ROANOKE COUNTY ECONOMIC DEVELOPMENT STRATEGIC PLAN

ELEVATE 2026

Prepared by the Virginia Tech Center for Economic and Community Engagement

DECEMBER 2021

https://www.yesroanoke.com/468/Strategic-Plan

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Executive Summary

Roanoke County has experienced economic and population growth over the past decade and is expected to continue growing. Proximity to high-quality educational institutions, numerous outdoor recreation attractions, and a high quality of life for a lower cost all contribute to the livability and continued growth of the County. Roanoke County's unique location, surrounding the independent city of Roanoke, gives it access to urban amenities while the County maintains its suburban identity.

Despite the aging population, employment increased in the last decade, with notable growth in the healthcare and social services, manufacturing, and professional and technical services sectors. Healthcare and social services was also the top-employing industry sector in the County as of 2020, which is due to the local presence of the Carillion and Lewis Gale medical networks. The other two top employing industry sectors were retail trade and government. However, retail trade has seen decreases in employment, largely caused by the shutdowns and economic recession of the COVID-19 pandemic. Nonetheless, the County has been recovering and is expected to return to 2019 pre-pandemic employment levels by mid-2022.

Existing clusters in Roanoke County drive much of the job creation and economic growth in the County and region. These include business and financial services, information and telecommunications, construction services, transportation, warehousing, and logistics, hospitality and tourism, and retail and restaurants. Specifically, the transportation, warehousing, and logistics cluster has grown at a faster rate than others in the last decade. The County plays a key role in the regional clusters and contributes a significant portion of the activity that supports job creation. Other emerging clusters show promise for future employment and growth, including the healthcare, advanced materials manufacturing, and forest/wood products clusters. New facilities have opened in the County, contributing to notable employment increases in these clusters. The concentration of educational opportunities combined with the employment opportunities generated by these dominant clusters provides the County with potential for stronger career pathways and collaboration between key businesses, institutions, and other partners.

With increasing incomes, employment opportunities, and the growth of outdoor recreation and entertainment opportunities, it is clear that the County's economy continues to improve in the right direction. These strengths were evident in the Strengths/ Weaknesses/ Opportunities/ Threats (SWOT) Analysis conducted by CECE which drew on stakeholder feedback, previous County plans, and a data overview. The SWOT analysis illustrated the County has been successful in providing an effective business retention and expansion program, branding for recent developments, and collaborating to spur site development. However, there is concern about the aging population trend, difficulties retaining younger professional populations, limited supply of developable sites, and challenges emerging in the post-pandemic economy.

This report provides recommendations and strategies that will help Roanoke County harness the momentum of current trends while addressing challenges to future development. The Roanoke County Economic Development Department will use specific action steps and initiatives around four main goals (i.e. value and invest in: people and opportunity, place and quality of life, innovation and entrepreneurship, and industry and business) to advance Roanoke County's economy and help the Roanoke County Economic Development Department further their mission, and commitment to growing and supporting the County's future.

Introduction

The Roanoke County Economic Development Department engaged the Virginia Tech Center for Economic and Community Engagement (CECE) to lead a strategic planning process to shape and define Roanoke County's future economic development efforts and outcomes. The Economic Development Strategic Plan will help guide the direction and focus of Roanoke County's Economic Development Department reflect changing County and industry conditions, priorities, and needs, particularly in the context of post COVID-19 recovery and vitality.

The County

Roanoke County, part of the Roanoke Metropolitan Statistical Area (MSA), is nestled between the Blue Ridge and Allegheny Mountains. After its founding in 1838, the County shifted from largely rural to a more suburban and commercial character after the arrival of the railroad industry to the Roanoke Valley in 1852. The town of Vinton and the City of Roanoke, borne from the railroad industry activity, are located within the boundaries of the County, with the City of Roanoke adding a more urban feel to the area. The independent city of Salem is also located within County borders. Unlike other localities in the greater Southwest Virginia area, Roanoke County saw population growth between 2010 and 2020. The County's population was 94,495 people as of 2020.

Roanoke County, sometimes described as a "bedroom community," boasts high quality of life with low cost of living. Roanoke was designated as one of the Top 100 Best Places to Live in America in the Livability.com 2019 list. The County was ranked as one of the U.S. News & World Report's Healthiest Communities in 2018 and again in 2021. This aligns with the outdoor attractions and community assets within the County, such as the Roanoke Greenway, the Blue Ridge Parkway, the Explore Park, and the Appalachian Trail.

In addition to its natural beauty and outdoor recreation opportunities, the County is developing its cultural, dining, arts, and entertainment to complement quality of life for diverse populations. Recent developments, such as the Tanglewood419 project, will contribute to the live, work, and play opportunities for the County. More urban amenities including the Taubman Museum of Art, downtown breweries, and the Valley View Mall are a short drive away for County residents.

Within the County, commercial and industrial activity is concentrated near the western and northeastern County borders, close to I-81, I-581, U.S. Route 460, U.S. Route 11, and U.S. Route 220. These major highways and routes directly connect the County to surrounding localities and larger metropolitan areas, such as the Washington, D.C. metro to the northeast and Greensboro, NC to the south.

Much like other southwestern Virginia communities, the greater Roanoke Valley experienced negative economic impacts after the decline in industrial and manufacturing sectors. Nonetheless, the County has retained its reputation as an industrial center while growing other sectors of employment. Healthcare and social services, retail trade, and government were the highest employing sectors for Roanoke County as of 2020. Recently the County has seen significant growth in the healthcare and technology sectors and this growth is expected to continue.

The Strategic Plan will serve to guide the Roanoke County Economic Development Department to harness current trends and take advantage of opportunities. As Roanoke County recovers from the unprecedented impacts of the COVID-19 pandemic, the County will face distinct challenges concerning

talent attraction and retention, future land development, and business climate. Understanding Roanoke County's current conditions, recurring trends, community assets, and economic potential is key to establishing effective strategies to address such challenges.

Methods and Approach

The strategic plan will include strategic recommendations to enhance Roanoke County's business climate, advance the economic health and recovery of the County, and support economic vitality consistent with the County's character and strengths. To guide these recommendations, CECE completed secondary and primary data collection, using proprietary and publicly available sources for economic, demographic, industry, and labor market quantitative data tasks to understand the economic trends and complex conditions of the County. CECE also collected qualitative input from stakeholder focus group sessions, key informant interviews, and community survey instruments. Using this collection of quantitative and qualitative data, the project team completed a thorough analysis and synthesis of the locality's economic base, business climate, and its current, emerging, and potential industry clusters.

Furthermore, CECE completed a Strengths/ Weaknesses/Opportunities/Threats (SWOT) analysis using recurring themes and concerns from the data collection, community engagement, and economic analysis. As an iterative process, results from the SWOT analysis and other features of the Strategic Plan will be shared with the County. CECE plans to assist the County in conducting additional public engagement to further revise results and subsequent recommendations as needed.

The sections that follow provide an overview of Roanoke County's demographic and economic characteristics and trends, discuss the results of the SWOT analysis, summarize stakeholder and community input, and identify and prioritize strategic directions and potential future recommendations.

Roanoke County Demographic and Economic Profile

This report reveals important trends in Roanoke County as well as its neighboring cities and counties. It is important to understand the current demographics of the County and how they are changing to understand Roanoke County's economic position. Traditional economic metrics such as employment, and gross regional product offer core metrics of the County's economic health. They indicate whether the County is creating new wealth and opportunity, however, they do not capture all factors, such as quality of jobs and equitable distribution of investment. The modern economy is driven by education; thus, education is a determinant of future success for individuals.[1] Understanding Roanoke County's educational reputation and opportunities that are available feeds into the likelihood of the County having a skilled workforce and the ability to attract and train new workers.

Industry composition indicators reveal a mix of industries, both public and private, in the community. In general, diverse economies are more resilient to shocks, such as economic downturns or the current pandemic. The Roanoke County Demographic and Economic Overview reports on these measures along with business climate characteristics to reveal industry clusters and target areas for future economic growth. Small business establishments account for the majority of new job creation and offering pathways to wealth creation for families. This report distinguishes between the needs of traditional brick-and-mortar small businesses and new technology-based startups.

The availability of housing plays a critical role in determining the County's overall quality of life. This report analyzes housing, as it relates to affordability and availability, in Roanoke County, as well as other cost of living factors. Counties with limited housing and high costs of living may find it difficult to attract and retain talent, especially young professionals and young families. A higher cost of living disproportionately affects lower-income families and may create socioeconomic hurdles for public sector and service workers, including teachers, nurses, hospitality workers, prominent positions in Roanoke County.

The County has seen success in promoting and developing outdoor activities and recreational amenities. These have both improved the quality of life for County residents and attracted out-of-region visitors, who spend money locally and bask in the communities' placemaking. They are important for their own sake and for the economic health and vitality of the County and its surrounding areas. Additionally, the availability of retail, arts, entertainment, and restaurants contributes to the County's quality of life and attracts outside visitor dollars, which creates wealth within the area. The overview is completed with poverty, inclusion and social mobility data. Research suggests that helping residents fulfill their potential and attracting new businesses and residents alike helps equitable communities grow more quickly. A truly successful economy provides equal access to opportunity for all residents.

[1] Berger N. and P. Fisher, "A Well-Educated Workforce Is Key to State Prosperity," *Economic Policy Institute,* Aug. 2013 [Online]. Available at: https://www.epi.org/publication/states-education-productivity-growth-foundations/

I. Demographic Summary

Contrary to the Southwest Virginia trend of population decrease and stagnation, the Roanoke County population is growing and expected to continue to expand. However, the County population is continuing to age, with decreases in younger population cohorts. Employers lack the younger workforce needed to fill and replace positions left vacant after older generations retire.

1. Population Changes

There were 94,495 people living in Roanoke County in 2020. Unlike most other localities in the greater Southwest Virginia region, Roanoke County's population has increased in the last decade (2.3%) albeit at a slower rate than the state (7.2%) and the nation (6.9%). County population is expected to grow in the future, with an increase of 1.3% by 2030 predicted by ESRI projections. The greater Roanoke MSA is also expected to grow by 2% by 2030, at a greater rate than other Southwest Virginia MSAs with the exception of the Blacksburg-Christiansburg MSA.

2. Population by Race

The County has a majority white population (85.8%), with Black or African Americans accounting for 5.9%, and Hispanic or Latino (of any race) and Asian making up 3.1% each. Roanoke County is getting slightly more diverse overtime, but absolute minority populations are still smaller as compared to white.

3. Population by Age

The County's population is also aging, with an observed increase of 32% in the population cohort over 65 years of age over the last decade. Meanwhile, the population cohort of ages 40 to 64 decreased by 13% in the last decade and is expected to decrease by another 5% in the next 10 years. This trend is not unique to Roanoke County: other Southwest Virginia and more rural areas are facing similar aging populations. For more detailed information and additional graphs, see Appendix I.

