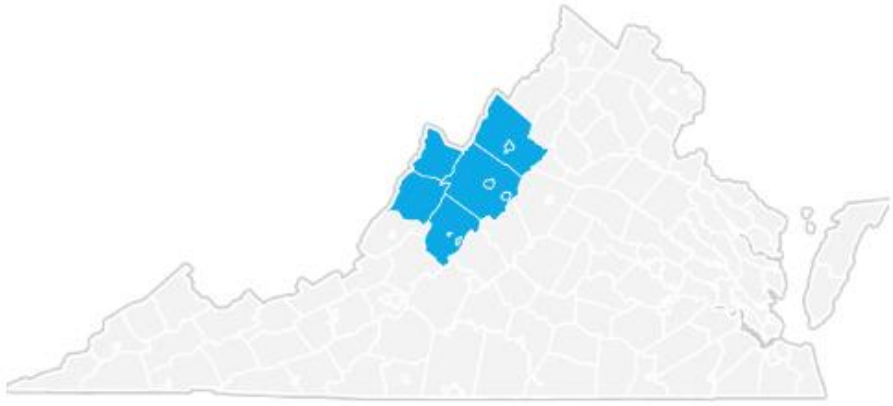
PREPARED FOR
Central Shenandoah Planning District Commission



10/7/2021

# Regional Pandemic Recovery and Resiliency Plan

## CENTRAL SHENANDOAH PLANNING DISTRICT COMMISSION

CHMURA

# Contents



# 1.Background

The COVID-19 pandemic has impacted the national economy in a manner not experienced in modern times. Similarly, this pandemic affected cities and counties in the Central Shenandoah Planning District Commission (CSPDC) region.[1]

The CSPDC was awarded funding from the Economic Development Administration (EDA) in the U.S. Department of Commerce for the development of a Pandemic Recovery and Resiliency Plan to be used by their local governments, regional leaders, and stakeholders to prevent, prepare for, and respond to the pandemic and similar future events. The plan is expected to provide a roadmap and assist their regional leaders in "seeing the future" as they continue to respond to the pandemic.

The CSPDC contracted Chmura Economics & Analytics (Chmura)[2] to provide research and supporting data in their development of the Pandemic Recovery and Resiliency Plan. Chmura's research will focus on three major areas:

1. Understanding the impact of COVID-19 on regional economies
2. Identifying gaps and opportunities for future development
3. Recommendations for bridging gaps and managing opportunities

This report focuses on the impact of COVID-19 on the CSPDC region. More specifically, this report analyzes the impact of the pandemic on key regional industrial sectors, including agriculture and tourism, small business and downtown areas, and key supply chains of the region. In addition, this report will also evaluate the projected recovery path of regional industries.

Information about the pandemic's spread, government response, and effective treatments and prevention has evolved quickly. Among those, state policies have had profound impacts on the regional economies. Chmura thoroughly researched Virginia's pandemic-related policies, such as the stay-at-home directives, state and regional reopening plans, and vaccination processes to evaluate their effects on the CSPDC region.[3]

Various federal policies have provided some relief to the economy. On March 27, 2020, the U.S. Congress passed—and the President signed into law—the Coronavirus Aid, Relief, and Economic Security (CARES) Act. The CARES Act temporarily expanded unemployment insurance benefits and provided a $1,200 payment to eligible Americans. In addition, this law included the

[1] The CSPDC region consists of Augusta, Bath, Highland, Rockbridge, and Rockingham counties and the cities of Buena Vista, Harrisonburg, Lexington, Staunton, and Waynesboro.
[2] Chmura provides economic software, consulting, and data so our clients can make informed decisions that benefit their communities. Chmura's PhD economists, data scientists, and strategic planners guide clients through their local labor market. Over the past 22 years, Chmura has served hundreds of clients nationwide with thoroughness, accuracy, and objectivity.
[3] Section 2 provides a detailed description of state and regional policies.

Paycheck Protection Program (PPP) that allocated $349 billion in loans to small businesses to help them continue to pay their employees.[4] In late April, Congress passed—and the President signed—another law that injected $310 billion to replenish the PPP program.[5] These policies allowed many businesses to keep their employees, thus moderating the effects of the COVID-19 pandemic on the economy throughout 2020.

In December 2020, a new relief package was authorized, providing several measures similar to the CARES Act passed in March 2020. This new package expanded unemployment insurance benefits and provided payments of $600 to eligible Americans. This package added $285 billion to the Paycheck Protection Program to provide loans to small businesses.[6] In March 2021, President Biden signed a new COVID-19 relief package to provide more help to households and businesses, including expanded unemployment benefits and additional cash payments to eligible households.[7]

As national and regional economies start to recover, one determining factor of the recovery pace is the development of vaccines and effective treatments for COVID-19. In December 2020, both Pfizer-BioNTech and Moderna applied for and were granted emergency use authorizations for their vaccines by the United States Food and Drug Administration (FDA).[8] In March 2021, a third vaccine developed by Johnson & Johnson was also approved by the FDA for emergency use.[9] In terms of vaccine distribution, Virginia adopted a phased approach. Phase 1A included healthcare personnel and residents of long-term care facilities; Phase 1B included seniors, adults with medical conditions, and frontline essential workers; and Phase 1C included other essential workers.[10] Virginia expanded vaccine eligibility to all adult residents (16 and older) on April 18, 2021.[11]

Chmura's analysis of the pandemic's impact on the regional economy and its recovery incorporates anticipated industry changes as well as the latest government policy actions. For this report, Chmura first analyzed the impact of COVID-19 on regional industries from the second through fourth quarters of 2020.[12] During this period, the region was in different phases of restrictions and reopening, and many jobs were lost and recovered. Chmura also identified regional growth industries during the pandemic. Finally, employment recovery is projected for regional industries in 2021 and 2022. This projection is based on the fact that vaccines are widely available to the public in the second quarter of 2021 and that new strains of the virus do not require new vaccines.

[4] Source: https://www.washingtonpost.com/business/2020/03/25/trump-senate-coronavirus-economic-stimulus-2-trillion/.
[5] Source: https://www.marketwatch.com/story/house-set-to-pass-bill-that-replenishes-coronavirus-aid-program-for-small-businesses-2020-04-23.
[6] Source: https://www.nytimes.com/2020/12/22/us/politics/second-stimulus-whats-included.html.
[7] Source: https://www.washingtonpost.com/us-policy/2021/03/11/biden-sign-stimulus-covid-relief-congress-checks/.
[8] Source: https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tracker.html.
[9] Source: https://www.fda.gov/news-events/press-announcements/fda-issues-emergency-use-authorization-third-covid-19-vaccine.
[10] Source: https://www.vdh.virginia.gov/covid-19-vaccine/.
[11] Source: https://www.governor.virginia.gov/newsroom/all-releases/2021/april/headline-894153-en.html.
[12] Quarters are defined by dividing the calendar year into periods of three months each, such that the first quarter of 2020 represents January, February, and March of calendar year 2020, and so on.

# 2. Impact on CSPDC Region Industries and GDP

## 2.1. State Policies

Chmura first estimated the potential impact of COVID-19 on the national labor market based on research of its impact on different industry sectors, recent releases of unemployment claims, and the latest news reports related to business closures and layoffs.

Next, Chmura incorporated information related to the COVID-19 impact that is specific to the state of Virginia and the CSPDC region. The most significant factors in this evaluation are the statewide stay-at-home order and reopening schedules. On March 12, 2020, Virginia Governor Ralph Northam declared a state of emergency to address the COVID-19 pandemic.[13] Throughout March 2020, the governor ordered the closure of schools and placed restrictions on both business and social gatherings. On March 23, 2020, Governor Northam issued Executive Order 53, closing all non-essential businesses.[14] On March 30, 2020, Governor Northam issued a statewide stay-at-home order, effective until June 10, 2020.[15] Under this order, only essential services, such as grocery stores and pharmacies, and critical infrastructure, such as food suppliers or healthcare facilities, were allowed to remain in operation. All schools, entertainment and recreation venues such as bars/nightclubs, gyms/fitness centers, theaters/performance venues, and amusement parks were to be closed.

As the spread of COVID-19 slowed, Virginia started its gradual reopening process. In early May 2020, Governor Northam outlined a three-phase plan to ease restrictions in Virginia. Phase One of reopening for the state began on May 15, 2020.[16] Phase Two of reopening in Virginia began on June 5, 2020, while all localities entered Phase Three of reopening on July 1, 2020.[17] Phase Three encouraged social distancing and teleworking, and individuals were required to wear face coverings in indoor public settings.

The CSPDC region was in Phase Three of reopening throughout the summer and fall months of 2020. In late fall and early winter, infections surged in the state, and Virginia implemented a curfew policy. On December 10, 2020, Governor Northam established a modified stay-at-home order where individuals must remain at their place of residence from 12:00 AM to 5:00 AM, and the capacity of social gatherings was reduced.[18]

As infections subsided and vaccination distribution began, Virginia gradually lifted many of its COVID-19 restrictions. On February 24, 2021, Governor Northam announced that the capacity limits for outdoor sports and entertainment would be lifted, as well as increasing the social gathering limit from 10 to 25 individuals. The on-site serving and consumption of alcohol was permitted until 12:00 AM instead of the previous limit of 10:00 PM; however, dining establishments were still prohibited from operating from 12:00 AM to 5:00 AM.[19] On March 23, 2021, Governor Northam increased capacity for social gatherings both indoors and outdoors, and increased capacity for entertainment venues, including recreational sporting events. On May 14, 2021, Governor Northam ended the universal indoor mask mandate, following new guidance from the Centers for Disease Control and Prevention (CDC) which stated that fully vaccinated individuals do not need to wear masks

[13] Source: https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/eo/EO-51-Declaration-of-a-State-of-Emergency-Due-to-Novel-Coronavirus-(COVID-19).pdf.
[14] Source: https://www.governor.virginia.gov/newsroom/all-releases/2020/march/headline-855292-en.html.
[15] Source: https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-55-Temporary-Stay-at-Home-Order-Due-to-Novel-Coronavirus-(COVID-19).pdf.
[16] Source: https://www.governor.virginia.gov/newsroom/all-releases/2020/may/headline-856681-en.html.
[17] Source: https://www.governor.virginia.gov/newsroom/all-releases/2020/june/headline-858266-en.html.
[18] Source: https://www.governor.virginia.gov/newsroom/all-releases/2020/december/headline-886185-en.html.
[19] Source: https://www.governor.virginia.gov/newsroom/all-releases/2021/february/headline-892984-en.html.

indoors in most cases.[20] As of May 28, 2021, all social distancing and capacity restrictions were eased, marking the end of all COVID restrictions in Virginia.[21]

Of the measures stated above, the stay-at-home order issued in March 2020 had a significant impact on regional employment in the second quarter of 2020, while the phased reopening of businesses facilitated the economic recovery in the second half of the year. However, business restrictions implemented in December affected the regional economic recovery in the fourth quarter of 2020. Vaccine distribution has had significant effects on economic recovery and growth in 2021, which will be analyzed in Section 4.

## 2.2. COVID-19 Impact on Major Regional Industries

As of the first quarter of 2020, total employment in the CSPDC region was 140,898.[22] Based on the two-digit industry level of the North American Industry Classification System (NAICS), the largest sector in the region was manufacturing, employing 20,613 workers. The next-largest sectors in the region were health care and social assistance (18,443 workers), educational services (16,279), retail (15,067), and accommodation and food services (14,877).

Table 2.1 summarizes the employment and GDP impact of the COVID-19 pandemic in the CSPDC region at the two-digit NAICS level. Chmura presents the COVID-19 impact for the second through fourth quarters of 2020, covering the initial decline and ensuing recovery of the regional economy. Available data indicate that in the second quarter of 2020, 15,092 jobs based in the region were lost, equivalent to 10.7% of the regional workforce in the first quarter of 2020. This represents a loss of $315.0 million in regional GDP.

[20] Source: https://www.governor.virginia.gov/newsroom/all-releases/2021/may/headline-895235-en.html and https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html.
[21] Source: https://www.governor.virginia.gov/newsroom/all-releases/2021/may/headline-895235-en.html.
[22] This employment number is based on the place of work, not the place of residence. This is the seasonally adjusted quarterly employment. Source: JobsEQ by Chmura.

**Table 2.1: Employment and GDP Impact from COVID-19 in the CSPDC Region**

| Two-Digit NAICS Industry | Q2 Job Change | Q2 GDP Impact (Million) | Q3 Job Change | Q3 GDP Impact (Million) | Q4 Job Change | Q4 GDP Impact (Million) |
|---|---|---|---|---|---|---|
| Accommodation and Food Services | -6,699 | -$72.3 | 3,082 | $32.7 | 1,518 | $14.4 |
| Educational Services | -1,415 | -$23.8 | -665 | -$11.8 | -11 | -$1.1 |
| Retail Trade | -1,411 | -$16.8 | 816 | $9.5 | 213 | $1.2 |
| Health Care and Social Assistance | -1,044 | -$16.6 | 161 | $2.7 | 120 | $2.8 |
| Construction | -942 | -$18.6 | 10 | $0.5 | 238 | $4.9 |
| Other Services (except Public Administration) | -756 | -$8.4 | 413 | $4.9 | 157 | $1.8 |
| Manufacturing | -710 | -$54.0 | -9 | $3.6 | 470 | $18.7 |
| Arts, Entertainment, and Recreation | -622 | -$8.6 | 74 | $1.0 | 208 | $2.3 |
| Administrative and Support and Waste Management and Remediation Services | -382 | -$5.4 | 347 | $4.2 | -27 | -$0.7 |
| Wholesale Trade | -272 | -$8.8 | -125 | -$3.8 | 56 | $1.4 |
| Real Estate and Rental and Leasing | -258 | -$64.4 | 33 | $8.6 | 20 | $3.5 |
| Professional, Scientific, and Technical Services | -231 | -$5.1 | 27 | $1.1 | 26 | $0.2 |
| Transportation and Warehousing | -200 | -$6.0 | 145 | $2.7 | -139 | -$5.6 |
| Information | -174 | -$3.9 | 7 | -$0.6 | -9 | -$0.2 |
| Public Administration | -105 | -$2.0 | 286 | $6.5 | -206 | -$4.7 |
| Finance and Insurance | -103 | -$2.9 | -39 | -$1.2 | 6 | $0.5 |
| Management of Companies and Enterprises | -90 | -$1.9 | -38 | -$0.8 | -3 | -$0.1 |
| Utilities | -62 | -$5.0 | -4 | -$1.0 | 11 | -$0.3 |
| Mining, Quarrying, and Oil and Gas Extraction | 0 | $0.1 | -1 | $0.0 | 3 | $0.1 |
| Unclassified | 16 | $0.4 | 40 | $1.1 | -60 | -$1.6 |
| Agriculture, Forestry, Fishing and Hunting | 367 | $8.9 | -99 | -$1.8 | 100 | $0.9 |
| **Total** | **-15,092** | **-$315.0** | **4,462** | **$58.2** | **2,693** | **$38.7** |

*Source: Chmura and JobsEQ by Chmura*

The industry impacted most in terms of employment is accommodation and food services, not surprising given the stay-at-home orders. In the second quarter of 2020, accommodation lost 6,699 jobs or 45.0% of the regional workforce in that industry. This impact hit Bath County, where the Omni Homestead Resort is the largest employer, particularly hard—the unemployment rate in the county reached a high of 18.2% (seasonally adjusted) in June 2020. Across the CSPDC region, the educational services industry lost 1,415 jobs, or 8.7% of its regional workforce. Colleges and universities experienced a steeper decline (-10.8%) than K-12 schools (-7.7%) as instruction shifted to remote learning and jobs for noninstructional staff such as food service, support staff, and bus drivers were reduced or not filled.[23] Other regional industries such as retail trade, health care and social assistance, and construction also lost a significant number of jobs. Manufacturing, the largest industry in the region, lost 710 jobs in the quarter, or 3.4% of its workforce. On the other hand, some industries experienced limited impact in the second quarter of 2020, and industries such as agriculture, forestry, fishing and hunting gained jobs in this quarter. Manufacturing and agricultural businesses were considered essential industries during the pandemic, and typically, (though not always) it is easier for these employees to maintain social distancing. These factors were an important contribution to job stability in the second quarter of 2020.

[23] Source: https://www.pewtrusts.org/en/research-and-analysis/articles/2020/11/10/nearly-all-states-suffer-declines-in-education-jobs

Business responses to the negative shock of the pandemic included reducing employment, temporarily closing, and permanently shutting down operations. The change in the number of business establishments includes the churn of firms both exiting and starting up in the region, where a negative change in the number of establishments provides insight into business closings during the pandemic. As shown in Table 2.2, the other services industry experienced the largest net loss of business establishments between the end of 2019 and the third quarter of 2020. This industry includes a variety of services including personal care services, such as barber shops and nail salons; civic and social organizations; and private household employment, such as maids, nannies, and caretakers. A net 28 establishments in transportation and warehousing closed over this period, primarily in general freight trucking in Augusta County. The wholesale trade sector lost a net 17 establishments, primarily among trade agents and brokers in Harrisonburg. However, other major industries have experienced a net increase in establishments, including health care and social assistance, construction, and retail. Overall, there are net nine more establishments in the region as of the third quarter of 2020.

**Table 2.2: Number of Business Establishments in the CSPDC Region**

| Two-Digit NAICS Industry | 2019 Q4 | 2020 Q1 | 2020 Q2 | 2020 Q3 | Net Change, 2019Q4 to 2020Q3 |
|---|---|---|---|---|---|
| Other Services (except Public Administration) | 857 | 813 | 808 | 808 | -49 |
| Transportation and Warehousing | 344 | 323 | 316 | 316 | -28 |
| Wholesale Trade | 292 | 281 | 276 | 275 | -17 |
| Finance and Insurance | 389 | 383 | 384 | 382 | -7 |
| Manufacturing | 346 | 341 | 342 | 339 | -7 |
| Agriculture, Forestry, Fishing and Hunting | 142 | 138 | 138 | 138 | -4 |
| Accommodation and Food Services | 659 | 668 | 652 | 656 | -3 |
| Administrative and Support and Waste Management and Remediation Services | 350 | 349 | 346 | 347 | -3 |
| Public Administration | 244 | 245 | 245 | 243 | -1 |
| Arts, Entertainment, and Recreation | 106 | 106 | 108 | 107 | 1 |
| Mining, Quarrying, and Oil and Gas Extraction | 10 | 11 | 11 | 11 | 1 |
| Professional, Scientific, and Technical Services | 549 | 552 | 549 | 550 | 1 |
| Utilities | 31 | 31 | 32 | 32 | 1 |
| Educational Services | 105 | 106 | 107 | 108 | 3 |
| Management of Companies and Enterprises | 43 | 43 | 45 | 46 | 3 |
| Real Estate and Rental and Leasing | 283 | 289 | 287 | 287 | 4 |
| Information | 97 | 107 | 103 | 102 | 5 |
| Retail Trade | 1,003 | 1,007 | 1,007 | 1,008 | 5 |
| Construction | 859 | 859 | 860 | 869 | 10 |
| Unclassified | 110 | 124 | 136 | 146 | 36 |
| Health Care and Social Assistance | 1,546 | 1,550 | 1,589 | 1,604 | 58 |
| **Total** | 8,365 | 8,326 | 8,341 | 8,374 | 9 |

*Source: Chmura and JobsEQ by Chmura*

As the state and region entered different phases of reopening beginning in May 2020 which continued over the summer and fall, the CSPDC region experienced a strong economic recovery in the third quarter of 2020. Available data indicate that the region regained 4,462 jobs in this quarter, led by accommodation and food services, retail, and other services (except public administration). The end of the stay-at-home order prompted the strong recovery in those industries, but they

were still well below their pre-pandemic levels. However, the educational services industry continued to lose a significant number of jobs in this quarter as schools anticipate a drop in enrollments and tighter budgets, typically slowing or freezing hiring instead of replacing employees who left.[24] Other industries such as wholesale trade also continued to lose jobs. In total, the job changes represent an increase of $58.2 million in regional GDP, compared with the previous quarter (Table 2.1).

