.76	14.85%
Howard U	1,549	530	34.22%	150	28.30%	153	3.41	-7.65%
U District of Columbia	518	169	32.63%	65	38.46%	149	3.09	-13.48%
U Maryland	2,106	767	36.42%	202	26.34%	160	3.66	9.74%
Wake Forest U	1,790	322	17.99%	71	22.05%	163	3.73	13.50%
Florida A&M U	1,310	443	33.82%	111	25.06%	158	3.53	-18.30%
Lewis & Clark C	1,143	694	60.72%	184	26.51%	158	3.49	-7.74%
Northern Kentucky U (Chase)	527	344	65.28%	123	35.76%	152	3.19	1.62%
Northwestern U	5,301	1,018	19.20%	237	23.28%	169	3.85	9.50%
Southern U	962	593	61.64%	322	54.30%	144	2.98	-35.33%
Texas A&M U	2,795	627	22.43%	159	25.36%	160	3.76	14.84%
U Alabama	1,509	539	35.72%	126	23.38%	164	3.94	14.77%
U Arkansas Little Rock	787	397	50.44%	156	39.29%	151	3.41	4.90%
U Connecticut	1,206	544	45.11%	165	30.33%	158	3.53	9.22%

TABLE 1

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U Minnesota	2,088	761	36.45%	209	27.46%	165	3.77	16.73%
U Nevada Las Vegas	898	279	31.07%	119	42.65%	160	3.67	4.10%
U North Dakota	315	209	66.35%	81	38.76%	148	3.34	7.70%
U Southern California	5,327	915	17.18%	183	20.00%	167	3.83	13.62%
Yale U	3,539	262	7.40%	168	64.12%	173	3.94	19.37%

Source: American Bar Association, JD Applicant and Enrollee Data, Fall 2020, www.americanbar.org/groups/legal_education/resources/statistics.

Charting Lawyers' Incomes

If we ignore price inflation for a moment (not an easy thing to do in 2022), then it is true that both the mean and the median incomes of lawyers increased during most years since the turn of the century. Graph 1 illustrates this phenomenon for the Commonwealth of Virginia between 2005 and 2021. Before taking account of the effects of price inflation, the mean salary of a lawyer in Virginia rose by $26,620, or 22.28%, while the median salary of a lawyer rose by $22,450, or 20.58% during the same period.[11]

The problem with the income numbers in Graph 1 is that they do not account for price inflation. Rising prices erode the spending power of money and so in Graph 2, we present the "real" (price-adjusted) salaries of Virginia lawyers during the same 2005-2021 period. Each year's income is expressed in terms of July 2021 prices, and therefore, the average $119,490 income of a Virginia lawyer in 2005 translates to $167,374 when it is valued in terms of those 2021 prices. Stated differently — only $119,490 would be required in 2001 to purchase the same items that $167,374 would purchase in 2021. We adjust our numbers to reflect this so the time periods are comparable.

Once we take price inflation into account, it is clear that the real, spendable value of the typical Virginia lawyer's income has been declining. Indeed, the total 2005-2021 declines were 12.70% if we focus on the mean incomes of lawyers and 13.91% if we concentrate on the median incomes of lawyers.

When real incomes are the measuring stick, it becomes clear that recent years have not been kind to the typical Virginia lawyer. The purchasing power of the representative Virginia lawyer's income has declined.

We acknowledge that publications such as Virginia Business recently have asserted that times are booming for lawyers in Virginia; however, the reality is that this phenomenon may have been confined to a small number of lawyers at a select group of law firms. Virginia Business opined that "In law firms across Virginia, power is now definitely on the side of individual attorneys, who can command larger salaries and other perks so long as they're willing to cope with heavier workloads."[12] But Graph 2

11 It is customary for mean salaries to exceed median salaries because a few individuals earn very high incomes, and this props up the average.
12 M.J. McAteer, "Attorneys in Power Positions Amid Talent Shortage," *Virginia Business* (April 28, 2022), www.virginiabusiness.com.

portrays economic reality for the typical Virginia lawyer. Even if lawyers are working longer hours, Graph 2 reveals that the economic payoff from the extra effort has been deteriorating for the representative lawyer in Virginia.

Further, as Graph 3 discloses, the relative decline in the economic fortunes of lawyers has been worse than what we observe in other occupations. Between 2005 and 2021, the median income of a Virginia worker increased by 10.81% but fell 13.91% for Virginia lawyers.

The volume of legal activity is affected by economic conditions. An expanding economy generates more legal business; a contracting economy does the opposite. The problem for lawyers is that the Commonwealth's economy grew rather slowly between 2005 and 2021. In 2005, the total number of employed individuals (all occupations) in Virginia was 3,631,440; by 2021 this number had risen only to 3,753,230.[13] This translates to a puny .21% average annual growth rate of jobs in the Commonwealth, which hardly qualifies as a dynamic performance. This resulted in net negative domestic migration from Virginia to other states. More individuals moved out of Virginia into other states than came into the Commonwealth from other states. These are not economic conditions likely to produce rapid growth in lawyers' real incomes.

The erosion of lawyers' real incomes that has occurred in Virginia does not represent an isolated trend. The same phenomenon has been present nationally, though lawyers have fared slightly better in the rest of the country than in Virginia. Graph 4 reveals that when our focus is on the United States overall, real median lawyers' incomes declined 7.64% between 2005 and 2021, even while the real incomes of many other professionals were increasing.

One lawyer with whom we spoke chose to term the current malaise in lawyers' incomes as "the Virginia lawyers' disease" because the declines in lawyers' incomes have been more virulent in Virginia than in most other states. Not only have Virginia lawyers' real median incomes declined, but also our lawyers have fared worse than other professions.

Further, the decline in the real incomes of lawyers in Virginia has not been confined to isolated locales. Instead, it has occurred throughout Virginia. Table 2 focuses on Virginia's major metropolitan areas plus Nashville, a contrasting metropolitan region that has been prospering. Between 2005 and 2021, the real median incomes of Virginia lawyers fell in every major metropolitan region of the Commonwealth. The Washington, D.C., metropolitan area experienced the smallest decline (about 2.3%), while Hampton Roads suffered the largest decline (about 29.1%). Graph 5 illustrates how these changes have occurred over time.

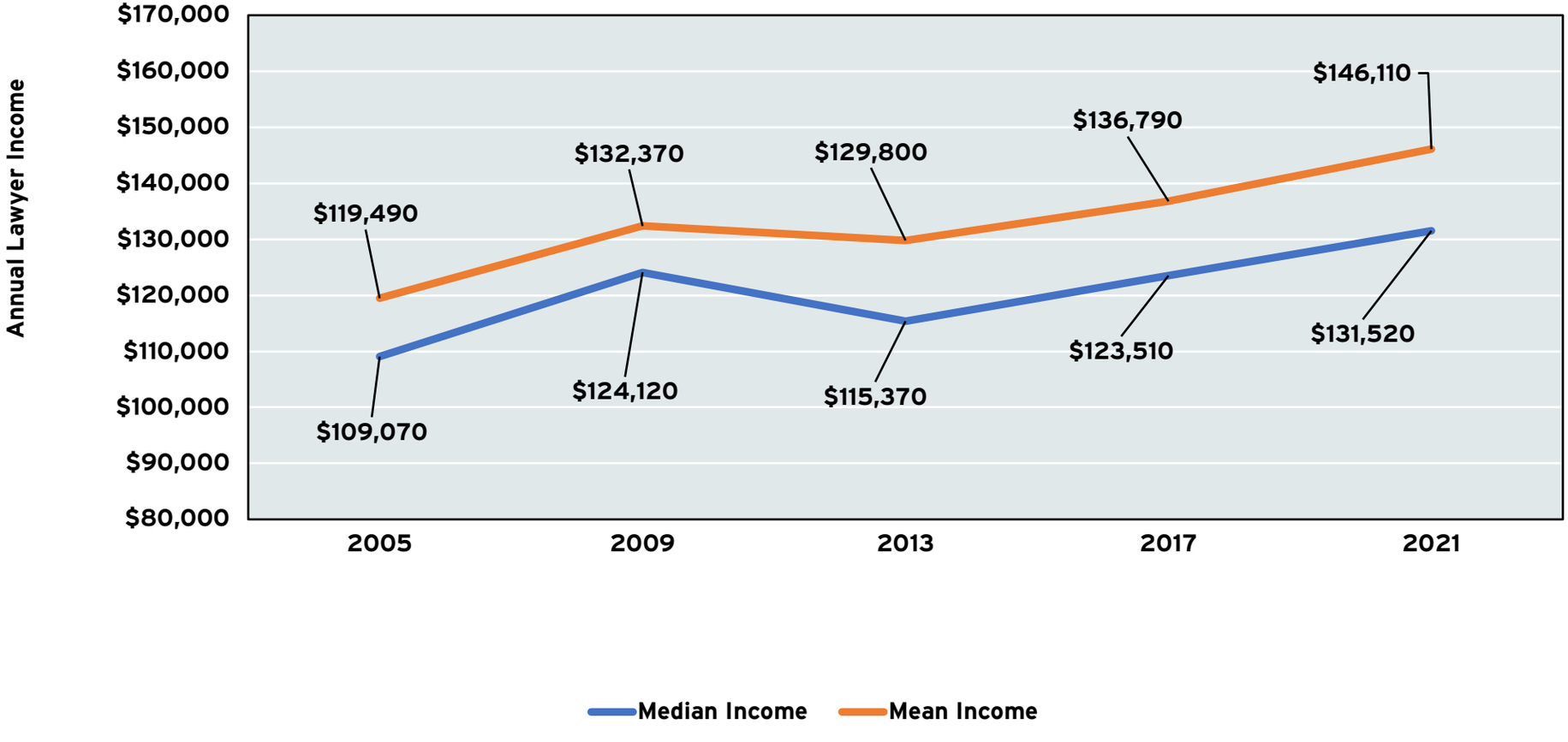
There is no mistaking the message that these income numbers send; they paint a dismal financial picture for the typical lawyer. When similar circumstances have presented themselves in industries such as coal mining, newspaper publishing, or shopping malls, these industries usually are labeled "declining," and we are informed that they must undergo painful readjustments. Lawyers will not appreciate being positioned on the same plateau as these industries, but some of the same characteristics apply to the practice of law. This has meant that the typical attorney who inhabits the "law industry" in Virginia (or across the country) has found themselves in the midst of what now has matured into a long-term decline in their real compensation.

We now will explore why this is so.

13 Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes.

GRAPH 1

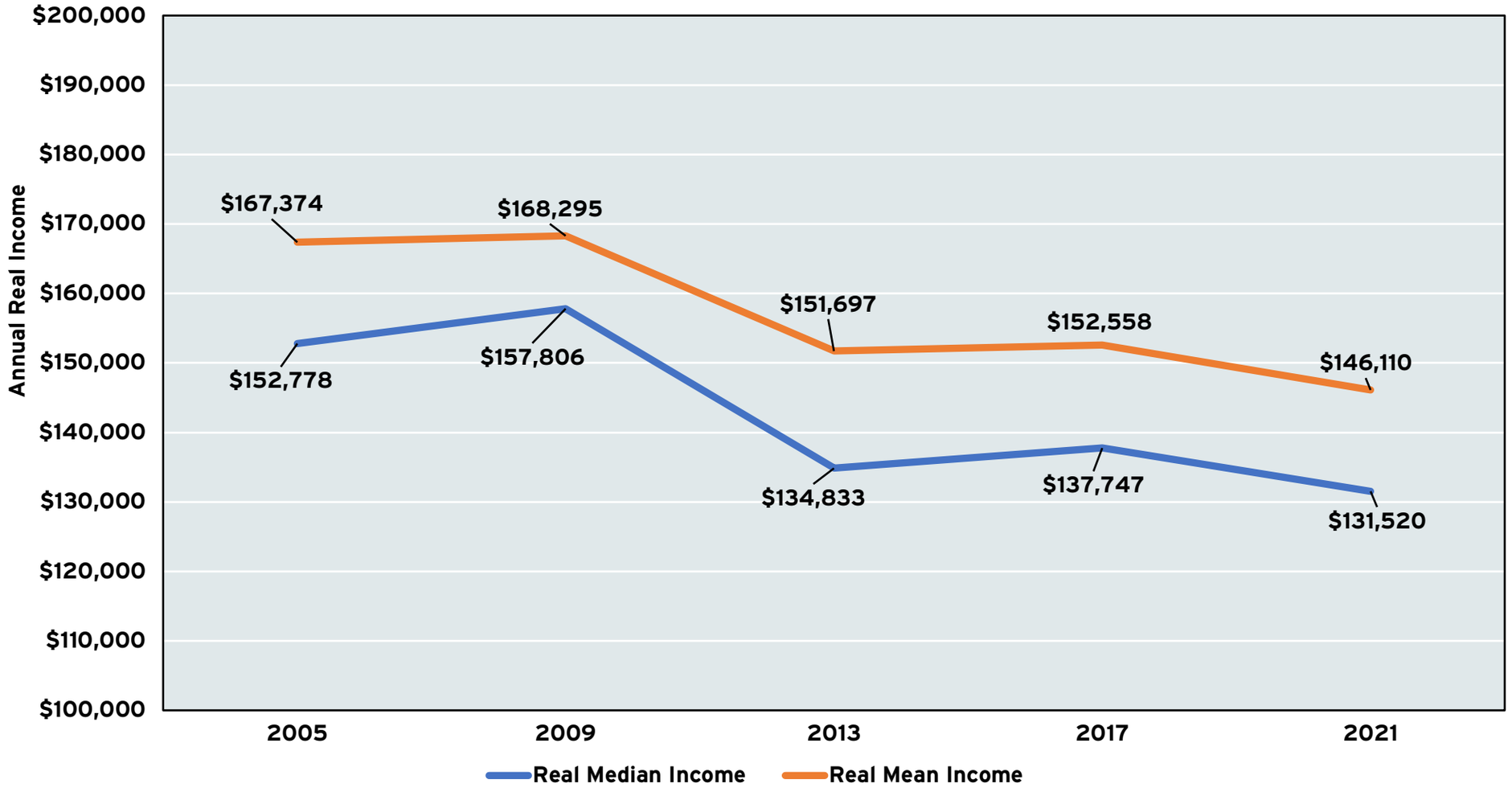
COMPARING THE MEAN AND MEDIAN INCOMES OF VIRGINIA LAWYERS: 2005-2021



Source: Bureau of Labor Statistics, "Occupational Employment and Wages," various years, www.bls.gov

GRAPH 2

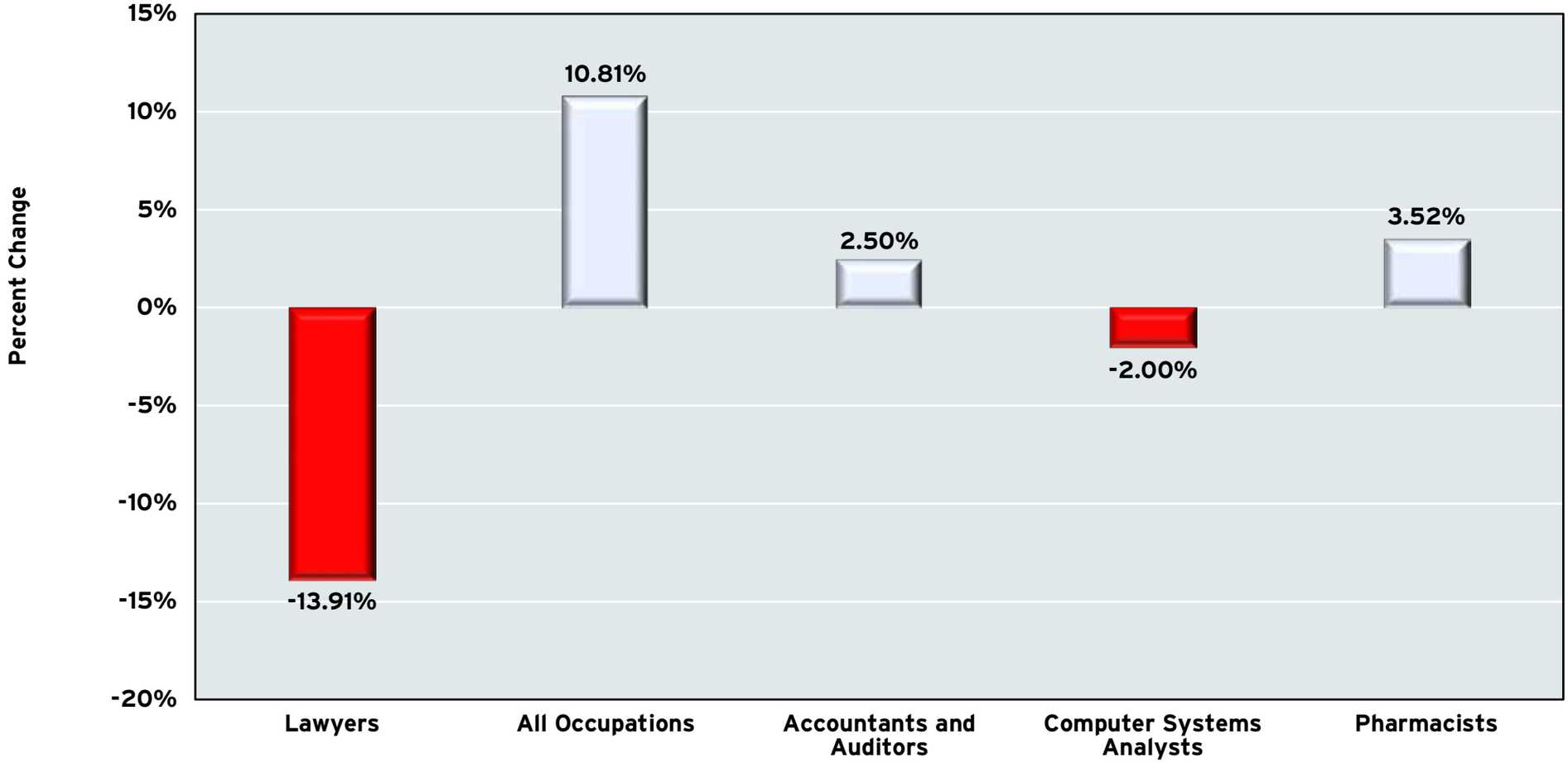
COMPARING THE REAL MEAN AND REAL MEDIAN INCOMES OF VIRGINIA LAWYERS: 2005-2021



Source: Bureau of Labor Statistics, "Occupational Employment and Wages," various years, www.bls.gov