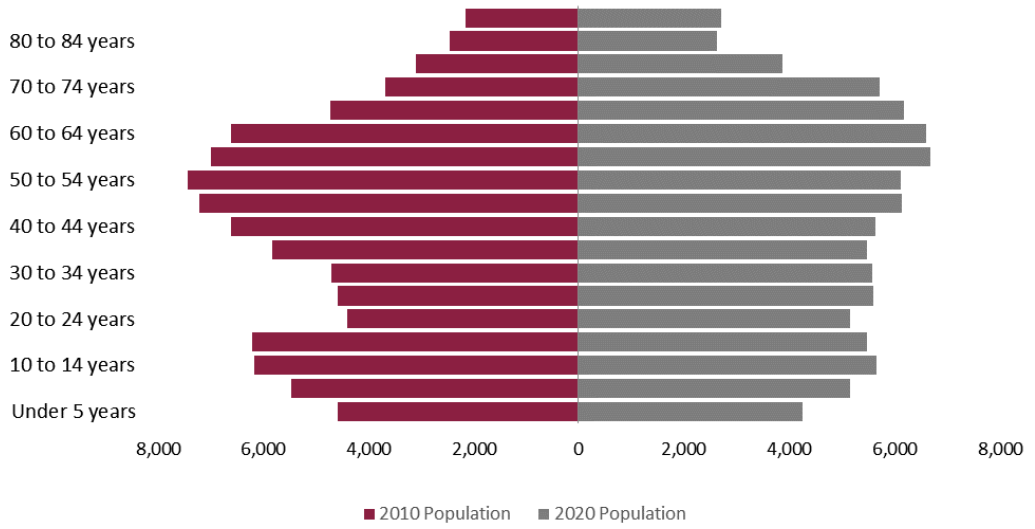


Figure 1: Roanoke County Population Change by Age, 2010-2020
Source: EMSI Developer 2021.1 Datarun

II. Education and Workforce

Roanoke County is generally more educated than the state and the nation. Particularly, educational attainment among populations below poverty level is significantly higher. This is likely due to the proximity of the County to a variety of postsecondary and professional education institutions such as Virginia Western Community College, Radford University – Carillion, and others. Health services and related programs had the highest number of completions, which aligns with the presence of large medical and health-related industries within the County. There is also a gap in program completions as compared to job openings in the Business, Management, and Related Support Services pathway. Aging population and retaining youth populations could be an obstacle to enrollment in such programs and subsequent filling of those positions.

1. Education Attainment

Overall educational attainment for the County is higher than the state of Virginia for all segments with the exception of graduate and professional degrees. In 2019, 22.8% of Roanoke County residents had a bachelor's degree (3.0% above the national average), and 31.8% had an associate's degree (2.9% above the national average). Particularly, minority populations in the County had higher high school diploma rates compared to the U.S. averages in 2019. Roanoke County does not appear to have a sizeable gender gap in educational attainment. However, census data showed that a smaller portion of the Roanoke County female population had completed high school compared to their male counterparts, contradictory to national educational trends.

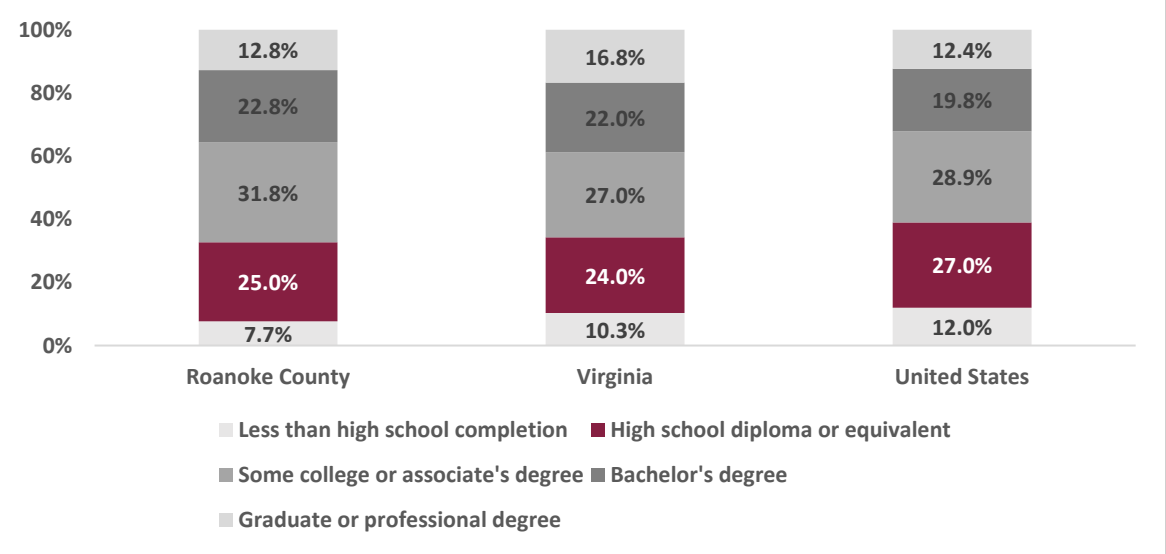


Figure 22: Education Attainment of 25 years and over, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

Additionally, more than a third (33.5%) of the population below poverty level attained some college education and/or attained an associate' degrees in 2019. This contrasts with the in-poverty population for the state and nation who have high school graduates accounting for the greatest proportion (33.5% and 33.8% respectively).

2. Continuing Education and Workforce Pipeline

In the 2019-2020 graduate year, most high school graduates reported that they plan to attend a four-year (45.2%) or two-year college (33.5%). A higher percentage of graduates in the County chose to attend a two-year college compared to the state average of 25.2%. About 15% of students had plans to directly enter the workforce.

Health professions and related programs had the greatest postsecondary program completions (993) for the Roanoke County, City of Roanoke, and City of Salem region. These degrees offer a wide variety of careers in nursing, the medical/clinical field, business administration and management, and biological and physical sciences. Program career pathways reported having high annual openings (3,732) and strong projected job changes in the next ten years (6.2%).[2] Additionally, the Business, Management, Marketing, and Related Support Services pathway had a very large number of job openings in the County compared to the number of completions for the program. This indicates unfilled demand by employers in this field.

Virginia Western Community College produced the greatest amount of program completions (1,210 individuals) within the Roanoke County, Roanoke City, and Salem City region. However, Radford University-Carilion saw the greatest amount of growth (32%) in its number of completions, an increase of 133 completers between 2013-2019.

The County's median incomes of high school graduates and some college and associate graduates are slightly higher than state and national averages, while incomes of those with a bachelor's degree or higher are lower. This may reflect the County's job market which may not be able to incentivize workforce participants who have higher educational attainments to remain or relocate to the County.

1. Labor Force

Labor force participation has fallen at the County, state, and national level. Roanoke County's labor force participation rate decreased from 67.3% in 2010 to 61.3% in 2019. This is likely related to the aging population trend and the increase in the over-65 population. A large portion of labor force participants in Roanoke County also tend to be older, with 48.1% being over the age of 45. There is also a smaller population aged 20 to 34 years, representing 20.7% of labor force participants. This is comparable to trends for the state and nation as well.

For more information, please see Appendix II.

[2] EMSI. Datarun 2021.1 Industry Table.

III. Income, Poverty, and Social Mobility

Overall, Roanoke County has higher incomes and a smaller disparity gap between high- and low-income households. The poverty rate is lower than both the state and national rates. Social mobility is also higher for the County. These are strong positive indicators for the County.

1. Income

Roanoke County's median household income was $71,715 in 2019, a real-dollar increase of 16.0% since 2016. The average household income was $21,495 higher, at $93,210, which is more similar to U.S. average household income. Per capita income in Roanoke County has also grown, with a gradual real-dollar increase of 17.5% since 2015. In 2019, per capita income was $38,803.

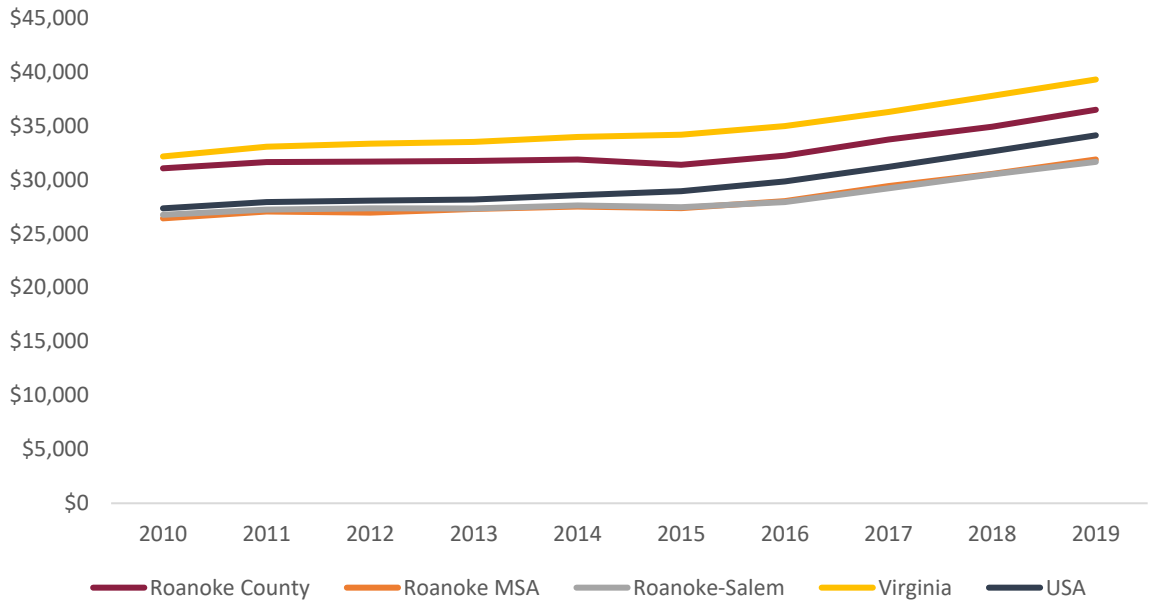


Figure 3: Inflation-Adjusted Per Capita Income in Roanoke County and Other Geographies, 2010-2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

The County has experienced relatively steady real-dollar increases in its most recent five years to the point of surpassing the state's growth rate in average household income and per capita income. When comparing the County's income increases with 133 other Virginian cities and counties, Roanoke County placed 74th in median household income, with a growth rate of 16.0% in the last five years. The average household income was ranked higher at 54th place with a 19.0% increase, and per capita income had placed 61st, with a 17.5% increase.

Overall, data suggests that Roanoke County has a narrower gap between high-income and low-income households. Increases in size and productivity of the workforce increase incomes, but only strong productivity growth can increase per capita GDP and income.

2. Poverty

Roanoke County had a poverty rate of 6.9% between 2015-2018. This is a lower population compared to both state and national figures for the same time period.

3. Social Mobility

The County shows a slightly higher social mobility rate. Data from Opportunity Atlas showed children's income outcomes in adulthood using anonymized American Community Survey data overlaid on Census tracts. By the time they are in their mid-30s, 10% of children who grew up in Roanoke County have an average household income in the top 20% of the national income distribution for children born in the same year. Over 30% of children have an average income in the top 1% of the nation.

For more details, please see Appendix III.

IV. Employment and Industry

1. Employment Change

Roanoke County employment has increased by 9% in the past decade with a 2,963 net-increase in jobs. Roanoke County housed 37,247 jobs at the end of 2020, however, employment fluctuated greatly during the Coronavirus Pandemic. The largest job loss was seen between the months of March and April, where employment decreased by 4,200 jobs. Since then, 3,184 jobs have been regained and the County is expected to recover to its 2019 pre-pandemic employment by mid-2022.