Upon entering the fourth quarter of 2020, there was a surge in COVID-19 infections across the country and Virginia. While regional employment recovery slowed in this quarter, industries such as accommodation and food services and retail trade continued to recover. The regional economy added jobs in manufacturing; construction; and arts, entertainment, and recreation. Chmura estimated that the regional economy added 2,693 jobs in the fourth quarter of 2020, for a GDP gain of $38.7 million. [25]

## 2.3. Detailed COVID-19 Impact on Selected Industry Sectors

In this section, Chmura provides a drill-down analysis of the three key sectors in the region: manufacturing (or industrial), agricultural, and tourism sectors. This analysis is performed at the more detailed four-digit NAICS level. Due to a large number of four-digit industries in each sector, Chmura only presented the top 20 most-impacted industries for the manufacturing and tourism sectors.

### 2.3.1. Manufacturing Sector

Overall, the manufacturing sector in the CSPDC region did better than other industries during the pandemic. In the second quarter of 2020, this sector lost 710 jobs, or 3.4% of the pre-pandemic workforce in the first quarter of 2020. As a comparison, the region as a whole lost 10.7% of pre-pandemic jobs.

Table 2.3 presents the manufacturing industries impacted most at the four-digit NAICS level. In the second quarter of 2020, motor vehicle parts manufacturing lost 174 jobs, or 22.0% of the region's pre-pandemic workforce in that industry. Other manufacturing industries lost significant jobs, including other food manufacturing (down 160 jobs); animal slaughtering and processing (down 146 jobs); and printing and related support activities (down 124 jobs). The data indicate that a wide variety of manufacturing industries were negatively affected by the COVID-19 pandemic and the state stay-at-home order in this quarter.

[24] Source: https://www.brookings.edu/blog/brown-center-chalkboard/2021/03/02/during-the-pandemic-lost-education-jobs-arent-what-they-seem/
[25] Please note that while preliminary regional data for the third quarter of 2020 are available via JobsEQ, they are estimates and are subject to revision.

**Table 2.3: Twenty Manufacturing Industries Impacted Most by COVID-19 in the CSPDC Region**

| Four-Digit NAICS Industry | Q2 Job Change | Q2 GDP Impact (Million) | Q3 Job Change | Q3 GDP Impact (Million) | Q4 Job Change | Q4 GDP Impact (Million) |
|---|---|---|---|---|---|---|
| Motor Vehicle Parts Manufacturing | -174 | -$6.2 | 103 | $3.7 | -5 | -$0.2 |
| Other Food Manufacturing | -160 | -$19.9 | -64 | -$7.9 | -16 | -$2.0 |
| Animal Slaughtering and Processing | -146 | -$12.5 | -90 | -$7.7 | 76 | $6.6 |
| Printing and Related Support Activities | -124 | -$2.3 | -60 | -$1.1 | 51 | $0.9 |
| Beverage Manufacturing | -89 | -$8.0 | 113 | $10.2 | -9 | -$0.8 |
| Dairy Product Manufacturing | -70 | -$14.4 | 45 | $9.2 | -3 | -$0.7 |
| Alumina and Aluminum Production and Processing | -53 | -$1.5 | 1 | $0.0 | 12 | $0.3 |
| Architectural and Structural Metals Manufacturing | -52 | -$1.5 | 5 | $0.1 | 15 | $0.4 |
| Textile Furnishings Mills | -49 | -$0.9 | -23 | -$0.4 | 62 | $1.1 |
| Soap, Cleaning Compound, and Toilet Preparation Manufacturing | -47 | -$3.0 | 0 | $0.0 | 0 | $0.0 |
| Other Miscellaneous Manufacturing | -39 | -$0.7 | 17 | $0.3 | 15 | $0.3 |
| Converted Paper Product Manufacturing | -27 | -$0.9 | -9 | -$0.3 | 18 | $0.6 |
| Household and Institutional Furniture and Kitchen Cabinet Manufacturing | -26 | -$0.6 | 14 | $0.3 | 3 | $0.1 |
| Fruit and Vegetable Preserving and Specialty Food Manufacturing | -25 | -$2.1 | -13 | -$1.1 | -14 | -$1.2 |
| Fiber, Yarn, and Thread Mills | -21 | -$0.4 | 9 | $0.2 | 1 | $0.0 |
| Animal Food Manufacturing | -17 | -$2.4 | -2 | -$0.3 | 9 | $1.3 |
| Sawmills and Wood Preservation | -16 | -$0.5 | -23 | -$0.7 | 11 | $0.3 |
| Navigational, Measuring, Electromedical, and Control Instruments Manufacturing | -16 | -$0.7 | 14 | $0.7 | 3 | $0.1 |
| Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing | -15 | -$0.8 | 2 | $0.1 | -16 | -$0.9 |
| Other Fabricated Metal Product Manufacturing | -9 | -$0.3 | -1 | $0.0 | 1 | $0.0 |
| **Top Manufacturing Sector** | **-710** | **-$54.0** | **-9** | **$3.6** | **470** | **$18.7** |

*Source: Chmura and JobsEQ by Chmura*

In the third quarter of 2020, while the CSPDC region manufacturing sector only lost nine jobs overall, some industries fared better than others. Motor vehicle parts manufacturing in the CSPDC region started its recovery, adding 103 jobs, and beverage manufacturing also added 113 jobs. But other food manufacturing, animal slaughtering and processing, and printing and related support activities continued to lose jobs. In the fourth quarter of 2020, sizable job gains occurred in animal slaughtering and processing, printing and related support activities, and textile finishing mills, with the overall manufacturing sector adding 470 jobs.

### 2.3.2. Agricultural Sector

Unlike other industries, agriculture is an industry sector that added jobs in the second quarter of 2020, gaining 367 jobs. As a comparison, the region as a whole lost 10.7% of pre-pandemic jobs in this quarter.[26]

[26] While all data are seasonally adjusted, the agricultural sector still tends to show an increase in employment in the summer months—an average of about 200 jobs from the first quarter to the second quarter each year from 2014 and 2019.

Despite overall growth in the sector, some industries lost jobs. As Table 2.4 shows, greenhouse, nursery, and floriculture production lost 51 jobs in the second quarter of 2020. Other agricultural industries lost jobs, including support activities for forestry (-8 jobs) and support activities for animal production (-7). However, industries such as vegetable and melon farming, crop production, and animal production added more than one hundred jobs each.

**Table 2.4: CSPDC Region Agricultural Industries Impacted Most by COVID-19**

| Four-Digit NAICS Industry | Q2 Job Change | Q2 GDP Impact (Million) | Q3 Job Change | Q3 GDP Impact (Million) | Q4 Job Change | Q4 GDP Impact (Million) |
|---|---|---|---|---|---|---|
| Greenhouse, Nursery, and Floriculture Production | -51 | -$0.9 | -64 | -$1.1 | 115 | $2.0 |
| Support Activities for Forestry | -8 | -$0.2 | -1 | $0.0 | 10 | $0.3 |
| Support Activities for Animal Production | -7 | -$0.1 | 10 | $0.2 | -18 | -$0.3 |
| Logging | -4 | -$0.1 | -2 | $0.0 | -1 | $0.0 |
| Fishing | -1 | $0.0 | 0 | $0.0 | 0 | $0.0 |
| Aquaculture | 0 | $0.0 | 6 | $0.2 | -6 | -$0.2 |
| Forest Nurseries and Gathering of Forest Products | 1 | $0.0 | 0 | $0.0 | 0 | $0.0 |
| Support Activities for Crop Production | 1 | $0.0 | 5 | $0.1 | -18 | -$0.2 |
| Other Animal Production | 3 | $0.1 | -5 | -$0.1 | 1 | $0.0 |
| Fruit and Tree Nut Farming | 3 | $0.1 | 2 | $0.0 | -5 | -$0.1 |
| Poultry and Egg Production | 4 | $0.1 | -15 | -$0.4 | -8 | -$0.2 |
| Hog and Pig Farming | 4 | $0.1 | -4 | -$0.1 | -1 | $0.0 |
| Cattle Ranching and Farming | 13 | $0.3 | -13 | -$0.3 | -10 | -$0.2 |
| Other Crop Farming | 16 | $0.4 | -4 | -$0.1 | -6 | -$0.2 |
| Vegetable and Melon Farming | 105 | $3.2 | 26 | $0.8 | -92 | -$2.8 |
| Crop Production (Proprietors) | 140 | $3.1 | -28 | -$0.6 | 25 | $0.5 |
| Animal Production (Proprietors) | 147 | $2.9 | -10 | -$0.2 | 113 | $2.2 |
| **Total Agricultural Sector** | **367** | **$8.9** | **-99** | **-$1.8** | **100** | **$0.9** |

*Source: Chmura and JobsEQ by Chmura*

In the third quarter of 2020, greenhouse, nursery, and floriculture production lost 64 jobs. Some industries that gained jobs in the second quarter lost some jobs in the third quarter, including crop production, animal production, and poultry and egg production. But vegetable and melon farming continued to add jobs. In the fourth quarter of 2020, the agricultural sector added a total of 100 jobs, with greenhouse, nursery, and floriculture production adding 115 jobs, but vegetable and melon farming losing 92 jobs.

### 2.3.3. Tourism Sector

Tourism is an important sector in Central Shenandoah Valley. However, there is no standard definition for the tourism sector. While some industries such as hotels and air transportation are clearly part of the tourism sector, many other industries including restaurants and retail shops have both tourists and local residents as their customers. Some of those industries may be driven more by the local economy than visitors to the region, and only a portion of their businesses may serve tourists.

**Table 2.5: Industries in the Tourism Sector**

| List of Industries | NAICS Code |
|---|---|
| Gasoline stations | 4471 |
| Air transportation | 4811, 4812 |
| Water transportation | 4831 |
| Intracity mass transit | 4851 |
| Intercity bus transportation | 4852 |
| Taxicab and ride sharing services | 4853 |
| Charter bus services | 4855 |
| Scenic and sightseeing transportation services | 4871, 4872, 4879 |
| Parking lots and highway tolls | 4884 |
| Motion pictures | 5121 |
| Automotive vehicle rental | 5321 |
| Travel arrangement and reservation services | 5615 |
| Performing arts | 7111, 7113, 7114, 7115 |
| Gambling | 7132 |
| Sports and other recreation and entertainment | 7112, 7121, 7131, 7139 |
| Traveler accommodations | 7211, 7212, 7213 |
| Food and beverage services | 7223, 7224, 7225 |

*Source: BEA and Chmura*

In this analysis, Chmura utilizes the following approach to define the tourism sector. The U.S. Bureau of Economic Analysis (BEA) maintains a travel and tourism satellite account that includes over 20 industries that provide products and services related to travel and tourism.[27] As Table 2.5 shows, BEA considers retail, food services, transportation, accommodation, and entertainment industries to be associated with the tourism sector. From the BEA report, Chmura computed the national percentage of tourism employment in total industry employments, and only includes tourism-related industries with sizable employment (>10%) in Table 2.5.[28] For example, national data shows 21% of jobs in gas stations are associated with tourism, so they are considered as part of the tourism sector. But for other retail such as department stores, since only 2% of their employment is associated with tourism, they are not included.

Tourism is one of the sectors most negatively affected by the pandemic. In the second quarter of 2020, this sector lost 7,641 jobs, or 39.1% of the pre-pandemic workforce. As a comparison, the region as a whole lost 10.7% of pre-pandemic jobs in this quarter. The stay-at-home order and closure of non-essential businesses in April and May of 2020 hurt this sector and tourism-dependent counties more than others, such as Bath (home to the Omni Homestead Resort).

Table 2.6 provides the detailed impact of industries in the tourism sector in the second quarter of 2020. The top tourism industries that lost the most jobs included restaurants and other eating places (-3,938 jobs), traveler accommodation (-1,929), and special food services (-749). Job losses were widespread in other industries including entertainment, recreation, and transportation.

[27] Source: U.S. Travel and Tourism Satellite Account for 1998-2019. Survey of Current Business, Bureau of Economic Analysis. November 2019. https://apps.bea.gov/scb/2019/11-november/pdf/1119-travel-tourism-satellite-account.pdf.
[28] Chmura did not find a tourism satellite account for the CSPDC region.

**Table 2.6: Twenty Tourism Industries Impacted Most by COVID-19 in the CSPDC Region**

| Four-Digit NAICS Industry | Q2 Job Change | Q2 GDP Impact (Million) | Q3 Job Change | Q3 GDP Impact (Million) | Q4 Job Change | Q4 GDP Impact (Million) |
|---|---|---|---|---|---|---|
| Restaurants and Other Eating Places | -3,938 | -$29.4 | 1,901 | $14.2 | 1,119 | $8.4 |
| Traveler Accommodation | -1,929 | -$34.0 | 796 | $14.0 | 247 | $4.3 |
| Special Food Services | -749 | -$8.2 | 301 | $3.3 | 218 | $2.4 |
| Other Amusement and Recreation Industries | -230 | -$2.0 | 23 | $0.2 | 91 | $0.8 |
| Spectator Sports | -149 | -$3.5 | 15 | $0.3 | 4 | $0.1 |
| Gasoline Stations | -116 | -$1.4 | 72 | $0.9 | -22 | -$0.3 |
| Independent Artists, Writers, and Performers | -83 | -$1.2 | 8 | $0.1 | 32 | $0.5 |
| Motion Picture and Video Industries | -79 | -$1.3 | 35 | $0.6 | 3 | $0.1 |
| Drinking Places (Alcoholic Beverages) | -79 | -$0.6 | 4 | $0.0 | 1 | $0.0 |
| Performing Arts Companies | -59 | -$0.8 | 3 | $0.0 | 23 | $0.3 |
| Promoters of Performing Arts, Sports, and Similar Events | -46 | -$0.6 | 53 | $0.6 | 30 | $0.4 |
| Nonscheduled Air Transportation | -44 | -$2.3 | 28 | $1.4 | -76 | -$3.9 |
| Automotive Equipment Rental and Leasing | -36 | -$1.9 | 6 | $0.3 | 4 | $0.2 |
| Amusement Parks and Arcades | -35 | -$0.3 | 8 | $0.1 | 3 | $0.0 |
| Museums, Historical Sites, and Similar Institutions | -19 | -$0.2 | -36 | -$0.4 | 25 | $0.3 |
| Support Activities for Road Transportation | -14 | -$0.2 | -8 | -$0.1 | -2 | $0.0 |
| Travel Arrangement and Reservation Services | -10 | -$0.2 | 6 | $0.1 | -1 | $0.0 |
| Charter Bus Industry | -10 | -$0.3 | 6 | $0.2 | 4 | $0.1 |
| Taxi and Limousine Service | -10 | -$0.2 | 1 | $0.0 | 0 | $0.0 |
| RV (Recreational Vehicle) Parks and Recreational Camps | -6 | -$0.1 | 81 | $1.2 | -77 | -$1.2 |
| **Top 20 Total** | **-7,641** | **-$88.7** | **3,302** | **$37.2** | **1,626** | **$12.4** |

*Source: Chmura and JobsEQ by Chmura*

In the third quarter of 2020, the regional tourism sector recovered 3,302 jobs, or 43.2% of jobs that were lost. Industries that lost the most jobs in the previous quarter, such as restaurants and other eating places and traveler accommodation, also recovered the most jobs in this quarter.[29] But museums, historical sites, and similar institutions continued to shed jobs. In the fourth quarter of 2020, the overall tourism sector continued to recover, albeit at a slower rate. The sector added 1,626 jobs in this quarter, once again led by restaurants and other eating places and traveler accommodation.

## 2.4. COVID-19 Impact by Clusters

Table 2.7 summarizes the employment and GDP impact of the COVID-19 pandemic in the CSPDC region at the industry cluster level, based on the cluster definitions by Chmura's JobsEQ platform. The cluster definitions take into consideration the supply chain relationships in the region, providing more details of impact, especially for manufacturing industries.

[29] Source: https://cdn.advocacy.sba.gov/wp-content/uploads/2021/03/02112318/COVID-19-Impact-On-Small-Business.pdf.

**Table 2.7: Employment and GDP Impact from COVID-19 by Clusters in the CSPDC Region**

| Cluster | Q2 Job Change | Q2 GDP Impact (Million) | Q3 Job Change | Q3 GDP Impact (Million) | Q4 Job Change | Q4 GDP Impact (Million) |
|---|---|---|---|---|---|---|
| Consumer Services | -8,005 | -$150.3 | 3,695 | $50.3 | 1,607 | $14.6 |
| Education | -1,710 | -$26.2 | -585 | -$10.9 | 54 | -$0.4 |
| Retail | -1,684 | -$25.6 | 691 | $5.7 | 270 | $2.6 |
| Health | -1,044 | -$16.6 | 161 | $2.7 | 120 | $2.8 |
| Construction | -932 | -$18.1 | -7 | -$0.3 | 237 | $4.8 |
| Professional Services | -714 | -$14.9 | 313 | $4.0 | 10 | $0.0 |
| Media | -283 | -$5.6 | -33 | -$0.9 | 43 | $0.8 |
| Auto/Auto-related | -271 | -$7.6 | 84 | $2.5 | 27 | $0.4 |
| Utilities | -163 | -$40.5 | -13 | $0.6 | 113 | $9.2 |
| Food Manufacturing | -131 | -$3.9 | 21 | $0.9 | 42 | $1.3 |
| Metal & Product Manufacturing | -105 | -$2.0 | 286 | $6.5 | -206 | -$4.7 |
| Public Administration | -100 | -$2.6 | -42 | -$1.4 | 6 | $0.5 |
| Financial Services | -77 | -$2.3 | -48 | -$1.5 | 52 | $0.2 |
| Freight Transportation | -77 | -$1.6 | 21 | $0.4 | 11 | $0.3 |
| Wood/Paper Manufacturing | -72 | -$2.0 | -13 | -$0.5 | 42 | $1.3 |
| Textile/Leather Manufacturing | -66 | -$1.3 | -2 | $0.0 | 66 | $1.1 |
| Machinery Manufacturing | -41 | -$0.9 | -73 | -$2.4 | 135 | $3.9 |
| Coal/Oil/Power | -32 | -$3.1 | -18 | -$1.4 | -5 | -$0.8 |
| Chemical Manufacturing | -15 | -$2.1 | 19 | $0.6 | 10 | $0.0 |
| Electric/Electronics Manufacturing | 2 | -$0.1 | 24 | $0.8 | 12 | $0.4 |
| Unclassified | 16 | $0.4 | 40 | $1.1 | -60 | -$1.6 |
| Pharmaceutical | 61 | $5.4 | 39 | $3.4 | -2 | -$0.2 |
| Agricultural | 351 | $6.4 | -99 | -$2.0 | 110 | $2.2 |
| **Total** | **-15,092** | **-$315.0** | **4,462** | **$58.2** | **2,693** | **$38.7** |

*Source: Chmura and JobsEQ by Chmura*

Not surprisingly, the industry cluster impacted most in the second quarter in terms of employment was consumer services (-8,005 jobs). Businesses in this cluster include hotels, restaurants, and personal care services, which were severely affected by the stay-at-home order. Other regional industries such as education, retail, health, and construction also lost a significant number of jobs. On the other hand, some clusters experienced limited impact in the second quarter of 2020, and clusters such as agricultural and pharmaceutical gained jobs in this quarter.