GRAPH 3

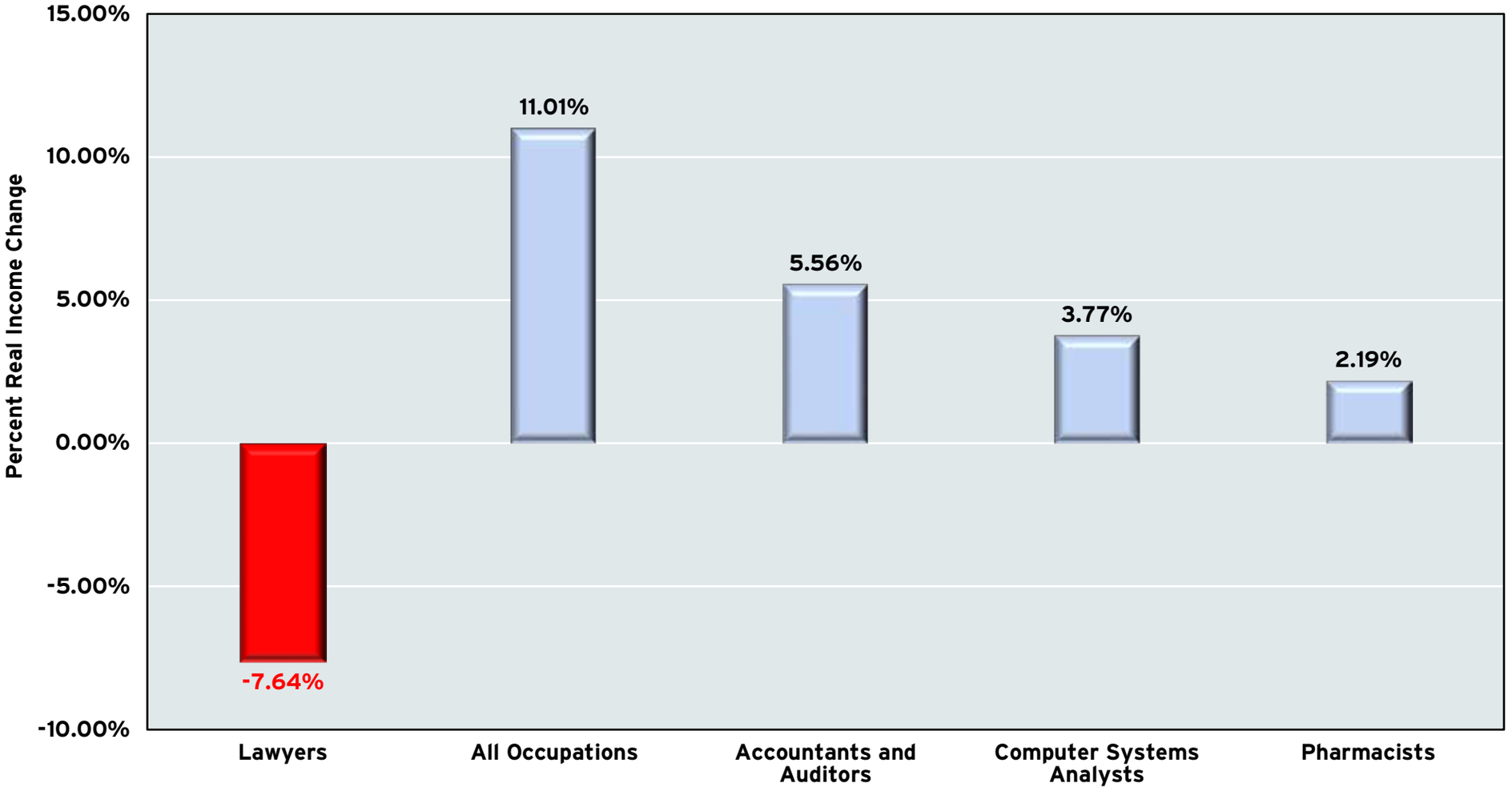
PERCENT CHANGE IN REAL MEDIAN INCOMES OF VARIOUS OCCUPATIONS: VIRGINIA, 2005-2021



Source: Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes.

GRAPH 4

PERCENT CHANGE IN REAL MEDIAN INCOME OF VARIOUS OCCUPATIONS: UNITED STATES, 2005-2021



Source: Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes.

TABLE 2

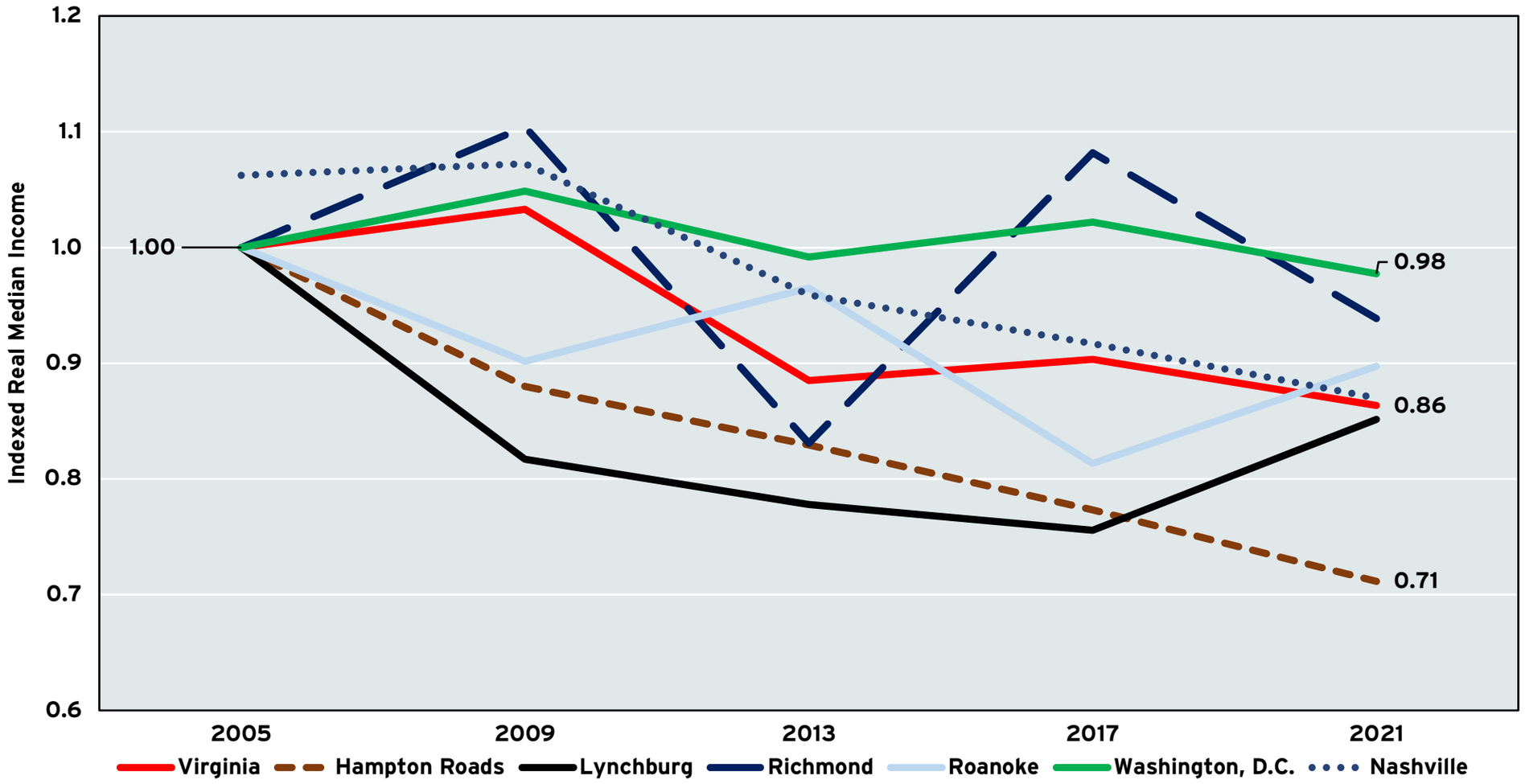
MEDIAN INCOMES OF VIRGINIA LAWYERS BEFORE AND AFTER PRICE INFLATION: 2005-2021

	2005	2009	2013	2017	2021
Money Incomes					
Virginia	$109,070	$124,120	$115,370	$123,510	$131,520
Hampton Roads	$101,830	$98,700	$100,900	$104,670	$101,830
Lynchburg	$82,030	$73,830	$76,240	$77,690	$97,650
Richmond	$97,550	$118,680	$96,850	$132,250	$127,860
Roanoke	$82,780	$82,240	$95,460	$84,390	$103,750
Washington, D.C.	$126,390	$146,020	$149,790	$161,890	$172.490
Nashville	$90,220	$100,320	$97,310	$97,570	$103,160
Real Incomes, 2021 Prices					
Virginia	$152,316	$157,335	$134,833	$137,615	$131,520
Hampton Roads	$142,637	$125,487	$117,922	$116,736	$101,180
Lynchburg	$114,555	$93,587	$89,102	$86,562	$97,560
Richmond	$136,229	$150,439	$113,189	$147,353	$127,860
Roanoke	$115,602	$104,247	$111,564	$94,027	$103,750
Washington, D.C.	$176,504	$185,095	$175,060	$180,378	$172,490
Nashville	$125,992	$127,166	$113,726	$108,712	$103,160

Source: Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes.

GRAPH 5

DECLINING REAL MEDIAN INCOMES OF LAWYERS: METRO AREAS AND VIRGINIA, 2005-2021



Source: Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes

An Important Supply Side Thermometer: The Law School Admissions Test (LSAT)

The American Bar Association (ABA) accredits law schools. In all but a few states, one of the requirements an individual must meet in order to practice law is that they must have graduated from an ABA-accredited law school. Further, ABA-accredited law schools currently may not admit students who have not taken the Law School Admission Test (LSAT), which has long been administered by the Law School Admission Council (LSAC).[14] Thus, the LSAT serves a gate-keeping function (though this may change), and scores on this examination usually are quite influential in the admissions decisions made by law schools.

In 2020, 2,240 Virginians took the LSAT, which historically has been required by American law schools for admission.[15] An undetermined number of Virginians sat for the examination for a second, third, or even tenth time[16] because they failed to earn a passing grade on their previous attempt.

The 2,240 test takers represented a 30.0% increase over the number of first-time test takers in 2019 but still constituted only about three-quarters of the all-time peak number of first-time test takers recorded in 2002 (see Table 3). The number of Virginians who attempt the LSAT for the first time fluctuates significantly from year to year but as we will see, seems to broadly reflect current labor market conditions for lawyers (see Graph 6 for confirmation of this). More women have taken the LSAT than men since 2010 and as Table 3 reveals, constituted 58.17% of all first-time test takers in 2020.

Do those contemplating the LSAT pay any attention to the economic status of lawyers? That is, has the almost two decades-long decline in lawyers' real incomes made any difference in the number of individuals who sit for the LSAT? The answer is yes, but it is a nuanced yes (see Graph 6). First, there is a strong positive relationship between the real median incomes of lawyers in a given year and the percent of individuals who attempt the LSAT. The simple correlation between the two is +.810 for men and +.812 for women. However, if we hypothesize a delayed reaction to the economic circumstances of lawyers such that this year's real incomes affect next year's number of test takers, then the simple correlations fall to +.646 for men and +.542 for women.

Regardless, as Graph 7 reveals, there has been an almost continuous increase in the percent of women who take the LSAT, which necessarily means that just the opposite has been occurring for men. As one lawyer put it to us, "Men have been bailing out on the law profession for some time." The reasons for this are multiple but certainly include societal changes that have opened many career doors (including law) to women. Yet, we also should observe that the 58% test-taking percentage for women is very close to the percentage of women undergraduate students who were enrolled in American colleges and universities in spring 2022. Thus, it should not come as a surprise that women now dominate in taking the LSAT.[17]

14 The LSAC, however, does allow law schools to accept the Graduate Record Examination in lieu of the LSAT.
15 Data provided by the Law School Admission Council.
16 The LSAC does not give much publicity to "retake" data; however, it did report that 44.4% of all test takers in 2020-2021 were individuals who were retaking the examination.
17 However, this domination is lower at the national level, where only 54.52% of LSAT takers were women in 2020. This, however, is up from only 44.87% in 1996 and 46.07% in 2010. Data supplied privately by the Law School Admissions Council.

TABLE 3

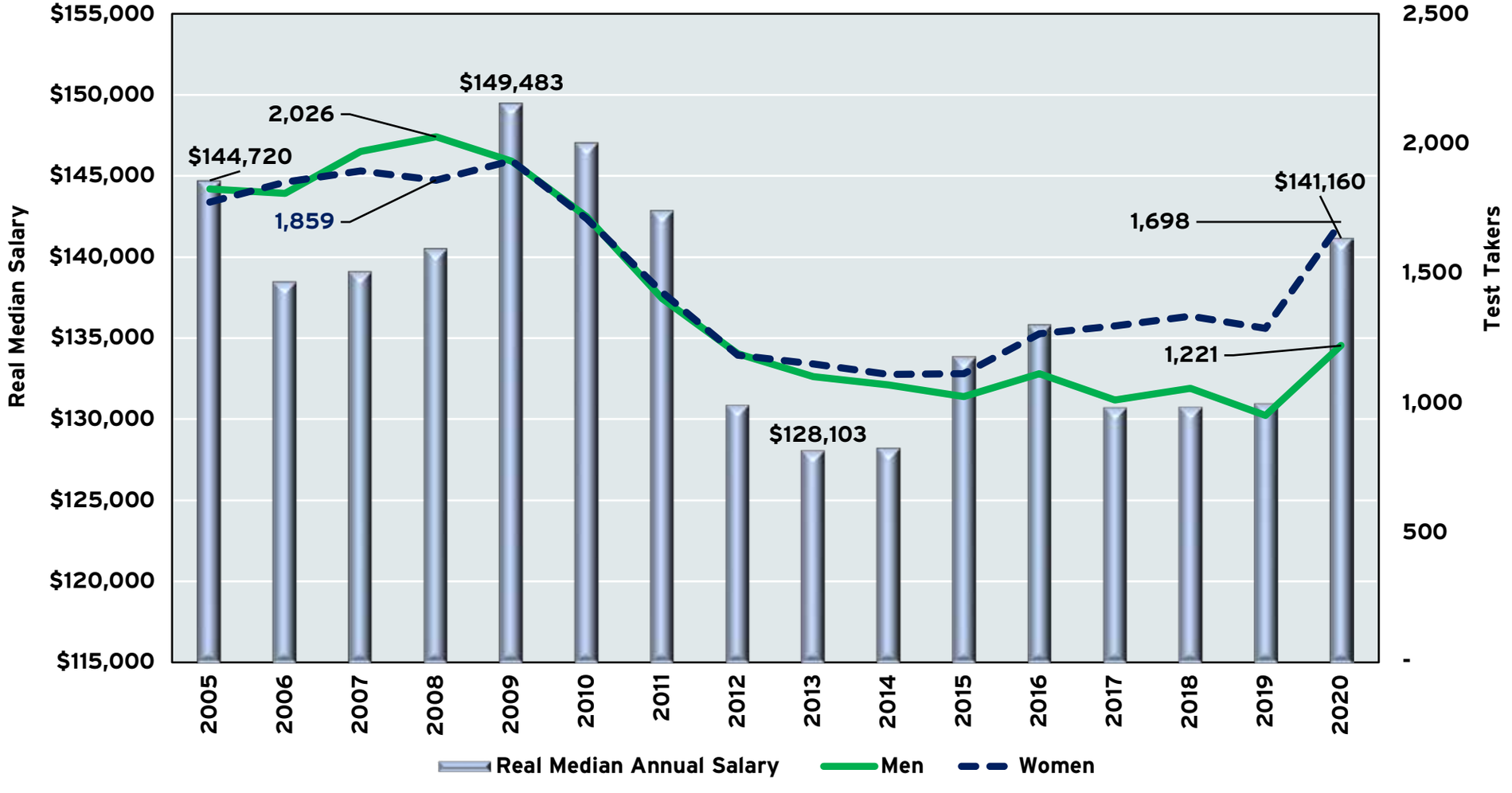
FIRST-TIME LAW SCHOOL ADMISSION TEST TAKERS
VIRGINIA, 2001-2020

Year	Total First-Time Test Takers	Male Test Takers	Female Test Takers	Female Test Taker Percent
2001	3,769	1,858	1,911	50.70%
2002	4,004	1,989	2,015	50.32%
2003	3,970	1,924	2,046	51.54%
2004	3,822	1,929	1,893	49.53%
2005	3,598	1,824	1,774	49.31%
2006	3,658	1,807	1,851	50.60%
2007	3,865	1,970	1,895	49.03%
2008	3,885	2,026	1,859	47.85%
2009	3,865	1,931	1,934	50.04%
2010	3,428	1,718	1,710	49.88%
2011	2,828	1,402	1,426	50.42%
2012	2,375	1,190	1,185	49.89%
2013	2,253	1,102	1,151	51.09%
2014	2,180	1,070	1,110	50.92%
2015	2,137	1,024	1,113	52.08%
2016	2,378	1,112	1,266	53.24%
2017	2,308	1,012	1,296	56.15%
2018	2,392	1,057	1,335	55.81%
2019	2,240	952	1,288	57.50%
2020	2,919	1,221	1,698	58.17%

Source: American Bar Association, www.americanbar.org/groups/legal_education/resources/statistics.