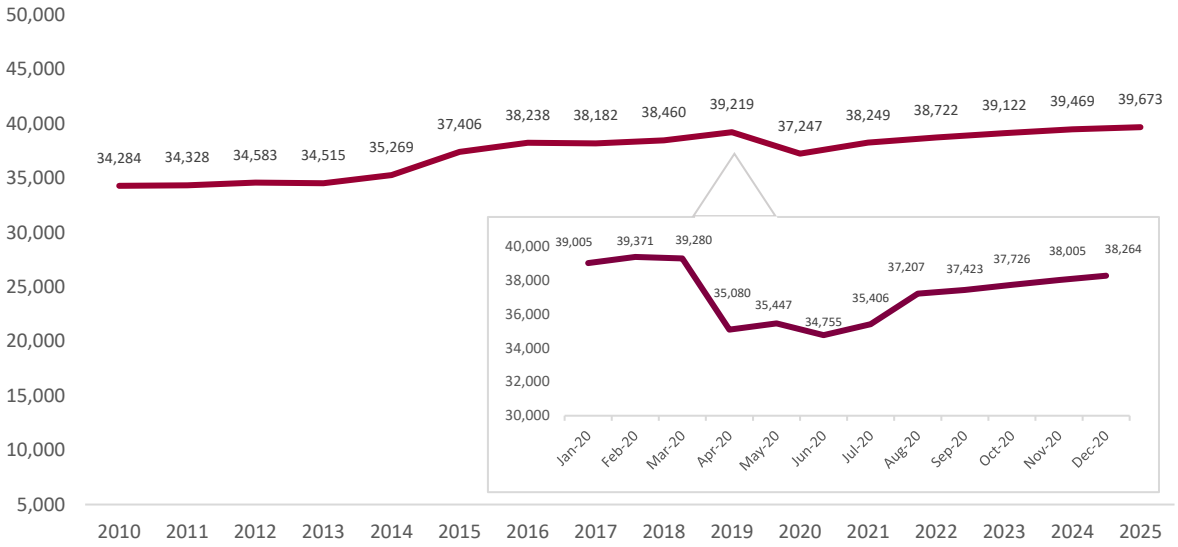


Figure 4: Employment Change in Roanoke County, 2010–2025
Source: EMSI Developer 2021.2 Datarun

2. Unemployment Rate

In general, unemployment in Roanoke County trends lower than that of the state and nation over the past decade. In 2019, the County's unemployment rate was 3.2%, while the state and nation rates were 4.6% and 5.3% respectively. Similarly, during the 2020 Coronavirus Pandemic, Roanoke County experienced 5.1% unemployment, while the state and nation rates were 6.2% and 8.1%. A greater look at Roanoke County's unemployment fluctuation during the year 2020 reveals that the greatest unemployment was had during the initial wave of lockdown, in the month of April with a rate of 9.8%. Since then, jobs have been slowly recovering resulting in an unemployment rate of 4.6% for the month of December.

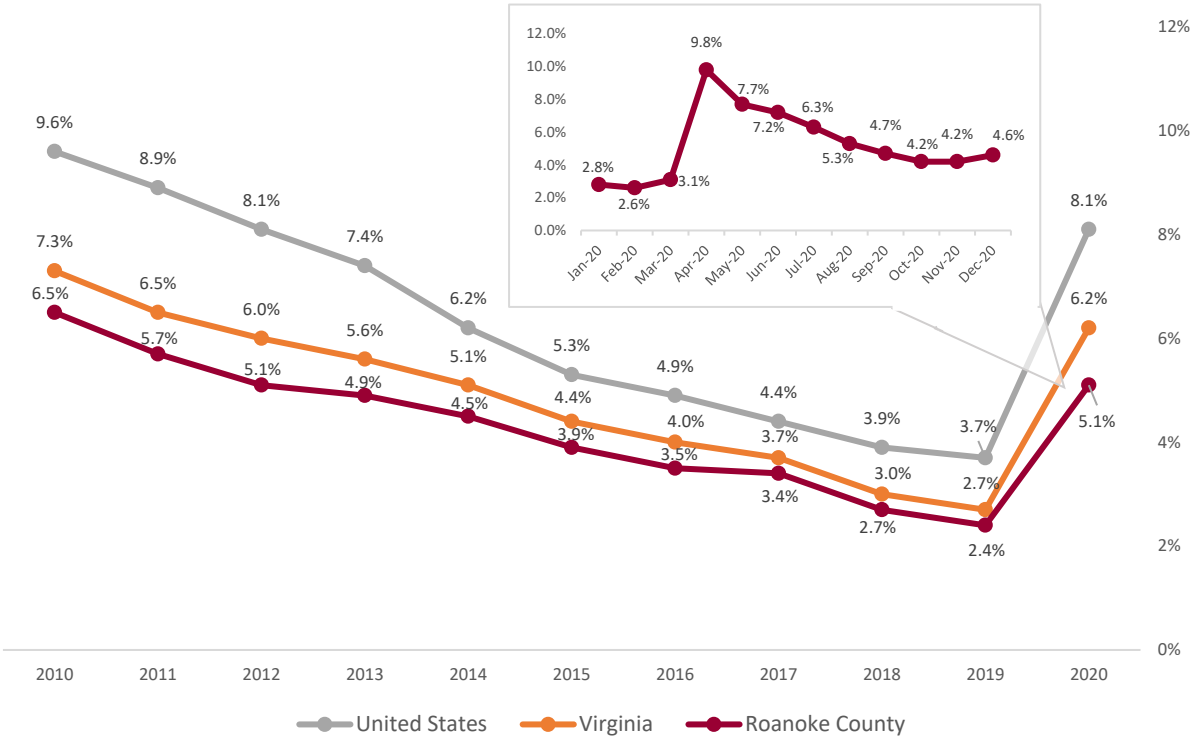


Figure 5: Unemployment Rate, 2010–2019

Source: U.S. Census Bureau, American Community Survey 5-year estimates

V. Employment

1. Industry

i. Industries by Employment

Health care and social assistance is the top industry by employment in Roanoke County (6,866 jobs) and the greater Roanoke Region (24,259 jobs) in 2020. The County saw greater health care industry growth (37%) over the last decade compared to its larger regional counterpart (12%). Retail trade and government are the second and third most employed industries in the County and greater Roanoke Region. While the size of employment is relatively small compared to the top industries, jobs in transportation and warehousing have increased by 85% between 2010-2020 in Roanoke County. Similarly, the greater Roanoke region saw jobs in transportation and warehousing, educational services, and arts, entertainment, and recreation have increases between 15%-17% for the same time period. Please see Appendix IV for an expanded table that details the top employing industries in Roanoke County and the greater Roanoke Region.

Table 1: Roanoke County Industry by Employment

NACIS	Description	2010 Jobs	2020 Jobs	Change	% Change
62	Health Care and Social Assistance	4,999	6,866	1,867	37%
44	Retail Trade	5,548	5,300	-248	-4%
90	Government	4,634	4,772	139	3%
54	Professional, Scientific, and Technical Services	3,904	4,688	785	20%
31	Manufacturing	2,863	3,879	1,016	35%

Source: EMSI Developer 2021.1 Datarun

Table 2: Roanoke Region Industry by Employment

NACIS	Description	2010 Jobs	2020 Jobs	Change	% Change
62	Health Care and Social Assistance	24,259	27,140	2,882	12%
90	Government	24,985	23,566	-1,418	-6%
44	Retail Trade	22,257	20,124	-2,133	-10%
31	Manufacturing	16,289	17,250	962	6%
72	Accommodation and Food Services	13,033	12,978	-55	0%

Source: EMSI Developer 2021.1 Datarun

ii. Employment Concentrated Industries

Management of companies and enterprises had the highest location quotient (LQ) as a sector for Roanoke County and the greater Roanoke Region. However professional, scientific, and technical services and manufacturing sectors had the greatest specialization amongst its national industries. The County's professional, scientific, and technical services sector contained the greatest specialization in the computer facilities management services industry (95.85). Alternatively, the greater Roanoke Region's manufacturing sector contained top industries with specializations ranging between 24.66-29.36 in 2020. The health care and social assistance sector has multiple subsectors that have high LQs in the County and greater Region, indicating a strong health care industry with diversified demands. Similarly, the wholesale trade and construction sectors have multiple subsectors that have high LQs in the greater Roanoke Region. Please see Appendix IV for an expanded table that details the top employment concentrated industries in Roanoke County and the greater Roanoke Region.

iii. Industries by GRP

Health care and social assistance and manufacturing industry sectors generated the largest gross regional product in the County ($847,407,407) and greater Roanoke Region ($4,154,621,821) in 2020. The third largest GRP contributor differed between the County and greater Roanoke Region. Professional, scientific, and technical services industry sector contributed $352,337,709 to Roanoke County's economy while the government industry sector contributed $1,795,948,926 to the greater Roanoke Region's economy. Table 3 and Table 4 illustrate the top GRP contributing industries in Roanoke County and the greater Roanoke Region.

Table 3: Roanoke County Industries by GRP, 2020

NAICS	Industry	2020 GRP
62	Health Care and Social Assistance	$453,453,807
31	Manufacturing	$393,953,600
54	Professional, Scientific, and Technical Services	$352,337,709
52	Finance and Insurance	$336,094,672
90	Government	$304,125,866
44	Retail Trade	$281,155,334
42	Wholesale Trade	$190,612,159
23	Construction	$170,855,311
55	Management of Companies and Enterprises	$158,196,212
22	Utilities	$144,873,988

Source: EMSI Developer 2021.1 Datarun

Table 4: Roanoke Region Industries by GRP, 2020

NAICS	Industry	2020 GRP
31	Manufacturing	$2,157,626,092
62	Health Care and Social Assistance	$1,996,995,729
90	Government	$1,795,948,926
52	Finance and Insurance	$1,253,782,393
42	Wholesale Trade	$1,240,085,103
44	Retail Trade	$1,090,455,005
23	Construction	$879,492,039
54	Professional, Scientific, and Technical Services	$874,982,945
48	Transportation and Warehousing	$629,991,234
56	Administrative and Support and Waste Management and Remediation Services	$507,790,166

Source: EMSI Developer 2021.1 Datarun

2. Occupation

i. Top 20 Occupations below $15 per Hour

Retail salespersons, fast food and counter workers, cashiers, and stockers and order fillers are the top four most employed jobs with median hourly earnings below $15.00 in both the Roanoke County and the greater Roanoke Region. Occupations with this rate of pay typically do not require a high level of education. No formal education or a high school diploma are required for the majority of occupations. Please see Appendix V for an expanded table that details the top 20 occupations in Roanoke County and the greater Roanoke Region.

Table 5: Roanoke County Top 10 Occupations Below $ 15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education
41-2031	Retail Salespersons	1,256	201	$12.46	None
35-3023	Fast Food and Counter Workers	1,103	207	$9.16	None
41-2011	Cashiers	1,093	197	$9.55	None
53-7065	Stockers and Order Fillers	906	121	$12.02	H.S diploma
31-1131	Nursing Assistants	901	110	$12.68	Postsecondary
31-1128	Home Health and Personal Care Aides	805	125	$10.39	H.S diploma
53-7062	Laborers/Freight, Stock, Material Movers	764	108	$13.35	None
37-2011	Janitors/Cleaners, Except Maids	698	103	$11.43	None
33-9032	Security Guards	577	91	$13.74	H.S diploma
35-3031	Waiters and Waitresses	544	115	$8.96	None

Source: EMSI Developer 2021.1 Datarun

Table 6: Roanoke Region Top 10 Occupations Below $15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education
41-2031	Retail Salespersons	5,060	854	$12.41	None
35-3023	Fast Food and Counter Workers	4,368	884	$9.32	None
53-7065	Stockers and Order Fillers	3,844	484	$12.12	H.S diploma
41-2011	Cashiers	3,392	709	$9.85	None
31-1131	Nursing Assistants	2,976	377	$12.80	Postsecondary
31-1128	Home Health and Personal Care Aides	2,849	461	$10.85	H.S diploma
53-7062	Laborers/ Freight, Stock, and Material	2,711	484	$13.27	None
37-2011	Janitors and Housekeeping Cleaners	2,704	409	$12.36	None
51-2098	Miscell. Assemblers and Fabricators	2,453	329	$14.80	H.S diploma
35-3031	Waiters and Waitresses	2,240	543	$8.98	None

Source: EMSI Developer 2021.1 Datarun

ii. Top 20 Occupations at or above $15 per Hour

Real estate sales agents account for the largest employment (1,009 jobs) in Roanoke County in 2020, followed by customer service representatives (908 jobs) and office clerks (879 jobs). Although many of the jobs with hourly earnings above $15 require bachelor's degrees or higher, the top three largest occupations in the County only require a H.S diploma. Alternatively, the greater Roanoke Region top employing occupation is registered nurses (4,529 jobs), followed by heavy tractor-trailer truck drivers (3,733 jobs) and real estate sales agents (3,601 jobs). The majority of occupations at or above $15 per hour in the region require a high school diploma or bachelor's degrees for typical entry-level education. Please see Appendix V for an expanded table that details the top 20 occupations in Roanoke County and the greater Roanoke Region.