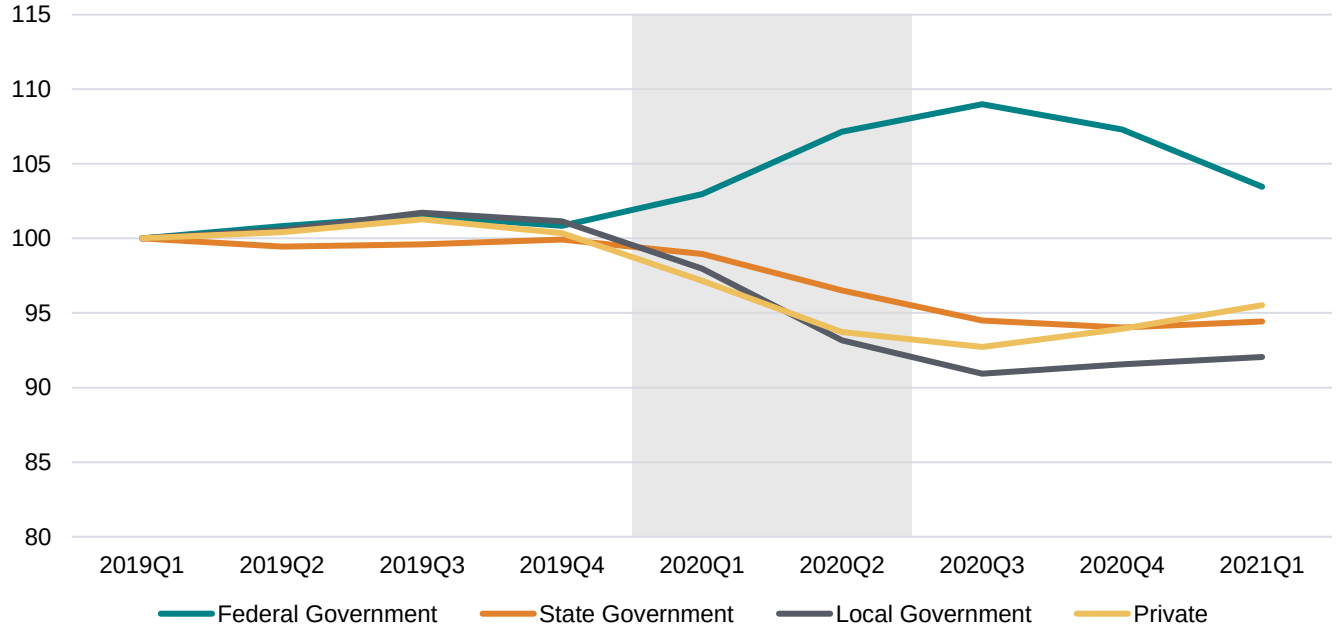
In the third quarter of 2020, many clusters in the CSPDC region experienced a healthy recovery, led by job gains in consumer services, as the reopening of the state economy prompted strong hiring in this cluster. Retail, health, and professional services also added a significant number of jobs. However, the education cluster continued to lose jobs in this quarter.

Upon entering the fourth quarter of 2020, there was a surge in COVID-19 infections across the country and in Virginia. While regional employment recovery slowed in this quarter, job growth was more widespread than the third quarter, as most clusters gained jobs. Clusters such as consumer services, retail, and construction highlighted job gains in this quarter.

## 2.5. COVID-19 Impact by Ownership

Figure 2.1 summarizes employment trends in the CSPDC region by public and private employment.[30] As shown in the chart, federal employment in the CSPDC region expanded during the pandemic through the third quarter of 2020, and as of the first quarter of 2021 remains 3% above levels prior to the pandemic. State government employment declined at a slower rate than private employment, but while private employment has recovered to 95% of pre-pandemic levels, state government employment has leveled off at 94% of pre-pandemic levels as of the first quarter of 2021. Local government was hit the hardest, losing 9% of all employment (1,200 jobs) by the third quarter of 2020, before recovering to 92% of pre-pandemic levels in the first quarter of 2021. The hardest-hit local government sectors were educational services and arts, entertainment, and recreation, particularly as summer activities and parks closed due to the pandemic. The cities of Lexington and Harrisonburg had the steepest declines in local government employment.

**Figure 2.1: Change in Employment by Ownership in the CSPDC Region (Index 2019Q1=100)**




*Source: Chmura*
*Note: Shaded bar indicates the recession*

# 3. Supply Chain Impact

This section estimates the impact of COVID-19 on the existing supply chains in the region. The supply chain impact evaluates how the COVID-19 effect rippled through the economy in the CSPDC region and affected various businesses in the supply chain. For example, when Virginia issued a stay-at-home order in the spring of 2020, many restaurants had to close or were only open for takeout. That affected restaurant suppliers such as food wholesalers, truck transportation, and grocery stores. That further affected suppliers to those businesses, such as food manufacturers and other service providers.

Chmura utilized the JobsEQ economic impact model to analyze the supply chain impact of COVID-19 in the region. For changes in each industry, this model provides estimates of changes in sales or revenue for industries providing goods and

[30] Employment is indexed relative to the level as of the first quarter of 2019. A value of 100 indicates the same level of employment as that base period, and a value of 95 indicates 95% of employment relative to that base period.

services. Chmura utilized the estimated COVID-19 impact by industry, as analyzed in Section 2, as an input. Chmura then used the JobsEQ impact model to estimate employment impact of its suppliers.

Table 3.1 summarizes the job changes during the COVID-19 pandemic resulting from the supply chain impact. In the second quarter of 2020, the CSPDC region lost a total of 15,092 jobs. Using the impact model, Chmura estimated that 1,334 regional jobs were lost due to supply chain relationships. As an example, the analysis in Section 2 indicates that the agriculture, forestry, fishing and hunting industry gained jobs in the second quarter overall. However, the industry lost 100 jobs due to supply chain relationships, possibly due to job cuts in food manufacturing and food service industries.

Table 3.1 also indicates that in the second quarter of 2022, industries impacted most by the supply chain disruption from COVID-19 were accommodation and food services, with a loss of 217 jobs. With many business restrictions in place and people working from home, business travel and lunches were severely curtailed. Similarly, the industry sector of administrative and support and waste management and remediation services provides regional businesses with landscaping, cleaning, and other business support. The sector lost 178 jobs due to the supply chain impact. The regional manufacturing industry lost an estimated 167 jobs due to problems with supply chain relationships.

**Table 3.1: Estimated Supply Chain Employment Impact in the CSPDC Region, by Industry**

| Industry | 2020Q2 | 2020Q3 | 2020Q4 |
|---|---|---|---|
| Accommodation and Food Services | -217 | 56 | 27 |
| Administrative and Support and Waste Management and Remediation Services | -178 | 63 | 32 |
| Agriculture, Forestry, Fishing and Hunting | -100 | -6 | 24 |
| Arts, Entertainment, and Recreation | -43 | 7 | 10 |
| Construction | -105 | 6 | 6 |
| Educational Services | -18 | 9 | 1 |
| Finance and Insurance | -27 | 8 | 2 |
| Health Care and Social Assistance | -1 | 0 | 0 |
| Information | -13 | 1 | 2 |
| Management of Companies and Enterprises | -52 | 46 | 26 |
| Manufacturing | -167 | 25 | 68 |
| Mining, Quarrying, and Oil and Gas Extraction | -4 | 0 | 1 |
| Other Services (except Public Administration) | -62 | 17 | 9 |
| Professional, Scientific, and Technical Services | -71 | 10 | 9 |
| Public Administration | -3 | 1 | 1 |
| Real Estate and Rental and Leasing | -49 | 9 | 5 |
| Retail Trade | -76 | 10 | 17 |
| Transportation and Warehousing | -82 | 32 | 38 |
| Utilities | -18 | 0 | 0 |
| Wholesale Trade | -46 | 14 | 11 |
| **Regional Total** | **-1,334** | **307** | **286** |

*Source: Chmura*

In the third and fourth quarter of 2020, with the regional economy experiencing a recovery, a majority of regional industries added jobs from supply chain relationships. For example, in the third quarter of 2020, the largest gains occurred in administrative and support and waste management and remediation services; accommodation and food services; and management of companies and enterprises. In the fourth quarter of 2020, the largest gains due to the supply chain impact occurred in manufacturing; transportation and warehousing; and administrative and support and waste management and remediation services.

# 4. CSPDC Region's Path to Recovery

## 4.1. Factors Influencing Recovery

To evaluate the recovery of different CSPDC region industries, Chmura conducted research using secondary studies and expert reports to understand the differing recovery paths for various industries. Implementation of vaccines, approaching herd immunity to COVID-19, and public comfort returning to pre-pandemic activities are the determining factors in achieving a full economic recovery. With continued spread of the virus and without medical intervention, social distancing policies will remain in place and consumers will be cautious about traveling and visiting retail shops, food service establishments, and entertainment venues.

Before vaccines were ready for distribution, industries began recovering at different paces. In industries that typically require fewer person-to-person interactions, such as manufacturing and construction, jobs are easier to recover. Industries such as finance and insurance; and professional and business services can also expect relatively fast recoveries, as they are able to maintain their operations via remote work.[31] Employment in industries such as hospitality, food service, entertainment, and personal services will likely be on a slower recovery path without the wide availability of vaccines, because each of these industries involves close contact with customers.

Since the COVID-19 pandemic began, vaccine development has been on an accelerated schedule. The federal government has invested billions of dollars in this effort. In December 2020, both Pfizer-BioNTech and Moderna applied for an emergency use authorization for their vaccines and were approved by the FDA. In March 2021, a third vaccine, developed by Johnson & Johnson, was also approved by the FDA for emergency use. In terms of vaccine distribution, Virginia adopted a phased approach, with Phase 1A covering healthcare personnel and residents of long-term care facilities; Phase 1B covering seniors, adults with medical conditions, and frontline essential workers; and Phase 1C covering other essential workers. Starting April 18, 2021, all Virginians 16 and older were eligible to get the COVID-19 vaccine.[32] As of June 1, 2021, a total of over 8.2 million vaccine doses had been administered in the state of Virginia, 4.7 million people had received at least one dose (54.9% of the population), and 3.8 million people were fully vaccinated (44.4% of the population).[33]

From a long-term perspective, there will be some permanent changes in national and regional economies after the pandemic. Some studies predict the retail industry will be permanently changed. Based on a McKinsey report, the COVID-19 pandemic has accelerated the trend of consumers choosing e-commerce over traditional brick-and-mortar establishments.[34] Some of the behaviors that consumers have developed during the pandemic will persist, and this will affect retail and food service businesses in the future. On the other hand, the McKinsey report indicated there will be some long-term benefits for the manufacturing industry. Some manufacturing operations will be moving back to the United States, closer to consumer markets, at least in some capacity.

This recovery analysis assumes that the current pace of vaccinating residents will continue. Also included in this assumption is that variant strains of the virus (such as the delta variant) will not require the manufacture of new vaccines that may disrupt both vaccination efforts and the pace of economic recovery.

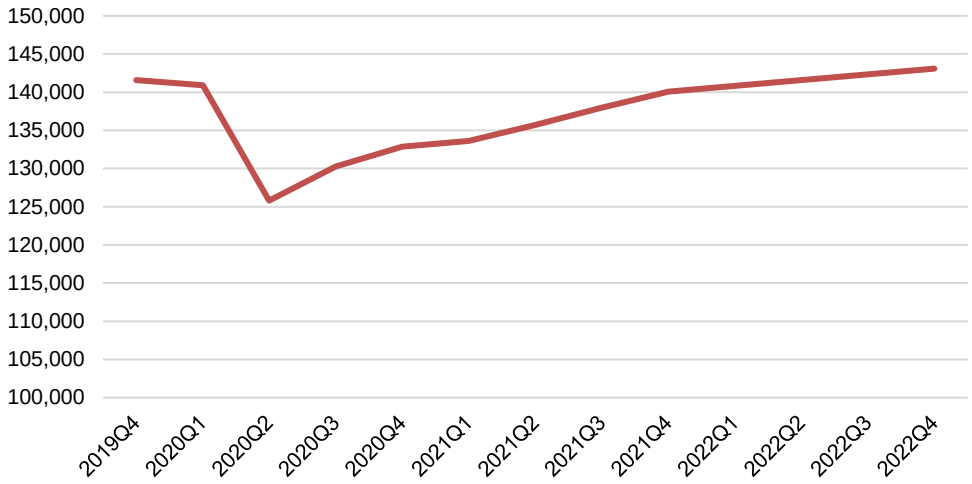
---

[31] Source: https://www.inquirer.com/business/recovery-economy-zandi-moodys-virus-covid-19-jobs-prediction-20200423.html.
[32] Source:https://www.governor.virginia.gov/newsroom/all-releases/2021/april/headline-894153-en.html and https://www.governor.virginia.gov/newsroom/all-releases/2021/april/headline-894469-en.html.
[33] Source: https://www.vdh.virginia.gov/coronavirus/covid-19-vaccine-summary/.
[34] Source: McKinsey, at https://www.mckinsey.com/business-functions/organization/our-insights/to-emerge-stronger-from-the-covid-19-crisis-companies-should-start-reskilling-their-workforces-now.

## 4.2. Regional Recovery Path

Figure 4.1 and Table 4.1 present the actual employment and projected employment recovery for the CSPDC region from 2020 to 2022. For overall regional employment, the lowest level was in the second quarter of 2020, at 88.9% of pre-pandemic levels.[35] Available data indicate that a significant number of jobs were added in the third quarter, led by accommodation and food services; and retail. Of those lost jobs, 28.3% were recovered in this quarter. Employment recovery continued in the fourth quarter of 2020, and the first quarter of 2021, but slowed as infections surged during the winter. It is estimated that 44.7% of lost jobs were recovered by the fourth quarter of 2020, with regional employment reaching 132,860. Chmura projects that the economic recovery will accelerate starting in the second quarter of 2021. The wide availability of vaccines by this time will enhance consumers' confidence to travel and patronize consumer-related businesses. In addition, the Biden Administration's new relief plan will provide an extra boost for the economic recovery. By mid-year 2021, the region is projected to recover 62.9% of jobs lost due to the pandemic, with total employment reaching 135,725. The region is projected to recover all of the jobs lost during the pandemic by the second quarter of 2022.

**Figure 4.1: CSPDC Employment Recovery**




*Source: Chmura*

[35] Please note that job losses started in March, during the first quarter of 2020.

**Table 4.1: Projected Employment by Industry in the CSPDC Region (2020-2022)**

| Two-Digit NAICS Industry | 2019Q4 | 2020Q2 | 2020Q4 | 2021Q2 | 2021Q4 | 2022Q2 | 2022Q4 | %Change 2019Q4-2022Q4 |
|---|---|---|---|---|---|---|---|---|
| Accommodation and Food Services | 14,967 | 8,177 | 12,777 | 13,578 | 14,250 | 14,585 | 14,940 | -0.2% |
| Administrative and Support and Waste Management and Remediation Services | 4,976 | 4,545 | 4,865 | 5,001 | 4,992 | 4,989 | 4,986 | 0.2% |
| Agriculture, Forestry, Fishing and Hunting | 3,050 | 3,287 | 3,288 | 3,208 | 3,216 | 3,239 | 3,263 | 7.0% |
| Arts, Entertainment, and Recreation | 1,578 | 1,224 | 1,507 | 1,567 | 1,663 | 1,711 | 1,742 | 10.4% |
| Construction | 9,531 | 9,164 | 9,412 | 9,604 | 9,781 | 9,826 | 9,871 | 3.6% |
| Educational Services | 16,551 | 14,864 | 14,188 | 14,614 | 15,625 | 16,095 | 16,566 | 0.1% |
| Finance and Insurance | 2,471 | 2,336 | 2,303 | 2,305 | 2,383 | 2,421 | 2,459 | -0.5% |
| Health Care and Social Assistance | 18,937 | 17,399 | 17,679 | 17,823 | 18,796 | 19,233 | 19,671 | 3.9% |
| Information | 1,838 | 1,551 | 1,549 | 1,593 | 1,615 | 1,615 | 1,615 | -12.1% |
| Management of Companies and Enterprises | 1,402 | 1,360 | 1,320 | 1,310 | 1,392 | 1,396 | 1,400 | -0.1% |
| Manufacturing | 20,539 | 19,904 | 20,365 | 20,478 | 20,922 | 20,893 | 20,863 | 1.6% |
| Mining, Quarrying, and Oil and Gas Extraction | 106 | 109 | 112 | 112 | 120 | 120 | 121 | 13.7% |
| Other Services (except Public Administration) | 6,066 | 5,274 | 5,844 | 5,949 | 6,253 | 6,271 | 6,285 | 3.6% |
| Professional, Scientific, and Technical Services | 4,294 | 3,896 | 3,949 | 4,045 | 4,244 | 4,326 | 4,408 | 2.7% |
| Public Administration | 4,588 | 4,565 | 4,646 | 4,683 | 4,690 | 4,693 | 4,697 | 2.4% |
| Real Estate and Rental and Leasing | 1,945 | 1,712 | 1,765 | 1,793 | 1,852 | 1,852 | 1,851 | -4.8% |
| Retail Trade | 14,998 | 13,655 | 14,585 | 14,794 | 14,719 | 14,681 | 14,699 | -2.0% |
| Transportation and Warehousing | 8,827 | 8,248 | 8,254 | 8,776 | 8,947 | 8,957 | 8,967 | 1.6% |
| Unclassified | 227 | 250 | 231 | 231 | 231 | 232 | 232 | 2.3% |
| Utilities | 917 | 826 | 833 | 835 | 855 | 863 | 870 | -5.1% |
| Wholesale Trade | 3,774 | 3,459 | 3,390 | 3,427 | 3,535 | 3,584 | 3,581 | -5.1% |
| **Regional Total** | **141,582** | **125,805** | **132,860** | **135,725** | **140,081** | **141,583** | **143,088** | **1.1%** |

*Source: Chmura and JobsEQ by Chmura*

The CSPDC region's recovery speed is slightly slower than the national average. Chmura predicts that national employment will exceed its pre-pandemic level in the first quarter of 2022. This analysis indicates a full recovery for the region will also be achieved in the second quarter of 2022. While the national recovery was led by expansion in construction, transportation, and logistics, recovery in the CSPDC region was led by manufacturing and construction.

# 5. Other COVID-19 Impacts

This section discusses the COVID-19 impacts on other components of the economy outside its impact on industries, clusters, and supply chains. These topics range from COVID-19 impact on small business, downtown areas, commercial and residential real estate, and labor force participation rates. Some of those discussions are qualitative in nature, as regional specific data are not available. Chmura used national studies to evaluate the COVID-19 impact in those areas.

## 5.1. Impact on Small Business

In this analysis, a small business is defined as an establishment with 50 employees or less (including business owners). To understand COVID-19's impact, the first task is to understand the number of small businesses in the CSPDC region and their employments. For that, Chmura uses the business firm size data to compute the percentage of small business establishment and employment in each industry. Chmura uses firm size data from the 2017 U.S. Census Business Survey for the Harrisonburg and Staunton metropolitan statistical areas.[36]

Chmura estimates that in the first quarter of 2020, there were 6,376 small business establishments in the CSPDC region, accounting for 76.6% of all business establishments in the region. Those small businesses employed a total of 41,865 workers, accounting for 29.7% of all jobs in the region. Compared with the state average, the region seems to have fewer small businesses, possibly due to the large percentage of manufacturing industries. The U.S. Census Business Survey indicated that in Virginia, 94.1% of business establishments were classified as small businesses in 2018, employing 41.7% of all state workers.

[36] County-level data are not available. But since those two metro areas accounted for 87% of all jobs in the CSPDC region, it is justifiable to use those data to estimate the remaining counties.

**Table 5.1: Estimated Small Business Establishments and Employment by Industry in the CSPDC Region (2021-Q1)**

| Two-Digit NAICS Industry | Number of Small Business Establishments | SB Percentage in All Establishments | Small Business Employment | SB Percentage in All Employment |
|---|---|---|---|---|
| Accommodation and Food Services | 465 | 69.6% | 5,115 | 34.9% |
| Administrative and Support and Waste Management and Remediation Services | 301 | 86.2% | 1,899 | 38.2% |
| Agriculture, Forestry, Fishing and Hunting | 137 | 98.9% | 2,575 | 81.2% |
| Arts, Entertainment, and Recreation | 97 | 91.9% | 773 | 46.4% |
| Construction | 822 | 95.7% | 5,908 | 61.5% |
| Educational Services | 93 | 87.3% | 2,440 | 15.1% |
| Finance and Insurance | 157 | 40.9% | 692 | 28.1% |
| Health Care and Social Assistance | 1,101 | 71.0% | 4,626 | 24.6% |
| Information | 44 | 41.2% | 205 | 11.6% |
| Management of Companies and Enterprises | 6 | 14.4% | 34 | 2.5% |
| Manufacturing | 237 | 69.5% | 1,835 | 8.9% |
| Mining, Quarrying, and Oil and Gas Extraction | 9 | 78.8% | 61 | 57.5% |
| Other Services (except Public Administration) | 761 | 93.6% | 4,891 | 80.0% |
| Professional, Scientific, and Technical Services | 492 | 89.1% | 2,814 | 66.0% |
| Public Administration | 233 | 95.1% | 476 | 10.2% |
| Real Estate and Rental and Leasing | 233 | 80.5% | 937 | 47.9% |
| Retail Trade | 624 | 62.0% | 3,863 | 25.8% |
| Transportation and Warehousing | 241 | 74.5% | 1,061 | 12.1% |
| Unclassified | 124 | 100.0% | 208 | 100.0% |
| Utilities | 25 | 79.3% | 180 | 20.7% |
| Wholesale Trade | 176 | 62.6% | 1,272 | 33.8% |
| **Total** | **6,376** | **76.6%** | **41,865** | **29.7%** |

*Source: JobsEQ by Chmura and Census*

Exploring industry differences at the two-digit NAICS level shows that agriculture, forestry, fishing and hunting had the highest percentage of its employment in small businesses, at 81.2%. This is followed by other services (except public administration); professional, scientific, and technical services; and construction. On the other hand, industries with the lowest small business employment are management of companies and enterprises; manufacturing; and public administration.