GRAPH 6

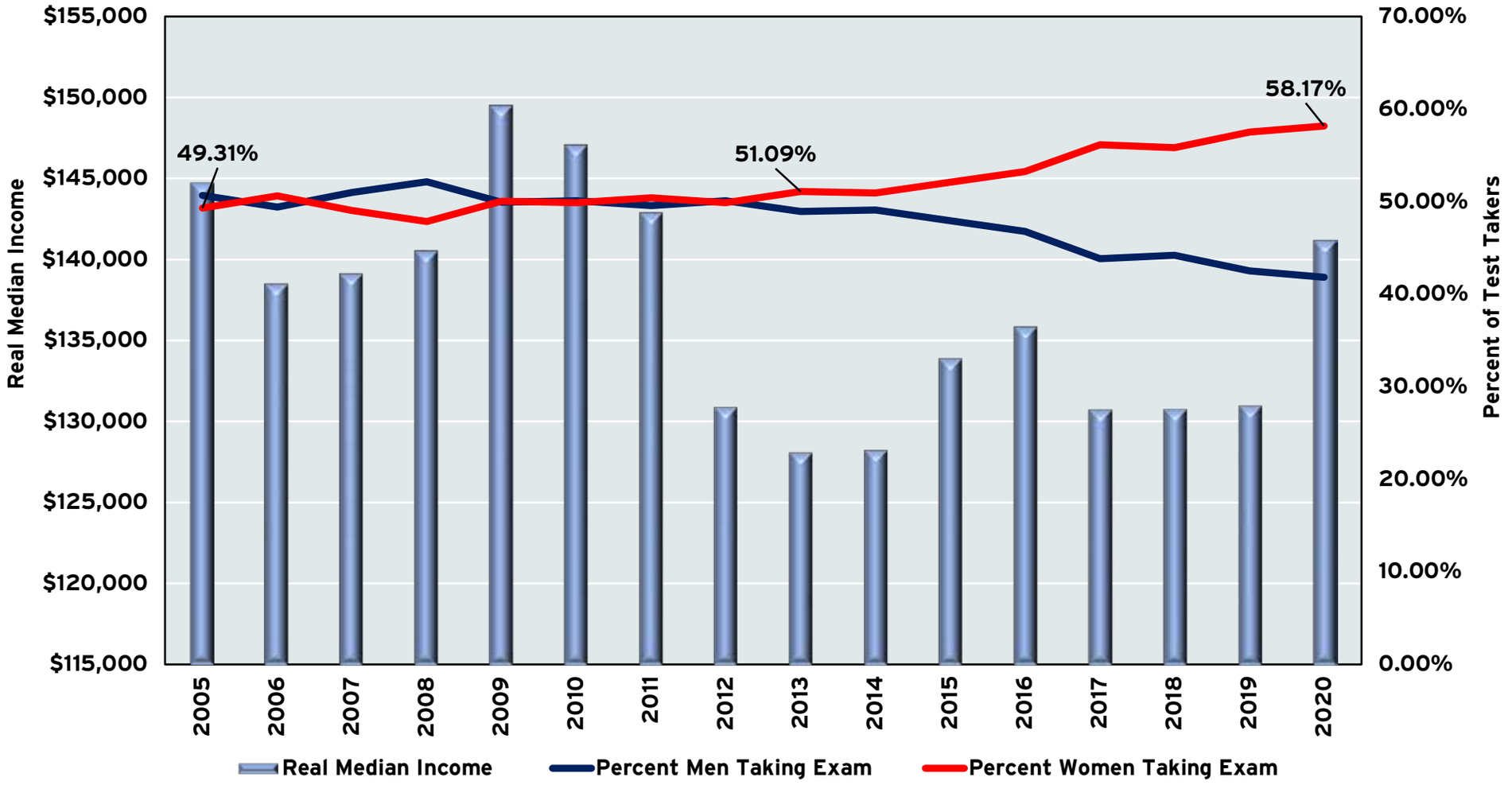
MEDIAN REAL LAWYERS' SALARIES AND LSAT TAKERS: VIRGINIA, 2005-2020



Sources: Law School Admission Council (privately provided) for LSAT test takers. For lawyers' incomes, the Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes.

GRAPH 7

GENDER DIFFERENCES IN LSAT TAKING: VIRGINIA, 2005-2020



Sources: Law School Admission Council (privately provided) for LSAT test takers. For lawyers' incomes, the Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes.

Additional Supply Side Considerations: Law School Enrollments, Graduation And The Law Board Exam

It is one thing to take the LSAT (which is an expensive undertaking that cost a minimum of $215 in Spring 2022) and another to graduate from a law school and subsequently pass the law board examination in the state where one wishes to practice. Enrolling in a costly law J.D. program signals a significant commitment. Graph 8 reports first-year law school enrollments at ABA-accredited law schools between 2001 and 2021. One can see that even though overall first-year J.D. enrollments in 2021 were down about 20% from their 2010 peak, enrollments of women students were only about 100 below their previous peak. Male enrollments are down significantly.

How sensitive are first-year J.D. enrollments to the economic circumstances of sitting lawyers? Graph 9 depicts both the number of first-year J.D. enrollees and the real median incomes of lawyers in the same year. One can see they track each other; the simple correlation coefficient between the number of J.D. enrollees and the real median income of lawyers in the same year is .783. The correlations fall substantially when previous years' incomes are paired with this year's J.D. enrollments.

The challenge here is that both the number of LSAT takers and the number of first-year J.D. enrollees are significantly related to the current real incomes of lawyers (whether or not they really know precisely what those incomes are). That is, prospective and actual law school students appear to have very short time horizons. They appear to be making lifelong career decisions on the basis of short-run data (a tendency noted years ago by other economists). It appears that test takers and enrollees know little about, or do not give much heed to, the declining real median incomes of lawyers. This appears to hold true especially for women, who have come to predominate test takers and enrollees in recent years. This tendency to ignore market signals is among the reasons why lawyers' median real incomes have fallen.

Let's take the next step. When students earn a J.D. degree, what is the probability they will then pass the bar examination of their chosen state? To begin, a sizable proportion of J.D. graduates (perhaps 20%) never sit for the bar examination. Of those who attempt the examination, pass rates in 2020 ranged from California's low of 44.42% to Oklahoma's high of 81.00%. Virginia was situated in the middle, at 66.15%.[18] Bar passage rates have declined over time.

If a law student earns a J.D., will they find a job? The answer usually is yes, but that job may not pay an attractive salary and the worker may not be practicing law. The American Bar Association reported in April 2021 that 69.9% of the 33,947 individuals who graduated with a J.D. in 2020 had taken full-time, long-term jobs that required passing the bar examination. This was down from 72.1% the previous year. Also in April 2021, 8.3% of the members of the Class of 2020 were unemployed, up from 6.4% for the Class of 2019. Slightly less than one-half of the 2020 graduates took a classic position with a law firm.[19] Job market conditions appear to have deteriorated post-COVID. In any case, placement data for new J.D. graduates, especially the numbers that are supplied by the law schools themselves, are somewhat suspect because of the tendency of some law schools to fudge the results, even by hiring significant numbers of their own graduates to prevent them from being recorded as unemployed.

Further, even if a student earns a J.D. degree, significant numbers of this group never end up practicing law because they fail to pass a state bar examination. A review of Table 1 reveals that the bar exam pass rate at one Virginia law school fell more than 40% below the state average of 67% in 2020.

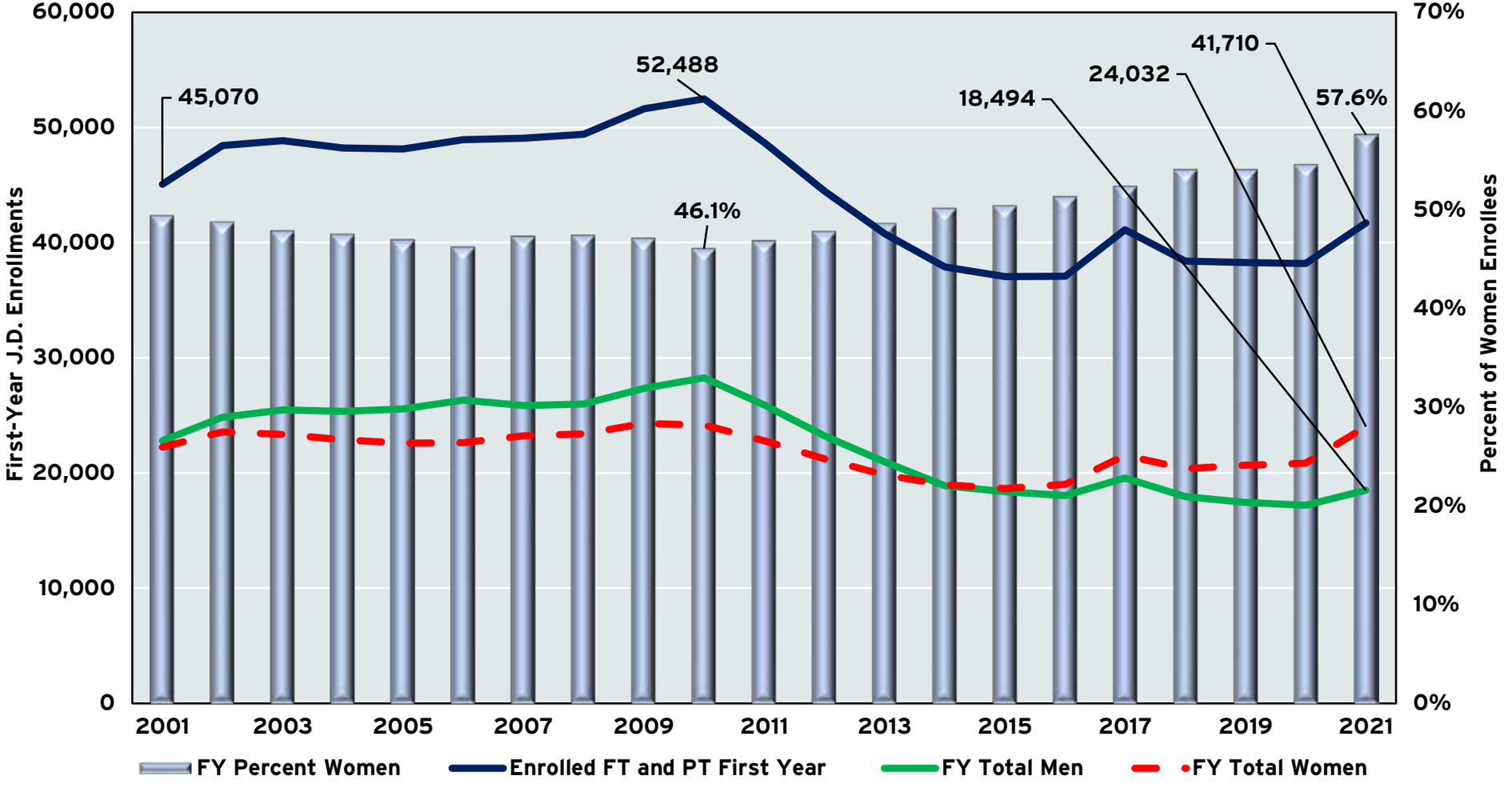
We will end the discussion in this section by once again appealing to Table 1. Huge differences exist between the student bodies and resources available to law schools in Virginia and nationally. As a consequence, the

18 Joshua Craven, "Bar Exam Pass Rates by State," *Lawschooli* (December 17, 2020), Bar Exam Pass Rate By State - LawSchooli.
19 Stephanie Francis Ward, "2020 Law School Graduates Having Harder Time Finding Jobs, Data Shows," American Bar Association Press Release (April 20, 2021), www.abajournal.com/news/article/data-shows-decrease-in-long-term-full-time-jobs-for-2020-law-school-grads.

financial malaise that now confronts the typical Virginia lawyer likely is concentrated among the graduates of some institutions. The success probability distribution confronting a newly minted J.D. graduate of the University of Virginia's law school differs from that facing graduates of the Appalachian School of Law, Liberty University, or Regent University. One prominent lawyer summarized the situation to us this way: "Where you went to school determines where you can work and what you earn in your first job. But let some years pass, and this recipe can change, but I don't think it ever completely disappears."

GRAPH 8

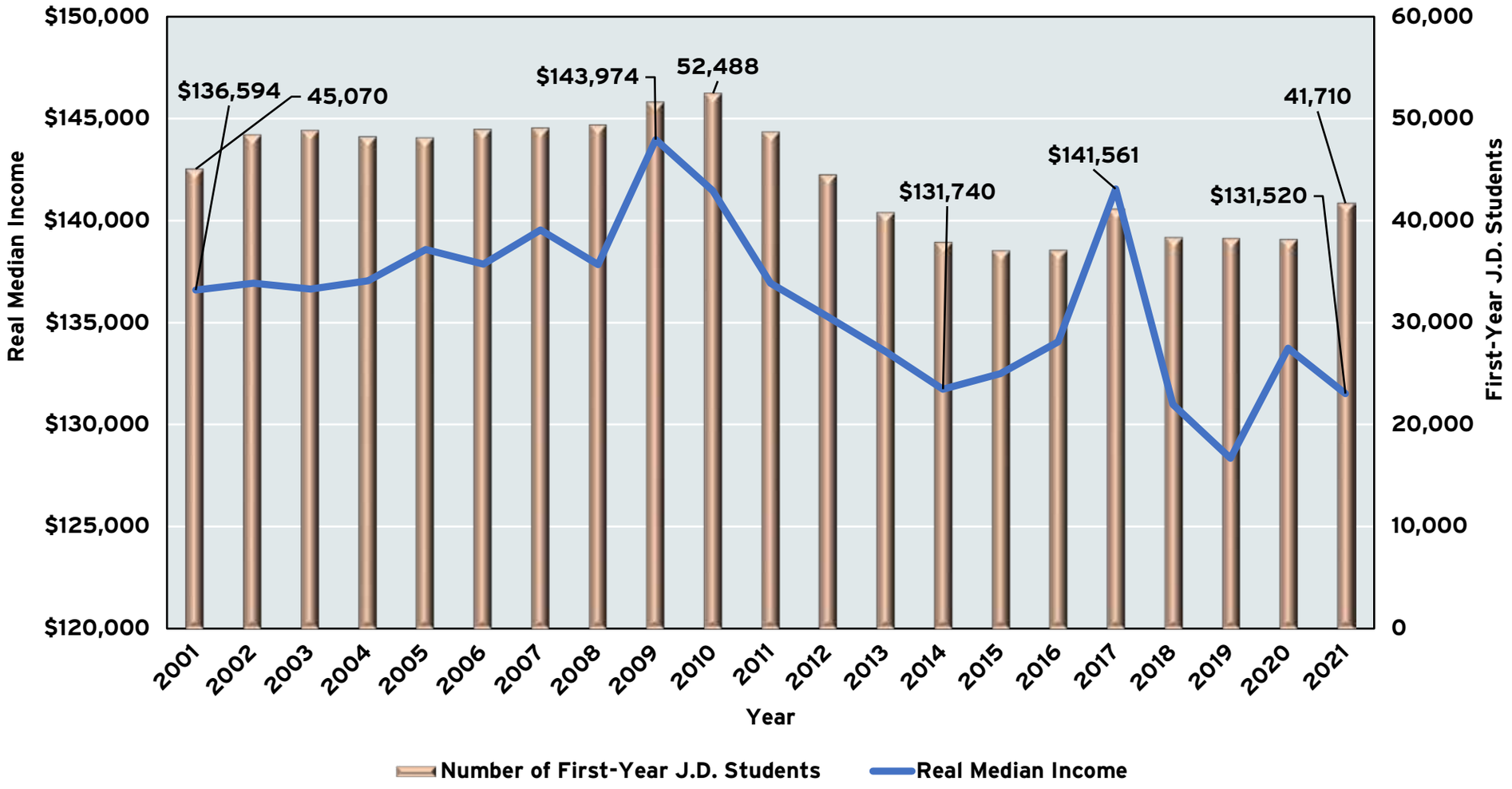
FIRST-YEAR J.D. ENROLLMENTS AT ABA-ACCREDITED SCHOOLS AND PERCENT OF WOMEN ENROLLEES
VIRGINIA, 2001-2021



Source: American Bar Association, JD Applicant and Enrollee Data, Fall 2020, www.americanbar.org/groups/legal_education/resources/statistics.

GRAPH 9

RELATIONSHIP BETWEEN FIRST-TIME J.D. ENROLLMENT AND REAL MEDIAN LAWYER INCOME
VIRGINIA, 2001-2021



Source: American Bar Association, JD Applicant and Enrollee Data, Fall 2020, www.americanbar.org/groups/legal_education/resources/statistics; The Bureau of Labor Statistics, U.S. Department of Labor, "Occupational Employment and Wage Statistics," various years, www.bls.gov/oes.

The Demand For Legal Services: Have We Become Less Litigious?

Contrary to the notion that Americans have become significantly more litigious and that the demand for legal services has been skyrocketing, there exists some credible evidence to the contrary. It also appears that the competitive market structure for many types of legal services has evolved in such a way that this has forced more lawyers to compete against each other for more or less standardized business that involves cases from personal injuries, traffic accidents, foreclosures and other housing-related items. These circumstances often involve insurance companies. We will deal with the litigiousness issue initially.

Graph 10 records the total number of legal actions per 1,000 persons brought to state courts in 30 states between 2016 and 2020. These cases are inclusive of civil, domestic relations, criminal, juvenile, and traffic actions, and represent 95% of all cases that reach courts in the United States. Alas, Virginia is not among the states that annually supplies its state court activity data to the Court Statistics Project, the source of the data.

But it is apparent that even before the onset of COVID, the case load of state courts was not increasing on a per capita basis, and the 2019 measure of activity was about 2% below the 2016 level. COVID is the presumed reason why state court activity per capita dove downward in 2020. But the lesson insofar as lawyers' incomes is this: a substantial decline for their services occurred in 2020 and this pushed their incomes downward. Some of the cases that generate income may reappear, post-2020, but a portion will never be filed. Preliminary 2021 data indicate that reduced levels of activity in state courts continue.[20]

At the level of the federal courts, Virginia is divided into two districts, the Eastern (which contains Hampton Roads, Richmond, and Northern Virginia) and the Western District, which accounts for the remainder of the Commonwealth. Thus, the Eastern District contains about three-quarters of the population of Virginia and therefore generates the most legal activity.

Two major sources of activity in the federal courts are those cases classified as civil and those that involve criminal activity. Graph 11 traces the total number of civil and criminal case filings per 1,000 people in the courts of the Eastern Virginia and Western Virginia federal court districts between March 2001 and March 2021. Civil cases involve disputes between individuals, for example, disagreement over properties, but also include many class actions, including those alleging discrimination. Criminal cases involve lawsuits brought by a governmental unit alleging that a criminal law has been broken. Murder, defamation and breach of contract allegations provide examples.