Table 7: Roanoke County Top 10 Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education
41-9022	Real Estate Sales Agents	1,009	97	$23.62	H.S diploma
43-4051	Customer Service Representatives	908	122	$15.70	H.S diploma
43-9061	Office Clerks, General	879	119	$15.40	H.S diploma
53-3032	Heavy and Tractor-Trailer Truck Drivers	868	104	$20.38	Postsecondary
29-1141	Registered Nurses	806	72	$31.21	Bachelor's
41-3021	Insurance Sales Agents	567	77	$23.24	H.S diploma
43-3031	Bookkeeping, Accounting, and Auditing	526	67	$17.72	Some college
11-1021	General and Operations Managers	524	48	$41.28	Bachelor's
41-1011	First-Line Supervisors of Retail Sales	516	61	$18.12	H.S diploma
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	512	79	$16.73	H.S diploma

Source: EMSI Developer 2021.1 Datarun

Table 8: Roanoke Region Top 20 Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education
29-1141	Registered Nurses	4,529	337	$31.66	Bachelor's
53-3032	Heavy and Tractor-Trailer Truck Drivers	3,733	477	$20.77	Postsecondary
41-9022	Real Estate Sales Agents	3,601	356	$22.94	H.S dipoloma
43-4051	Customer Service Representatives	3,470	477	$16.15	H.S dipoloma
43-9061	Office Clerks, General	3,192	462	$15.52	H.S dipoloma
11-1021	General and Operations Managers	2,119	188	$40.96	Bachelor's
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	2,052	301	$16.86	H.S dipoloma
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2,010	265	$17.50	Some college
41-1011	First-Line Supervisors of Retail Sales Workers	1,958	241	$18.07	H.S dipoloma
41-3021	Insurance Sales Agents	1,802	247	$24.14	H.S dipoloma

Source: EMSI Developer 2021.1 Datarun

iii. Top In-Demand Occupations below $15 per Hour

The top in-demand occupations below $15 hourly earnings in Roanoke County and the greater Roanoke Region are retail salesperson, fast food and counter workers and cashiers. Considering that both fast food and counter workers and cashiers are already the second-largest employed jobs in the County and Region, it might imply high turnovers of these positions. Most of the in-demand occupations do not require any formal educational credentials or only a high school diploma. Please see Appendix V for an expanded table that details the top in-demand occupations below $15 per hour in Roanoke County and the greater Roanoke Region.

Table 9: Roanoke County Top In-Demand Occupations Below $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Avg. Annual Openings	Median Hourly Earnings	Entry-Level Education

35-3023	Fast Food and Counter Workers	1,103	137	14%	1,657	207	$9.16	None
41-2031	Retail Sales	1,256	-165	-12%	815	201	$12.46	None
41-2011	Cashiers	1,093	57	5%	1,051	197	$9.55	None
31-1128	Home Health and Personal Care	805	121	18%	665	125	$10.39	H.S diploma
53-7065	Stockers and Fillers	906	295	48%	586	121	$12.02	H.S diploma

Source: EMSI Developer 2021.1 Datarun

Table 10: Roanoke Region Top In-Demand Occupations Below $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Avg. Annual Openings	Median Hourly Earnings	Entry-Level Education
41-2031	Retail Salespersons	5,060	(743)	(13%)	3,687	854	$12.41	None
35-3023	Fast Food Workers	4,368	510	13%	6,795	884	$9.32	None
53-7065	Stockers and Order Fillers	3,844	930	32%	2,687	484	$12.12	H.S diploma
41-2011	Cashiers	3,392	(696)	(17%)	3,693	709	$9.85	None
31-1131	Nursing Assistants	2,976	347	13%	2,028	377	$12.80	Postsecondary

Source: EMSI Developer 2021.1 Datarun

iv. Top In-Demand Occupations at or above $15 per Hour

Customer service representatives is the top in-demand occupation with hourly earnings above $15 in Roanoke County, followed by office clerks. Both occupations are largely employed jobs in the County and Region, which may imply high turnovers rates of these positions. The top in-demand occupation in the greater Roanoke Region is concentrated in the industry of healthcare. The Region's emerging health care cluster has resulted in a demand for registered nursing positions. Similarly, transportation and warehousing continue to expand in the Region, especially from recent impacts from the Coronavirus pandemic, resulting in a surplus of truck driving positions, the second most in-demand occupation. The majority of in-demand jobs at or above $15 per hour require a H.S diploma for typical entry level education.

Table 111: Roanoke County Top in-demand Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Annual Openings	Median Hourly Earnings	Entry-Level Education
43-4051	Customer Service Rep.	908	85	10%	545	122	$15.70	H.S diploma
43-9061	Office Clerks	879	-176	17%	581	119	$15.40	H.S diploma
53-3032	Heavy and Tractor-Trailer Truck Drivers	868	239	38%	473	104	$20.38	Postsecond
41-9022	Real Estate Sales	1,009	69	7%	24	97	$23.62	H.S diploma
43-6014	Secretaries & Admin Assistants, Except Legal, Medical, and Executive	512	22	4%	269	79	$16.73	H.S diploma

Source: EMSI Developer 2021.1 Datarun

Table 12: Roanoke Region Top In-Demand Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Annual Openings	Median Hourly Earnings	Entry-Level Education
29-1141	Registered Nurses	4,529	229	5%	1,103	337	$31.66	Bachelor's
53-3032	Heavy and Tractor-Trailer Truck Drivers	3,733	631	20%	1,833	477	$20.77	Postsecond
41-9022	Real Estate Sales Agents	3,601	287	9%	88	356	$22.94	H.S diploma
43-4051	Customer Service Representatives	3,470	333	11%	2,081	477	$16.15	H.S diploma
43-9061	Office Clerks, General	3,192	(1,284)	(29%)	2,023	462	$15.52	H.S diploma

Source: EMSI Developer 2021.1 Datarun

VI. Industry Clusters

Clusters are not bound by political jurisdictions, whether that be an individual County or group of counties. Rather, clusters are defined by economic activity or related industries across regions. CECE used clusters identified by the two leading economic development entities in the Greater Roanoke Region (the Roanoke Regional Partnership and GO Virginia Region 2) to better understand the County's role in the regional economy. CECE analyzed 18 unique clusters and their 162 component industry groups in both the County and Region, paying special attention to regional clusters in which Roanoke County played a larger than average role. More specifically, CECE evaluated regional clusters on the basis of employment change, location quotient, contribution to the County's GRP, and shift share. A description of each of these indicators can be found in Appendix X.

Nine clusters were identified at the culmination of this process: six existing clusters and three emerging clusters. CECE classified existing clusters as those with more longstanding specialization in the County. Existing clusters included business and financial services, information technology and telecommunications, construction services, transportation, warehousing, and logistics, hospitality and tourism, and retail and restaurants. Emerging clusters were identified as areas of more recent growth and specialization. Emerging clusters included forest and wood products, advanced material manufacturing, and healthcare.

1. Existing Industry Clusters

Existing clusters are the largest, most established clusters in a regional economy. These clusters tend to be the economic engines of their respective regions and play a crucial role in driving job creation and investment. Table 13 details the six existing clusters identified by CECE.

Table 13: Existing Industry Clusters of Roanoke County

Cluster	2010 Jobs	2020 Jobs	2010-2020 Change	2010-2020 % Change	2020 LQ	2020 GRP
Business and Financial Services	13,230	13,600	370	3%	1.05	$1,062,959,338
IT and Telecommunications	1,836	2,218	382	21%	2.56	$241,719,095
Construction Services	2,484	2,862	378	15%	0.79	$316,081,397
Trans., Warehousing, & Logistics	1,690	2,644	730	38%	2.26	$213,399,806
Hospitality and Tourism	1,347	1,282	-65	-1%	0.85	$39,057,285
Retail and Restaurants	8,127	8,372	244	3%	0.99	$380,507,636

The following sections will detail important trends related to each of these clusters. Please note that this analysis excludes industries with less than 10 employees due to data limitations.

i. Business and Financial Services

The business and financial services cluster includes industries engaged in finance and insurance, real estate, professional, scientific, and technical services, and management of companies. This cluster largely employs sales and customer service specialists, business specialists, and other financial and business occupations. The business and financial services cluster is by far the most dynamic and productive cluster in Roanoke County.

The County's business and financial services cluster plays a considerable role in the greater Roanoke Region. For instance, Roanoke County's business and financial cluster accounted for 34% of regional

cluster employment in 2020. This cluster benefits from a strong and diverse workforce pipeline, ability to connect to high-speed broadband infrastructure, access to an international airport, and more. The regional and national business and financial services cluster saw growth over the past decade (2010-2020), although the recent Coronavirus pandemic could slow or reverse these trends. National market trend research forecasts a wave of credit delinquencies and other financial backlash from the pandemic, which business and financial institutions may curb somewhat through increase technological efficiencies.

a. Employment

There were approximately 13,600 workers employed across the business and financial services cluster in 2020. The management of companies and enterprises subcluster accounted for the largest share of cluster employment (30%). Overall, this cluster saw 3% employment growth since 2010. The professional, scientific, and technical services subcluster accounted for the vast majority of this growth, adding 759 jobs during this period. Table 14 details employment trends for the business and financial services cluster. Please consult Appendix VI in this document for industry-level data.

Table 14: Employment Change, Business and Financial Services Cluster, Roanoke County, 2010-2020

	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Business and Financial Services Cluster	**13,230**	**12,793**	**13,600**	**370**	**3%**	**100%**
Finance and Insurance	3,407	4,989	3,111	-296	9%	23%
Real Estate and Rental and Leasing	1,628	1,865	1,742	113	7%	13%
Professional, Sci., Tech. Services	3,903	3,083	4,661	759	19%	34%
Management of Companies and Enterprises	4,291	2,856	4,084	-208	-5%	30%

Workforce supply for these jobs is higher in this Region than the national average, indicating a strong educational pipeline. Top educational programs contributing graduates to this workforce supply are business administration and management, business/commerce, accounting, and information science degrees.

b. Location Quotient and Gross Regional Product

The business and financial services cluster generated $1.06 billion in 2020; this accounted for 29% of the County's combined GRP for the same year. The professional, scientific, and technical services subcluster contributed the largest amount (33.2%) of the total cluster's GRP for 2020. However, the finance and insurance subcluster was the second highest contributor (31.8%) with $337,649,561. The business and financial services cluster had an LQ of 1.05 in 2020, which indicates that the County concentration of employment in this cluster was typical of that of all regions of the nation. The finance and insurance subcluster led the larger cluster in LQ (1.40) for 2020. Table 15 details GRP and LQ for each business and financial services subcluster. Please consult Appendix VI of this document for industry-level data.