Table 5.2 presents the estimated impact of COVID-19 on small business employment in the CSPDC region at the two-digit NAICS level. Chmura estimates that in the second quarter of 2020, the region lost 5,007 jobs in small businesses, equivalent to 12.0% of all regional small business jobs. This is higher than the 10.7% overall job losses in the region, or the 10.2% loss for business establishments with more than 50 employees. During the third and fourth quarter of 2020, small business employment experienced a healthy recovery, adding an estimated 1,714 and 1,157 jobs, respectively.

**Table 5.2: Small Business Employment and GDP Impact from COVID-19 in the CSPDC Region**

| Two-Digit NAICS Industry | Q2 Job Change | Q2 GDP Impact (Million) | Q3 Job Change | Q3 GDP Impact (Million) | Q4 Job Change | Q4 GDP Impact (Million) |
|---|---|---|---|---|---|---|
| Accommodation and Food Services | -2,337 | -$25.2 | 1,075 | $11.4 | 529 | $5.0 |
| Other Services (except Public Administration) | -605 | -$6.7 | 330 | $3.9 | 126 | $1.4 |
| Construction | -579 | -$11.4 | 6 | $0.3 | 146 | $3.0 |
| Retail Trade | -365 | -$4.3 | 211 | $2.5 | 55 | $0.3 |
| Arts, Entertainment, and Recreation | -288 | -$4.0 | 34 | $0.5 | 97 | $1.1 |
| Health Care and Social Assistance | -257 | -$4.1 | 40 | $0.7 | 30 | $0.7 |
| Educational Services | -213 | -$3.6 | -100 | -$1.8 | -2 | -$0.2 |
| Professional, Scientific, and Technical Services | -152 | -$3.4 | 18 | $0.7 | 17 | $0.2 |
| Administrative and Support and Waste Management and Remediation Services | -146 | -$2.1 | 133 | $1.6 | -10 | -$0.3 |
| Real Estate and Rental and Leasing | -123 | -$30.9 | 16 | $4.1 | 9 | $1.7 |
| Wholesale Trade | -92 | -$3.0 | -42 | -$1.3 | 19 | $0.5 |
| Manufacturing | -63 | -$4.8 | -1 | $0.3 | 42 | $1.7 |
| Finance and Insurance | -29 | -$0.8 | -11 | -$0.3 | 2 | $0.1 |
| Transportation and Warehousing | -24 | -$0.7 | 17 | $0.3 | -17 | -$0.7 |
| Information | -20 | -$0.5 | 1 | -$0.1 | -1 | $0.0 |
| Utilities | -13 | -$1.0 | -1 | -$0.2 | 2 | -$0.1 |
| Public Administration | -11 | -$0.2 | 29 | $0.7 | -21 | -$0.5 |
| Management of Companies and Enterprises | -2 | $0.0 | -1 | $0.0 | 0 | $0.0 |
| Mining, Quarrying, and Oil and Gas Extraction | 0 | $0.0 | -1 | $0.0 | 2 | $0.1 |
| Unclassified | 16 | $0.4 | 40 | $1.1 | -60 | -$1.6 |
| Agriculture, Forestry, Fishing and Hunting | 298 | $7.2 | -80 | -$1.4 | 191 | $3.2 |
| **Total** | **-5,007** | **-$99.0** | **1,714** | **$23.0** | **1,157** | **$15.7** |

*Source: Chmura and JobsEQ by Chmura*

While the COVID-19 pandemic affected all businesses regardless of size, the impact on small business was more severe. Small businesses tend to be concentrated in industries most vulnerable to COVID-19. Some of those industries, especially food services and personal services, were significantly impacted by the stay-at-home and social distancing policies. For example, in a paper released by Small Business Administration, a researcher found that industry sectors with large shares of small business employment before the pandemic experienced large decreases in employment in the early stage of the pandemic.[37] Even as those businesses were allowed to reopen, consumers are still hesitant to patronize those businesses as rates of vaccination are below herd immunity targets. As a result, many small businesses continue to struggle even during the recovery. In addition, during the COVID-19 pandemic and economic recovery, small businesses may have struggled to survive for many reasons, such as a lack of financial resources.[38]

[37] Source: The Effect of the COVID-19 Pandemic on Small Businesses, by Daniel Wilmoth, U.S. Small Business Administration. https://cdn.advocacy.sba.gov/wp-content/uploads/2021/03/02112318/COVID-19-Impact-On-Small-Business.pdf.

[38] Source: The Impact of COVID-19 on Small Business Owners: Evidence of Early-Stage Losses from the April 2020 Current Population Survey, by Robert Fairlie, June 2020. NBER Working Paper 27309. https://www.nber.org/papers/w27309.

In summary, Chmura's estimates are consistent with national studies indicating small business was severely impacted by the COVID-19 pandemic. However, because the CSPDC region has a smaller percentage of small businesses than the state average, the impact on small business establishments was only slightly more severe than the average impact across the region. While only 12.0% of small business jobs were lost in the second quarter of 2020, more small businesses may be struggling than the percentage suggests.

## 5.2. Impact on Downtown Areas

This section includes the downtown areas of the following cities and towns:

- City of Buena Vista
- City of Harrisonburg
- City of Lexington
- City of Staunton
- City of Waynesboro
- Town of Bridgewater
- Town of Broadway
- Town of Monterey
- Hot Springs (community in Bath County)

Research has shown that the outbreak of the COVID-19 pandemic has had negative impacts on downtown areas across the country. Downtowns are often composed of retail and office buildings, with a concentration of financial institutions, legal services, and government buildings that serve surrounding areas. During the pandemic, retail and food services were impacted by stay-at-home and social distancing policies, while offices also suffered as many businesses switched to working from home or "remote working."[39]

Similarly, the downtown areas in the CSPDC region also have large concentrations of office, retail, and food service businesses. In the first quarter of 2020 at the onset of the pandemic, the largest industries in CSPDC downtown regions were educational services; accommodation and food services; public administration; transportation and warehousing; and retail. James Madison University in Harrisonburg accounted for a large number of educational services jobs in the downtown areas. The Omni Homestead Resort, a major employer in Bath County, closed between March and July 2020, and has reduced hours for 2021.[40] The associated downtown area in Hot Springs shows a loss of more than 300 jobs between 2020Q1 and 2021Q1.

In the second quarter of 2020, during the height of the pandemic, the CSPDC region's downtown areas suffered more severe job losses than the region overall. As Table 5.3 shows, downtown areas lost 1,941 jobs, equivalent to 14.4% of the regional workforce in the first quarter of 2020. As a comparison, the CSPDC region lost 10.7% of the regional workforce. The downtown areas recovered some of those jobs in the third and fourth quarter of 2020, but there are a large number of jobs yet to be recovered.

[39] Source: https://www.brookings.edu/research/to-recover-from-covid-19-downtowns-must-adapt/.
[40] Source: https://www.wsls.com/news/local/2020/12/31/homestead-resort-cutting-back-on-hours-as-coronavirus-pandemic-continues/.

**Table 5.3: Employment and GDP Impact from COVID-19 in CSPDC Region's Downtown Areas**

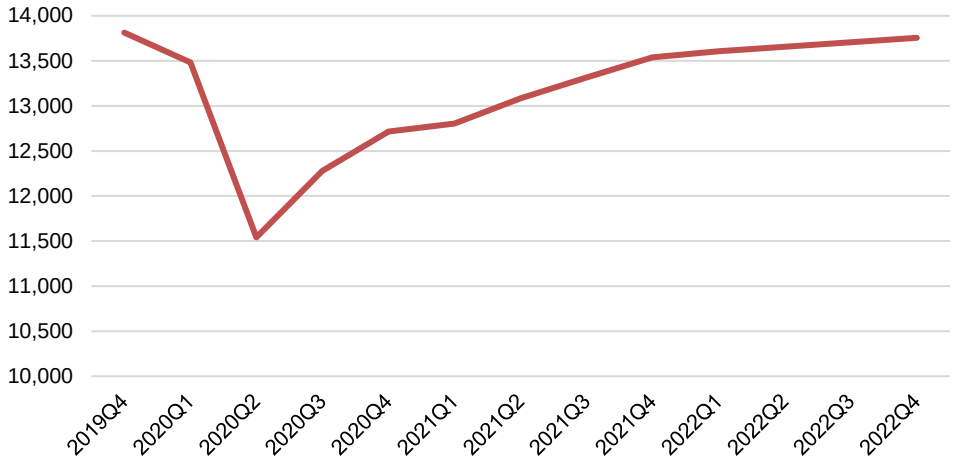
| Two-Digit NAICS Industry | Q2 Job Change | Q2 GDP Impact (Million) | Q3 Job Change | Q3 GDP Impact (Million) | Q4 Job Change | Q4 GDP Impact ($Million) |
|---|---|---|---|---|---|---|
| Accommodation and Food Services | -1,146 | -$19.8 | 702 | $12.1 | 230 | $4.0 |
| Educational Services | -237 | -$3.7 | -166 | -$2.6 | 161 | $2.5 |
| Information | -97 | -$2.9 | 13 | $0.4 | -3 | -$0.1 |
| Retail Trade | -66 | -$1.0 | 40 | $0.6 | 26 | $0.4 |
| Management of Companies and Enterprises | -57 | -$1.2 | -2 | -$0.1 | -1 | $0.0 |
| Other Services (except Public Administration) | -53 | -$0.7 | 36 | $0.5 | 11 | $0.2 |
| Professional, Scientific, and Technical Services | -50 | -$1.1 | -4 | -$0.1 | 9 | $0.2 |
| Transportation and Warehousing | -45 | -$1.1 | 28 | $0.7 | -23 | -$0.6 |
| Manufacturing | -31 | -$3.1 | -4 | -$0.4 | 12 | $1.2 |
| Arts, Entertainment, and Recreation | -30 | -$0.5 | 23 | $0.4 | 3 | $0.0 |
| Health Care and Social Assistance | -30 | -$0.5 | 15 | $0.2 | -3 | $0.0 |
| Public Administration | -27 | -$0.6 | 49 | $1.1 | 15 | $0.3 |
| Construction | -24 | -$0.5 | 6 | $0.1 | 1 | $0.0 |
| Real Estate and Rental and Leasing | -19 | -$2.5 | 7 | $0.9 | 4 | $0.5 |
| Finance and Insurance | -14 | -$0.6 | -6 | -$0.2 | 1 | $0.1 |
| Administrative and Support and Waste Management and Remediation Services | -9 | -$0.2 | -1 | $0.0 | -2 | $0.0 |
| Agriculture, Forestry, Fishing and Hunting | -4 | -$0.1 | 2 | $0.0 | 1 | $0.0 |
| Wholesale Trade | -4 | -$0.1 | -3 | -$0.1 | 1 | $0.0 |
| Utilities | 0 | $0.0 | 1 | $0.0 | 0 | $0.0 |
| Mining, Quarrying, and Oil and Gas Extraction | 0 | $0.0 | 0 | $0.0 | 0 | $0.0 |
| Unclassified | 1 | $0.0 | 2 | $0.0 | -5 | -$0.1 |
| **Total** | **-1,941** | **-$40.2** | **737** | **$13.7** | **438** | **$8.6** |

*Source: Chmura and JobsEQ by Chmura*

The downtown areas in the CSPDC region may recover more slowly than the region as a whole. A switch to remote working will not just affect office-related businesses in downtown areas; restaurants and other hospitality businesses that are located downtown will also struggle. The businesses that operate downtown rely on the foot traffic from consumers in the area. With more and more people telecommuting (and possibly staying remote after the pandemic), there may no longer be a steady supply of customers.

Chmura's analysis shows that downtown areas in the CSPDC region will recover at a slower pace than the region overall. Chmura predicts that regional employment will exceed its pre-pandemic level in the second quarter of 2022. But Figure 5.1 indicates that a full recovery for the CSPDC region's downtown areas will not be achieved in 2022. The downtown areas may recover all of the lost jobs by the first or second quarter of 2023.

**Figure 5.1: CSPDC Downtown Area Employment Recovery**




*Source: Chmura*

## 5.3. Impact on Commercial Real Estate

The COVID-19 pandemic will have a long-lasting impact on the commercial real estate market in the CSPDC region. COVID-19 has fundamentally changed the way real estate business is conducted. During the pandemic, the demand for commercial space has been impacted by social distancing, shutdowns, quarantines, layoffs, and remote work. In the long-term, the pandemic induced changes in consumer behavior regarding shopping and dining, which may affect demand for retail spaces. In addition, the trend of moving to remote work will affect office spaces significantly in the long-term. Finally, the increased demands of the logistics industry and a push to reshore manufacturing to the United States may be positive for industrial spaces. Since many of those long-term trends are still evolving, the discussion in this section is qualitative in nature.

The COVID-19 pandemic changed the way many retail stores operate, with some relying on curbside pickup or contactless delivery to remain open. A study on retail real estate found that in 2020, there was a closing of over 12,200 stores, resulting in 159 million square feet of empty retail space. At the beginning of 2020, the average vacancy rate of retail hovered around 4.5%; but by the end of the year, it rose to 5.4%. It is projected to rise again in 2021 to as high as 6.2%.[41] Real estate firm CBRE predicts that brick-and-mortar retail stores will rebound in 2021 as the economy recovers from the pandemic. But in the long-term, some of the behaviors that consumers have developed during the pandemic will persist, and this will affect retail space in the future. The COVID-19 pandemic has accelerated the trend of consumers choosing e-commerce over traditional brick-and-mortar establishments.[42] But against that trend, regions like CSPDC may be able to attract more residents from the congested Northern Virginia region, which may result in demand for more retail spaces in the region in the long term.

[41] The Effect of COVID-19 on Retail Rental Real Estate Market, https://www.pbmares.com/effect-covid-19-retail-rental-real-market/.
[42] Source: McKinsey, at https://www.mckinsey.com/business-functions/organization/our-insights/to-emerge-stronger-from-the-covid-19-crisis-companies-should-start-reskilling-their-workforces-now.

Demand for office space has declined during the pandemic, with offices either remaining closed or operating at limited capacity. However, that does not mean there is no demand for office space. There has been a greater demand for more floor space (for social distancing), greater indoor air quality, and touchless technology. Some businesses are choosing a blended remote and in-office model. This allows the physical office space to continue playing a role for in-person gatherings where ideas are shared. But overall, prospective tenants are primarily on the lookout for a healthy and safe building environment and a property owner that cares about their tenants' well-being.[43] After the pandemic, the work-from-home trend may have long-lasting effects on demand of office space. Remote working also means that large cities, which contain notable office buildings, may be more vacant in the future as a result of people no longer needing to live or work in the city. As opposed to retail and office spaces, industrial spaces are in high demand during COVID-19. Warehouses and logistical centers were in high demand because they helped with the delivery of goods.

Looking forward, economists expect some uncertainty related to commercial real estate. Projections by the National Association of Realtors (NAR) indicate similar trends. NAR forecasts that the retail space vacancy rate will increase from 12.5% in 2020 to 13.0% in 2021, before falling to 11.5% in 2022. Office vacancy rates will increase from 14.2% in 2020 to 16.7% in 2021 and will only fall slightly to 16.5% in 2022. The bright spot is industrial real estate, where the vacancy rate is estimated to decline from 5.1% in 2020 to 4.8% in 2021, and further decline to 4.6% in 2022.[44] Another economics forecasting firm, Moody's Analytics, predicted similar results, with struggling retail and office markets, but growing industrial real estate.[45]

It is expected that the commercial real estate market in the CSPDC region will also follow the same national trend, with strong growth in industrial commercial real estate. In fact, Colliers named the Shenandoah Valley one of ten emerging U.S. industrial markets to watch in 2021.[46]

## 5.4. Impact on the Residential Housing Market

The COVID-19 pandemic may have a positive effect on demand in residential real estate markets, especially in rural or small metro areas in the CSPDC region. More people have started looking for homes outside cities, with Realtor.com seeing a 30% increase in people looking for homes in rural areas. An increase in remote working has led some to an exodus from cities. Workers may no longer need to live close to where they work, especially if remote working becomes a standard post-pandemic practice. One survey found that 36% of people were more willing to live or commute further away.[47] Another reason could be a need for larger home office spaces.[48] Working from home for the foreseeable future could incentivize homeowners to look for homes with larger or more comfortable rooms to set up dedicated offices.

However, as demand for housing, low inventory, and low mortgage rates have driven up housing prices during the COVID-19 pandemic, it is more difficult for households with lower earnings to locate to the CSPDC region. Leading up to the pandemic, nearly a quarter (23.5%) of households in the CPSDC region were considered housing-cost burdened (spending 30% or more of their income on housing). Cost burden varied by income and ownership, as shown in Table 5.4. Most of the cost-burdened households are renters, with 45% of households allocating 30% or more of their income for housing. The average wage in the region ($43,181 as of the fourth quarter of 2020) falls within the range of $35,000 to

[43] Source: https://www.forbes.com/sites/forbesrealestatecouncil/2021/02/09/how-the-pandemic-continues-to-affect-the-commercial-real-estate-market/?sh=78b4aff93af3.
[44] Source: National Association of Realtors, available at: https://cdn.nar.realtor/sites/default/files/documents/2021-05-07-commercial-economic-issues-and-trends-forum-rlmte-lawrence-yun-presentation-slides-05-07-2021.pdf.
[45] Source: Moody's Analytics, available at: https://www.moodysanalytics.com/-/media/news/press-releases/2021/2021-05-03-cre-forecast-multifamily-rebound.pdf?modified=20210429141619.
[46] Source: https://www.colliers.com/en/research/emerging-us-industrial-markets-2021.
[47] Source: https://www.realtor.com/research/home-buying-2020-consumer-preferences-post-covid/.
[48] Source: https://www.globest.com/2020/07/13/covid-could-cause-real-estate-vacuum-in-big-cities-boom-in-rural-towns/?slreturn=20210428144948.

$49,999, where 27% of owner-occupied households and 25% of renter-occupied households are cost-burdened. The issue of affordable housing for workers is likely to have worsened due to the COVID-19 pandemic.