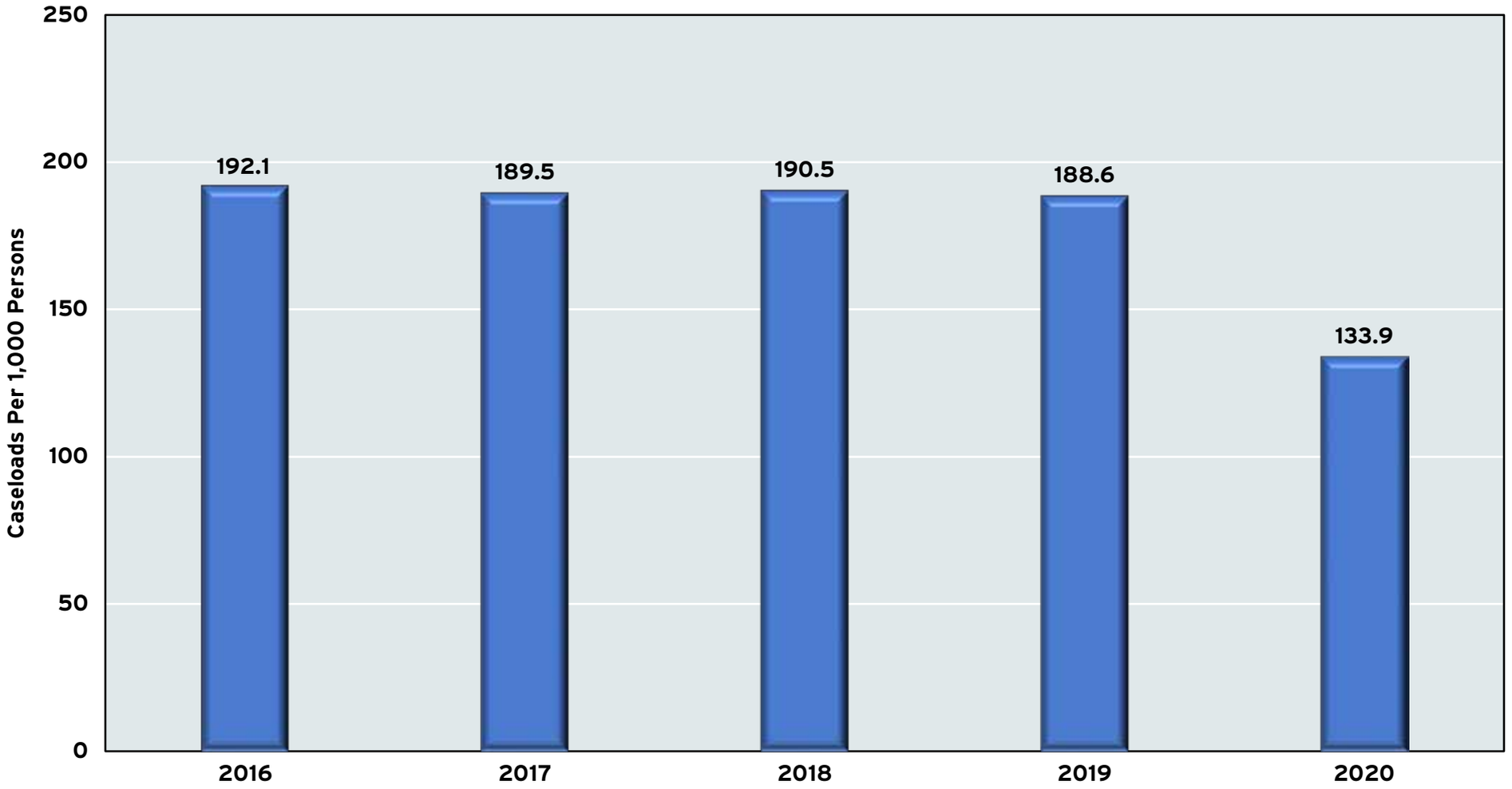
Once again, we observe gradual though perceptible declines in both civil and criminal cases per capita filed in these courts over this 20-year period. While there have been fluctuations, overall declines in filing activity are most apparent in the civil area since 2011 and in the criminal area over the entire 20 years.

It is not an easy task to quantify the diverse services that lawyers provide their clients. Lawyers may provide wise advice and counsel on a wide variety of subjects and even represent their clients in political arenas. We make no claim that we have captured the full gamut of activities that lawyers undertake for their clients. **What we have demonstrated, however, is that in several critical areas, the demand for lawyers' services has been declining on a population-adjusted basis. The demand for lawyers' services has lagged population growth in multiple areas. It should not be a mystery, then, that this has translated into sluggish income growth for the representative lawyer in the Commonwealth.**

20 Court Statistics Project, "Pandemic Caseloads," www.courtstatistics.org/interactive-data-displays-nav-cards-first-row/pandemic-data.

GRAPH 10

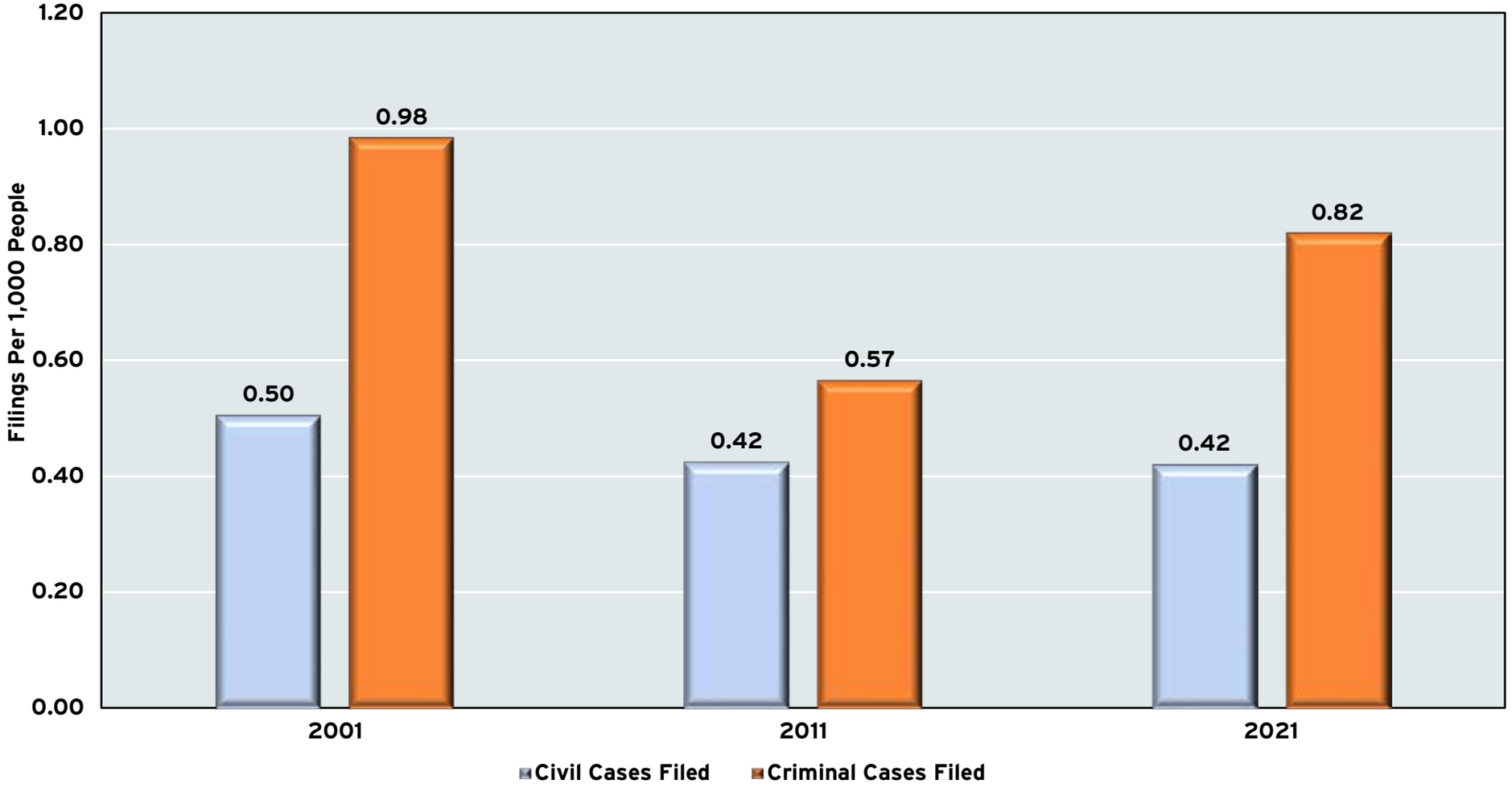
STATE COURT CASELOAD PER 1,000 PERSONS: UNITED STATES AVERAGE, 2016-2020



Source: Court Statistics Project, "CSP Stat," www.courtstatistics.org/court-statistics/interactive-caseload-data-displays/csp-stat.

GRAPH 11

CIVIL AND CRIMINAL CASES FILED PER 1,000 PERSONS:
VIRGINIA'S EASTERN AND WESTERN DISTRICT FEDERAL COURTS, 2001-2021



Source: United States Courts, Federal Judicial Caseload Statistics (various years), https://www.uscourts.gov/statistics-reports/federal-judicial-caseload-statistics-2001. Reflects 12-month reporting period ending in March 31st of each year.

The Demand For Legal Services: A Changing Market Structure

One hundred years ago, the roles played by the federal government and insurance companies in legal affairs were not nearly as large as they are today. Today, in situations involving lawyers, either plaintiffs or defendants may be a governmental unit or an insurance company, or those governmental units and insurance companies may be paying the bills and therefore call the tune as to which lawyers are hired and how much those lawyers are paid.

These large consumers of legal services often have developed pay schedules that restrict the hourly rates or total payments permissible for a lawyer who performs a certain task, for example, defending a business whose customer slipped and fell on the sidewalk in front of that business. When they operate in this fashion, these large consumers of legal services are monopsonists — buyers who exercise the buyer equivalent of monopoly power. Given that hundreds or thousands of lawyers are capable of performing a specific, standardized task, these large buyers of legal services fashion markets that implicitly force lawyers to compete against each other for business. In the jargon of economists, this tendency drives lawyers' fees down toward their marginal costs of operation and in so doing significantly reduce lawyers' profits. Those lawyers who decline to participate in this sequential downward process lose the business unless they or their firm have personal connections.

This pricing logic does not apply to larger, more complicated cases that may involve multiple legal specialties, many expert witnesses, arguable legal precedents, and perhaps even state or federal constitutional issues. The typical lawyer, however, seldom handles such cases.


LEGAL

Summing It Up

Occupational income data collected and distributed by the Bureau of Labor Statistics of the United States Department of Labor clearly disclose that the median incomes of lawyers as a group have been falling (not rising) once one deflates those incomes by means of the Consumer Price Index. **While the typical worker's real income increased between 2005 and 2021, the real median income of lawyers declined by more than 7.64% nationally and 13.91% in Virginia. Declines were present in every major metropolitan region of Virginia but were smallest in the Washington, D.C., metropolitan region and largest in Hampton Roads.**

The law remains a prestigious, sought-after occupation in the eyes of the public, and law schools continue to generate significant numbers of J.D. graduates despite charging soaring prices that typically result in significant student debt. The typical individual deciding about whether to attend law school employs a very short time horizon; she (approximately 58% of today's law students are women) appears to give only limited attention to the long-term decline that has occurred in the real median income of lawyers. Men, however, may be more sensitive to the economic situations of lawyers than women.

While the notion that there exists an oversupply of lawyers in the United States (and in Virginia) is supported by a reasonable interpretation of the data we have presented, most observers have overlooked the simultaneous lack of growth or even contraction in the demand for legal services. A contributing factor to the stagnant demand for legal service is that today, insurance companies and other large consumers of legal services such as governments have forced many lawyers to compete on the basis of price for business that these large consumers have standardized.

Together, the continuing flow of new lawyers that law schools generate annually, plus the stagnant or even declining demand for lawyers' services, have generated declining real lawyers' incomes. Are there exceptions to this general circumstance? Yes. Lawyers who work in well-established, larger firms appear to be faring better, as are those lawyers who graduated from a highly ranked law school.

A lawyer recently commented in a public forum that, "I don't recall anyone describing their career as a lawyer as 'fun.'"[21] This observation, while likely an exaggeration, encapsulates the competitive circumstances that confront many lawyers today. Times have changed. Practicing law continues to have appeal and remains an admired and sought-after pursuit, but for the rank-and-file lawyer it has become much less remunerative.

21 Chris Harvey, a lawyer, as quoted in Quora, "How is your life as a lawyer?" Accessed June 18, 2022. www.quora.com/How-is-your-life-as-a-lawyer.

A DEEPER DIVE INTO THE BLACKSBURG-CHRISTIANSBURG METROPOLITAN AREA

People in small towns, much more than in cities, share a destiny.

– Richard Russo, novelist, screenwriter, and teacher

While politicians in Richmond and traffic in Northern Virginia may garner the attention of many, there is a larger story to be told about the Commonwealth of Virginia. Outside the urban crescent formed by Hampton Roads, Richmond, and Northern Virginia lie other metropolitan areas, each of which has its own unique economic character. While some of these metropolitan areas are defined by their proximity to Northern Virginia, others are centered on the relationship with institutions of higher education. The success of these metropolitan areas will determine whether the Commonwealth can attract, educate, and retain sufficient workers to compete and grow in the coming decade.

The Blacksburg-Christiansburg metropolitan statistical area (MSA) is in southwest Virginia and includes the counties of Giles, Montgomery, and Pulaski as well as the independent city of Radford. Virginia Tech, with more than 37,000 full-time equivalent students in the 2021–2022 academic year, is not only the largest employer in the metro area, but it continues to expand its reach within the state. Radford University, the third-largest employer in the metro area, has seen full-time enrollments dip in the aftermath of the pandemic. However, its recent merger with the Jefferson College of Health Sciences, coupled with the growing demand for nurses, may provide the necessary fuel to boost enrollments over the decade.

Like other metropolitan areas in the Commonwealth, there are high and low points to reflect upon. In recent years, the Blacksburg-Christiansburg metropolitan statistical area has seen domestic outmigration increase while international migration into the metro area has fallen. The region appears to have a higher than average proportion of residents below the poverty level; however, we find that the presence of many college students, relative to the population, contributes to this observation.

While the Blacksburg metro area's economic performance lagged that of the nation prior to the pandemic, recently released estimates of real (inflation-adjusted) economic activity suggest that the metro area grew at a faster pace than the state or the nation in 2021. The most recent economic data for 2022 points to a sustained recovery and the possibility of a new expansion, with an unemployment rate below 3% and more jobs in the second half of 2022 than prior to the advent of the pandemic in 2020.

The purpose of this chapter is not to completely detail all the intricacies of the Blacksburg-Christiansburg MSA. The contributions of Virginia Tech are worthy of their own chapter and will be explored in a future *State of the Commonwealth Report*. We seek to inform readers about economic conditions in the region and the prospects for future growth. We identify potential challenges and opportunities and ask how the metro area can continue to contribute to the future of Virginia.

Where Are All The People?

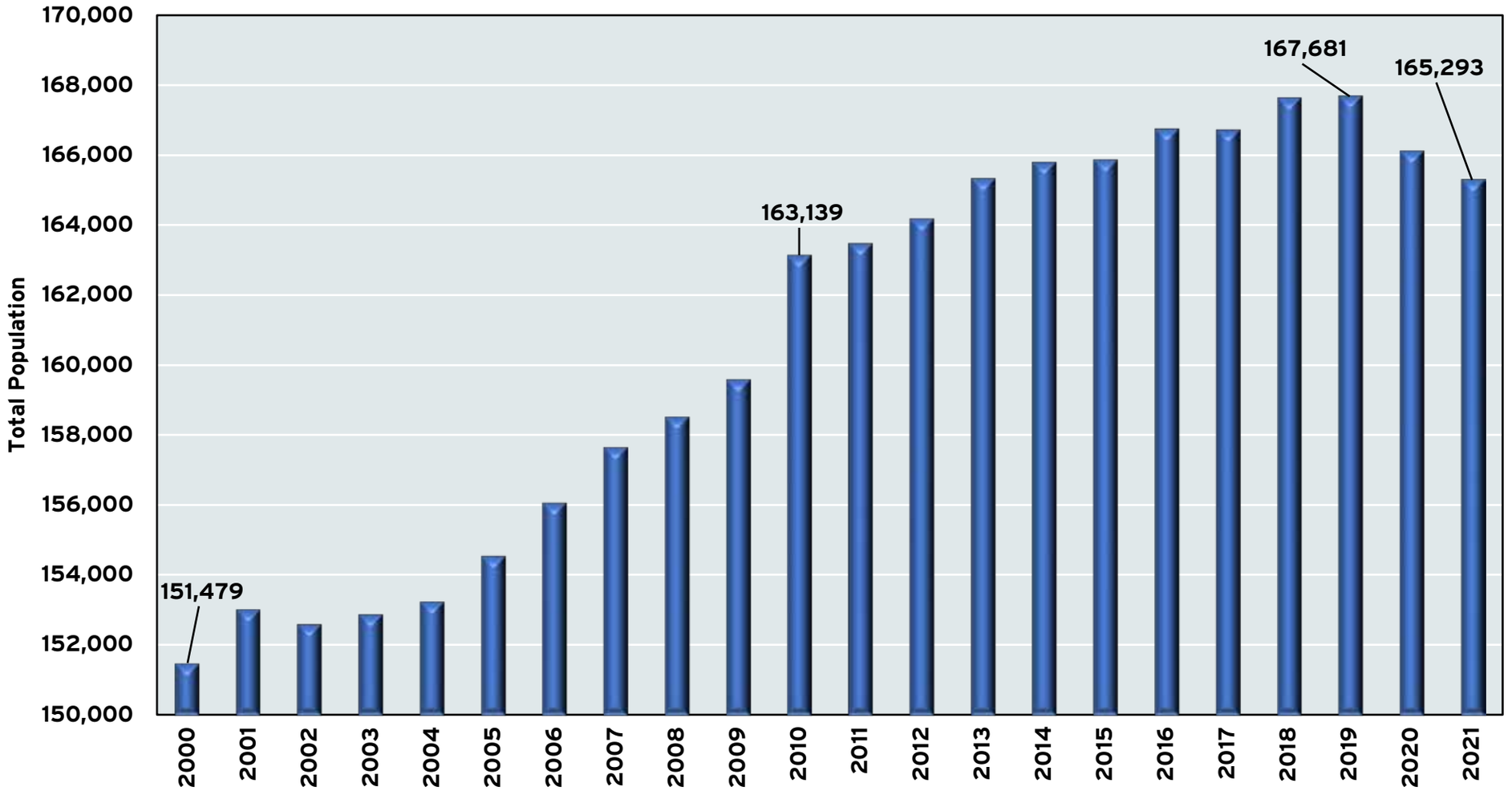
In Graph 1, we present the total population for the Blacksburg-Christiansburg metropolitan statistical area from 2000 to 2021. In 2000, the U.S. Census estimated that there were 151,479 residents in the region. By 2010, total population had increased by 7.6% to 163,139. In 2019, total population peaked at 167,681. In 2020 and 2021, the estimated population of the Blacksburg metro area declined by 1,570 and 818 individuals, respectively. The population decline of 1.4% from 2019 to 2021 is potentially troubling and could be associated with social distancing measures at Virginia Tech and Radford University during the pandemic. If the population continues to decline in the coming years, however, then the metro area will face an increasingly uncertain future.

In Table 1, we examine the components of population change for the Blacksburg metro area from 2011 to 2021. There are three potential sources for the observed changes in the total population: (1) the natural increase in the population, which is equal to births minus deaths; (2) domestic migration, which is equal to the movement of individuals into and away from the metro area to locations within the United States; and (3) international migration, which is equal to the movement of individuals into the metro area from outside the United States and from the metro area to other countries.

Even before the onset of the COVID-19 pandemic, the number of deaths had eclipsed the number of births in the Blacksburg region. In 2019, there were 183 more deaths than births, a gap that grew to 478 more deaths than births in 2021. Over the same period, international migration flows into the metro area declined, likely a combination of more restrictive immigration policies in the latter half of the last decade and increased travel restrictions associated with the pandemic. In 2019, there were 459 more arrivals to Blacksburg from locations overseas than there were departures overseas from the Blacksburg metro area. In 2021, international migration was still positive, but declined to only a net gain of 150 individuals, the lowest observed value over the decade.