Table 15: LQ & GRP, Business and Financial Services Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Business and Financial Services Cluster	**$1,062,959,338**		**1.05**
Finance and Insurance	$337,649,561	31.8%	1.40
Real Estate and Rental and Leasing	$74,841,573	7.0%	0.95

Professional, Sci., Tech. Services	$352,318,075	33.2%	0.98
Management of Companies and Enterprises	$298,150,131	28.1%	0.90

c. Shift Share

Please consult Appendix X for a detailed explanation of Shift Share. The business and financial services cluster yield a negative competitive effect value for 2010-2020; this suggests the regional cluster is underperforming the national cluster with respect to job creation. It is important to note that the largest contributor to underperformance was the management of companies and enterprises subcluster and finance and insurance subcluster. These two subclusters have a combined competitive effect of -2,053. Additionally, the remaining subclusters were largely not competitive during this period. Table 16 details shift share for business and financial services subclusters. Please consult Appendix VI in this document for industry-level data.

Table 16: Shift Share, Business and Financial Services Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Business and Financial Services Cluster	**1,897**	**1,411**	**3,309**	**370**	**-2,939**
Finance and Insurance	489	137	626	296	-920
Real Estate and Rental and Leasing	235	232	466	113	-352
Professional, Sci., Tech. Services	560	733	1,293	759	-536
Management of Companies and Enterprises	614	310	924	-208	-1133

ii. Information Technology and Telecommunications

The information technology and telecommunications cluster is comprised of manufacturing, information, construction and professional, scientific, and technical services industry sectors. The information technology and telecommunications cluster largely employs sales and customer service specialists, IT and business specialists, and those with financial expertise This cluster employed 2,218 individuals in 2020 and contributed $241 million to the County's total GRP. The County bares considerable competitiveness in most of its industry groups which suggest opportunities for further development along its existing assets. In terms of County assets, the information technology and telecommuting cluster benefits from a strong talented workforce, access to high-speed broadband, proximity to an international airport, and other modern technological and live-work-play amenities. Likewise, the effects of the Coronavirus pandemic may slow the growth of this cluster in the near future (1-3 years).

a. Employment

Approximately 2,218 workers were employed across the information technology, telecommunications, and power transmission cluster (henceforth known as the IT cluster) in 2020. This cluster experienced 21% growth from 2010-2020; 382 jobs were created. The power generation and distribution subcluster was largely responsible for this growth. Alternatively, negative employment change in the information technology subcluster offset much of this growth. Table 17 details employment

change for the IT cluster. Please consult Appendix VI for industry-level data.

Table 17: Employment Change, IT and Telecommunications Cluster, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
IT and Telecommunications	**1,836**	**1,612**	**2,218**	**382**	**21%**	**100%**
Power Generation and Distribution	528	585	949	421	80%	29%
Electric Component Manufacturing	784	706	1016	89	11%	43%
Information Technology	466	251	211	-255	-55%	25%
Research and Development Services	48	77	39	-9	-19%	2%

The existing information technology and telecommunications cluster largely employs electricians, HVAC mechanics and installers, plumbers, and miscellaneous assemblers and fabricators. Information technology occupations account for a small portion of cluster jobs. Low education and experience requirements make these jobs easily attainable, however, moderate to long term training is required to obtain competency in each occupation. Wages for many of these positions are competitive with occupations requiring similar credentials in the greater Roanoke Region.

b. Location Quotient and Gross Regional Product

The IT cluster had an LQ of 2.56 in 2020; the County's concentration of employment in this cluster was greater than that of the average for all regions in the US. Electronic component manufacturing was a particular area of specialization within the IT cluster; remaining subclusters exhibited less specialization. The IT cluster generated $241.7 million in GRP in 2020, which accounted for 6.7% of the County's total GRP for the same year. The power generation and distribution and information technology subclusters supplied a nearly identical (29%) portion of the larger cluster's GRP in 2020. Table 18 details LQ and GRP values for the County IT cluster. Please consult Appendix VI for industry-level data.

Table 18: LQ & GRP, IT and Telecommunications Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Information Technology and Telecommunications	**$241,719,095**		**2.56**
Power Generation and Distribution	$69,807,966	28.9%	1.36
Electric Component Manufacturing	$100,470,475	41.6%	3.43
Information Technology	$69,996,146	29.0%	1.29
Research and Development Services	$1,444,508	0.01%	0.18

c. Shift Share

Recent employment growth in the power generation and distribution subcluster buoyed competitiveness for the larger IT cluster. The remaining IT subclusters saw varying degrees of mid to low competitiveness. Table 19 details shift share values for the IT cluster. Please consult Appendix VI for industry-level data.

Table 19: Shift Share, IT and Telecommunications Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect

IT and Telecommunications	263	1,115	148	382	234
Power Generation and Distribution	76	100	175	421	246
Electric Component Manufacturing	113	-77	36	89	194
Information Technology	67	-143	-76	-265	-185
Research and Development Services	7	5	12	-9	-21

iii. Construction Services

The construction cluster contains industries vested in roadway, utility, commercial, and residential construction as well as the suppliers of construction products.

a. Employment

Approximately 2,862 workers were employed within the County construction cluster in 2020. The specialty trade subcluster accounted for the largest share of cluster employment (69%). Overall, this cluster saw 17% employment growth since 2010. The heavy and civil engineering subcluster accounted for 55% of cluster growth, or 68 jobs during this period. Two of the four construction subclusters saw stagnant or little growth in employment during this period; utilities and residential and nonresidential contractors. Table 20 details employment trends for the construction cluster. Please consult Appendix VI in this document for industry-level data.

Table 20: Employment Change, Construction Services Cluster, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Construction Services	**2,484**	**2,385**	**2,862**	**378**	**15%**	**100%**
Utilities	212	201	207	-5	-2%	9%
Residential and Nonresidential Contractors	435	239	449	13	-3%	18%
Heavy and Civil Engineering	124	425	192	68	55%	5%
Specialty Trade	1,710	1,509	1,995	285	17%	69%

b. Location Quotient and Gross Regional Product

The construction cluster had a LQ of 0.79, which indicates that employment in the County cluster was less concentrated compared to the average of all areas in the nation. The utilities subcluster led the larger cluster in specialization during this year (1.08). The construction cluster generated $316 million in 2020, which accounted for nearly 8.7% of the region's total GRP during the same year. The utilities and specialty trade subclusters accounted for more than three quarters of the construction cluster's GRP in 2020. Table 21 details LQ and GRP values for the construction subclusters. Please consult Appendix VI for industry-level data.

Table 21: LQ & GRP, Construction Services Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Construction Services	**$316,081,397**		**0.79**
Utilities	$142,520,056	45.1%	1.08
Residential and Nonresidential Contractors	$27,712,007	8.8%	0.64
Heavy and Civil Engineering	$20,948,177	6.6%	0.63
Specialty Trade	$124,901,158	39.5%	0.83

c. Shift Share

Continued employment decline across the construction cluster spelled for a sharply negative competitive effect value. None of the four County construction subclusters were competitive with respect to employment change over the past decade. Table 22 details shift share values for the construction cluster. Please consult Appendix VI for industry-level data.

Table 22: Shift Share, Construction Services Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Construction Services	**238**	**28**	**268**	**395**	**-367**
Utilities	28	-16	4	118	-11
Residential and Nonresidential Contractors	42	40	82	-78	-87
Heavy and Civil Engineering	11	-5	8	-24	5
Specialty Trade	165	9	174	379	-274

iv. Transportation, Warehousing, and Logistics Cluster

The transportation equipment manufacturing cluster includes industries vested in the creation of raw metals, automotive and aircraft parts or components, and wholesalers.

a. Employment

There were 2,644 workers employed across the transportation, warehousing, and logistics cluster in 2020. This cluster saw 38% employment growth from 2010-2020; 730 jobs were added. The courier and messengers subcluster led this cluster in job creation and saw tremendous employment growth over the past decade. As detailed in Table 23, several industries within these subclusters saw growth between 2010-2020. Please consult Appendix VI for industry level-data.

Table 23: Employment Change, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Transportation, Warehousing, and Logistics	**1,690**	**1,914**	**2,644**	**730**	**38%**	**100%**
Computer and Electronic Product Manufacturing	<10	24	111	87	4350%	4%
Wholesale Trade	561	659	695	134	24%	26%
Transportation and Warehousing	833	846	1,023	176	23%	39%
Couriers and Messengers	285	384	816	431	186%	31%

b. Location Quotient and Gross Regional Product

The transportation, warehousing, and logistics cluster had an LQ value of 2.26 in 2020, which is indicative of a high degree of regional specialization. The computer and electronic product manufacturing subcluster led the cluster with respect to LQ (4.89 in 2020). The transportation and warehousing cluster was also an area of considerable regional specialization (2.35 in 2020). The transportation, warehousing, and logistics cluster generated $213.3 million in 2020, which accounted for

5.6% of the County's total GRP for the same year. The wholesale trade subcluster supplied the largest portion of the cluster's GRP (40%). Table 24 details LQ and GRP values for the transportation, warehousing, and logistics cluster.

Table 24: LQ & GRP, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Transportation, Warehousing, and Logistics	**$213,399,806**		**2.26**
Computer and Electronic Product Manufacturing	$7,003,514	3.3%	4.89
Wholesale Trade	$85,956,558	40.3%	1.89
Transportation and Warehousing	$82,174,447	38.5%	2.35
Couriers and Messengers	$38,265,287	17.3%	1.66

c. Shift Share

The transportation, warehousing, and logistics cluster yielded a positive competitive effect value for the past decade. This suggests that the regional cluster is growing at a faster rate compared to the national cluster. Recent growth and high specialization in the couriers and messengers subcluster greatly overperformed national industry growth trends. Moreover, increase in the competitiveness of the computer and electronic product manufacturing industries gave the County considerable edge. Table 25 details shift share values for the transportation, warehousing, and logistics cluster.

Table 25: Shift Share, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Transportation, Warehousing, and Logistics	**242**	**268**	**510**	**954**	**444**
Computer and Electronic Product Manufacturing	0	-1	-1	Insf. Data	109
Wholesale Trade	-12	81	68	134	67
Transportation and Warehousing	18	120	140	-97	41
Couriers and Messengers	261	41	303	531	228

v. Hospitality and Tourism

The hospitality and tourism industry cluster include industries engaged in live sporting events, travel accommodation services, and providing other amusement and recreation services.

a. Employment

Approximately 1,282 workers were employed across the hospitality and tourism cluster in 2020. This cluster experienced 5% decline (65 jobs) in employment from 2010-2020. The arts, entertainment, and recreation subcluster was the only subcluster in the larger hospitality and tourism cluster that saw slight employment growth. Alternatively, negative employment change in the sightseeing and miscellaneous store retailers, accommodation and food services, and travel arrangement/reservation, rental services subclusters offset much of the overall employment growth. Table 26 details employment trends for the hospitality and tourism cluster. Please consult Appendix VI in this document for industry-level data.