**Table 5.4: Cost-Burdened Households by Income Level in the CSPDC Region**

| | Owner-Occupied | | | Renter-Occupied | | |
|---|---|---|---|---|---|---|
| Household Income | Total HH | Cost Burdened HH | Share CB | Total HH | Cost Burdened HH | Share CB |
| Less than $20,000 | 6,643 | 4,850 | 73% | 8,573 | 7,545 | 88% |
| $20,000 to $34,999 | 8,981 | 3,310 | 37% | 7,375 | 5,284 | 72% |
| $35,000 to $49,999 | 10,911 | 2,977 | 27% | 6,035 | 1537 | 25% |
| $50,000 to $74,999 | 15,654 | 2,369 | 15% | 5,888 | 771 | 13% |
| $75,000 or more | 33,751 | 1,255 | 4% | 5,917 | 116 | 2% |
| **Total** | **75,940** | **14,761** | **19%** | **33,788** | **15,253** | **45%** |

*Source: American Community Survey 2015-2019, Chmura*

Low inventories, increased demand, and easier financing in a low-interest-rate environment means consumers are willing to pay more for available housing. Between October 2019 and October 2020, Virginia REALTORS® data show that the median home price in the CSPDC region increased over 30%.[49] Table 5.5 shows the change in median sales prices from 2021 compared to the previous year. Some counties, like Bath County, consistently saw large increases in the price of homes, with prices increasing 20% or greater. Other parts of the CSPDC region, like the City of Waynesboro, saw little to no change in the median price of houses, with prices primarily increasing between 0-10%. Looking ahead, the National Association of Home Builders (NAHB) reports that increased cost of materials, coupled with a lack of labor and materials, may negatively impact future new home sales.[50]

**Table 5.5: Year-Over-Year Change in Median Sales Price of Homes, 2021**

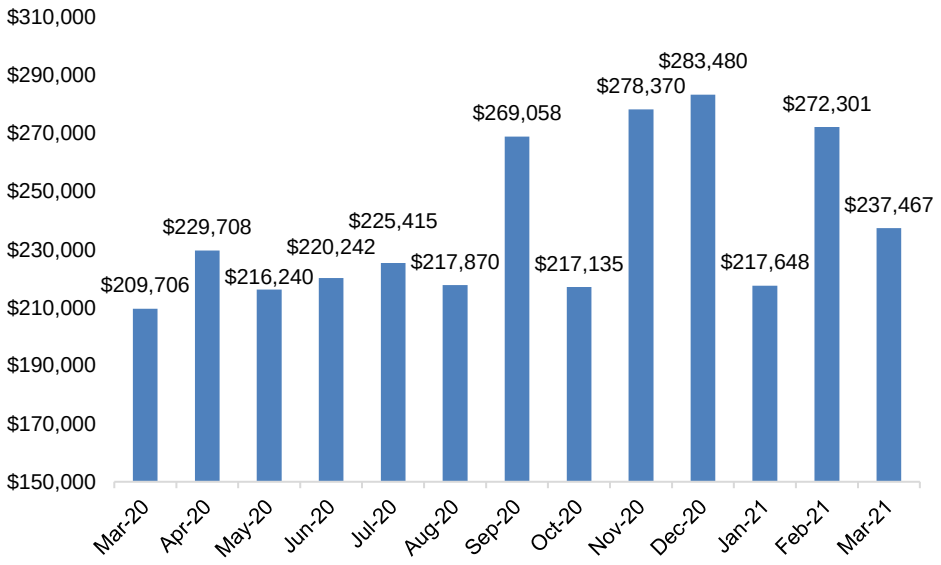
| Locality | January | February | March | April | May |
|---|---|---|---|---|---|
| Augusta County | >20.0% | 0.0%-10.0% | 10.0%-20.0% | 10.0%-20.0% | 10.0%-20.0% |
| Bath County | >20.0% | >20.0% | N/A | >20.0% | >20.0% |
| Highland County | <0.0% | >20.0% | N/A | 10.0%-20.0% | >20.0% |
| Rockbridge County | >20.0% | <0.0% | 0.0%-10.0% | 10.0%-20.0% | 0.0%-10.0% |
| Rockingham County | 10.0%-20.0% | >20.0% | 0.0%-10.0% | 0.0%-10.0% | 0.0%-10.0% |
| City of Buena Vista | <0.0% | >20.0% | <0.0% | 0.0%-10.0% | 10.0%-20.0% |
| City of Harrisonburg | <0.0% | 10.0%-20.0% | 0.0%-10.0% | 10.0%-20.0% | 0.0%-10.0% |
| City of Lexington | <0.0% | 10.0%-20.0% | >20.0% | 0.0%-10.0% | >20.0% |
| City of Staunton | >20.0% | 10.0%-20.0% | 10.0%-20.0% | 10.0%-20.0% | 0.0%-10.0% |
| City of Waynesboro | 0.0%-10.0% | <0.0% | 0.0%-10.0% | 0.0%-10.0% | <0.0% |

*Source: Virginiarealtor.org*

[49] Source: https://virginiarealtors.org/2020/11/18/virginia-home-sales-see-third-month-of-double-digit-price-growth/.
[50] Source: https://eyeonhousing.org/2021/06/supply-constraints-hold-back-may-new-home-sales/.

Figure 5.2 shows the median sales price of homes in the CSPDC region over the year ending March 2021. Prices peaked in December at over $283,000 but have since declined. The average price in the CSPDC region in March 2021 was up 13.2% (almost $30,000) compared with a year ago.

**Figure 5.2: Median Sales Price of Homes in the CSPDC Region**

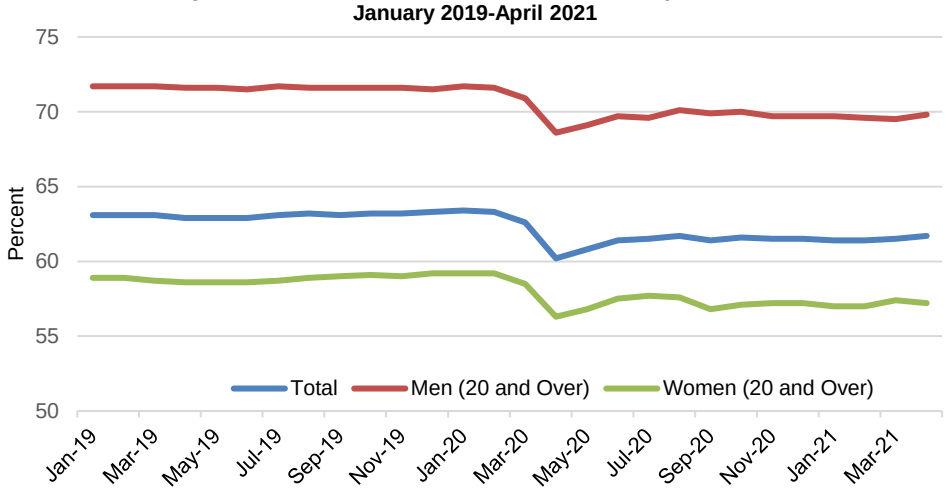



*Source: Virginia REALTORS*

## 5.5. Impact on Labor Force Participation

The labor force participation rate measures an economy's active workforce. It is essentially the percentage of employed and unemployed workers in the total adult civilian population. Unsurprisingly, labor force participation dropped during the pandemic. According to the U.S. Bureau of Labor Statistics, the civilian labor force participation rate (for those 20 years and older) was 63.4% in January 2020. The pandemic and widespread business closures caused the labor force participation rate to drop to 60.2%, as many exited the workforce due to lack of jobs, the fear of contracting COVID-19, or to take care of family members. As restrictions lifted and the economy reopened in the summer of 2020, this rate has increased to 61.7% in August 2020, and stayed relatively flat since then. As of April 2021, the labor force participation rate remained at 61.7%. Figure 5.3 also shows women's participation rates are consistently lower than men's throughout the pandemic and the recovery period. Women are more likely to be employed in industries such as leisure and hospitality, education and health services, and retail trade, which were hit the hardest due to the pandemic. Women are also more likely to have their hours reduced or choose to work part-time to care for children, an issue exacerbated by remote learning during the pandemic.[51]

**Figure 5.3: U.S. Total Civilian Labor Force Participation Rate**
**January 2019-April 2021**

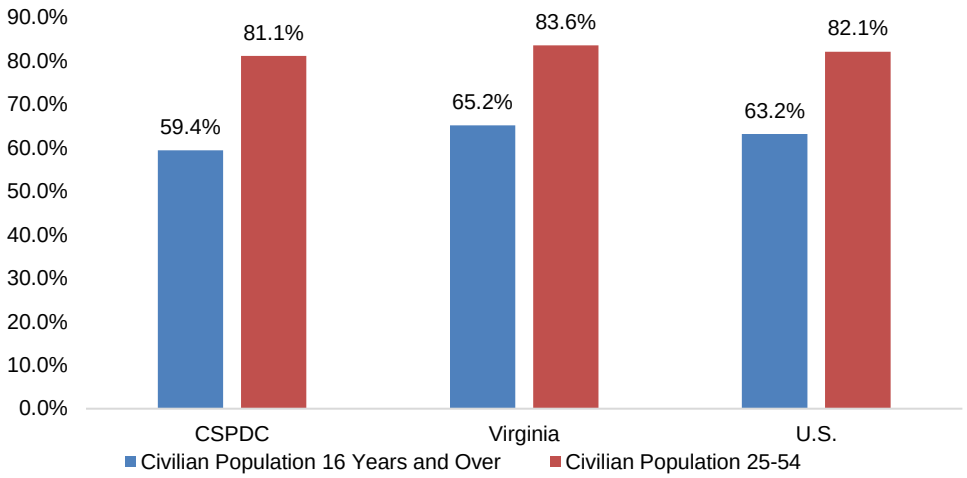



*Source: Bureau of Labor Statistics*

[51] Source: https://www.chmura.com/blog/what-is-happening-to-women-in-labor-force

In the CSPDC region, the latest data show that the labor force participation rate for those aged 16 and over averaged 59.4% from 2015 to 2019 (Figure 5.4).[52] This was lower than the state average of 65.2% and the national average of 63.2%. The lower labor force participation rate before the pandemic may be due to the aging population of the CSPDC region. When looking at the prime age for labor force participation, the region is only slightly lower than the state and national averages.

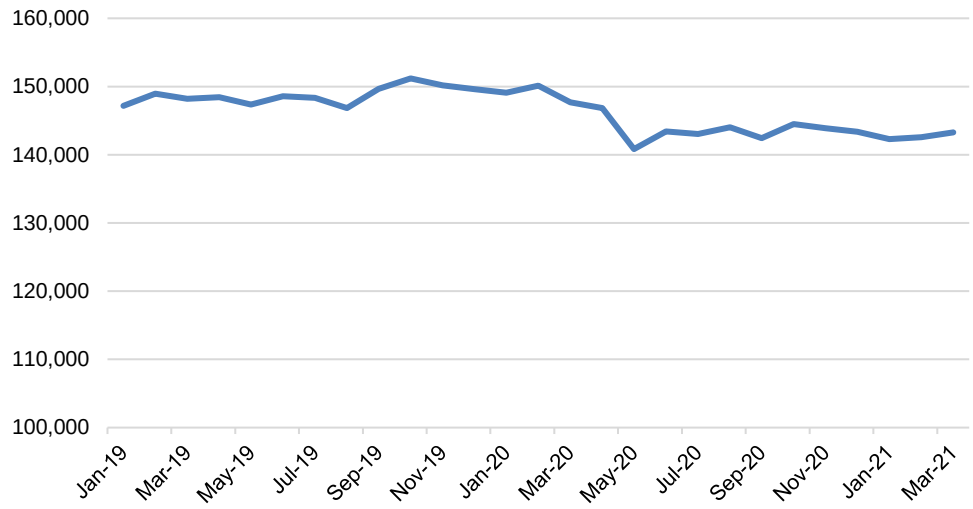
**Figure 5.4: Labor Force Participation Rate (2015-2019)**




*Source: Census American Community Survey*

Labor force participation rate data were not available for the CSPDC region from the time frame spanning the COVID-19 pandemic. But BLS did publish data on the number of individuals in the labor force. As Figure 5.5 shows, the labor force participation in the region follows the national trend from Figure 5.3. The number participating in the labor force dropped to its lowest level during the pandemic in May 2020, and recovered in the remaining months of 2020. However, the rate is still well below its pandemic level as of March 2021.

**Figure 5.5: Individuals in Labor Force**
**January 2019-March 2021**




*Source: Bureau of Labor Statistics*

Some economists and policy makers are concerned that low labor force participation may become permanent. In the first half of 2021, as the economy recovery continued and vaccines became widely available, data from the last few months did not show an increasing trend in labor force participation. Research has indicated that it is likely people will continue to have concerns about workplace safety after high levels of infection and death have occurred in some frontline occupations. In addition, increased unemployment insurance has resulted in unemployment benefits being more valuable than wages for some workers with low-income jobs, especially those in service industries.[53] With COVID-19 restrictions lifted in Virginia, and enhanced unemployment insurance expiring in the summer, it is expected that labor force participation in the region will move up for the rest of 2021 and 2022.

[52] For certain counties, the U.S. Census Bureau only releases five-year average data from its American Community Survey.
[53] Source: The US Labor Market is Running Hot… Or Not? Available at: https://www.piie.com/blogs/realtime-economic-issues-watch/us-labor-market-running-hotor-not.

# 6. Gap Analysis

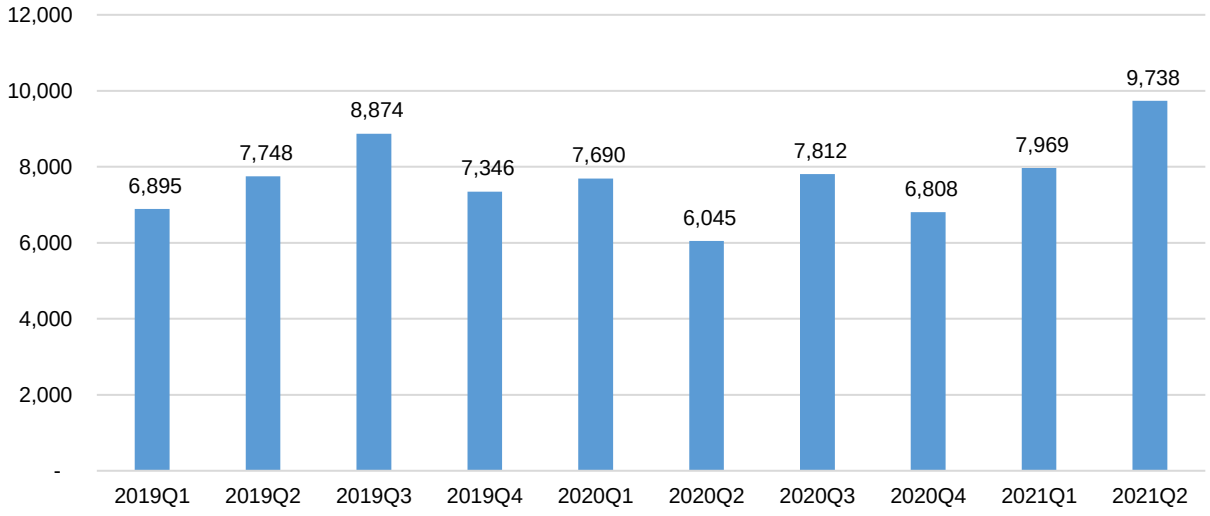
## 6.1. Short-Term Gaps

Job openings identify an immediate skills gap for employers and opportunities for job seekers. Large numbers of job postings for individual occupations suggest an apparent skills gap as many businesses need the same skills. Job postings data also provide real-time insights into the labor market such as hiring during the pandemic, difficult-to-fill positions, in-demand skills, and emerging trends such as remote work. Short-term gaps may slow the pandemic recovery if employers are not able to fill positions to meet returning consumer and business demand. Additionally, workers in occupations which have not recovered to pre-pandemic hiring as indicated by job ads may be facing deeper impacts of the pandemic.

**Workforce**

In 2019, total online job ads in the CSPDC region trended upwards during the first three quarters of the year, with a drastic decrease in the fourth quarter. Turnover rates are typically the highest in the summer months (June-August), which fall into the second and third quarters of the year.[54] During this time, individuals are often rotating into new roles and accepting new positions. Employers then need to fill the positions that are left behind, resulting in the increase of total online job ads over this period. In 2020, the CSPDC region was on pace to follow the 2019 trend, until the COVID-19 pandemic began to affect the second quarter, when total online job ads fell to its lowest volume since 2019. Compared to the nation, when ad volume decreased by 25.8% between the first and second quarter of 2020, the CSPDC region had a less drastic decrease of ad volume at 21.4%. The third quarter of 2020 saw an increase in ad volume; it was above quarter one but less than the corresponding time in 2019, indicating the start of recovery. Not until the first quarter of 2021 did the total online job ad volume surpass its pre-pandemic level in the CSPDC region and the nation as a whole. The CSPDC region saw a surge of new job ads during the second quarter of 2021, with the number of ads well surpassing the peak ad volume prior to the COVID-19 pandemic. This follows the trend of the nation as well.[55] Most occupation groups have recovered to their level of activity prior to the pandemic, though there are a few exceptions.

**Figure 6.1: Total Online Job Ads**
**CSPDC Region, by Quarter**

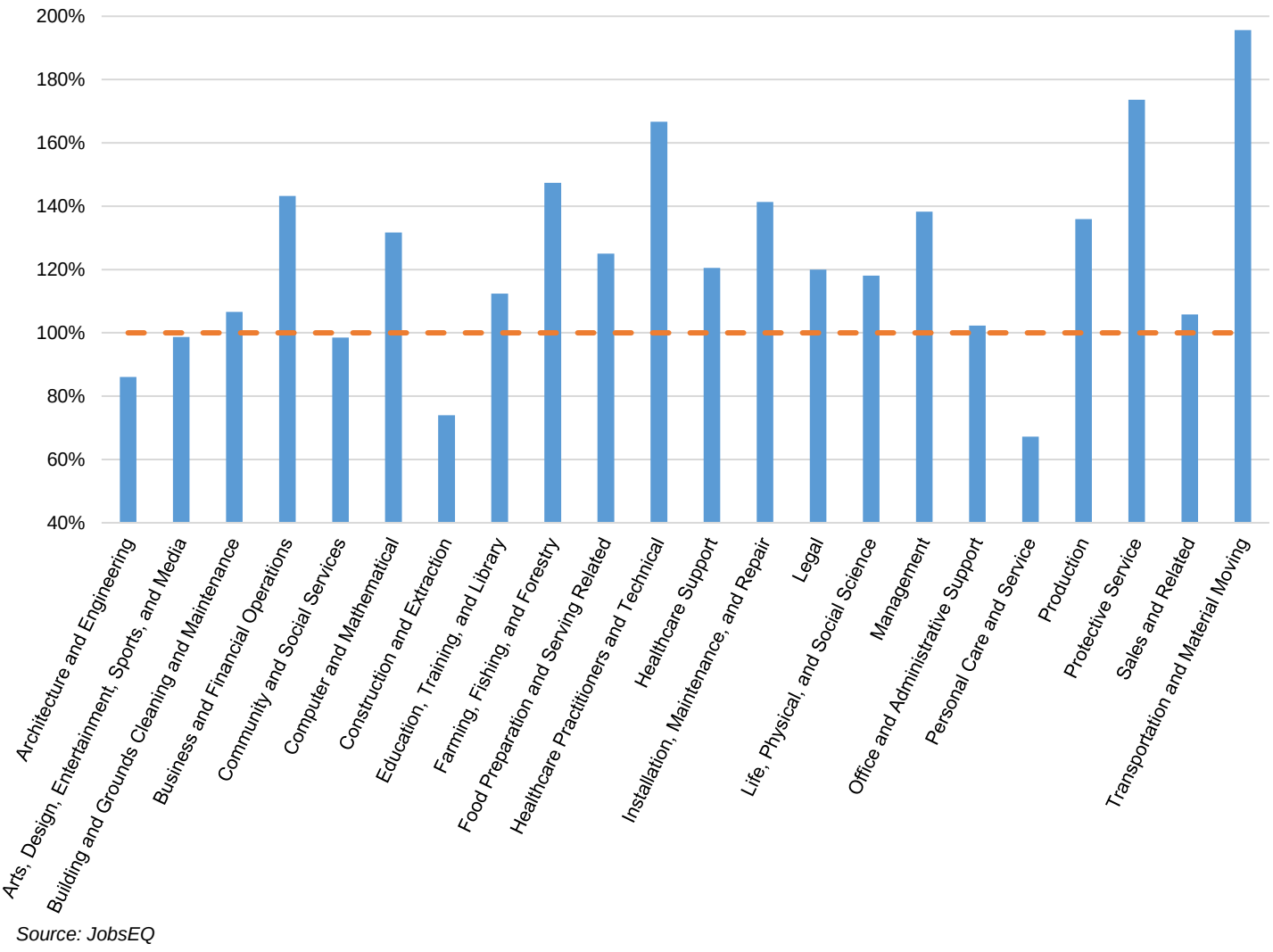



*Source: JobsEQ*

[54] Source: https://www.zenefits.com/workest/what-is-employee-turnover-and-why-it-matters/.
[55] Source: JobsEQ and https://www.chmura.com/blog/july-2021-covid-update.