GRAPH 1

TOTAL POPULATION:
BLACKSBURG - CHRISTIANSBURG VA METROPOLITAN STATISTICAL AREA, 2000-2021



Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; U.S. Census Bureau, Resident Population in Blacksburg-Christiansburg-Radford, VA (MSA) [BCRPOP], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/BCRPOP, October 25, 2022.

TABLE 1

COMPONENTS OF POPULATION CHANGE: BLACKSBURG-CHRISTIANSBURG METROPOLITAN STATISTICAL AREA, 2011-2021

	Natural Increase	International Migration	Domestic Migration	Population Change
2011	125	532	-329	332
2012	220	817	-326	705
2013	155	555	442	1149
2014	129	714	-374	459
2015	126	704	-763	69
2016	101	646	148	893
2017	3	576	-616	-32
2018	-38	274	666	906
2019	-183	459	-219	61
2020	-272	355	-528	-437
2021	-478	150	-494	-818

Sources: Dragas Center for Economic Analysis and Policy; and Metropolitan and Micropolitan Statistical Area Totals: 2011-2021. Components may not equal total population change due to statistical residual.

While it stands to reason that international migration flows will recover in the coming years as the pandemic ebbs into memory, there is more troubling news with regards to domestic migration. From 2011 to 2021, domestic migration was only positive for three years, that is, in only three years from 2011 to 2021 did more people move into the Blacksburg metro area from locations elsewhere in the United States than moved away from the Blacksburg metro area. In 8 of the 11 other years, domestic outmigration was higher than domestic immigration, including 2019, 2020, and 2021. If residents vote with their feet about economic conditions, the outflow of residents from the Blacksburg region to locations elsewhere in the United States is a strong signal of the economic prospects of the metropolitan area.

In Table 2, we compare the population growth rates for the Blacksburg metro area with selected cities and countries in the MSA. Montgomery County grew from a population of 83,752 in 2000 to 98,473 in 2021, an increase of 17.6%. Radford city also grew, from 15,855 in 2000 to 16,499 in 2021 (an increase of about 4.1%). These gains, however, were partly offset by declines in total population in Giles County (-0.9%) and Pulaski County (-4.0%) over the period. However, when we delve into the 2019 to 2021 period, we observe that each of these localities declined in population, suggesting that not one jurisdiction is solely to blame for the decline in metro area population.

In Table 3, we compare the population growth of Virginia's metropolitan statistical areas from 2010 to 2021. The Winchester metro area grew at an annual average rate of 1.2%, followed by the Washington, DC–Arlington–Alexandria metro area. On the other hand, the average annual rate of population growth for the Blacksburg-Christiansburg metro area was 0.1% from 2010 to 2021. Relative to the other metro areas in the Commonwealth, the Blacksburg metro area ranked second from last in terms of average annual population growth from 2010 to 2021.

TABLE 2

POPULATION GROWTH
SELECTED CITIES AND COUNTIES IN THE BLACKSBURG-CHRISTIANSBURG MSA
2000-2021

Area	Population 2000	Population 2010	Population 2019	Population 2021
Giles County	16,715	17,317	16,693	16,562
Montgomery County	83,752	94,560	98,872	98,473
Pulaski County	35,152	34,830	34,009	33,759
City of Radford	15,855	16,432	18,107	16,499
Blacksburg-Christiansburg MSA	151,479	163,139	167,681	165,293

Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; U.S. Census Bureau, Resident Population in Radford city, VA [VARADFOPOP], Pulaski County, VA [VAPULA5POP], Montgomery County, VA [VAMONTOPOP], and Giles County, VA [VAGILE1POP] retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/VARADFOPOP, October 25, 2022.

TABLE 3

POPULATION GROWTH IN VIRGINIA'S METROPOLITAN AREAS
2010 - 2021

Metro Area	Total Population 2010	Total Population 2021	Annual Average Growth
Winchester	128,640	145,155	1.1%
Washington-Arlington-Alexandria	5,678,733	6,356,434	1.0%
Richmond	1,188,423	1,324,062	1.0%
Charlottesville	201,913	222,688	0.9%
Harrisonburg	125,412	135,824	0.7%
Staunton	118,320	125,774	0.6%
Hampton Roads	1,717,110	1,803,328	0.4%
Lynchburg	252,975	262,258	0.3%
Roanoke	308,602	314,496	0.2%
Blacksburg-Christiansburg	163,139	165,293	0.1%
Kingsport-Bristol	309,488	308,661	0.0%

Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; U.S. Census Bureau, Metropolitan and Micropolitan Statistical Area Totals: 2010-2021. .

Who Lives In The Blacksburg-Christiansburg Metro Area?

In Table 4, we present the U.S. Census Bureau's American Community Survey (ACS) 1-year estimates for the Blacksburg-Christiansburg metropolitan statistical area. The 1-year ACS estimates allow us to compare the Blacksburg metro area with Virginia and the United States. At first glance, the Blacksburg metro area has higher proportions of individuals who identify as white, individuals between the ages of 18 and 24, and more individuals who reside below the poverty line when compared to the Commonwealth and the nation. Let's dig into the numbers.

The median (50th percentile) resident in the Blacksburg metro area is younger than the median resident of the Commonwealth and the United States. This is not because the population in Blacksburg under the age of 18 is a higher proportion of the population; in fact, 16.3% of the population in Blacksburg is under the age of 18, compared to 21.8% in Virginia, and 22.1% of the United States. We argue the reason why the median age in Blacksburg is lower is simple: college students.

If we examine the proportion of the population that is 18 to 24 years old, more than 1 in 5 residents of the Blacksburg metro area fell into this category in 2021 (23.0%). Roughly 1 in 11 Virginians and Americans belonged to this age group in 2021. The presence of large institutions of higher education typically attracts younger individuals to study and obtain a bachelor's degree (or higher). This is likely reflected in the fact that almost 94% of residents in Blacksburg have a high school degree (higher than Virginia or the nation), but only about 36% of residents have a bachelor's degree or higher (lower than Virginia or the nation).

Examining Table 4, one might conclude that the Blacksburg metro area is much poorer than Virginia or the United States. The percentage of individuals below the poverty line in 2021, for example, was 22.3% in the Blacksburg metro area compared to 10.2% for Virginia and 12.8% for the nation. Median household income is also substantially lower in the metro area than the state or the nation. However, there appears to be more to this story, a story that is shaped by the presence of Virginia Tech.

Virginia Tech[1] is on a roll. Its headcount enrollment increased by 19.1% between fall 2011 and Fall 2020, even while headcount enrollment in all Virginia colleges and universities was declining by more than 11,000 students and almost 3.0 million students were disappearing nationally. Tech's success extends well beyond its enrollment (which now exceeds 37,000). It has become an institution of choice that can take students away from rival institutions. Tech now is ranked by U.S. News and World Report among the Top 20 public universities in the United States.

Tech's successes reflect an accurate reading of Virginia's needs and a nimbleness that is commendable for an institution its size. Why is Tech dominating the Amazon-related developments in Northern Virginia even though it is a robust 257-mile automobile ride (perhaps five hours when there is traffic) from Blacksburg to Arlington? Because the institution was quicker to the mark than the University of Virginia, flexible in response to requests, and already had programs and people that fit the region's needs.

Tech's successes and increasingly large imprint have not been confined to technology. Its Carilion School of Medicine opened in 2007, and its athletic teams now compete vigorously in the Atlantic Coast Conference. Does Virginia Tech owe much of its rise to the increasingly vital role that innovation and technology now plays in our society? Of course, but credit for its wide-ranging accomplishments must also accrue to its presidential leadership and an impressive number of entrepreneurial administrators and faculty members.

1 While the formal name is Virginia Polytechnic Institute and State University, Virginia Tech is the official nickname of the university.

TABLE 4

POPULATION CHARACTERISTICS
BLACKSBURG-CHRISTIANSBURG MSA, VIRGINIA, AND THE UNITED STATES, 2021

Category	Blacksburg-Christiansburg, VA	Virginia	United States
Age			
Median Age	33.9	38.8	38.8
Under 18	16.3%	21.8%	22.1%
18 to 24	23.0%	9.5%	9.1%
25 to 64	44.3%	52.5%	51.9%
65 and Over	16.3%	16.3%	16.8%
Race/Ethnicity			
White	85.3%	59.2%	58.1%
Black or African American	5.1%	18.0%	11.8%
Asian	3.7%	6.7%	5.7%
Hispanic	3.0%	10.2%	18.8%
Educational Attainment			
High School Degree or Higher	93.8%	91.4%	89.4%
Bachelor's Degree or Higher	36.2%	41.8%	35.0%
Economics			
Median Household Income	$54,737	$74,222	$62,843
Persons Below Poverty Line	22.3%	10.2%	12.8%
Travel Time to Work (minutes)	20.3	26.4	25.6

Sources: Census Reporter and U.S. Census Bureau (2021) American Community Survey 1-year estimates. Hispanic includes respondents of any race. Other race categories are non-Hispanic.

Do College Students Drive The Poverty Rate?

Graph 2 displays the poverty rate in the Blacksburg-Christiansburg metropolitan area, the Commonwealth of Virginia, and the United States from 2010 to 2020. We use the U.S. Census Small Area Income and Poverty Estimates (SAIPE) to compare poverty rates across time. The SAIPE estimates are not direct counts of individuals' poverty; instead, the Census Bureau models income and poverty estimates by combining survey data with population estimates and administrative records. [2]

What is immediately apparent is that the estimated poverty rate in the Blacksburg-Christiansburg metropolitan area has been higher than the state or nation over the period of analysis. The reported poverty rate peaked in 2014 at 22.1%, 6.6 percentage points higher than the nation, and 10.3 percentage points higher than the Commonwealth. We note that the expansion of federal programs in response to the COVID-19 pandemic appears to have reduced the reported poverty rate in the Blacksburg metro, with a reported decline of almost 2 percentage points from 2019 to 2020.

We now turn to the 2020 American Community Survey 5-year estimates to examine whether college students are more likely to fall below the poverty line than in other metropolitan areas in the Commonwealth. To estimate the poverty rate for college students, we obtain estimates for the number of undergraduate and graduate and professional students who reported incomes below, at, and above the poverty line. We estimate the poverty rate as the ratio of college students in poverty to the total number of undergraduate, graduate, and professional students. We then compare this estimate to the ratio of the total number of individuals reported below the poverty line to the overall population for each metro area of interest.

Graph 3 displays the estimated population poverty rate and the estimated poverty rate for undergraduate, graduate, and professional students for several of Virginia's metropolitan areas for 2020. We estimate that approximately 66% of undergraduate, graduate, and professional students in the Blacksburg-Christiansburg metropolitan area had incomes below the poverty level in 2020, followed by approximately 59% of students in Harrisonburg, and 40% of students in Charlottesville. In other words, of the 32,100 individuals who were below the poverty level in the Blacksburg metro area in 2020, 15,994 were undergraduate students, and an additional 1,563 were graduate or professional students.

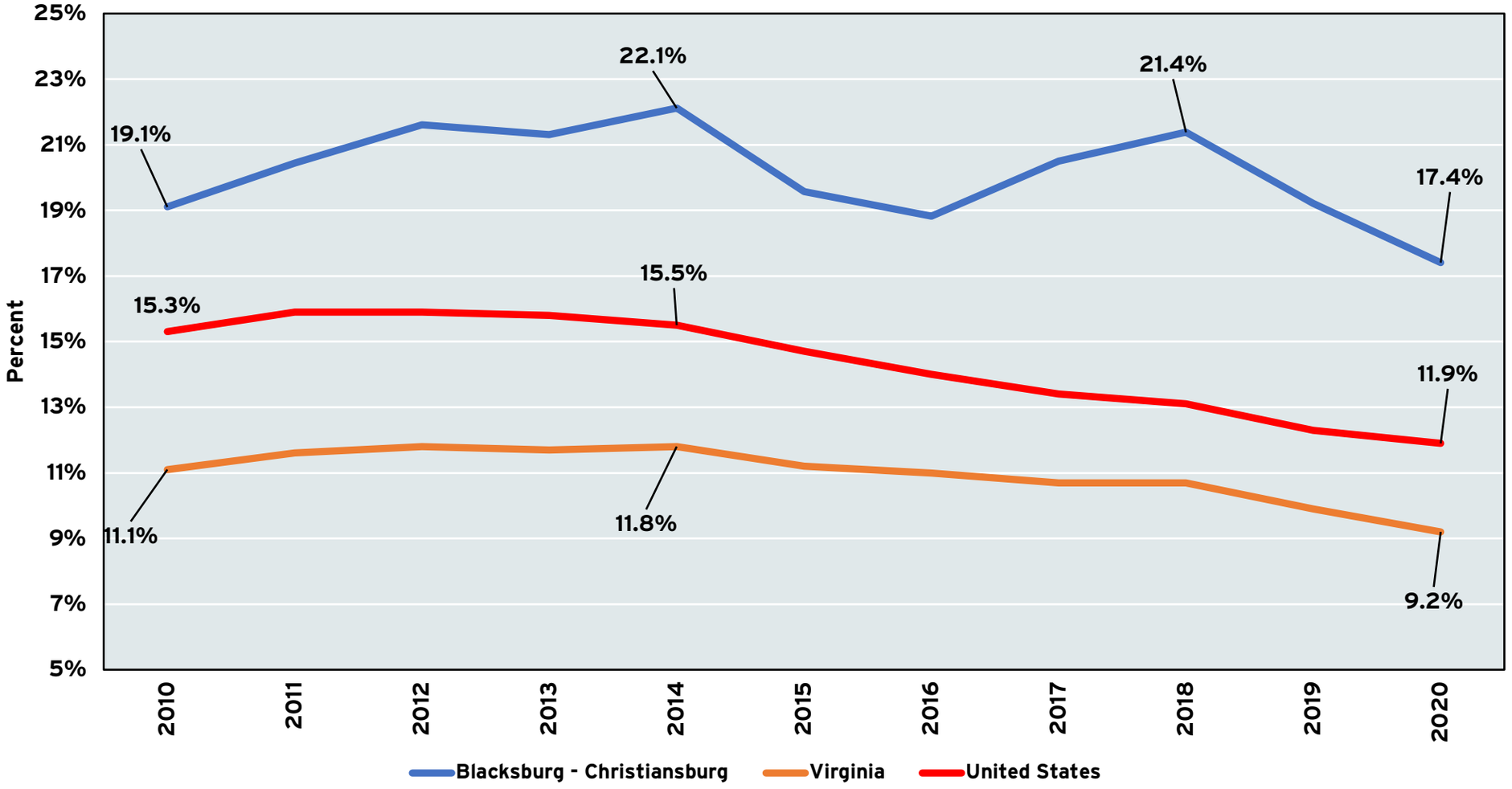
In Table 5, we present the estimated poverty rates for the population and the college and professional student population for 2020 for selected locations in the Blacksburg metropolitan area. As one might suspect, the estimated poverty rates are higher in localities with large college and professional student populations. In 2020, Radford city had an estimated population poverty rate of 39.6% and a college poverty rate of 78.7%, followed by Montgomery County with an estimated population poverty rate of 23.8% and a college poverty rate of 70.0%.

Care must be taken, however, when interpreting the poverty estimates. An undergraduate student with an income below the poverty level is quite different from an individual who is in their 30s or 40s. We can conduct a simple thought experiment to see how the presence of these students impacts the estimated poverty rate. If we remove the reported college and professional student population (above, at, and below the poverty level), then the estimated poverty rate in the Blacksburg metropolitan area would be approximately 13.5% in 2020. While this would still be above the reported poverty rate for the general population in Virginia and the United States, it is significantly less than the estimated 21.6% poverty rate in Graph 3 and the locality-based estimates in Table 5.

2 According to the U.S. Census, "The SAIPE methodology combines the 1-year American Community Survey (ACS) estimates with other data sources to provide more timely, precise, and stable estimates than the 5-year ACS estimates alone." For more information, see: https://www.census.gov/programs-surveys/saipe/about/faq.html

GRAPH 2

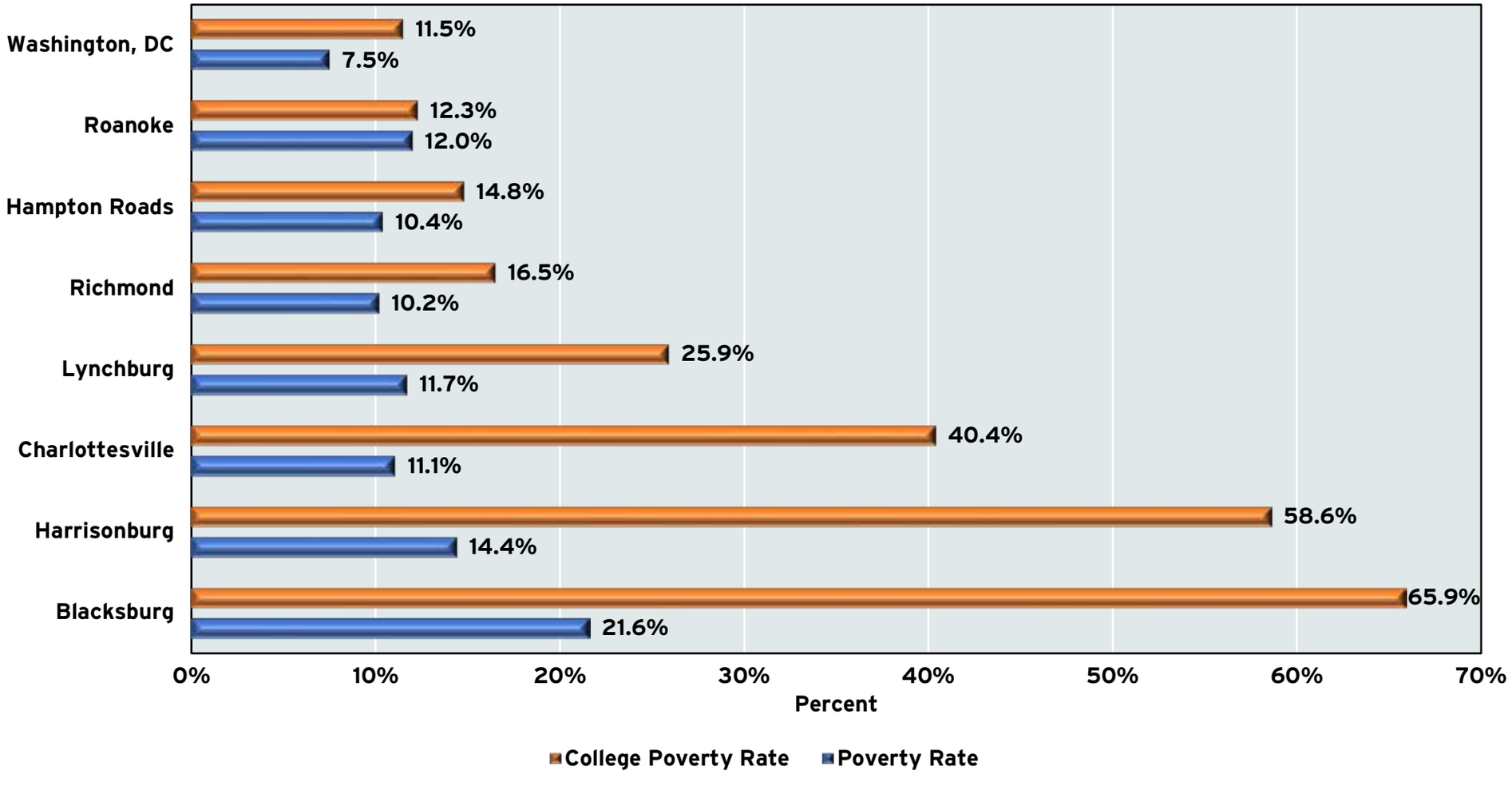
POVERTY RATE
BLACKSBURG-CHRISTIANSBURG MSA, VIRGINIA, AND THE UNITED STATES
2010-2020



Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; Small Area Income and Poverty Estimates (SAIPE), U.S. Census Bureau.