Table 26: Employment Change, Hospitality and Tourism Cluster, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Hospitality and Tourism	**1,347**	**1,163**	**1,282**	**-65**	**-5%**	**100%**
Sightseeing and Miscellaneous Store Retailers	235	192	167	-68	-29%	13.0%
Travel Arrangement/Reservation, Rental Services	97	75	80	-17	-18%	6.2%
Arts, Entertainment and Recreation	729	744	775	48	7%	6.0%
Accommodation and Food Services	287	252	259	-28	-10%	2.0%

b. Location Quotient and Gross Regional Product

The arts, entertainment, and recreation subcluster led the hospitality and tourism cluster in LQ in 2020. This industry group had an LQ of 1.24 during this year, indicating strong regional specialization. The remaining subclusters in this cluster fell short of LQ's meeting or exceeding 1.0. The arts, entertainment, and recreation subcluster accounted for the greatest contribution to the hospitality and tourism cluster's $39 million GRP, generating $16.5 million (43%) in 2020. Table 27 details location quotient and gross regional product for the hospitality and tourism cluster.

Table 27: LQ & GRP, Hospitality and Tourism Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Hospitality and Tourism	$39,057,285		0.85
Sightseeing and Miscellaneous Store Retailers	$6,482,690	16.6%	0.55
Travel Arrangement/Reservation, Rental Services	$7,331,286	18.8%	0.83
Arts, Entertainment and Recreation	$16,578,768	42.5%	1.24
Accommodation and Food Services	$8,664,541	22.2%	0.59

c. Shift Share

Roanoke County's hospitality and tourism cluster was expected to eliminate an estimated 21 jobs from 2010-2020, based on national economic performance and national industry-specific performance. Roanoke County's hospitality and tourism cluster underperformed this projection by 87 jobs, indicating that the industry is widely uncompetitive. The greatest amount of job loss was seen in the sightseeing and miscellaneous store retailers subcluster with 68 positions. Table 28 details shift share values for the local hospitality and tourism cluster.

Table 28: Shift Share, Hospitality and Tourism Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Hospitality and Tourism	**193**	**-172**	**21**	**-65**	**-87**
Sightseeing and Miscellaneous Store Retailers	34	-11	23	-68	-91
Travel Arrangement/Reservation, Rental Services	14	-33	-20	-17	2
Arts, Entertainment and Recreation	104	-88	17	48	30
Accommodation and Food Services	41	-40	1	-28	-29

vi. Retail and Restaurants

The retail and restaurants cluster include industries engaged in selling merchandise and providing food service to patrons. A total of 8,372 workers (20% of County employment) were employed in businesses belonging to this cluster in 2020. The retail and restaurants cluster is the second cluster by employment for the County and contributes over $10 million to the County's GRP.

a. Employment

Roanoke County's retail and restaurants cluster grew by 3% (244 jobs) from 2010-2020. The food, drink, and entertainment services subcluster was the greatest contributor to this growth with the addition of 459 jobs and 18% of jobs growth over the last decade. The retail establishments subcluster accounted for the majority of cluster employment, however, this subcluster experienced a great amount of job loss between 2010-2020, 4% or 235 jobs. Table 29 details employment trends for the retail and restaurants cluster. Please consult Appendix VI in this document for industry-level data.

Table 29: Employment Change, Retail and Restaurants, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Retail and Restaurants	**8,127**	**8,977**	**8,372**	**244**	**3%**	**100%**
Retail Establishments	5,551	6,044	5,316	-235	-4%	64%
Food, Drink and Entertainment Services	2,579	2,923	3,038	459	18%	36%

b. Location Quotient and Gross Regional Product

The retail and restaurants cluster had an LQ value of 0.99 in 2020, signifying that the County share is equal to the national share. The retail establishments subcluster led the cluster with respect to LQ (1.05 in 2020). The food, drink, and entertainment services subcluster was not an area of considerable regional specialization (2.35 in 2020). The retail and restaurants cluster generated $380.5 million in 2020, which accounted for 6.1% of the County's total GRP for the same year. The retail establishments subcluster supplied the largest portion of the cluster's GRP (77%). Table 30 details LQ and GRP values for the retail and restaurants cluster.

Table 30: LQ & GRP, Retail and Restaurants Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Retail and Restaurants	**$380,507,636**		**0.99**
Retail Establishments	$292,107,862	76.8%	1.05
Food, Drink and Entertainment Services	$88,399,776	23.2%	0.62

c. Shift Share

The retail and restaurants cluster yielded a negative competitive effect value for the past decade. This suggests that the regional cluster is underperforming compared to the national cluster. Despite recent growth and specialization in the food, drink, and entertainment services subcluster, the retail establishments subcluster offset these gains due to significant job loss. Table 31 details shift share values for the retail and restaurants cluster.

Table 31: Shift Share, Retail and Restaurants Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Retail and Restaurants	**1,166**	**-247**	**918**	**244**	**-674**
Retail Establishments	796	-275	520	216	-735
Food, Drink and Entertainment Services	369	28	398	459	61

2. Emerging Clusters

i. Healthcare

The healthcare cluster is composed of industries vested in healthcare, research, development, manufacturing, and provision of pharmaceutical and medical products, and other support industries, such as waste disposal. The emerging healthcare cluster largely employs nurses, manual labor, technicians, counselors, and pharmacists. The County's healthcare cluster has been an emerging industry cluster over the last decade. Approximately 6,784 workers were employed in businesses belonging to this cluster in 2020, which accounted for 16% of County employment. Nevertheless, new facilities have opened and continue to thrive in the County as part of the larger regional industry cluster. The success of these facilities and national growth trends may indicate an opportunity for growth, particularly with respect to residential and rehabilitation care.

a. Employment

There were approximately 6,731 workers employed across the healthcare cluster in 2020. The ambulatory health care services subcluster accounted for the largest share of cluster employment (41%). Overall, this cluster saw 35% employment growth since 2010. The hospitals subcluster accounted for the vast majority of this growth, adding 652 jobs during this period. Table 32 details employment trends for the healthcare cluster. Please consult Appendix VI in this document for industry-level data.

Table 32: Employment Change, Healthcare Cluster, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Healthcare	**4,999**	**6,813**	**6,731**	**809**	**35%**	**100%**
Ambulatory Health Care Services	2,185	2,588	2,757	572	26%	41%
Hospitals	16	882	978	652	4075%	15%
Nursing and Residential Care Facilities	1,923	1,847	1,929	6	0.3%	29%
Social Assistance	870	1,495	1,121	9	1%	17%

b. Location Quotient and Gross Regional Product

The healthcare cluster had an LQ of 1.62 in 2020; the County's concentration of employment in this cluster was greater than that of the average for all regions in the US. Social assistance was a particular area of specialization within the healthcare cluster; remaining subclusters exhibited similar specialization. The healthcare cluster generated $455.7 million in GRP in 2020, which accounted for 7.3% of the County's total GRP for the same year. The ambulatory health care services subcluster supplied the largest portion of the larger cluster's GRP in 2020 (48%). Table 33 details LQ and GRP values for the County healthcare cluster. Please consult Appendix VI for industry-level data.

Table 33: LQ & GRP, Healthcare Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Healthcare	**$455,739,830**		**1.62**
Ambulatory Health Care Services	$220,664,837	48.4%	1.06
Hospitals	$96,868,695	21.3%	1.87
Nursing and Residential Care Facilities	$94,985,078	20.8%	1.99
Social Assistance	$43,221,219	9.5%	2.06

c. Shift Share

The healthcare cluster yielded a sharply positive competitive effect value for the years between 2010-2020. This is indicative of high competitiveness; growth in the national cluster was reflected in the County cluster. The ambulatory health care services and hospitals subclusters saw significant County growth over the past decade, contributing to the larger regional success. Shift share analysis suggest that the remaining two healthcare subclusters were not competitive. Table 34 details shift share values for the healthcare cluster. Please consult Appendix VI for industry-level data.

Table 34: Shift Share, Healthcare Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Healthcare	**717**	**262**	**979**	**1,786**	**807**
Ambulatory Health Care Services	181	313	496	572	76
Hospitals	-1	2	1	652	957
Nursing and Residential Care Facilities	-206	276	71	6	-64
Social Assistance	287	125	412	9	-162

ii. Advanced Material Manufacturing

The advanced material manufacturing cluster includes industries vested in metal, glass, and plastic manufacturing as well as machine shops, R & D, and equipment manufacturing for communication and electrical components. The emerging advanced materials manufacturing cluster largely employs scientists, physicists, and engineers and related production chain positions. The County's advanced material manufacturing cluster has approximately 1,913 workers employed in businesses belonging to this cluster, which account for 4.3% of County employment. Nevertheless, new facilities have opened and continue to thrive in the County as part of the larger regional industry cluster. The success of these facilities and national growth trends may indicate an opportunity for growth.

a. Employment

There were 1,913 people employed across the advanced materials manufacturing cluster in 2020. Overall, this cluster saw moderate employment growth over the past decade; 477 jobs were added, marking 33% growth. The machinery and equipment manufacturing subcluster led the larger cluster in employment growth, contributing 388 jobs over the past decade. Both plastic and glass manufacturing and machinery and equipment manufacturing subclusters saw similar increases in job change (35%). Table 35 details employment change for the advanced materials manufacturing subcluster. Please consult Appendix VI for industry level-data.

Table 35: Employment Change, Advanced Material Manufacturing Cluster, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Advanced Material Manufacturing	**1,436**	**1,579**	**1,913**	**477**	**33%**	**100%**
Plastic and Glass Manufacturing	278	468	378	100	36%	10%
Machinery and Equipment Manufacturing	1,106	1,035	1,494	388	35%	78%
Research and Development Services	48	77	39	-9	-19%	2%

b. Location Quotient and Gross Regional Product

The advanced materials manufacturing cluster had an LQ of 5.75 in 2020, which indicates a high degree of regional specialization. The machinery and equipment manufacturing subcluster led the region in LQ for 2020 (6.70). The advanced materials manufacturing cluster generated a combined GRP of $199.8 million in 2020, which accounted for 3.2% of the region's total GRP during the same year. The machinery and equipment manufacturing subcluster supplied the largest portion of the larger cluster's GRP (78%). Table 36 details LQ and GRP values for the advanced materials manufacturing subcluster. Please consult Appendix VI for industry-level data.

Table 36: LQ & GRP, Advanced Materials Manufacturing Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Advanced Material Manufacturing	**$199,825,258**		**5.75**
Plastic and Glass Manufacturing	$42,987,343	21.5%	4.23
Machinery and Equipment Manufacturing	$155,393,409	77.8%	6.70
Research and Development Services	$1,444,508	0.01%	0.18

c. Shift Share

The advanced materials manufacturing subcluster yielded a positive competitive effect value for the past decade. This suggests that the cluster overperformed its national counterpart with respect to job creation. This high competitiveness was largely a result of sharp employment increase in the plastics and glass manufacturing subclusters. Alternatively, the research and development services subcluster was uncompetitive with respect to employment growth over the past decade. Table 37 details shift share values for the advanced materials manufacturing cluster. Please consult Appendix VI for industry-level data.

Table 37: Shift Share, Advanced Material Manufacturing Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Advanced Material Manufacturing	**206**	**-74**	**132**	**477**	**345**
Plastic and Glass Manufacturing	40	-6	34	100	67
Machinery and Equipment Manufacturing	159	-72	86	37	298
Research and Development Services	7	5	12	-9	-21

iii. Forest and Wood Products

The forest and wood products cluster include industries vested in wood or paper product manufacturing, and wood preservation. The cluster largely employs scientists, physicists, engineers and related production chain positions.

a. Employment

Approximately 798 workers were employed across the regional forest and wood products cluster in 2020. This cluster experienced a 67% increase in employment from 477 jobs in 2010 to 798 jobs in 2020. Job creation in the paper, pulp, and lumber manufacturing subcluster largely drove cluster growth during this period. Similarly, the paper manufacturing subcluster a small employment increase from 2010-2020. Table 38 details employment change for the forest and wood products cluster. Please consult Appendix VI for industry-level data.