New online job ads reached 9,738 during the second quarter of 2021 in the CSPDC region, as displayed in Figure 6.1. This volume is the highest in the past two years, and nearly 2,000 more than during the same time frame in 2020. The surge in ads is likely businesses responding to increased consumer demand as vaccines are administered and the economy recovers, but could also be due to delayed hiring as a result of the pandemic. Employers may also be posting more ads to account for turnover as the national quits rate is the highest recorded in the past 20 years.[56]

**Figure 6.2: Online Job Ads, CSPDC Region**
**By Date Posted, 2021Q2 versus 2019Q2**




*Source: JobsEQ*

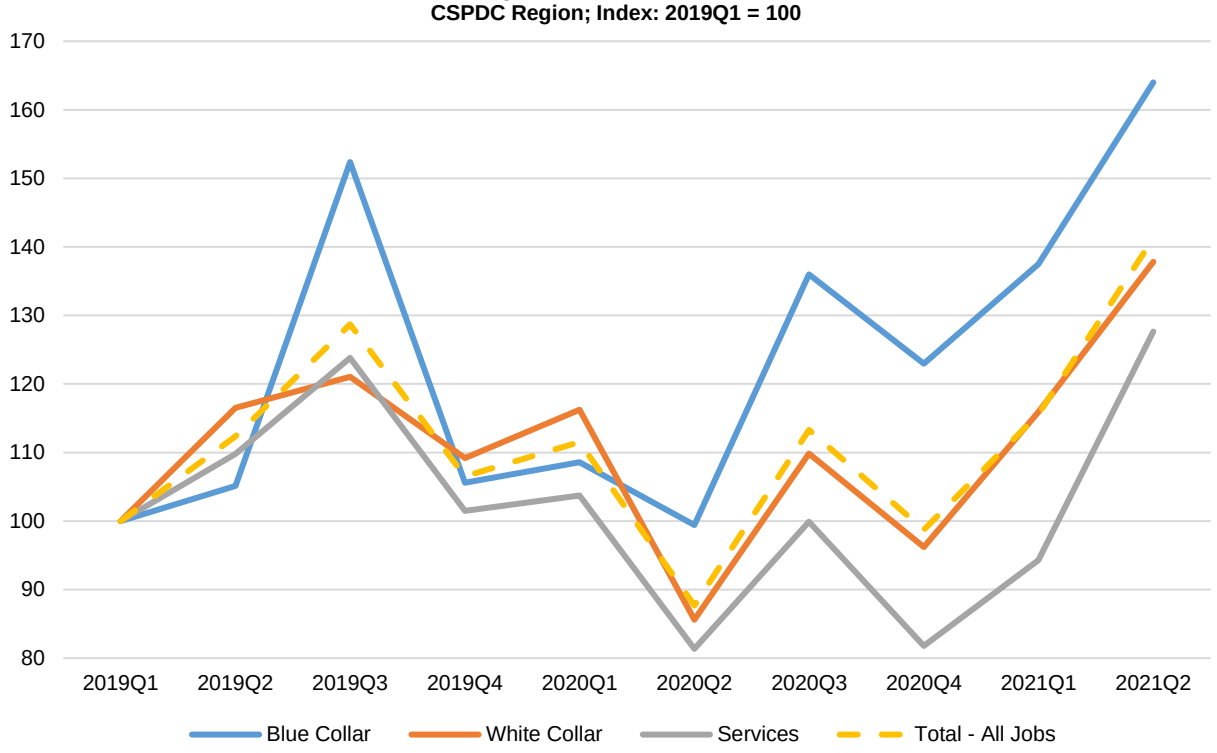
Figure 6.2 shows that a majority of occupation groups (at the two-digit Standard Occupational Classification level) have surpassed their previous online job ad total from two years ago. Ads for transportation and material moving occupations have almost doubled from the second quarter of 2019, reflecting the shift towards more e-commerce purchases during the pandemic. Protective service jobs have also increased dramatically from the second quarter of 2019 to 174% of prior levels.

Ads for five occupation groups are still below their pre-pandemic job ad levels as of the second quarter of 2020: architecture and engineering (which has recovered 86% of ad volume); arts, design, entertainment, sports, and media (99%); community and social services (98%); construction and extraction (74%); and personal care and service (67%). This indicates that the

[56] Chmura and https://www.shrm.org/resourcesandtools/hr-topics/talent-acquisition/pages/turnover-tsunami-expected-once-pandemic-ends.aspx.

demand for jobs in these occupations has not returned fully to the pre-pandemic level. However, only personal care and service occupations remain well below pre-pandemic levels, potentially due in part because of more stay-at-home parents. This has decreased the need for nannies (which has only recovered 13% of its pre-pandemic job ad level) and childcare services (which has recovered 36%).[57]

**Figure 6.3: Online Job Ads**
**CSPDC Region; Index: 2019Q1 = 100**




*Source: JobsEQ*

White collar occupations are professional jobs that are typically performed in an office, such as accountants, physicians, and financial managers. Blue collar occupations describe jobs that require manual labor, such as carpenters, electricians, and truck drivers. Service occupations are jobs that generally require social interaction with consumers or other individuals, such as barbers, janitors, and waiters.[58] In the CSPDC region, blue collar jobs have had the quickest recovery in new job ad postings, as shown in Figure 6.3. Despite a downturn in early 2020 as a result of the pandemic, new ads for blue collar occupations recovered to their pre-pandemic level almost immediately after the initial onslaught of the pandemic. In comparison, ads for white collar occupations were slow to recover to their pre-pandemic levels, and weren't back to these levels until the first quarter of 2021. Service occupations fared even worse as a result of the pandemic. Since the service sector relies on social interaction, the recovery of job ads has been much slower than the other sectors. As social restrictions continued to lift in 2021, the service sector was able to recover the pre-pandemic job ad volume in 2021Q2. Despite the slow recovery in the service sector, all of the occupation sectors have reached new peaks of job ad postings as of the second quarter of 2021.

[57] Source: Chmura and JobsEQ.
[58] BLS Definitions. Available at: https://www.bls.gov/opub/mlr/cwc/differences-among-private-industry-occupational-groups-in-pay-levels-and-trends.pdf.

**Table 6.1: Top In-Demand Jobs by Total Ad Count in 2021Q2**

| SOC | Occupation | Total Ads in 2021Q2 | Median Duration (Days) |
|---|---|---|---|
| 41-2031.00 | Retail Salespersons | 656 | 15 |
| 53-3032.00 | Heavy and Tractor-Trailer Truck Drivers | 424 | 12 |
| 53-7065.00 | Stockers and Order Fillers | 304 | 12 |
| 29-1141.00 | Registered Nurses | 267 | 11 |
| 49-9071.00 | Maintenance and Repair Workers, General | 235 | 19 |
| 35-3023.00 | Fast Food and Counter Workers | 229 | 15 |
| 41-1011.00 | First-Line Supervisors of Retail Sales Workers | 213 | 16 |
| 35-1012.00 | First-Line Supervisors of Food Preparation and Serving Workers | 198 | 30 |
| 37-2011.00 | Janitors and Cleaners, Except Maids and Housekeeping Cleaners | 192 | 20 |
| 21-1093.00 | Social and Human Service Assistants | 176 | 21 |
| 53-7062.00 | Laborers and Freight, Stock, and Material Movers, Hand | 168 | 13 |
| 43-6014.00 | Secretaries and Administrative Assistants, Except Legal, Medical, and Executive | 167 | 20 |
| 31-1131.00 | Nursing Assistants | 138 | 18 |
| 29-2061.00 | Licensed Practical and Licensed Vocational Nurses | 135 | 22 |
| 53-3031.00 | Driver/Sales Workers | 135 | 11 |
| 53-3054.00 | Taxi Drivers | 128 | 30 |
| 35-2021.00 | Food Preparation Workers | 125 | 21 |
| 43-4051.00 | Customer Service Representatives | 116 | 15 |
| 11-9033.00 | Education Administrators, Postsecondary | 113 | 31 |
| 35-2014.00 | Cooks, Restaurant | 109 | 48 |

*Source: Chmura and JobsEQ by Chmura*

The top requested jobs in the CSPDC region during the second quarter of 2021 show a demand for transportation and material moving services in the region. Truck drivers (424 job ads), stockers (304), freight laborers (168), drivers (135), and taxi drivers (128) make up a bulk of the total jobs requested in the region. Sales and related services are also in large demand as retail salespersons (656 job ads) and supervisors of retail workers (213) are highly requested in the region. The median duration shows how long job ads stay posted as an indication of the difficulty employers have filling those positions. The top occupations with the longest post durations are restaurant cooks (48 days), education administrators (31), and first-line supervisors of food preparation and serving workers (30). In the CSPDC region, industries in the service sector have had trouble filling positions, with many businesses in Harrisonburg citing trouble finding employees.[59] Virginia as a whole has been facing a restaurant and hospitality industry workforce shortage, which appears to be affecting the CSPDC region as well.[60] In the CSPDC region, ads in the service sector, such as restaurant cooks (48 days); food preparation and serving related workers (51); and maids and housekeeping cleaners (49), indicate difficulty finding employees.

[59] Source: https://www.whsv.com/2021/05/03/minimum-wage-goes-up-but-local-businesses-say-theyre-struggling-to-hire/.
[60] Source: https://www.whsv.com/2021/05/17/virginia-restaurant-and-hospitality-industry-facing-workforce-shortage/.

**Table 6.2: Top In-Demand Skills by Total Ad Count in 2021Q2**

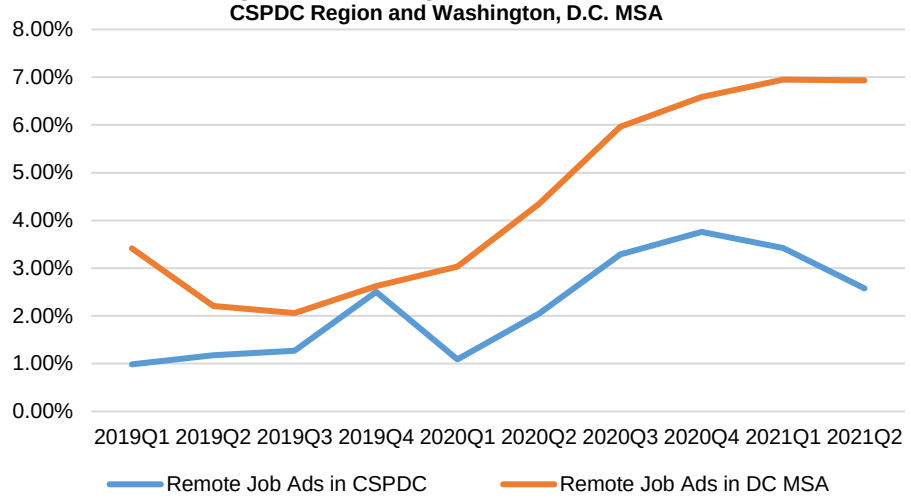
| Skill Name | Total Ads in 2021Q2 |
|---|---|
| Communication (verbal and written skills) | 4,137 |
| Customer Service | 2,417 |
| Cooperative/Team Player | 2,162 |
| Self-Motivated/Ability to Work Independently/Self Leadership | 1,539 |
| Organization | 1,185 |
| Adaptability/Flexibility/Tolerance of Change and Uncertainty | 1,134 |
| Detail Oriented/Meticulous | 1,048 |
| Accountable/Responsible/Reliable/Dependable/Trustworthy | 996 |
| Supervision/Management | 866 |
| Interpersonal Relationships/Maintain Relationships | 815 |
| Ability to Lift 51-100 lbs. | 778 |
| Problem Solving | 769 |
| Ability to Work in a Fast Paced Environment | 744 |
| Microsoft Office | 740 |
| Enthusiastic/Energetic | 732 |
| Coachable/Willingness to Learn | 723 |
| Ability to Lift 41-50 lbs. | 635 |
| Multi-Task | 546 |
| Microsoft Excel | 545 |
| Punctual | 537 |

*Source: Chmura and JobsEQ by Chmura*

The top requested skills in the CSPDC region during the second quarter of 2021 show that soft skills remain important. Employers most often requested individuals with skills in communication (4,137 job ads) and customer service (2,417), as well as cooperative/team players (2,162). The most requested hard skills are ability to lift 51-100 pounds (778 job ads), Microsoft Office (740), and ability to lift 41-50 pounds (635).

The COVID-19 pandemic has also affected the ways companies do work. Due to stay-at-home orders, many companies across the nation were pushed to conduct their operations in a virtual format. As seen in Figure 6.4, the CSPDC region and the Washington, D.C. MSA both saw their percentage of remote job ads increase at the onset of the pandemic. Based on the trends above, it appears that remote work ads are stabilizing in the D.C. MSA around 7%, while remote work ads in the CSPDC region are decreasing in their percentage share of total job ads. Though the CSPDC region doesn't have as many remote work opportunities, the region may be able to take advantage of the amount of remote work opportunities in the D.C. MSA region by offering incentives to remote workers. For example, West Virginia is offering cash, free outdoor recreation, and free co-working office spaces if remote workers move to, and remote work in, one of their small rural/suburban cities.[61]

**Figure 6.4: Percentage of Remote Job Ads in CSPDC Region and Washington, D.C. MSA**




*Source: JobsEQ*

**Table 6.3: Top Remote Jobs in the CSPDC Region**

| SOC | Occupation | Total Ads 2021Q2 | Total Ads 2019Q2 | Growth Rate | % of Ads in Occupation That Mention "Remote" (2021Q2) |
|---|---|---|---|---|---|
| 43-4051.00 | Customer Service Representatives | 32 | 2 | 1,500.0% | 27.6% |
| 41-3031.00 | Securities, Commodities, and Financial Services Sales Agents | 29 | 0 | N/A | 29.9% |
| 41-3091.00 | Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel | 25 | 6 | 316.7% | 23.4% |
| 41-3021.00 | Insurance Sales Agents | 17 | 6 | 183.3% | 35.4% |
| 41-2031.00 | Retail Salespersons | 10 | 2 | 400.0% | 1.5% |
| 11-9111.00 | Medical and Health Services Managers | 8 | 0 | N/A | 9.2% |
| 45-4011.00 | Forest and Conservation Workers | 7 | 0 | N/A | 70.0% |
| 15-1252.00 | Software Developers | 6 | 0 | N/A | 22.2% |
| 11-3021.00 | Computer and Information Systems Managers | 5 | 0 | N/A | 22.7% |
| 15-1244.00 | Network and Computer Systems Administrators | 5 | 0 | N/A | 11.6% |
| 21-1023.00 | Mental Health and Substance Abuse Social Workers | 5 | 0 | N/A | 16.7% |
| 25-3041.00 | Tutors | 5 | 39 | -87.2% | 31.3% |

*Source: Chmura and JobsEQ by Chmura*

Table 6.3 displays the top remote jobs in the CSPDC region compared between the second quarters of 2021 and 2019. In the CSPDC region, the jobs offering the most remote work opportunities are mainly in sales and related occupations. This includes securities, commodities, and financial services sales agents (29 remote ads); sales representatives of services, except advertising, insurance, financial services, and travel (25); insurance sales agents (17); and retail salespersons (10). Office and administrative support occupations (40 total remote ads), which includes customer service representatives (32), has the next-largest amount of remote ads in the CSPDC region. All of the previously mentioned occupations experienced a large increase from their pre-pandemic level of remote job ads, with each respective growth rate being larger than 150% since the second quarter of 2019; however, the percent of ads for these jobs offering remote work remains relatively small.

[61] Source: https://ascendwv.com/.

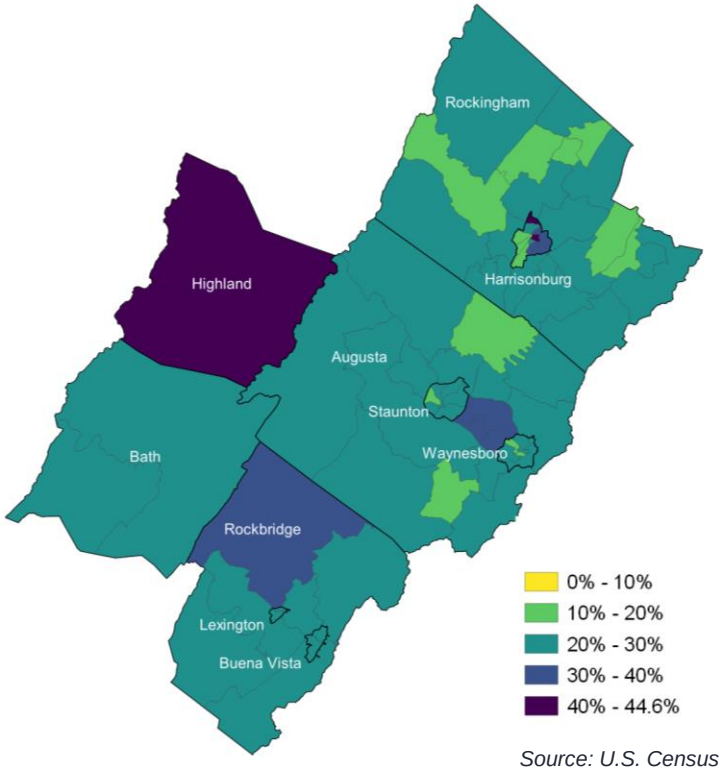
**Resiliency**

The U.S. Census Bureau developed estimates of community resilience, defined as "the capacity of individuals and households to absorb, endure, and recover from the health, social, and economic impacts of a disaster such as a hurricane or pandemic."[62] Specific to the COVID-19 pandemic, the Census Bureau identified several risk factors which indicate vulnerabilities within communities, specifically:

- Income-to-poverty ratio
- Single or zero-caregiver household
- Crowding/high-density residence
- Communication barrier
- No full-time employed person in household
- Disability
- No health insurance
- Age 65 or older
- Serious heart condition
- Diabetes
- Emphysema or asthma

The ability to recover from disasters such as the pandemic is compounded by the number of risk factors households face. In Virginia and in the CSPDC region, 27% of the average county's population face three or more risk factors, compared with 26% in the nation. However, there is substantial differentiation between and within counties, as shown in Figure 6.5. Highland County has an estimated 45% of residents facing three or more risk factors. There are also pockets of higher percentages in Rockbridge, Augusta, and Harrisonburg. These regions may be expected to face greater impacts from the pandemic and have more difficulty recovering.

**Figure 6.5: Percentage of Residents with 3+ Risk Factors**




*Source: U.S. Census Bureau*

[62] Source: https://www.census.gov/data/experimental-data-products/community-resilience-estimates.html.