GRAPH 3

TOTAL AND COLLEGE POPULATION POVERTY RATE: SELECTED VIRGINIA METROPOLITAN AREAS, 2020



Sources: Dragas Center for Economic Analysis and Policy, Old Dominion University; U.S. Census Bureau, ACS 5-year estimates. The poverty rate is estimated as the ratio of individuals below the poverty level to the total number of individuals below, at, or above the poverty level.

TABLE 5

ESTIMATED POPULATION AND COLLEGE POVERTY RATES, SELECTED LOCALITIES IN BLACKSBURG-CHRISTIANSBURG METROPOLITAN STATISTICAL AREA, 2020

Location	Total Population	College Student Population	Individuals Below Poverty Level	Students Below Poverty Level	Estimated Poverty Rate	Estimated Student Poverty Rate
Giles County	16,075	658	1,549	149	9.6%	22.6%
Montgomery County	86,136	19,731	20,524	13,409	23.8%	68.0%
Pulaski County	31,895	1,513	4,303	274	13.5%	18.1%
Radford City	14.453	4,731	5,724	3,725	39.6%	78.7%

Sources: Dragas Center for Economic Analysis and Policy; U.S. Census Bureau, ACS 5-year estimates. The poverty rate is estimated as the ratio of individuals below the poverty level to the total number of individuals below, at, or above the poverty level.

Neither Forward Nor Backward: Gross Domestic Product

Recently released data from the Bureau of Economic Analysis suggests that real (inflation-adjusted) economic activity in the Blacksburg-Christiansburg metropolitan area contracted by 3.6% in 2020 and then expanded by 8.5% in 2021 (Table 6) (KEEP FOOTNOTE 3). The rebound in real GDP was the highest among Virginia's metropolitan areas and more recent labor market data for 2022 lend credence to the argument that the Blacksburg-Christiansburg metro area is in the midst of a new economic expansion. We project that annual real GDP growth will moderate in 2022 to 2.0% in 2022 due to inflation and global uncertainty.

The economic recovery in the Blacksburg-Christiansburg metro area is good news but must be tempered by comparison with the Commonwealth and nation. Graph 4 illustrates that the region's economic performance left much to be desired prior to the pandemic, with the regional economy growing by 19.7% from 2001 to 2019, compared to 35.7% and 43.5% for the state and nation, respectively. Examining Graph 4, we note that the Blacksburg metro, the Commonwealth, and the nation followed similar growth profiles prior to the Great Recession but that this story changed dramatically after 2007. From the peak of real GDP in 2007 to 2019, real GDP in the Blacksburg region contracted by 0.2%, that is, the level of economic activity was basically unchanged from 2007 to 2019.

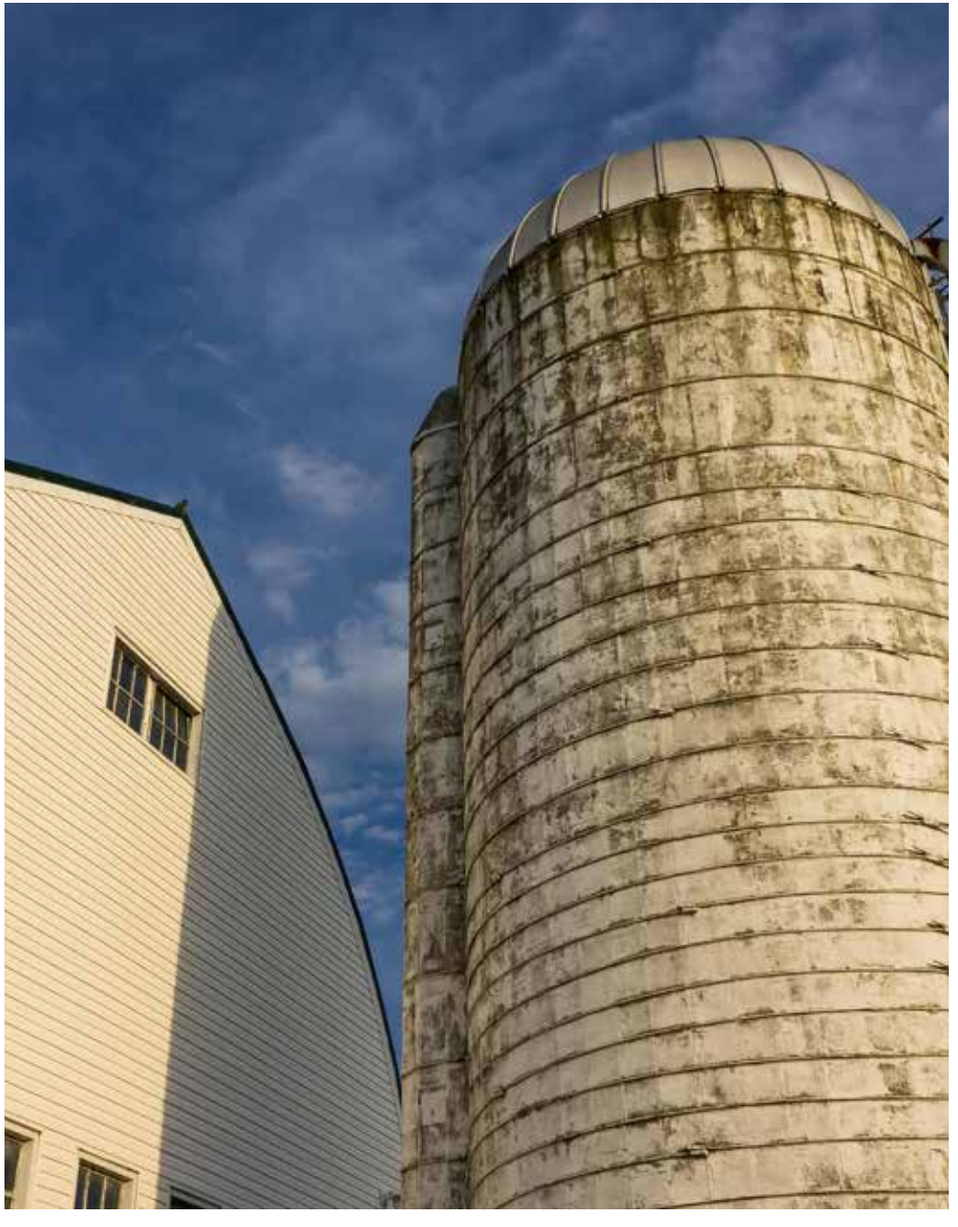
Real GDP in the Blacksburg metro area, the Commonwealth, and the nation all contracted in 2020, but there was a significant recovery of economic activity in 2021. At the end of 2021, real GDP was higher in the Blacksburg-Christiansburg metro area, Virginia, and the United States than 2019, the last full year prior to the COVID-19 pandemic. The economic recovery in the Blacksburg-Christiansburg metro area outpaced that of the state of nation in 2021 and labor market data from 2022 suggest that the recovery has continued (although not at the 8.5% annual rate in 2021). We will have to wait until late 2023, however, for estimates of real GDP for the Blacksburg-Christiansburg metro area for 2022.

TABLE 6

NOMINAL AND REAL GROSS DOMESTIC PRODUCT IN MILLIONS OF DOLLARS BLACKSBURG – CHRISTIANSBURG MSA, 2001-2022*

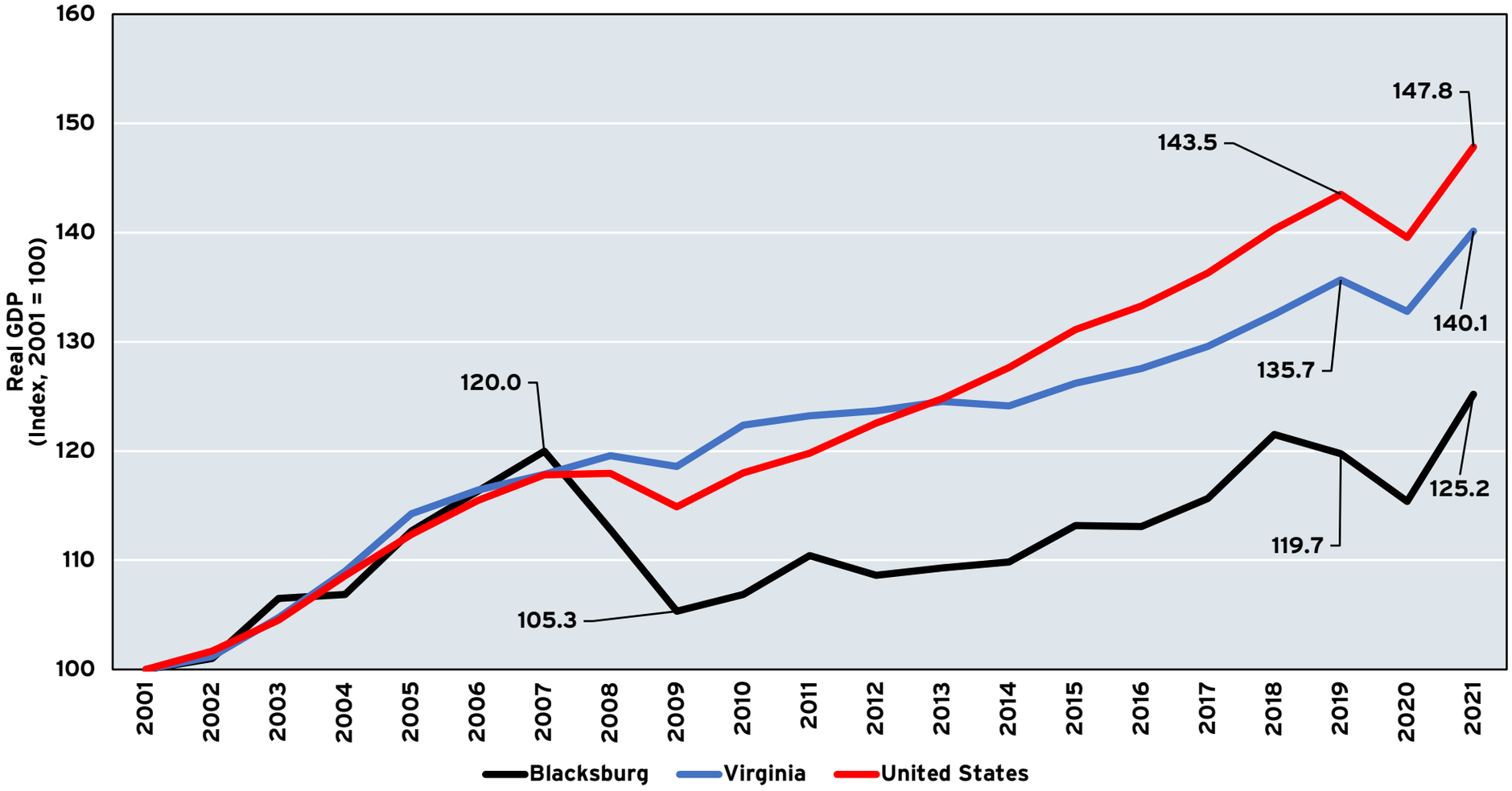
Year	Nominal GDP (Millions)	Real GDP (Millions of 2012 Dollars)
2001	$4,428.3	$5,418.4
2002	$4,529.9	$5,472.9
2003	$4,835.9	$5,771.8
2004	$4,922.4	$5,790.2
2005	$5,276.8	$6,106.0
2006	$5,522.3	$6,303.7
2007	$5,829.8	$6,500.2
2008	$5,585.2	$6,112.1
2009	$5,469.0	$5,707.1
2010	$5,558.8	$5,790.5
2011	$5,809.3	$5,982.3
2012	$5,885.2	$5,885.2
2013	$6,071.9	$5,923.0
2014	$6,248.8	$5,951.0
2015	$6,676.1	$6,132.7
2016	$6,787.0	$6,127.9
2017	$7,020.5	$6,267.1
2018	$7,497.7	$6,584.2
2019	$7,562.8	$6,488.2
2020	$7,497.0	$6,253.0
2021	$8,271.6	$6,783.9
2022	$8,983.0	$6,919.6

Sources: Dragas Center for Economic Analysis and Policy; Bureau of Economic Analysis. *Data for 2020 is the advanced estimate, 2021 represents our estimate, and 2022 is our forecast. 2012 dollars for real GDP.



GRAPH 4

INDEX OF REAL GROSS DOMESTIC PRODUCT
BLACKSBURG-CHRISTIANSBURG, VIRGINIA, AND THE UNITED STATES
2001 – 2021*



Source: U.S. Bureau of Economic Analysis. Real GDP in 2012 chained dollars. *2021 forecast for Blacksburg. Base year of the index is 2001.

Regional Prices And Housing In The Blacksburg Region

Regional price parities (RPPs) are regional price levels expressed as a percentage of the national price level for a given year. The price levels are determined by average prices paid by consumers for the mix of services and goods consumed in a region. Estimated by the U.S. Bureau of Economic Analysis (BEA), the RPPs provide insight into whether a metropolitan area is cheaper or more expensive than the national average. The BEA derives RPP using data from the Consumer Price Index, relative prices for housing rents and utilities from the American Community Survey, and expenditure weights from the Personal Consumption Expenditures by state series.[3]

As illustrated in Graph 5, the average price level in the Blacksburg-Christiansburg metro area was approximately 9.3% cheaper than the national average in 2008, while the average price level in the Washington, D.C., metro area was 14.2% higher than the national average. From 2008 to 2020, the Blacksburg metro area became relatively more expensive when compared to the national average, that is, in 2020, prices were 8.5% lower than the national average, an increase of 0.8 percentage points. The Richmond and Washington, D.C., metropolitan areas saw prices decrease relative to the national average, but this should be construed as prices increasing faster nationally rather than these regions becoming absolutely cheaper to live in over time.

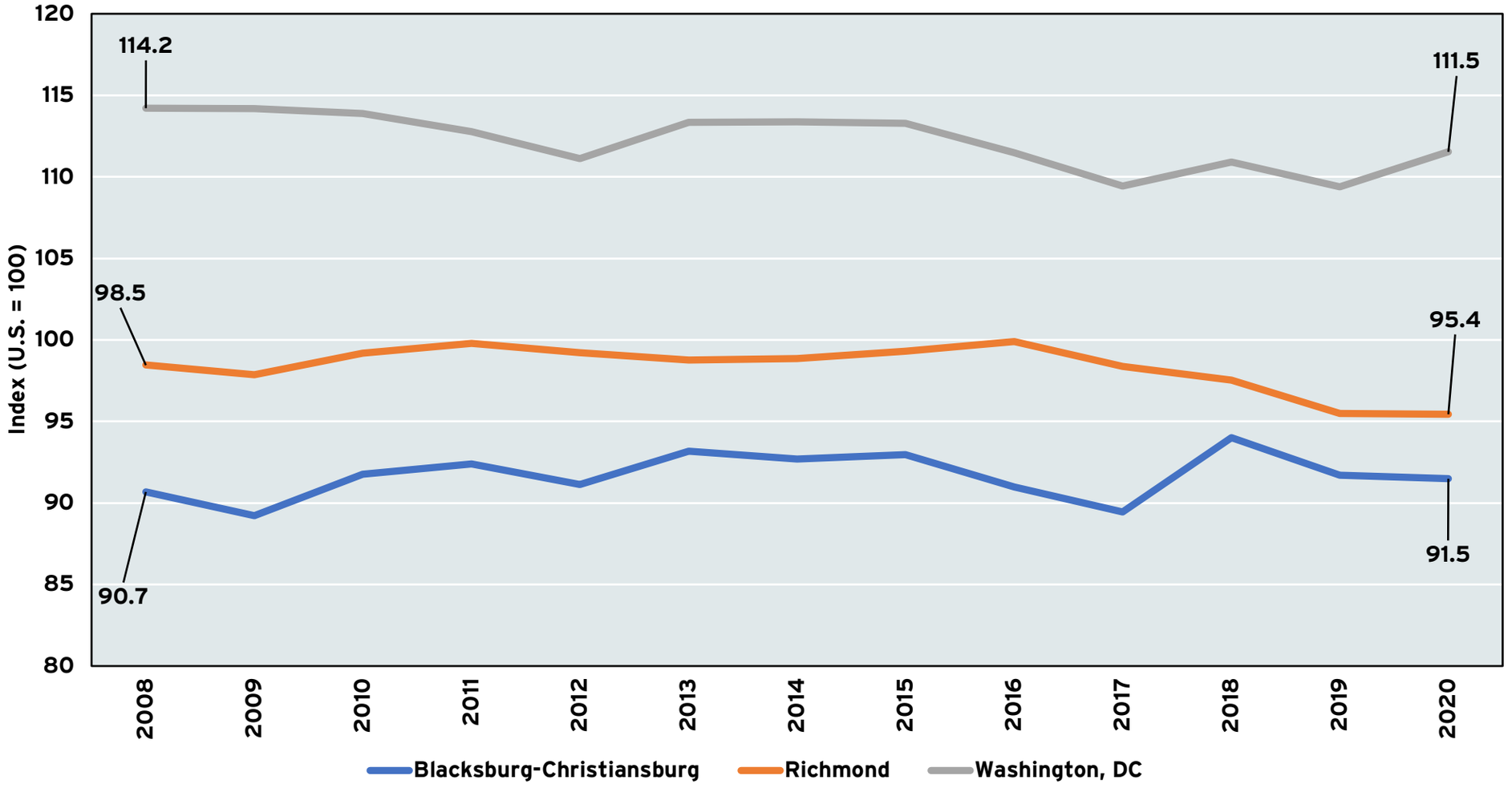
While the cost of living in the Blacksburg metro area was cheaper than the national average in 2020, median housing values have climbed in the region over the last decade. As with many other metropolitan areas across the Commonwealth, median housing values peaked prior to the Great Recession. As illustrated in Graph 6, the estimated median housing value increased from $107,598 in January 2000 to a pre-recessionary peak of $197,192 in December 2006, an increase of 83.3%. The Great Recession of 2007-2009 did not leave the region untouched, with the estimated median housing value falling to $169,250 in November 2011. The 14.2% decline in median housing values soon became a memory, however, as low interest rates and inventory led to a steady climb in median housing values. From the trough in November 2011 to the pre-COVID peak in October 2019, the median housing value in the Blacksburg metro area rose by 25.9% to $213,024. While there was a small dip in housing values in early 2020, median housing values in September 2022 were 27.1% higher than the pre-pandemic peak.