Table 38: Employment Change, Forest and Wood Products Cluster, Roanoke County, 2010-2020

Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	% of Cluster Employment
Forest and Wood Products	**477**	**657**	**798**	**321**	**67%**	**100%**
Paper, Pulp, and Lumber Manufacturing	282	498	491	209	74%	62%
Paper Manufacturing	195	159	303	107	55%	38%

b. Location Quotient and Gross Regional Product

Roanoke County specialized in the forest and wood products cluster; this cluster had and LQ of 2.91 in 2020. Paper, pulp, and lumber manufacturing led the cluster in LQ for 2020. This subcluster supplied the largest portion of the cluster's GRP (56.6%) in 2020 by generating $40.8 million in GRP. Table 39 details LQ and GRP values for the forest and wood products cluster. Please consult Appendix VI for industry-level data.

Table 39: LQ & GRP, Forest and Wood Products Cluster, Roanoke County, 2010-2020

Description	2020 GRP		2020 LQ
Forest and Wood Products	**$72,168,373**		**2.91**
Paper, Pulp, and Lumber Manufacturing	$40,817,125	56.6%	3.32
Paper Manufacturing	$31,351,248	43.4%%	2.30

c. Shift Share

The forest and wood products cluster was an area of regional competitiveness with respect to job creation over the past decade. Considerable employment growth in the paper, pulp, and lumber manufacturing subcluster bolstered competitiveness for the larger cluster. Additionally, moderate competitiveness (124) was had among the paper manufacturing subcluster. Table 40 details shift share values for the forest and wood products cluster. Please consult Appendix VI for industry-level data.

Table 40: Shift Share, Forest and Wood Products Cluster, Roanoke County, 2010-2020

Description	Nat'l Growth Effect	Ind. Mix Effect	Expected Change	2010 - 2020 Change	Competitive Effect
Forest and Wood Products	**68**	**-57**	**11**	**321**	**310**
Paper, Pulp, and Lumber Manufacturing	40	-15	24	249	186
Paper Manufacturing	28	-42	-14	107	124

VII. Other Industry Clusters

Roanoke Valley-Alleghany Regional Comprehensive Development Strategy (CEDS) identified geographic concentrations of interrelated industries or occupations in the region. The industry cluster with the highest relative concentration in the RVARC CEDS is Wood/Paper with a location quotient of 2.57, followed by Textile/Leather, Electric/Electronics Manufacturing, Freight Transportation, and Metal & Product Manufacturing.

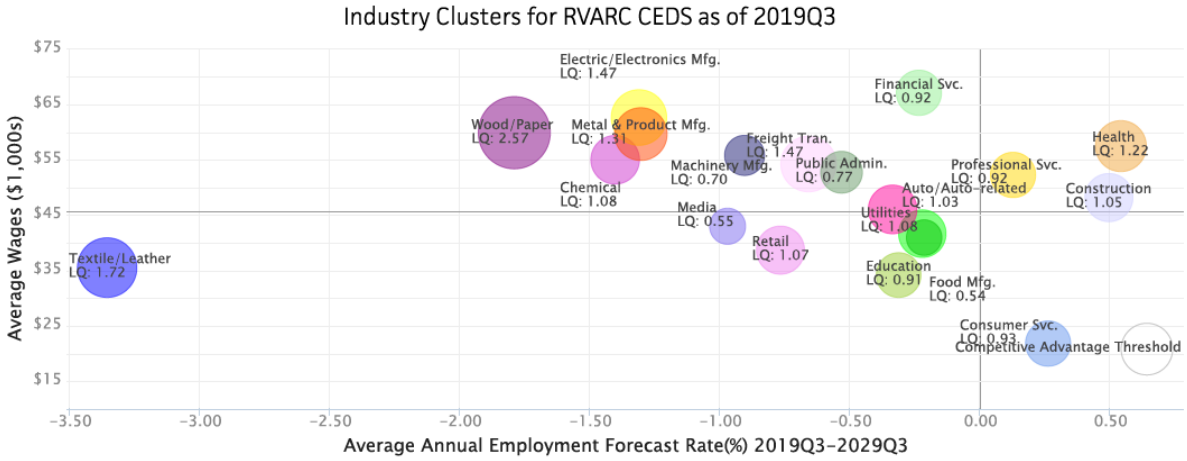


Figure 63: Industry Clusters Identified for RVARC CEDS in 2019. Q3

Source: Roanoke Valley-Alleghany Regional Comprehensive Economic Development Strategy (2020)

The tables below show the profiles of subsectors in each industry cluster. Among the five clusters with the highest employment concentration in the Roanoke Valley-Alleghany region, Wood/Paper and Metal & Product Manufacturing industries are expected to be competitive between 2010-2030.

Wood/Paper

In 2020, two subsectors in the wood and paper cluster contributed $73,744,602 in GRP to the local economy. The region is expected to see a substantial increase in employment and employment concentration in this cluster. Competitive effect illustrates that these expected job increases are not only the impact of a national trend in the industry, but the result of a unique competitive advantage in the region.

Table 41: Employment Change, LQ, and GRP in Wood/Paper Industry

NAICS	Description	2010 Jobs	2030 Jobs	2010 - 2030 Change	2010 - 2030 % Change	2010 LQ	2030 LQ	2020 GRP
321	Wood Product Manufacturing	281	500	219	78%	2.67	4.44	$41,937,367
322	Paper Manufacturing	195	370	175	89%	1.86	4.08	$31,807,235

Source: EMSI Developer 2021.1 Datarun

Table 42: Shift Share in Wood/Paper Industry

NAICS	Description	Industry Mix Effect	National Growth Effect	Expected Change	Competitive Effect
321	Wood Product Manufacturing	-47	75	28	191

322	Paper Manufacturing	-73	52	-21	196

Source: EMSI Developer 2021.1 Datarun

Textile/Leather

Despite the high location quotient, the textile and leather cluster is likely to have a downturn in the number of jobs available. Even though the national industry trend is expected to see gradual growth, it is not competitive in the RVARC region.

Table 432: Employment Change, LQ, and GRP in Textile/Leather Industry

NAICS	Description	2010 Jobs	2030 Jobs	2010 - 2030 Change	2010 - 2030 % Change	2010 LQ	2030 LQ	2020 GRP
313	Textile Mills	109	10	-98	-90%	3.29	0.41	$4,161,800
314	Textile Product Mills	<10	<10	No Data	No Data	0.26	0.04	$99,370
316	Leather and Allied Product Manufacturing	<10	<10	No Data	No Data	0.17	0.41	$190,563

Source: EMSI Developer 2021.1 Datarun

Table 443: Shift Share in Textile/Leather Industry

NAICS	Description	Industry Mix	National Growth	Expected	Competitive
313	Textile Mills	Effect -52	Effect 29	Change -23	Effect -75
314	Textile Product Mills	-3	2	-1	-7
316	Leather and Allied Product Manuf.	0	0	1	3

Source: EMSI Developer 2021.1 Datarun

Electric/Electronic Manufacturing

The electric and electronic manufacturing cluster is expected to gradually grow in employment and LQ in the Roanoke Valley-Alleghany region. These increases are likely from national industry growth trends.

Table 454: Employment Change, LQ, and GRP in Electric/Electronic Manufacturing Industry

NAICS	Description	2010 Jobs	2030 Jobs	2010 - 2030 Change	2010 - 2030 % Change	2010 LQ	2030 LQ	2020 GRP
335	Electrical Equipment, Appliance, and Component Manufacturing	205	287	81	40%	2.10	2.60	$25,334,099

Source: EMSI Developer 2021.1 Datarun

Table 46: Shift Share in Electric/Electronic Manufacturing Industry

NAICS	Description	Industry Mix Effect	National Growth Effect	Expected Change	Competitive Effect
335	Electrical Equipment, Appliance, and Component Manufacturing	-22	55	33	49

Source: EMSI Developer 2021.1 Datarun

Freight Transportation

The transportation subsectors are losing their competitiveness in the region despite national growth trends in the transportation industry, according to EMSI estimates. Particularly, the rail transportation sector is estimated to lose more than half of its jobs in 2010 by 2030.

Table 475: Employment Change, LQ, and GRP in Freight Transportation Industry

NAICS	Description	2010 Jobs	2030 Jobs	2010 - 2030 Change	2010 - 2030 % Change	2010 LQ	2030 LQ	2020 GRP
481	Air Transportation	<10	<10	No Data	No Data	0.05	0.06	$724,303
482	Rail Transportation	164	80	-83	-51%	2.81	1.46	$16,530,438
484	Truck Transportation	668	679	11	2%	1.33	1.03	$50,062,095

Source: EMSI Developer 2021.1 Datarun

Table 48: Shift Share in Freight Transportation Industry

NAICS	Description	Industry Mix Effect	National Growth Effect	Expected Change	Competitive Effect
481	Air Transportation	-0	2	1	1
482	Rail Transportation	-49	44	-5	-78
484	Truck Transportation	54	178	232	-221

Source: EMSI Developer 2021.1 Datarun

Metal & Product Manufacturing

Fabricated metal product manufacturing has the largest 2020 GRP among the subsectors of this industry cluster, generating $88,163,525 in 2020. Employment is expected to grow 32% in the next ten years. Although it is mostly due to the estimated national job growth, the competitive effect indicates jobs increases are due to the region's unique advantage as well.

Table 49: Employment Change, LQ, and GRP in Metal & Product Manufacturing Industry

NAICS	Description	2010 Jobs	2030 Jobs	2010 - 2030 Change	2010 - 2030 % Change	2010 LQ	2030 LQ	2020 GRP
331	Primary Metal Manufacturing	<10	92	No Data	No Data	0.05	0.92	$4,479,278
332	Fabricated Metal Product Manufacturing	578	765	187	32%	1.65	1.97	$88,163,525

Source: EMSI Developer 2021.1 Datarun

Table 506: Shift Share in Metal & Product Manufacturing Industry

NAICS	Description	Industry Mix Effect	National Growth Effect	Expected Change	Competitive Effect
331	Primary Metal Manufacturing	-1	1	0	87
332	Fabricated Metal Product Manufacturing	-74	154	80	107

Source: EMSI Developer 2021.1 Datarun

VIII. Business Start-ups and Establishments

The number of establishments in the County has decreased over the last decade, with a decline in new startup businesses. However, Roanoke County had a higher number of web ventures per capita than the state and the nation, indicating growing innovation and activity in the tech economy. Considering that small- and medium-sized businesses provide the majority of employment for County residents, entrepreneurship and small business support is key. Future economic growth depends on addressing barriers to entry for incoming and startup businesses.

1. Establishments

Retail trade had the largest number of establishments (266) in Roanoke County, generating $1,126,152,000 in sales and employing 4,267 individuals in 2018. Health care and social assistance, professional, scientific, and technical services, finance and insurance, and accommodation and food services followed the retail trade in number of establishments per industry sector. Health care and social assistance and retail trade are also the largest employing industries in the County.

The number of startup businesses (0-5 years old) have decreased through the last decade. The number of exit establishments has fluctuated but overall decreased as well. This has resulted in a decrease in the total establishments in the County over the last decade.