## 6.2. Post-Pandemic Long-Term Trends and Emerging Opportunities

**Reshoring and Supply Chain Resilience**

The COVID-19 pandemic has highlighted weaknesses in the global supply chain system, including a dependency on China, a lack of resilient supply chains that can adapt quickly to disruptions, and a lack of self-sufficient supply chains that can operate without outside suppliers.[63] These weaknesses contributed to shortages of pharmaceuticals and medical supplies early in the pandemic, following disruptions in Chinese production.[64] A strategy to address these supply chain issues in the post-pandemic world is reshoring, or the relocation of manufacturing activity either back to the home country or a nearby country.[65]

Companies may decide to relocate production back to their home countries for reasons of risk aversion or to diversify production locations to mitigate any future disruptions.[66,67] As automation costs decrease, companies may choose to reshore to their home countries, despite the higher costs of labor.[68] Rural areas in the United States can capitalize on this trend by attracting companies thinking of reshoring in light of the pandemic; either to fill the whole in the supply chain left by disruptions in China or to capitalize on manufacturing growth created in the post-pandemic market.[69] A March 2021 survey of 120 U.S. manufacturing executives revealed that 41% had already reshored a portion of their operations back to the United States in the past three years. An additional 22% plan to reshore some of their manufacturing operations within the next three years.[70] According to the survey, small and medium-sized enterprises see reshoring to the United States as more advantageous for them, when compared to large companies and manufacturers with offshore facilities.[71]

COVID-19 has accelerated growth in e-commerce, the market in which goods and services are exchanged via the internet.[72] As much of the population was confined to their homes at the beginning of the pandemic, goods that could be obtained online and services that could be accessed without leaving the home became exceedingly in demand.[73] E-commerce growth has contributed to increased demand for the transportation of goods directly to consumers in the form of freight transport and delivery.[74] As consumers ordered more products online and expected those products to arrive faster, supply chain priorities have shifted to increasing inventories in warehouses and increasing the number of warehouses and distribution centers close to consumers.[75] E-commerce is likely to endure after the pandemic and with continual advancements in technology and automation, more companies may find it advantageous to capitalize on productivity growth and shift in-person business to e-commerce.[76]

Multiple industries are poised to benefit from potential productivity growth as a result of the pandemic, as shown in Table 6.4. Healthcare has the potential for increases in productivity driven by the advancements in telemedicine. Construction has the potential to emerge strongly from the pandemic due to improved operational efficiency, industrialization, and digital construction. Growth in e-commerce accelerated by COVID-19 presents an opportunity for productivity growth in the retail sector. Information and communications technology has also benefitted from the pandemic through increased demand for

[63] Source: https://link.springer.com/article/10.1007/s12063-020-00160-1.
[64] Source: https://hbr.org/2020/09/global-supply-chains-in-a-post-pandemic-world.
[65] Source: https://link.springer.com/article/10.1007/s12063-020-00160-1.
[66] Ibid.
[67] Source: https://prologis.getbynder.com/m/416c7355dc279204/original/COVID-19-Special-Report-5-12-2020.pdf.
[68] Source: https://hbr.org/2020/09/global-supply-chains-in-a-post-pandemic-world.
[69] Source: https://link.springer.com/article/10.1007/s12063-020-00160-1.
[70] Source: https://www.kearney.com/operations-performance-transformation/us-reshoring-index.
[71] Ibid.
[72] Source: https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-consumers-workers-and-companies-in-the-post-covid-19-recovery.
[73] Ibid.
[74] Source:https://www.researchgate.net/publication/341312437_The_Impact_of_COVID-19_on_Transport_Demand_Modal_Choices_and_Sectoral_Energy_Consumption_in_Europe.
[75] Source: https://www.logisticsmgmt.com/article/record_breaking_demand_for_warehouse_and_dc_development.
[76] Source: https://www.bigcommerce.com/articles/ecommerce/future-of-ecommerce/#10-trends-shaping-the-future-of-ecommerce.

online services and online advertising. The pharmaceutical industry has potential to benefit from productivity growth after the pandemic due to the digitization of sales channels, automation of manufacturing, and the use of AI for vaccine discovery. Rural communities could consider attracting any one of these emerging industries to capitalize on possible post-pandemic growth.[77]

**Table 6.4: Main Contributors to Potential Productivity Growth Driven by COVID-19**

| Sector | Contributors |
|---|---|
| Healthcare | Telemedicine<br>Operational efficiency |
| Construction | Operational efficiency<br>Industrialization<br>Digital construction |
| Retail | E-commerce<br>Warehouse automation<br>Advanced analytics |
| Information and Communications Technology | Online channels<br>Online advertising<br>Demand for online services |
| Pharmaceutical | Digitization of sales channels<br>Automation of manufacturing<br>AI for vaccine discovery |
| Banking | Hybrid work model<br>Online channels<br>Shift to digital payments |
| Automotive | Electric vehicles<br>Connected car<br>Online sales |
| Travel and Logistics | Digital interaction (e.g., apps)<br>Agile working<br>Automation of tasks |
| Other | Automation of tasks<br>Digital channels<br>Lower real estate costs |

*Source: McKinsey & Company*

**Remote Work**

The pandemic's effect on remote work has led to increased interest and demand for rural living, as many jobs are no longer constrained by physical proximity. Rural communities can capitalize on the increased demand and attract skilled labor by improving cell and internet infrastructure and promoting the lower cost of living in rural areas compared to urban areas.[78]

As the COVID-19 pandemic subsides and restrictions are lifted, many companies that mandated a remote policy for their employees (also referred to as "working from home" or "teleworking") are now questioning whether or not they should continue this practice and to what degree. Broadly, a company has three potential solutions to the remote working dilemma:

- continue the practice of remote working and do not return to an in-office setting
- bring all remote personnel back into the office fully
- formulate a hybrid model combining remote and in-person working

There is substantial uncertainty as to how and when companies will be back to in-person working, if ever. Even within the same company, there may be disagreement on how to handle remote working. When comparing executives and office workers, a study by PwC (PricewaterhouseCoopers) found that only 2% of company executives expect the office to never be above 50% in-person workers again, while a larger 18% of office workers share this expectation. The PwC findings suggest that most companies will head toward a hybrid working model post-pandemic.[79] Further, a survey by executive compensation firm Pearl Meyer showed that responding companies (from the following industries: business, consumer goods, financial/real estate, healthcare, industrials/materials, technology, and energy/utilities) expect 33% of their workforce to permanently work remotely post-pandemic.[80] In contrast, Mercer's Coronavirus Business Impact Survey finds that 87% of employers in various industries (most respondents from manufacturing, public sector, and financial services) say they will embrace greater flexibility post-pandemic, with most planning a hybrid onsite/remote-work model.[81]

However, not all occupations and types of work can be done remotely. Some businesses need their personnel to work in-person, such as hospital workers and mechanics. Other occupations are more suitable to remote work, such as financial representatives or customer service employees. The types of companies that are most eager to bring their workers back in

[77] Source: https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-consumers-workers-and-companies-in-the-post-covid-19-recovery.
[78] Source: https://www.mainstreet.org/blogs/national-main-street-center/2020/06/18/covid-19-trend-series-rural-economies-great-opport.
[79] Source: https://www.pwc.com/us/en/library/covid-19/us-remote-work-survey.html.
[80] Source: https://www.shrm.org/resourcesandtools/hr-topics/benefits/pages/reopening-strategies-recognize-many-will-keep-working-remotely.aspx.
[81] Source: https://www.shrm.org/ResourcesAndTools/hr-topics/benefits/Pages/offices-may-operate-differently-than-before-the-pandemic.aspx.

person are education, automotive, retail, hospitality, and manufacturing. The types of companies that are more likely to let their workers stay remote are professional and technical service; technology; staffing, professional employer organization, and employment services; and finance and insurance.[82] The Conference Board (a research organization) forecasts that occupations in technology and IT; finance and insurance; engineering; and administrative support are likely to experience a permanent increase in remote work rates. This forecast was based on the steady increase of full-time remote workers in these industries since 2001 that COVID-19 has only accelerated. Prior to COVID-19, executives were generally hesitant to allow employees to work remotely due to concerns in monitoring productivity. However, the pandemic has proven that remote work is effective and can increase productivity. Half of the 141 organizations surveyed with 80% or more of their workforce primarily remote during the pandemic reported increased worker productivity. Remote work can also be beneficial as it allows companies to lower their expenses for office space, and serves as a perk for employees by allowing an improved work-life balance.[83]

A further implication of the pandemic's effect on employees is that remote workers aren't bound to a certain geographic location. This means that remote workers can live wherever they please, resulting in a migration of workers to areas that are cheaper to live in. Rural communities have seen a great influx in their populations as a cost-friendly and socially distant alternative to big cities. Bozeman, Montana, which has been attracting remote workers with its low housing cost and scenic mountain ranges that are perfect for skiing, has become one of the nation's many "Zoom Towns"—the county's home values have increased by 18% since the pandemic started. Zoom Towns are small (and typically rural) communities that have seen a large increase in population as a result of remote workers moving into the area. A commonality amongst these towns is abundant natural outdoor spaces and scenery, and they provide quiet areas to get work done. Jackson Hole, Wyoming; Truckee, California; and New York's Hudson Valley are just a few localities that have notably experienced this recent trend.[84]

Closer to the CSPDC region, Washington, D.C. was not immune to the increased movement out of larger cities. According to an analysis of USPS change of address data by CBRE, the district saw a loss of 7.2 movers per 1,000 residents in 2020, compared with 5.3 per 1,000 a year earlier.[85] Most moves were local—the number of moves within 100 miles increased 25% year over year. While about 70% of the moves remained within the D.C. metro area, the number moving to the Charlottesville metro area increased by 0.7 basis points. The Lynchburg metro area saw an increase of 0.2 basis points. However, these two regions combined only accounted for an estimated 0.031% of all movers out of the Washington, D.C. area in 2020.

Many other rural and small communities are trying to take advantage of this migration of remote workers by offering incentives for people to move and work there. For example, West Virginia is offering $12,000 and free outdoor recreation services to remote workers who move to one of the preselected cities (Morgantown, Lewisburg, and Shepherdstown) from out of state through its "Ascend WV" program.[86] Additionally, the website "Make My Move" lists the current offers that areas across the United States are providing to incentivize workers to live there. One way areas have sought to differentiate themselves from other relocation programs has been to offer specialized incentives. Topeka, Kansas, for example, is offering a year of free Jimmy John's sandwiches (on top of a financial incentive of $10,000) to those who participate in the program. Nearly all of the offers listed on "Make My Move" advertise their outdoor recreation areas and cheap cost-of-living to attract people from large cities who want to leave a cramped and expensive lifestyle.[87] While the success of these programs remains to be seen, demand is evident as there are thousands of people applying to participate in these programs. Within the first 36 hours of the announcement of Ascend WV, 2,000 applications had already been filled out.[88] Another

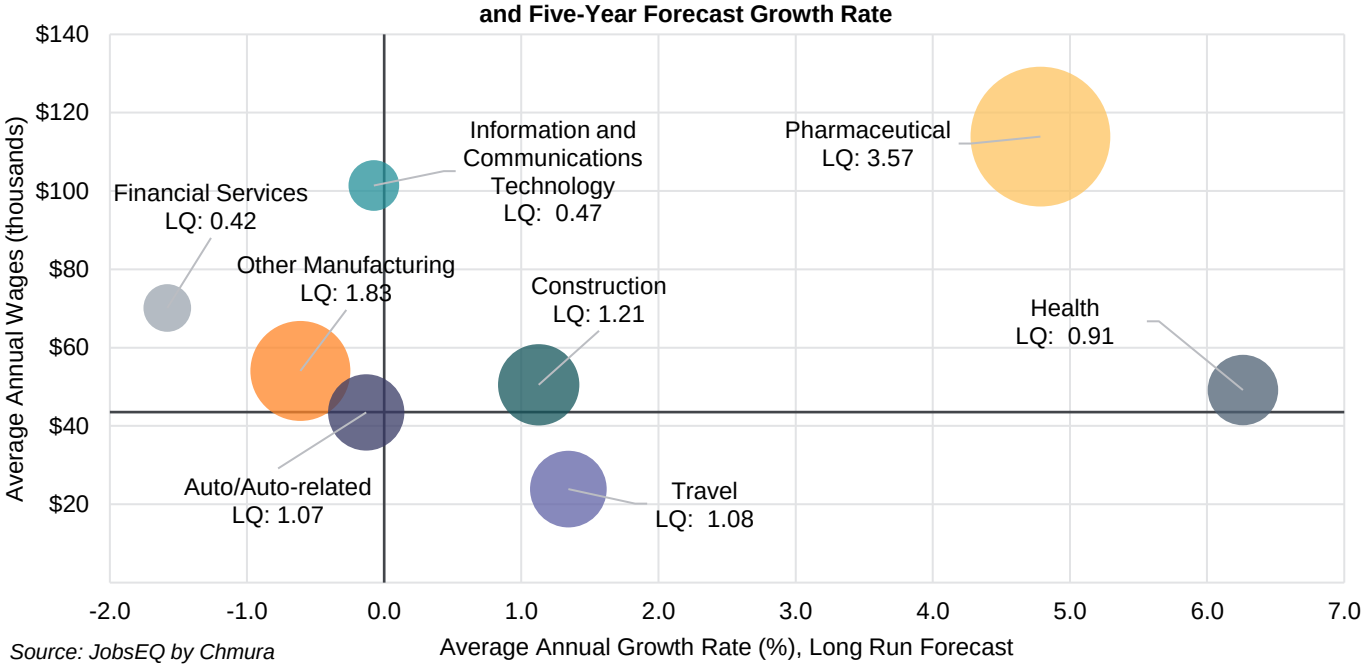
[82] Source: https://www.fisherphillips.com/news-insights/fp-flash-survey-reveals-great-remote-work.html.
[83] Source: https://www.conference-board.org/pdfdownload.cfm?masterProductID=26029.
[84] Source: https://www.wsj.com/articles/how-remote-work-is-reshaping-americas-urban-geography-11614960100.
[85] Source: https://www.cbre.us/research-and-reports/COVID-19-Impact-on-Resident-Migration-Patterns.
[86] Source: https://www.flexjobs.com/blog/post/economic-development-programs-remote-workers/.
[87] Source: https://www.makemymove.com/.
[88] Source: https://www.wvnews.com/news/wvnews/tens-of-thousands-looking-at-west-virginia-after-ascend-wv-remote-worker-program-launch-gov/article_5ff61c01-fdc9-5639-bf43-dc2c44a0e448.html.

incentive program, "Remote Tulsa," has already had 30,000 applications for the 2021 intake. Those selected will be given a stipend of $10,000 and free office space in a co-working facility.[89]

## 6.3. CSPDC Industries

The pandemic has affected the long-term growth outlook for many of the key industry clusters in the CSPDC region. Based on average annual wages and average long-run annual growth forecast, the pharmaceutical, construction, and health industries are best positioned for long-term growth in the CSPDC region. The travel industry has a positive growth forecast but has average annual wages ($23,876), well below the CSPDC region's average ($45,537). The auto/auto-related industry has both a negative long-run growth forecast and below-average annual wages ($43,457). The financial services, information and communications technology, and other manufacturing industries have above-average annual wages but negative long-run growth forecasts. The remainder of this section explores historical trends in clusters and prospects for growth after the pandemic based on national trends that local businesses and organizations may capitalize on.

**Figure 6.6: CSPDC Region Industry Clusters, Average Wages, and Five-Year Forecast Growth Rate**




*Source: JobsEQ by Chmura*

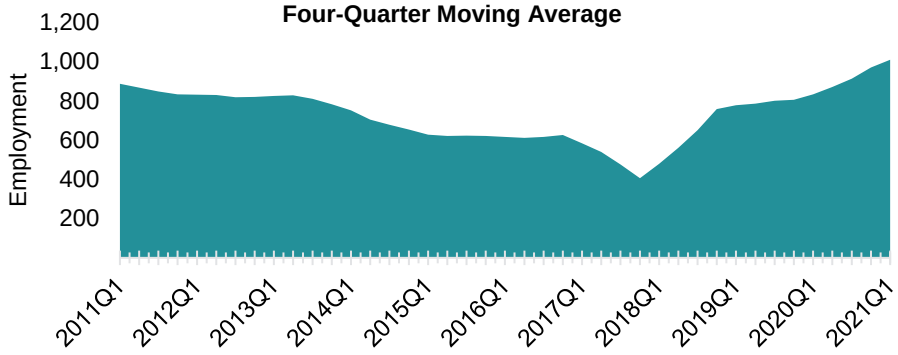
**Pharmaceutical**

The pharmaceutical industry is poised for strong growth in the CSPDC region. Prior to the pandemic, employment in the pharmaceutical industry in the CSPDC region was increasing rapidly, growing at a rate of 110.3% over the past three years and well above the state (38.1%) and national growth (8.3%) over the same period. Strong employment growth continued

[89] Source: https://fortworthbusiness.com/business/tulsa-remote-relocation/.

in 2020, despite the onset of the pandemic in March 2020. Average annual wages in the pharmaceutical industry are higher in the CSPDC region ($113,888) than the Virginia average ($100,941), indicating a highly productive workforce. The pharmaceutical industry also has a location quotient of 3.57, further suggesting a strong competitive advantage in the region.[90] Over the next five years, employment in the CSPDC region is expected to grow by 48 jobs. The five-year forecast growth rate is also strong, at 0.9% on average each year. As one of the industries expected to benefit the most from pandemic trends, the pharmaceutical industry in the CSPDC region may expand more rapidly. In fact, prior to the pandemic, Merck announced plan for a $1 billion expansion in Rockingham County.[91]

**Figure 6.7: Employment in Pharmaceuticals, Four-Quarter Moving Average**




*Source: JobsEQ® by Chmura*

The occupations in the pharmaceutical industry with the largest expected total demand (due to workers retiring, changing occupations, or otherwise leaving the workforce) include packaging and filling machine operators and tenders; chemists; mixing and blending machine setters, operators, and tenders; inspectors, testers, sorters, samplers, and weighers. Employment growth for four of these occupations is positive, while the other will have negative growth.

**Table 6.5: Top Five Pharmaceutical Occupations by Total Demand**

| Occupation | Current Employment | Current Avg. Annual Wages | Five-Year Demand Employment Growth | Five-Year Demand Total Demand |
|---|---|---|---|---|
| Packaging and Filling Machine Operators and Tenders | 107 | $48,300 | 5 | 70 |
| Chemists | 47 | $85,200 | 5 | 28 |
| Inspectors, Testers, Sorters, Samplers, and Weighers | 47 | $49,300 | -3 | 25 |
| Mixing and Blending Machine Setters, Operators, and Tenders | 38 | $42,300 | 2 | 25 |
| First-Line Supervisors of Production and Operating Workers | 38 | $78,600 | 2 | 22 |

*Source: JobsEQ by Chmura*

### Construction

The construction industry is positioned to emerge strongly from the pandemic, driven by housing demand and renovations to existing structures to incorporate pandemic safety recommendations. Detailed industries in this sector include nonresidential plumbing, heating, and air-conditioning contractors; commercial and institutional building construction; and

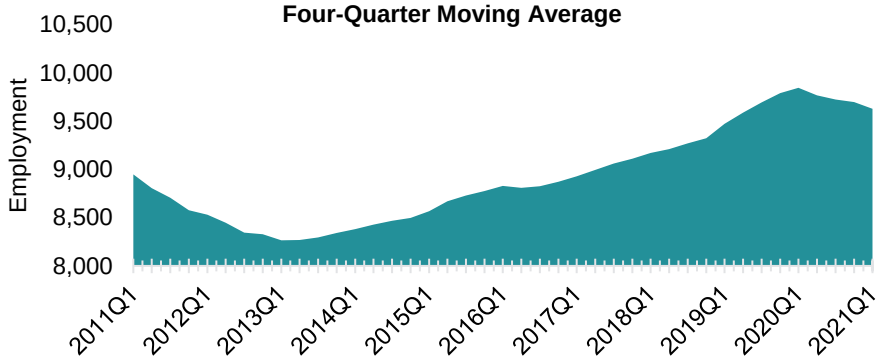
[90] The location quotient (LQ) is a measure of the relative size of an industry in a region compared to the average size in the nation. An LQ of 1.0 indicates an industry is the same size in the region as is average in the nation; an LQ of 2.0 means the industry is twice as large in the region compared to average; and an LQ of 1/2 indicates the industry is half as large regionally as average in the nation. By formula, the location quotient is the ratio of an industry's share of total employment within the region to the same industry's share of employment in the nation.

$$LQ = \frac{Employment\_in\_industry\_I\_in\_area\_J \,/\, Total\_employment\_in\_area\_J}{U.S.\_employment\_in\_industry\_I \,/\, Total\_U.S.\_employment}$$

[91] Source: https://www.virginiabusiness.com/article/merck-plans-1-billion-expansion-in-rockingham/

highway, street, and bridge construction. The industry saw strong positive employment growth beginning in 2013 but suffered a small decline as a result of the pandemic. Average annual wages in construction in the CSPDC region ($50,508) are higher than the total industry regional average ($45,537), but lag behind average annual wages in construction in Virginia ($60,965) and the nation ($63,212). Construction in the CSPDC region has a location quotient of 1.21, indicating a greater share of employment in this industry than in the national mix. Over the next five years, employment in construction is expected to grow by 108 jobs, and the five-year forecast growth rate in construction is positive at 0.2% on average each year.

**Figure 6.8: Employment in Construction, Four-Quarter Moving Average**




*Source: JobsEQ® by Chmura*

The construction occupations with the largest total demand forecast are construction laborers; carpenters; first-line supervisors of construction trades and extraction workers; electricians; and plumbers, pipefitters, and steamfitters. Out of these occupations, all except carpenters have positive employment growth expected over the next five years.

**Table 6.6: Top Five Construction Occupations by Total Demand**

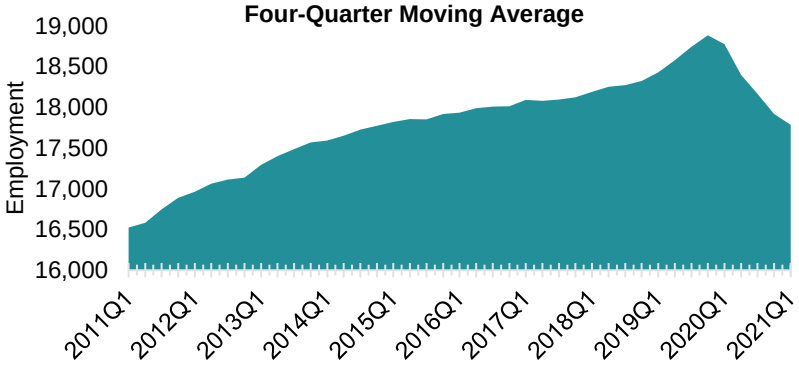
| Occupation | Current Employment | Current Avg. Annual Wages | Five-Year Demand Employment Growth | Five-Year Demand Total Demand |
|---|---|---|---|---|
| Construction Laborers | 1,154 | $32,400 | 26 | 678 |
| Carpenters | 909 | $45,600 | -5 | 460 |
| First-Line Supervisors of Construction Trades and Extraction Workers | 666 | $61,100 | 13 | 364 |
| Electricians | 444 | $47,200 | 21 | 290 |
| Plumbers, Pipefitters, and Steamfitters | 482 | $48,200 | 14 | 287 |

*Source: JobsEQ by Chmura*

### Health

The health industry is poised for growth driven by the COVID-19 pandemic. Industries in this sector include general medical and surgical hospitals; offices of physicians (except mental health specialists); and continuing care retirement communities. Employment in the health industry in the CSPDC region recovered quickly after the Great Recession and experienced consistent positive growth prior to the pandemic. Despite a decline in employment after the start of the pandemic, employment growth demand of 1,114 jobs is expected over the next five years. Average annual wages in the health industry are above the region's average, but are below the state and national health industry average wages. The location quotient is 0.91, pointing to opportunities for expansion to reach a concentration closer to the national mix. The overall outlook for the industry is positive, with a five-year growth forecast rate of 1.2% each year.