Even though median housing values have appreciated in the Blacksburg metro area, there is a modicum of good news. In Graph 7, we compare the growth in housing values in the Blacksburg region with Virginia and the nation. In the years prior to the pandemic, Blacksburg experienced a higher rate of growth in housing values than the nation, but less than the state. Since the onset of the pandemic, however, median housing values have appreciated more rapidly across the state and nation than in Blacksburg. From a regional competitiveness perspective, this may work to the metro area's advantage. While housing in the region is more expensive than prior to the pandemic, it has been relatively less expensive than many other areas of the Commonwealth and the nation. Brian T. Hamilton, director of Economic Development, Montgomery County, cited a 2021 study of the New River Valley Housing Market by the Virginia Center for Housing Research at Virginia Tech, Housing Forward Virginia, and the New River Valley Regional Commission to describe the latest on local housing needs. Hamilton shared that "at least 5,500 more rental units are needed to be able to house all our residents from all income levels." Several projects are in the housing pipeline to expand affordable housing in the area.

3 For more information see: frehttps://www.bea.gov/system/files/methodologies/Methodology-for-Regional-Price-Parities_0.pdf

GRAPH 5

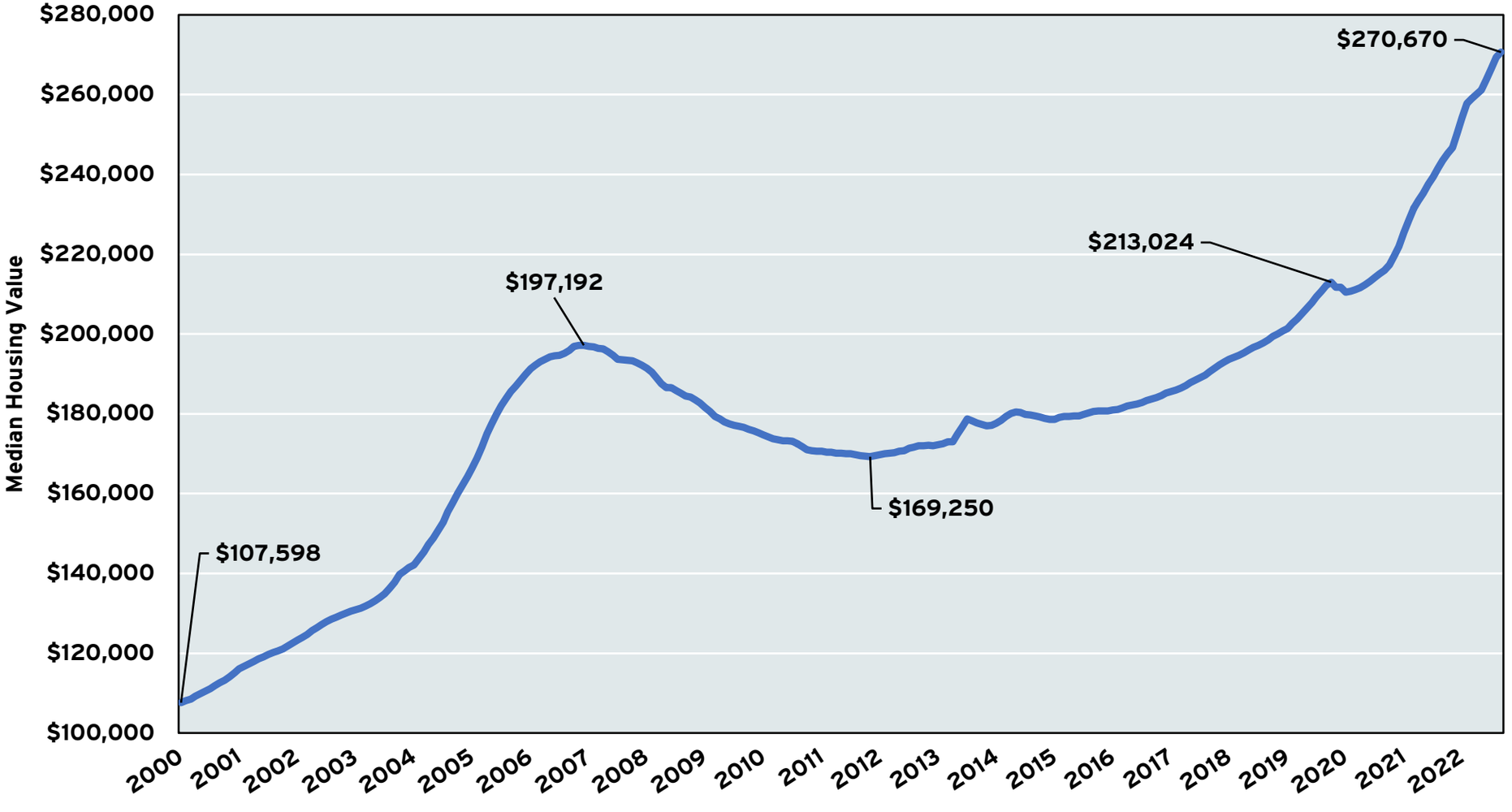
REGIONAL PRICE PARITIES FOR ALL ITEMS: BLACKSBURG-CHRISTIANSBURG, RICHMOND, AND WASHINGTON, D.C., METROPOLITAN STATISTICAL AREAS



Sources: Dragas Center for Economic Analysis and Policy and Bureau of Economic Analysis.

GRAPH 6

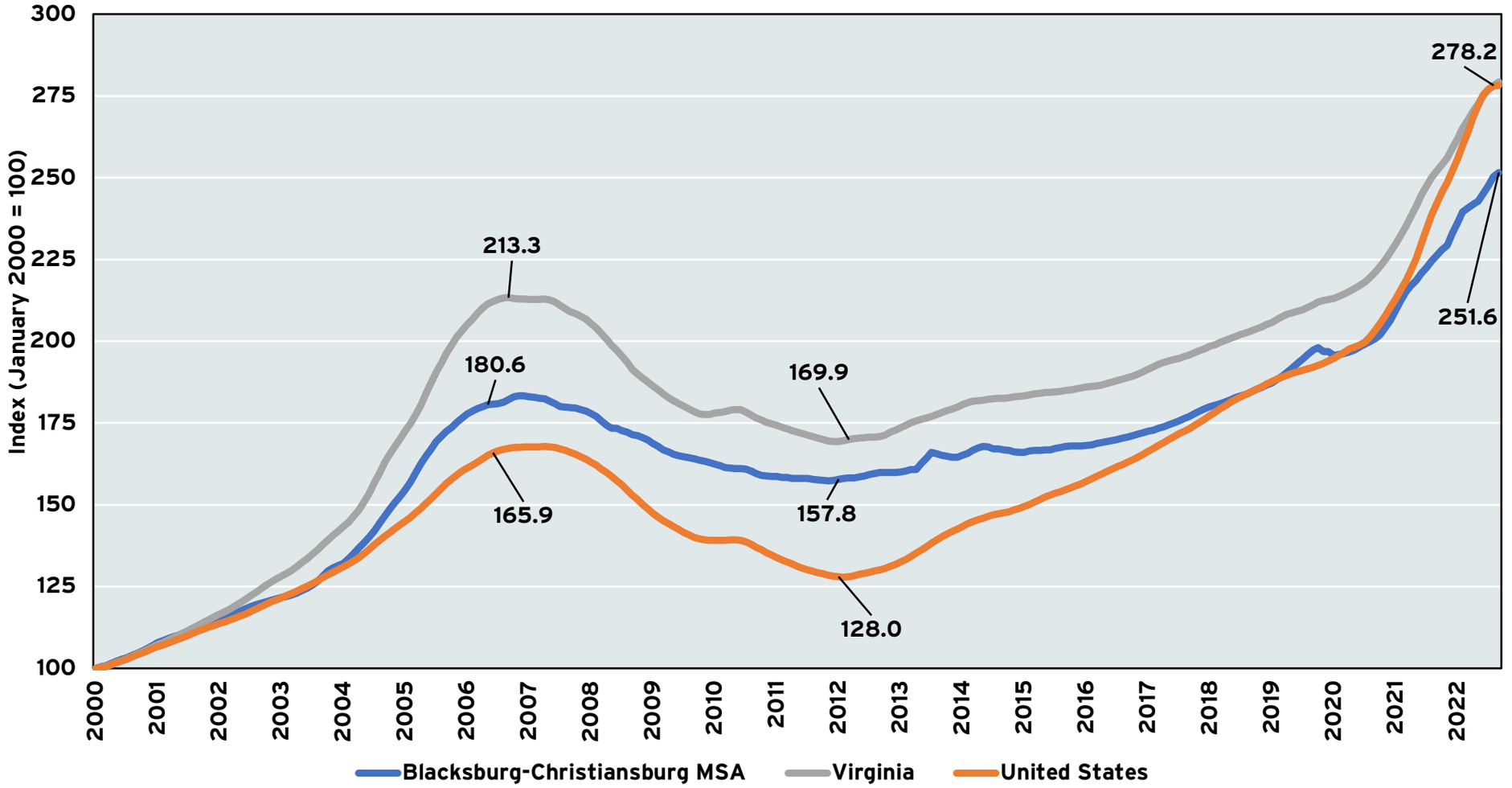
ZILLOW HOME VALUE INDEX OF SINGLE-FAMILY RESIDENTIAL HOMES: BLACKSBURG-CHRISTIANSBURG MSA, JANUARY 2000 - SEPTEMBER 2022



Source: Dragas Center for Economic Analysis and Policy; Zillow Home Value Index. Data are seasonally adjusted and reflect the typical home values in the 35th to 65th percentile range. Data not available for May and August of 2013 and November and December of 2019.

GRAPH 7

INDEX OF ZILLOW MEDIAN HOUSING VALUES FOR SINGLE-FAMILY RESIDENTIAL HOMES: BLACKSBURG-CHRISTIANSBURG MSA, VIRGINIA, AND THE UNITED STATES JANUARY 2000 - SEPTEMBER 2022



Source: Dragas Center for Economic Analysis and Policy; Zillow Home Value Index. Data are seasonally adjusted and reflect the typical home values in the 35th to 65th percentile range. Data not available for May and August of 2013 and November and December of 2019.

A Recovery In Labor Markets

Prior to the onset of the COVID-19 pandemic, the civilian labor force in the Blacksburg-Christiansburg metropolitan area reached a record 93,255 individuals in December 2019 (Graph 8). By May 2020, 6,525 individuals had left the labor force, a decline of 7.0%. At the end of 2020, the civilian labor force remained 4,107 (4.4%) below the pre-pandemic peak. Over the course of 2021, the labor force recovered and at the end of the year, the labor force was only 1,267 individuals (1.4%) below the pre-pandemic peak. The recovery slowed in 2022, and the civilian labor force remained 594 individuals (0.6%) below the pre-pandemic peak in September 2022.

In Graph 9, we examine individual employment in the Blacksburg metro area.[4] Following the Great Recession, individual employment reached a nadir in late 2009, followed by a recovery through most of 2019. The metro area set a record in October 2019 with 90,268 employed individuals. The shock to individual employment from the pandemic was more significant than that experienced by the civilian labor force, with individual employment declining by 11,571 individuals from October 2019 to May 2020, a decline of 12.8%.

As with many other metro areas in the Commonwealth, the reopening in the summer of 2020 led to a recovery in employment. By the end of 2020, there were 4,556 fewer individuals employed (5.0%) than the pre-pandemic peak. The recovery continued apace in 2021, ending the year with 867 fewer employees (1.0%) than October 2019. In 2022, the individual employment increased though March and then declined through September. In September, there were 125 fewer employees (0.1%) than October 2019.

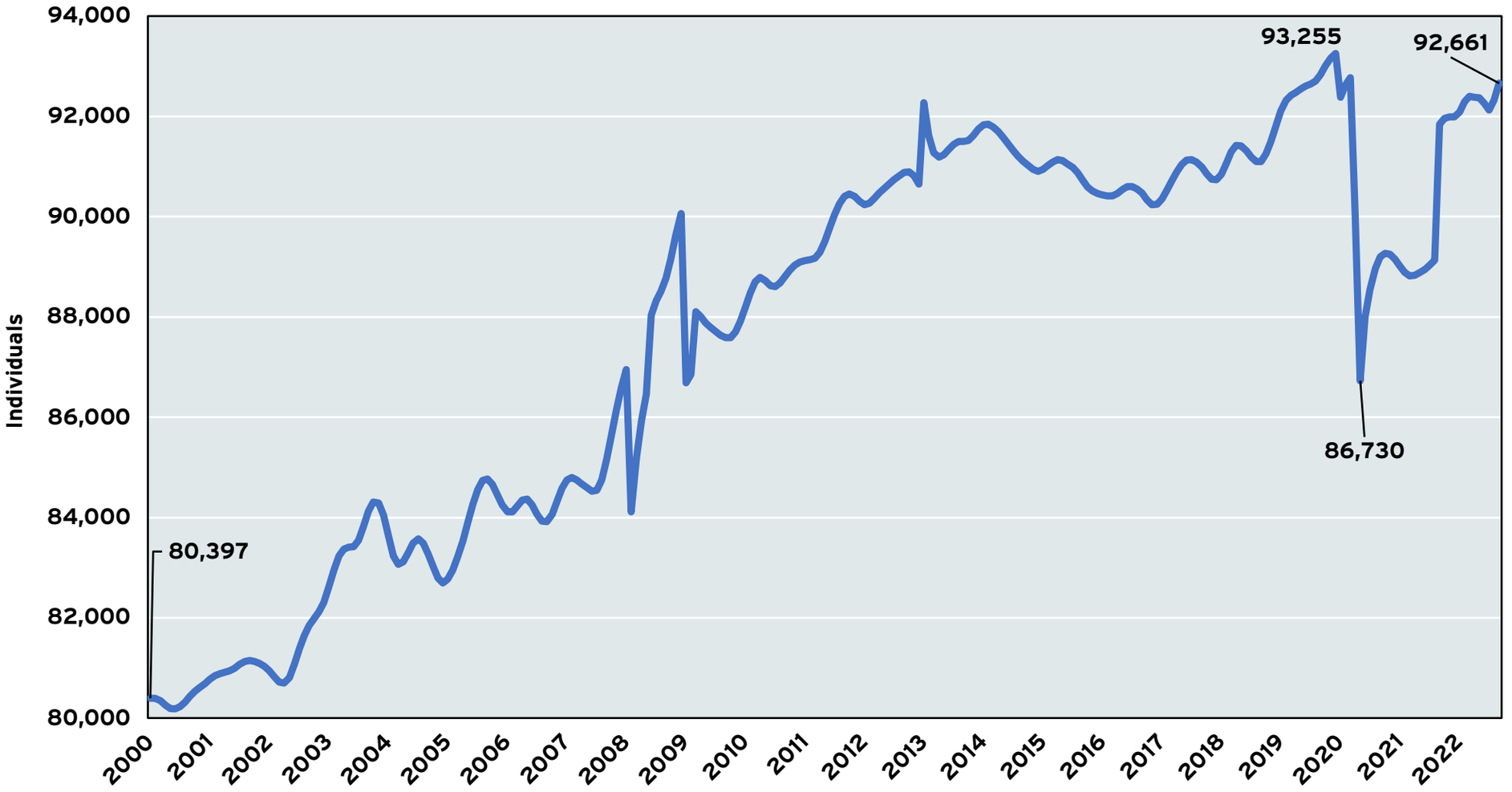
The headline unemployment rate is equal to the ratio of the number of unemployed individuals to individuals in the civilian labor force. As shown in Graph 10, the headline unemployment rate peaked in the Blacksburg region at 9.2% in 2010 following the Great Recession of 2007 – 2009. As individual employment increased faster than the civilian labor force over the following decade, the headline unemployment rate declined, reaching 2.6% in January 2020.

The sharp rise in unemployment during the initial months of the COVID-19 pandemic led the unemployment rate to increase to 12.0% in April 2020. Given the previously discussed departures from the labor force, the actual unemployment rate was likely higher. As the labor force and employment recovered in 2020 and 2021, the headline unemployment rate declined, reaching 3.9% in December 2020 and 2.8% in December 2021. In 2022, the unemployment rate declined to 2.5% in April, but then increased, with the unemployment rate reaching 2.7% in September 2022.

4 According to the BLS, individuals are classified as employed if, during the survey reference week, they meet one of the following criteria: (1) worked at least one hour as a paid employee; (2) worked at least one hour in their own business, profession, trade, or farm; (3) were temporarily absent from the job, business, or farm, regardless of whether they were paid or not; or (4) worked without pay for a minimum of 15 hours in a business or farm owned by a member of their family.

GRAPH 8

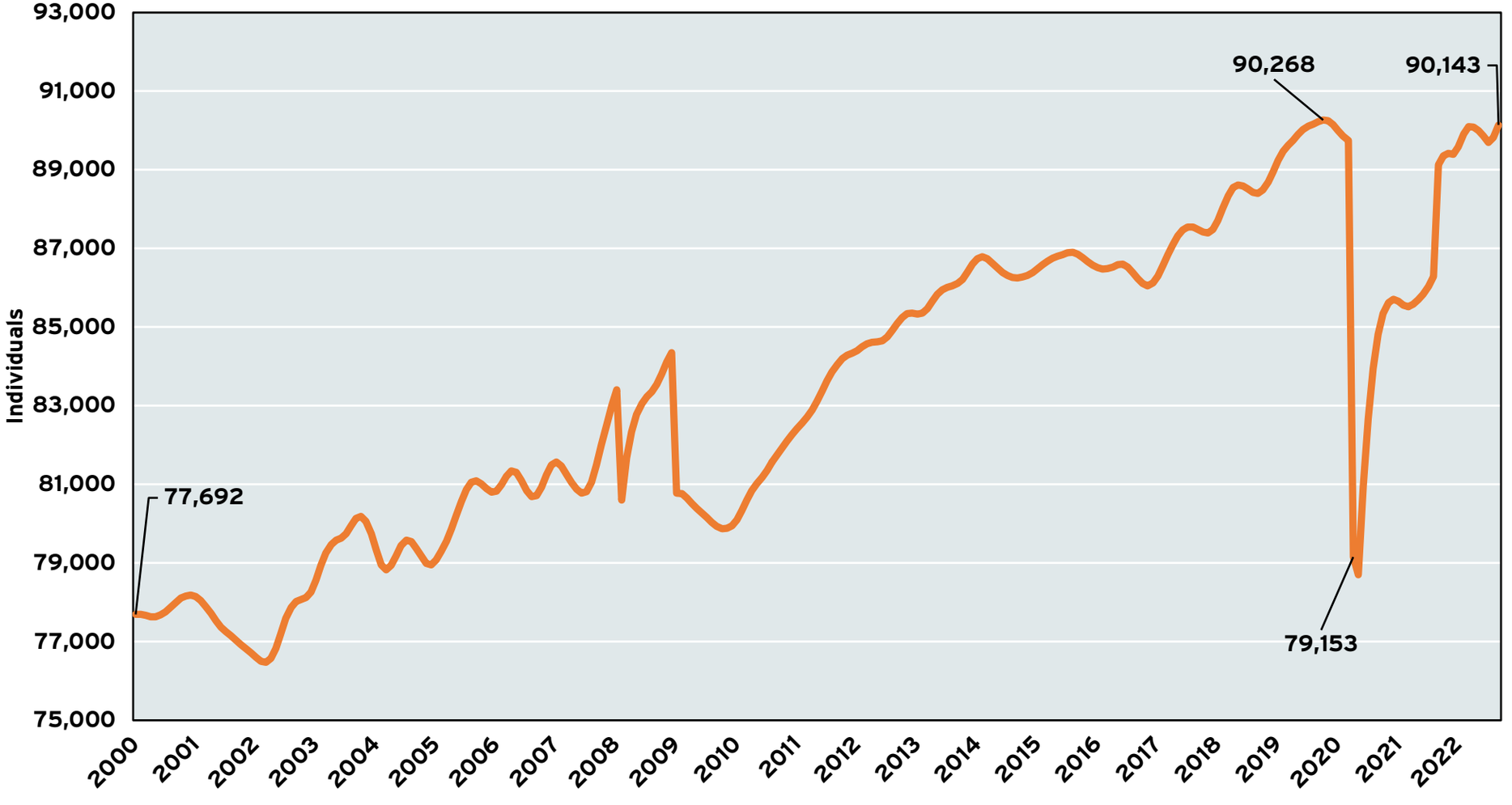
CIVILIAN LABOR FORCE
BLACKSBURG-CHRISTIANSBURG METROPOLITAN STATISTICAL AREA
JANUARY 2000 - SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

GRAPH 9

INDIVIDUAL EMPLOYMENT
BLACKSBURG-CHRISTIANSBURG METROPOLITAN STATISTICAL AREA
JANUARY 2000 - SEPTEMBER 2022



Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

GRAPH 10

HEADLINE UNEMPLOYMENT RATE
BLACKSBURG-CHRISTIANSBURG METROPOLITAN STATISTICAL AREA
JANUARY 2000 - SEPTEMBER 2022

Sources: Bureau of Labor Statistics and the Dragas Center for Economic Analysis and Policy, Old Dominion University. Data are seasonally adjusted.

Where Are The Jobs?

Graph 11 highlights the distribution of covered employment (jobs) in the Blacksburg metro region in 2021. Not surprisingly, 34.0% of all jobs were in education and health services, followed by manufacturing (17.4%), trade, transportation, and utilities (15.7%), and leisure and hospitality (10.0%). In Table 7, we highlight the 10 largest reported employers in the metro area, with Virginia Tech being the largest employer in 2021, followed by Volvo, and then Radford University.

With institutions of higher education among the five largest employers in the Blacksburg-Christiansburg metropolitan area, the question is whether enrollments will continue to climb over the coming decade. Graph 12 displays data from the State Council of Higher Education for Virginia on annual Full-Time Equivalent (FTE) enrollments. Annual FTEs are a standardized measure of enrollment that converts part-time student activity to equivalents of full-time student activity.[5] For example, for Virginia Tech, unduplicated headcount for the 2021–2022 academic year was 39,563 and the full-time equivalent headcount was 37,981. For Radford University, for the same academic year, unduplicated enrollment was 10,028 while annual full-time equivalent headcount was 7,585.

For Virginia Tech, annual FTE enrollments have trended upward this century, peaking with 38,037 FTEs in the 2020–2021 academic year. FTEs were down slightly in the most recent academic year, but this may be due to several factors. On the other hand, annual FTE enrollments at Radford University largely increased from 2000 to 2013, peaking at 9,702 FTEs, a 16.6% increase from the 2000–2001 academic year. Since 2013, however, FTE enrollments have declined, and there were fewer FTEs in the 2021–2022 academic year than there were in the 2000–2001 academic year. Most of this decline is attributable to the 2020–2021 and 2021–2022 academic years, that is, FTE enrollment declined from 9,449 in the 2019–2020 academic year to 7,585 in the 2021–2022 academic year. Now that the pandemic is fading from public discourse, the open question is whether Radford University can recover to pre-pandemic levels?

TABLE 7

TOP 10 LARGEST EMPLOYERS BLACKSBURG-CHRISTIANSBURG METROPOLITAN STATISTICAL AREA, 2022

	Employer	Industry
1	Virginia Polytechnic Institute and State University	Educational Services
2	Volvo Group North America Inc.	Transportation Equipment Manufacturing
3	Radford University	Educational Services
4	Montgomery County School Board	Educational Services
5	Carilion New River Valley Medical Center	Hospitals
6	Moog Inc.	Machinery Manufacturing
7	Walmart	General Merchandising
8	Bae Systems Ordnance Systems	Chemical Manufacturing
9	HCA Virginia Health System	Hospitals
10	Pulaski County School Board	Educational Services

Source: Dragas Center for Economic Analysis and Policy; Virginia's New River Valley, Largest Employers. Data as of August 2022.

5 https://research.schev.edu/info/Reports/Guide-to-the-Enrollment---Annual-FTE-Reports?

Looming ahead for Virginia Tech and Radford University, as well as other institutions of higher education in the Commonwealth, is the "demographic cliff." Beginning in 2025, the number of potential freshmen for higher education institutions is projected to drop significantly, with some estimates suggesting up to a 15% decline in prospective students.[6] On the heels of this cliff is that future COVID demographic cliff, a result of the decline in births in 2020. Simply put, in 2025 the projected number of prospective freshmen will decline, and in 2037 we will observe another similar decline. If there are fewer prospective freshmen, colleges and universities will face the unenviable task of enrolling fewer students and downsizing faculty, administrators, and facilities as a result.

While higher education is anticipating a bleaker enrollment future, the competition for students is only intensifying. Prospective students are increasingly expressing a preference for shorter degree programs and, in some cases, non-degree programs.[7] In a tighter labor market, employers are revamping degree requirements, choosing to prioritize skills over credentials. The rise of online learning during the pandemic, for all its drawbacks, is also appealing to a non-trivial number of students. For many institutions, face-to-face enrollments have stagnated or declined outright, while online enrollments have only continued to increase. In the online environment, competition is not limited to a specific geographic area; students can choose among colleges and universities across the globe.

Change is coming. Higher education may become more like a tournament, where the most nimble and skilled organizations will be able to earn the higher awards (students, research funding, and donations). Smaller colleges and universities are increasingly under pressure and closures are likely looming for some over the coming decade. Virginia Tech's forays into other metro areas across the Commonwealth can be, in this context, viewed as a proactive strategy to boost enrollments in an increasingly competitive environment. This also may slow the growth in the number of students in the Blacksburg area in the coming years due to the availability of students in Northern Virginia, Richmond, and Hampton Roads to attend Virginia Tech but reside close to their homes.

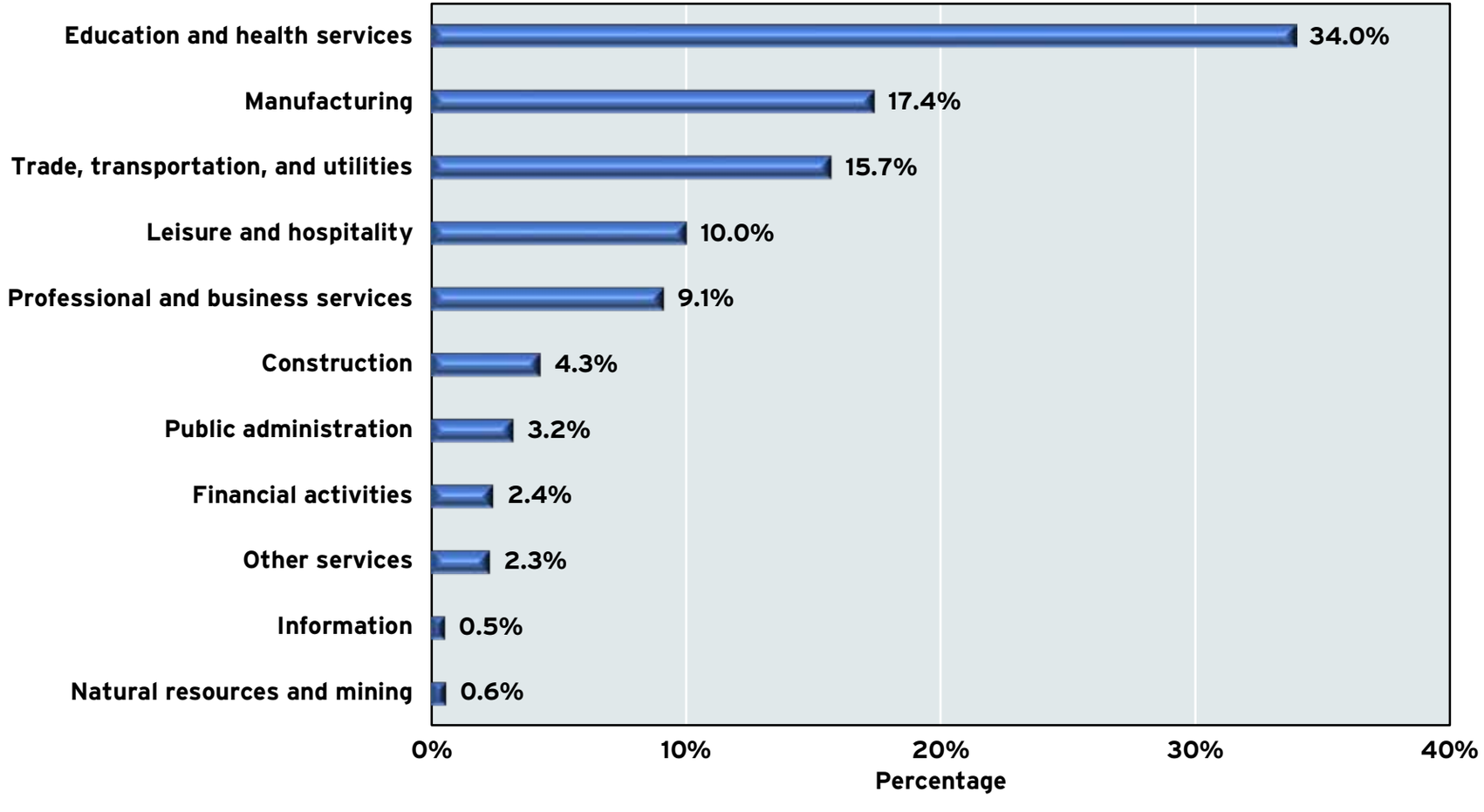
Source: Matt Gentry/The Roanoke Times via AP

Wing Aviation was the first drone delivery company in the U.S. to receive its Air Carrier Certification from the U.S. Federal Aviation Administration. Located in the town of Christiansburg, Wing is a subsidiary of Google's corporate parent Alphabet.

6 https://www.insidehighered.com/digital-learning/blogs/online-trending-now/second-demographic-cliff-adds-urgency-change
7 https://www.stradaeducation.org/wp-content/uploads/2020/06/pv-charts-062420.pdf

GRAPH 11

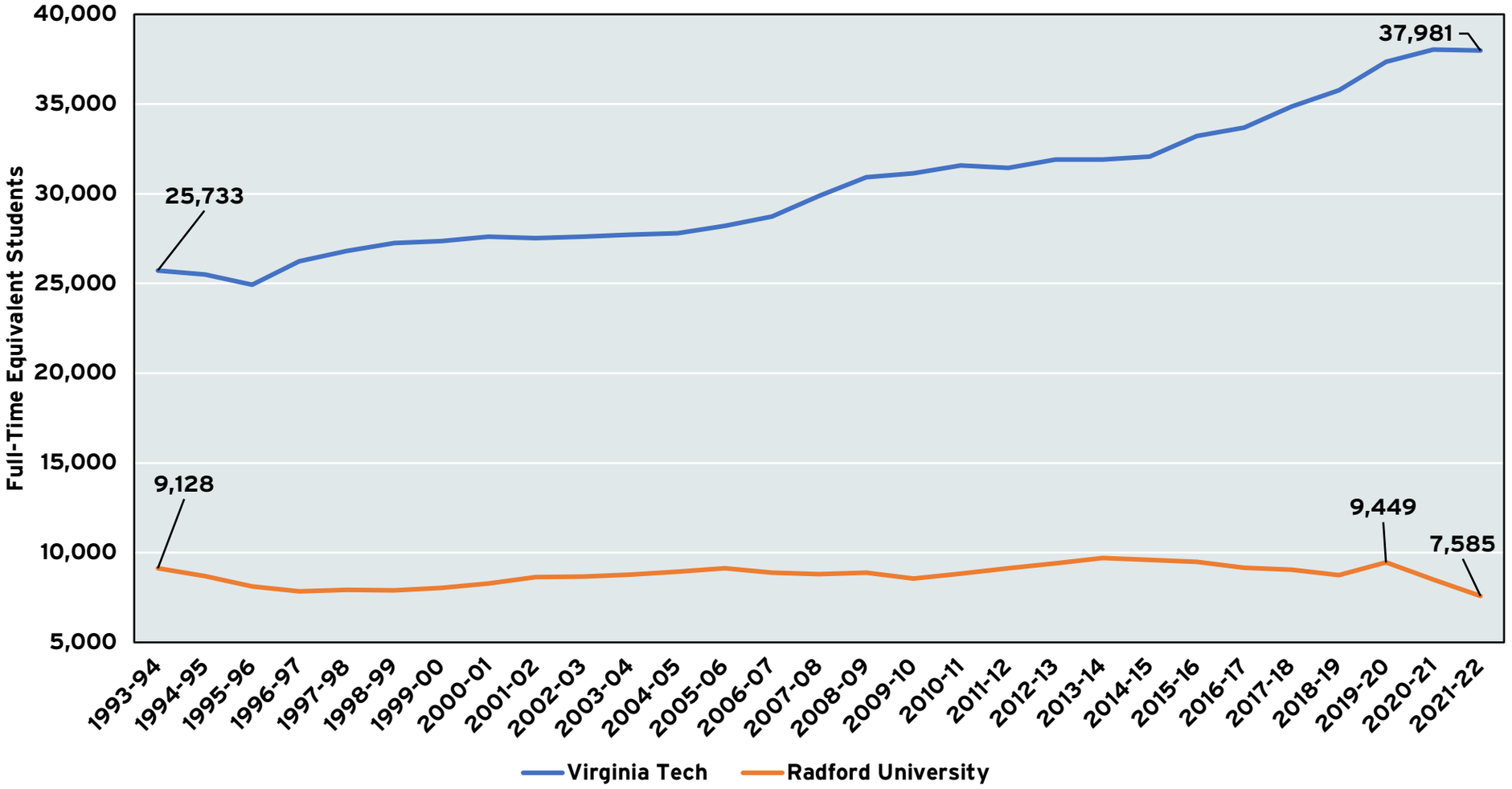
INDUSTRY SHARE OF COVERED EMPLOYMENT (JOBS):
BLACKSBURG - CHRISTIANSBURG METROPOLITAN STATISTICAL AREA, 2021



Sources: Virginia Employment Commission; Bureau of Labor Statistics, Quarterly Census of Employment and Wages; and the Dragas Center for Economic Analysis and Policy.

GRAPH 12

FULL-TIME EQUIVALENT ENROLLMENTS
RADFORD UNIVERSITY AND VIRGINIA TECH
1993-1994 ACADEMIC YEAR TO 2021-2022 ACADEMIC YEAR



Source: State Council of Higher Education for Virginia (2022), Table E05 Annualized Student FTE and Credit Hours.

Final Thoughts

The Blacksburg-Christiansburg metropolitan area may be small when compared to Northern Virginia or Richmond, but one might argue that it "punches above its weight" due to the presence of Virginia Tech and Radford University. These institutions attract large numbers of students to the region, bringing with them hopes, tuition dollars, and other forms of spending. Virginia Tech and Radford University also attract millions of research dollars to the region, significantly more than some larger metropolitan regions such as Hampton Roads.

There is a mixture of good and bad economic news to report. Economic activity, as measured by real Gross Domestic Product, has been relatively flat over the last decade and the poverty rate is higher than the state or the nation. Median household income in the metro region is lower than the state and the region. However, care must be taken to interpret the statistics as the presence of thousands of undergraduate, graduate, and professional students (who typically have lower incomes than the general population) may bias these data in a negative direction.

Labor markets continue to recover from the pandemic economic shock. The civilian labor force and individual employment have not yet reached their pre-pandemic peaks, but these peaks are within sight. Nonfarm payrolls (jobs) exceeded the previous record, and it appears that the Blacksburg metro region is outperforming many other metro areas in the Commonwealth. Higher inflation and economic uncertainty may lead to a recession in 2023, but Blacksburg appears to be better positioned than other metros to weather this potential economic storm.

We would be remiss, however, if we did not note that the region's economic prospects are closely tied to enrollments, research, and donations at its institutions of higher education. While the cost of living is cheaper in the Blacksburg-Christiansburg metropolitan area, it must now compete in a globalized economic system. The rise of distance learning during the COVID-19 pandemic may threaten colleges and universities with small enrollments or poor financial means, neither of which appears to apply to Virginia Tech and Radford University. The coming demographic cliffs, however, will increase competition for prospective freshmen and may lead to slower enrollment growth over the coming decade. Much like Hampton Roads, which is heavily dependent on federal spending, Blacksburg-Christiansburg's economic future is determined, in some part, by forces outside its control. Diversification of the economic base, by continuing to support innovation and entrepreneurship by leaning into its existing strengths, appears to be a wise course of action.


OLD DOMINION UNIVERSITY
1930