**Figure 6.9: Employment in Health, Four-Quarter Moving Average**




*Source: JobsEQ® by Chmura*

The health occupations with the largest forecast total demand include personal care aides; nursing assistants; registered nurses; home health aides; and medical assistants. All of these occupations are estimated to have positive employment growth.

**Table 6.7: Top Five Health Occupations by Total Demand**

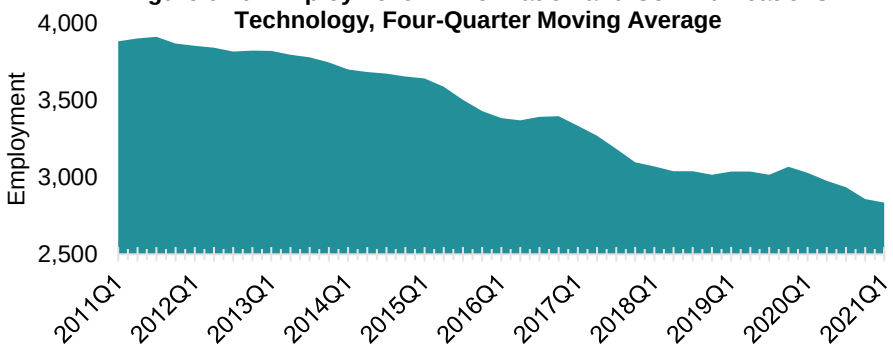
| Occupation | Current Employment | Current Avg. Annual Wages | Five-Year Demand Employment Growth | Five-Year Demand Total Demand |
|---|---|---|---|---|
| Personal Care Aides | 1,911 | $22,700 | 278 | 1,776 |
| Nursing Assistants | 1,436 | $29,500 | 56 | 889 |
| Registered Nurses | 2,045 | $67,900 | 63 | 629 |
| Home Health Aides | 666 | $22,700 | 97 | 518 |
| Medical Assistants | 475 | $34,200 | 41 | 322 |

*Source: JobsEQ by Chmura*

### Information and Communications Technology

The information and communications technology sector has seen employment decline over the past ten years. Prior to the pandemic, employment was relatively stable from 2018 to 2020, before declining again after the onset of the pandemic.

**Figure 6.10: Employment in Information and Communications Technology, Four-Quarter Moving Average**




*Source: JobsEQ® by Chmura*

Out of the five largest industries in this sector, only semiconductor and other electronic component manufacturing saw employment growth over the past five years. Employment growth in software publishers, other information services, and computer systems design and related services is expected to be strong over the next five years, a positive sign for growth in the sector. Average annual wages in information and communications technology are $101,403, more than double the overall CSPDC region average, but lower than the state and national averages for the sector. The sectors' location quotient is 0.47, pointing to opportunities for expansion in the region. The sector is expected to decline slightly in the near future, with a stagnant five-year growth rate forecast. Improved access to broadband and increased demand for online services could provide opportunities to capitalize on greater growth in the sector. The existing semiconductor manufacturing industry is also an opportunity for expansion due to the global chip shortage. This shortage has highlighted a national security risk from relying on overseas manufacturing, and has led to calls for expansion in the nation's capability to manufacture these components. In September 2020, VIRTEX announced plans to add up to 50 jobs at its plant Waynesboro. The manufacturer provides services to military, aerospace, and medical customers.[92]

[92] Source: https://www.areadevelopment.com/newsItems/9-3-2020/virtex-solutions-place-waynesboro-virginia.shtml

**Table 6.8: Information and Communications Technology Industries**

| Industry | Employment | Five-Year % Employment Change (4Q Mov Avg) | Five-Year Forecast Growth Rate | Five-Year Forecast Growth Demand |
|---|---|---|---|---|
| Software Publishers | 432 | -18.8% | 6.6% | 27 |
| Other Information Services | 323 | -23.7% | 4.3% | 14 |
| Computer Systems Design and Related Services | 335 | -29.8% | 6.1% | 20 |
| Semiconductor and Other Electronic Component Manufacturing | 315 | 56.4% | -0.2% | -1 |
| Newspaper, Periodical, Book, and Directory Publishers | 277 | -14.0% | -25.3% | -71 |
| **Information and Communications Technology Total** | **2,872** | **-16.2%** | **-0.1%** | **-2** |

*Source: JobsEQ by Chmura*

The information and communications technology occupations with the largest total demand include software developers and software quality assurance analysts and testers; sales representatives of services, except advertising, insurance, financial services, and travel; customer service representatives; electrical, electronic, and electromechanical assemblers, except coil winders, tapers, and finishers; and market research analysts and marketing specialists. Growth in these five occupations is expected to be mixed, with some occupations projected to have positive growth while others will remain constant or have negative growth.

**Table 6.9: Top Five Information and Communications Occupations by Total Demand**

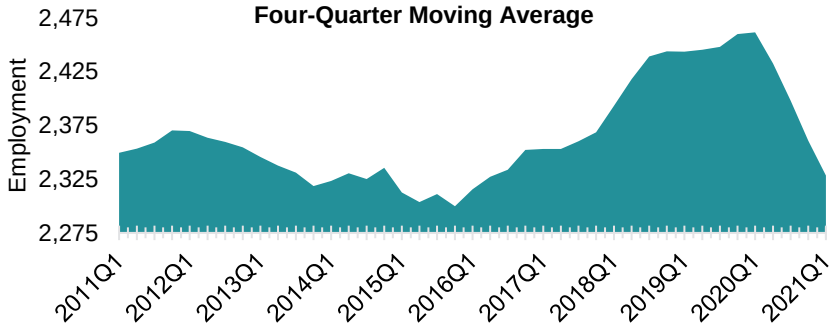
| Occupation | Current Employment | Current Avg. Annual Wages | Five-Year Demand Employment Growth | Five-Year Demand Total Demand |
|---|---|---|---|---|
| Software Developers and Software Quality Assurance Analysts and Testers | 311 | $94,700 | 24 | 141 |
| Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel | 81 | $72,100 | 0 | 51 |
| Customer Service Representatives | 73 | $38,200 | -6 | 39 |
| Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers | 64 | $38,300 | -1 | 36 |
| Market Research Analysts and Marketing Specialists | 52 | $62,900 | 3 | 31 |

*Source: JobsEQ by Chmura*

**Financial Services**

The financial services sector in the CSPDC region saw increasing employment in the five years preceding the pandemic before experiencing a sharp decline at the start of the pandemic. Out of the five largest six-digit NAICS industries in the financial services sector, securities brokerage; insurance agencies and brokerage; and credit unions saw the largest decreases in employment due to the pandemic. The five-year employment growth forecast remains negative, with employment expected to decline by 37 jobs. Average annual wages in financial services are $70,126 in the CSPDC region, above the regional average. However, wages in the financial services

**Figure 6.11: Employment in Financial Services, Four-Quarter Moving Average**




*Source: JobsEQ® by Chmura*

sector in the CSPDC region lag behind both the Virginia ($109,030) and United States ($119,519) averages. The location quotient for the financial services sector is 0.42. The sector is projected to decline, with a five-year growth forecast of -0.3% each year.

The occupations with the largest projected total demand in financial services are tellers; customer service representatives; insurance sales agents; securities, commodities, and financial services sales agents; and loan officers. Growth in these five occupations is expected to be mixed, but mostly negative.

**Table 6.10: Top Five Financial Services Occupations by Total Demand**

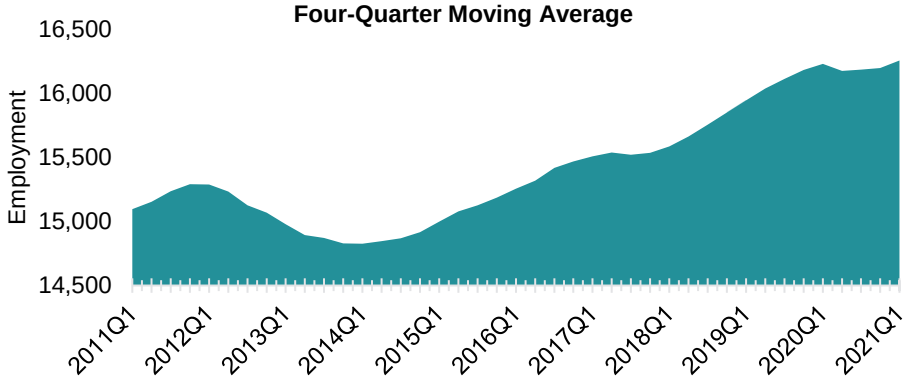
| Occupation | Current Employment | Current Avg. Annual Wages | Five-Year Demand Employment Growth | Five-Year Demand Total Demand |
|---|---|---|---|---|
| Tellers | 246 | $32,800 | -24 | 112 |
| Customer Service Representatives | 174 | $35,300 | -7 | 105 |
| Insurance Sales Agents | 198 | $56,900 | 3 | 100 |
| Securities, Commodities, and Financial Services Sales Agents | 171 | $57,900 | 0 | 81 |
| Loan Officers | 133 | $51,800 | -1 | 55 |

*Source: JobsEQ by Chmura*

**Other Manufacturing**

After declining during the Great Recession, employment in the other manufacturing[93] sector has been increasing in the past seven years. Industries in this sector include animal slaughtering and processing; sugar and confectionery product manufacturing; and ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing. The pandemic caused a slight dip in employment, but by the first quarter of 2021 employment has returned to the pre-pandemic level. Average annual wages in the sector are $54,049, above the CSPDC region average, but lower than the state and national averages for the sector. The location quotient for other manufacturing is 1.83, pointing to a competitive advantage in the region. Employment in the sector is expected to decline slightly over the next five years at 0.1% each year.

**Figure 6.12: Employment in Other Manufacturing, Four-Quarter Moving Average**




*Source: JobsEQ® by Chmura*

The occupations with the largest total demand forecast in other manufacturing are meat, poultry, and fish cutters and trimmers; laborers and freight, stock, and material movers, hand; packaging and filling machine operators and tenders; food batchmakers; and first-line supervisors of production and operating workers. Growth in these occupations is expected to be mixed, with the most demand in food manufacturing such as meat, poultry, and fish cutters and trimmers.

[93] Other manufacturing includes all three-digit NAICS manufacturing industries except chemical manufacturing and the four-digit motor vehicle manufacturing industries.

**Table 6.11: Top Five Other Manufacturing Occupations by Total Demand**

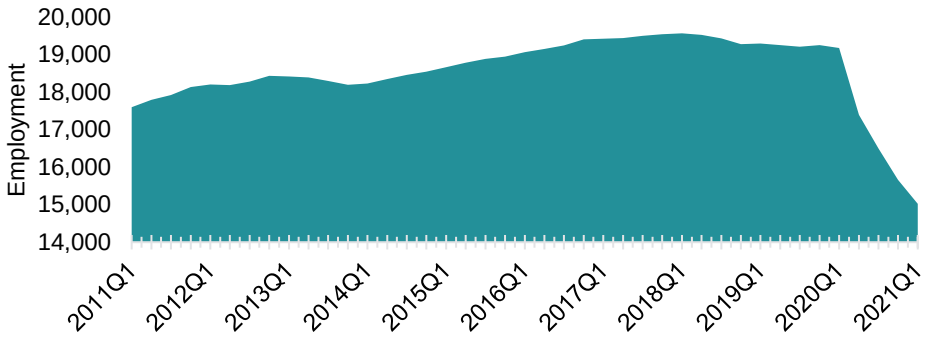
| Occupation | Current Employment | Current Avg. Annual Wages | Five-Year Demand Employment Growth | Five-Year Demand Total Demand |
|---|---|---|---|---|
| Meat, Poultry, and Fish Cutters and Trimmers | 878 | $29,700 | 20 | 575 |
| Laborers and Freight, Stock, and Material Movers, Hand | 765 | $32,700 | 7 | 542 |
| Packaging and Filling Machine Operators and Tenders | 795 | $43,200 | 8 | 473 |
| Food Batchmakers | 516 | $35,400 | -2 | 378 |
| First-Line Supervisors of Production and Operating Workers | 595 | $64,300 | -1 | 303 |

*Source: JobsEQ by Chmura*

**Travel**

Travel was the sector most negatively impacted by the COVID-19 pandemic. Industries in this sector include restaurants and other eating places; traveler accommodation; and gasoline stations. Prior to the pandemic, employment in travel in the CSPDC region was increasing over the last ten years. Employment in travel plummeted by more than 20% after the start of the pandemic, which is consistent with state and national trends. The sector is expected to recover as pandemic restrictions lift, and settle into longer-term employment growth expected at 1.3% per year. Average annual wages in travel are $23,876, below the regional average, and are below average wages in both the state and nation. The location quotient for the sector is 1.08, indicating this sector accounts for a slightly higher share of employment in the CSPDC region than the nation.

**Figure 6.13: Employment in Travel, Four-Quarter Moving Average**




*Source: JobsEQ® by Chmura*

The travel occupations with the largest estimated total demand include fast food counter workers; waiters and waitresses; cashiers; cooks, restaurant; and first-line supervisors of food preparation and serving workers. All of these are tied to the food service industry, which can serve tourists as well as residents, while other industries in the travel industry such as accommodations are more heavily dependent on tourism. Four of these occupations have positive projected employment growth, though cashiers are expected to have negative growth.

**Table 6.12: Top Five Travel Occupations by Total Demand**

| Occupation | Current Employment | Current Avg. Annual Wages | Five-Year Demand Employment Growth | Five-Year Demand Total Demand |
|---|---|---|---|---|
| Fast Food and Counter Workers | 2,839 | $21,400 | 136 | 2,830 |
| Waiters and Waitresses | 1,710 | $23,300 | 8 | 1,653 |
| Cashiers | 1,345 | $22,200 | -49 | 1,173 |
| Cooks, Restaurant | 909 | $24,700 | 90 | 787 |
| First-Line Supervisors of Food Preparation and Serving Workers | 686 | $35,300 | 12 | 544 |

*Source: JobsEQ by Chmura*

## 6.4. Regional Economic Development Targets

Industries targeted for attraction, expansion, and retention by local economic development organizations may be expected to benefit from such targeted investment and be poised for growth in the recovery from the pandemic. The table below summarizes economic development targets for localities within the CSPDC region; regional organizations including the Shenandoah Valley Partnership and GO Virginia Region 8; and statewide targets from the Virginia Economic Development Partnership (VEDP). Areas of overlap indicate potential areas for cooperation between localities in attracting firms and assisting existing firms in expanding. The greatest overlap is in manufacturing, especially food and beverage manufacturing, building from the existing strengths in the region. Most agencies are also targeting transportation and logistics as well as information technology (IT). Continuing to monitor these targets and coordinate efforts will help the CSPDC region take advantage of emerging opportunities in manufacturing supply chains, e-commerce, and IT and remote work coming out of the pandemic.

Alignment and consistent messaging between local and region-wide targets can help with coordinated regional strategies for business attraction and retention. There are some gaps in industries targeted by some organizations and not others in the region. Augusta and Bath counties may consider adding information technology targets to take advantage of possible internet infrastructure improvements.Though GO Virginia Region 8 includes a target for light manufacturing, none of the local agencies include that language in their tagets.

**Table 6.13: Economic Development Targets**

| Targeted Industries | Augusta | Bath | Harrisonburg | Waynesboro | Shenandoah Valley Partnership | GO Virginia Region 8 | VEDP |
|---|---|---|---|---|---|---|---|
| Information Technology | | | X | X | X | X | X |
| Digital Industries | | | | X | | | |
| Communications | | | | | | X | |
| Unmanned Systems | | | | | | | X |
| Manufacturing | X | | X | X | X | X | X |
| Food and Beverage | X | | X | X | | X | X |
| Light | | | | | | X | |
| Advanced | X | | | | | | |
| Transportation | | | X | X | X | X | X |
| Distribution | | | X | | | | |
| Logistics | | | X | X | X | X | |
| Supply Chain Management | | | | | | | X |
| Healthcare | | X | | | | X | |
| Life Sciences | X | | | | | X | X |
| Biomedical/Biotechnical | | | | | | X | |
| Services | | X | | | X | X | X |
| Administrative and Support | | X | | | | | |
| Professional, Scientific and Technical | | X | | | X | | |
| Financial and Business | | | | | | X | |
| Corporate | | | | | | | X |
| Agriculture/Forestry | X | | | | X | | |
| Agribusiness | | | | | X | | |
| Hospitality/Accommodation | | X | | | | | |
| Private Household Sectors | | X | | | | | |
| Construction | | X | | | | | |
| Utilities | | X | | | | | |

*Source: Chmura*
*Note: Data collected from organization websites as of August 2021*

# Appendix

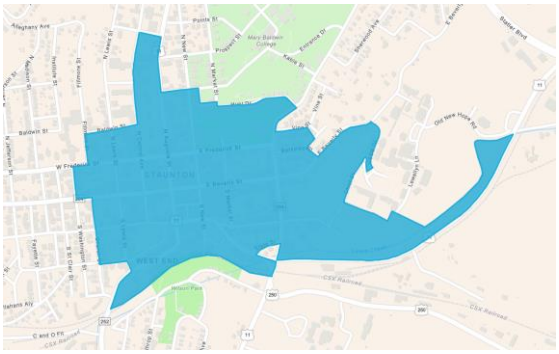
## Maps of CSPDC Downtown Regions

City of Buena Vista Downtown

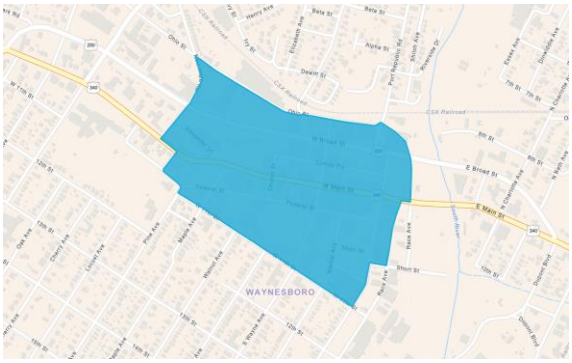
City of Harrisonburg Downtown

City of Lexington Downtown

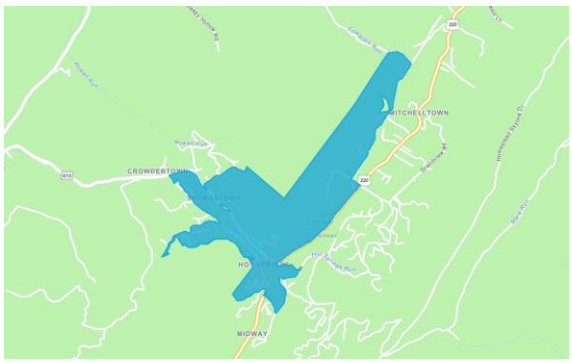
City of Staunton Downtown



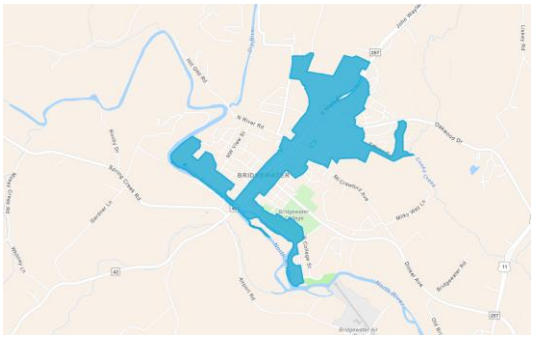
City of Waynesboro Downtown



Hot Springs Downtown



Town of Bridgewater Downtown



Town of Broadway Downtown

Town of Monterey Downtown