2. Start-Ups and Web Ventures

The majority of jobs in the County were provided by small-to-medium size enterprises, accounting for 42.6% of employment in 2019. small and mid-size companies hire 22.8% and 24.8% of employees, respectively.

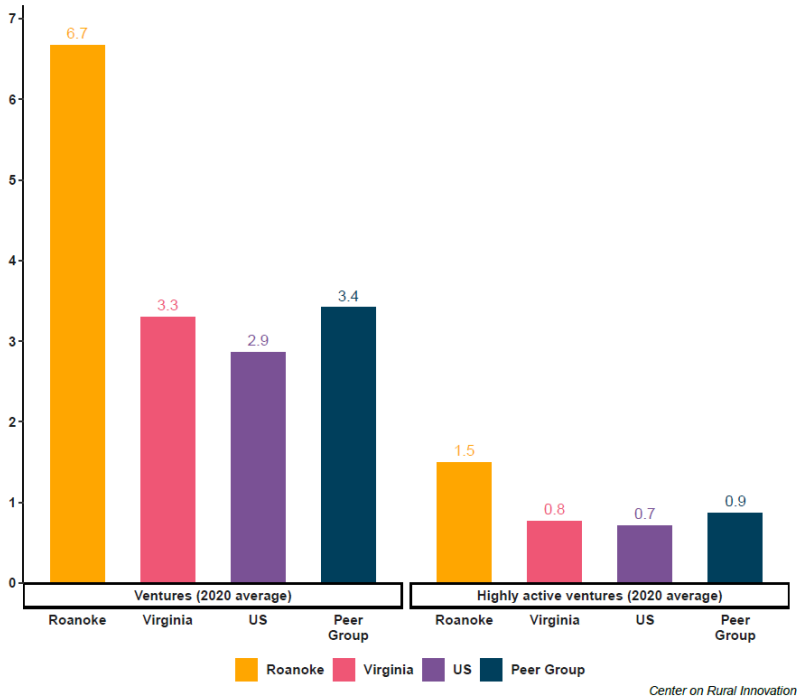


Figure 7: Web Ventures per Capita and Highly Active Ventures, 2020
Source: Center on Rural Innovation

Web ventures per capita indicates strong local digital literacy, entrepreneurial activity, and connection to the tech economy compared to the state, nation, and peer group counties, according to the Center for Rural Innovation. High active ventures show the per capita rate of sites that are visited frequently. Roanoke County had a high number of web ventures per capita as well as high active ventures as of 2020.

For more details, please see Appendix VII.

IX. Connectivity

1. Major Cities

Roanoke County is located in southwest Virginia with two states (West Virginia and North Carolina) and one city with a population over 250,000 (Greensboro) falling within a 100-mile radius. Four major cities with populations over 500,000 (Columbus, Baltimore, Washington D.C., and Charlotte) fall within a 300-mile ring.

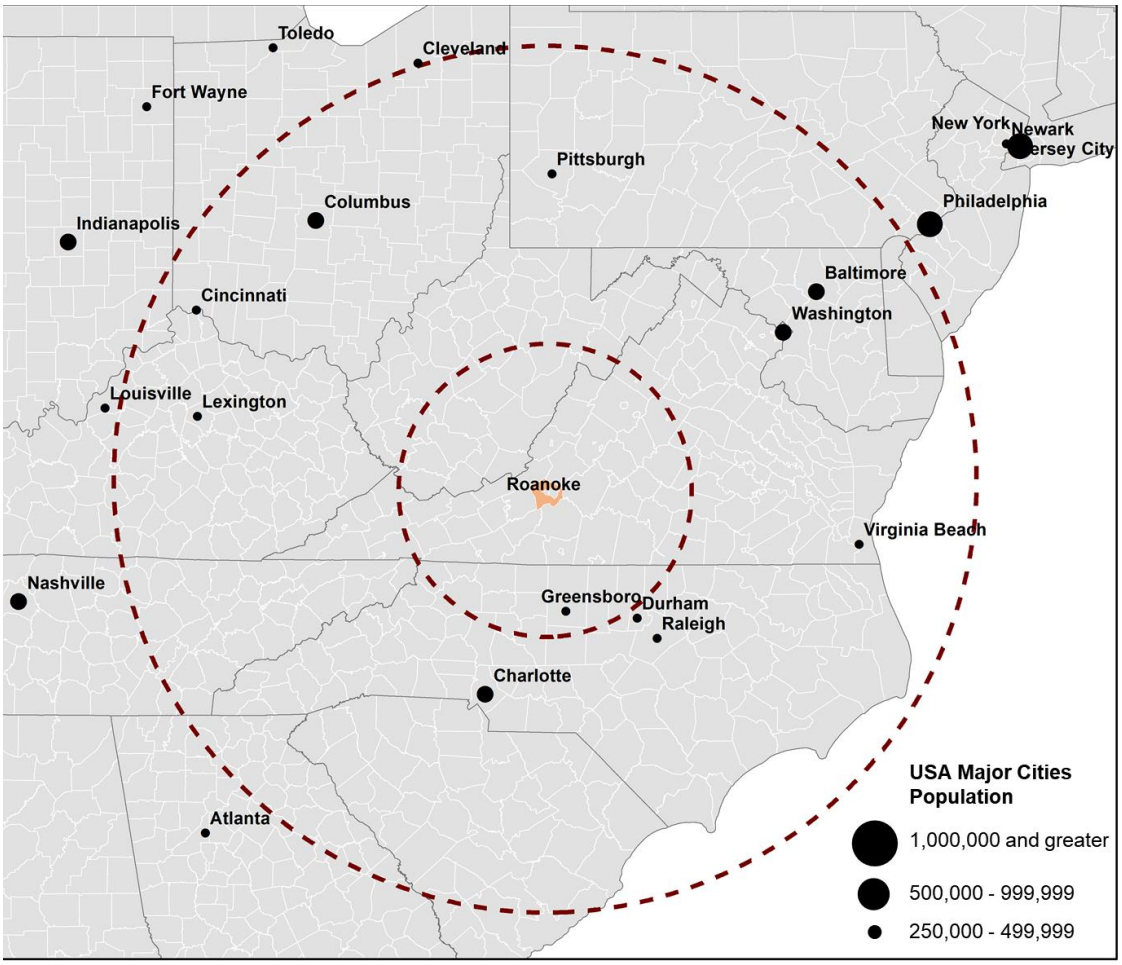


Figure 84: Major Cities Within 100 and 300-mile Radius From Roanoke County

2. Highway Connectivity

Interstate I-81 bisects Roanoke County, stretched from the Tennessee state line near Bristol, TN to the West Virginia state line near Berkeley County, WV. I-581 is a spur off from I-81 to Roanoke, overlapping U.S. 220 as part of its route between Martinsville and Covington. The Interstate connectivity is supplemented mainly by U.S. route 460 and 220. U.S. 460 connects Roanoke from Christiansburg to Lynchburg.

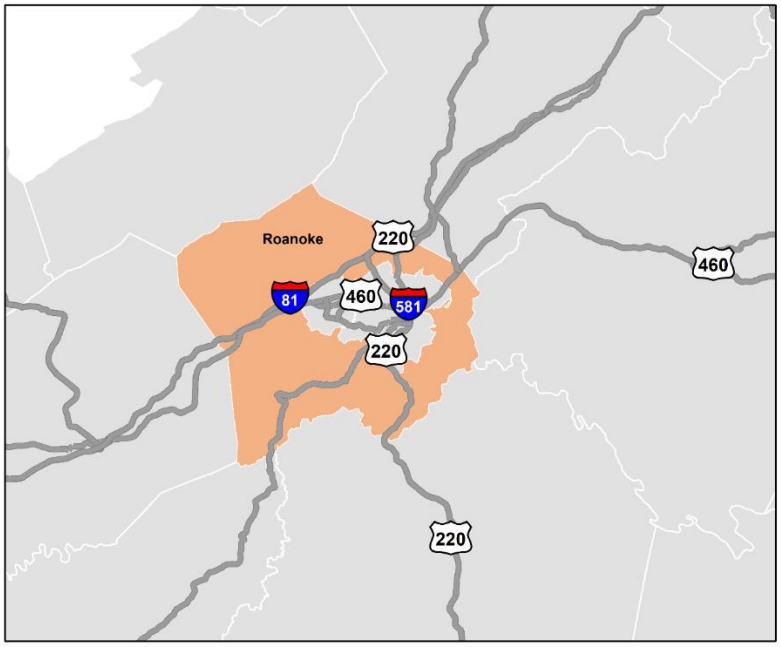


Figure 95: Major highways Transecting Roanoke County

3. Air and Rail Connectivity

According to the Roanoke-Blacksburg Regional Airport, 291,718 total passengers used the airport in 2020. Passenger numbers have gradually increased over the past five years, up until the COVID-19 pandemic. The impact of disturbed air transportation decreased the passenger number by 59.5% in 2020.

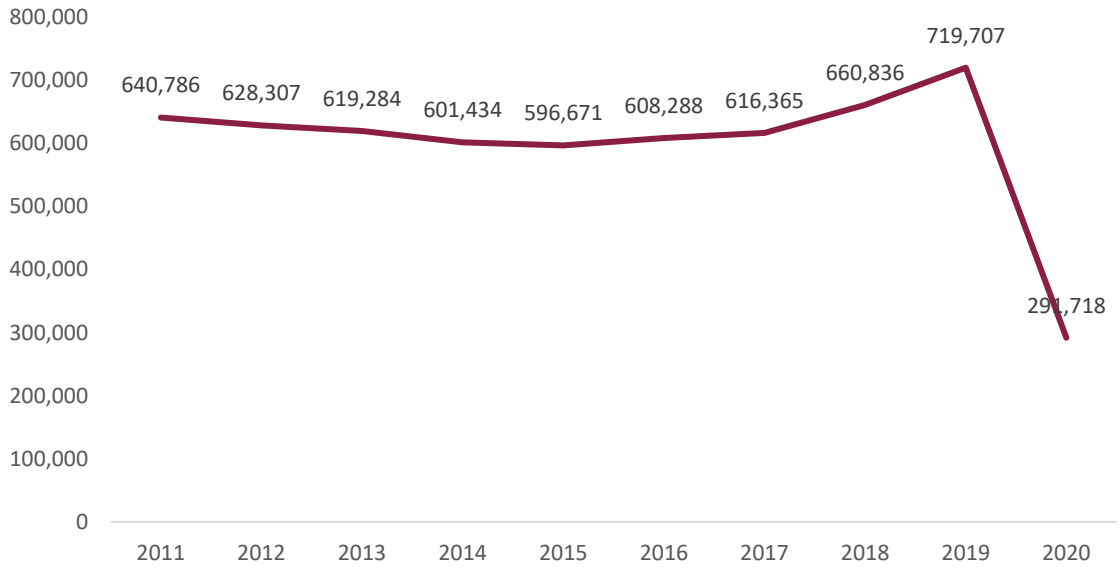


Figure 106: Total Passengers using Roanoke Regional Airport, 2011-2020
Source: Roanoke-Blacksburg Regional Airport

In 2020, 12,212 tons of cargo was transported through the Roanoke-Blacksburg Regional Airport. Cargo transportation gradually increased between 2010-2018 but faced a slight downturn in the follow years. Between 2018-2020, the amount of cargo decreased by 10.8%. Air cargo's performance was dampened by weak growth in global trade. The sector's underperformance was also due in particular to slowing GDP growth in manufacturing-intensive economies. Softer business and consumer confidence, along with falling export orders, also contributed to air freight struggles.

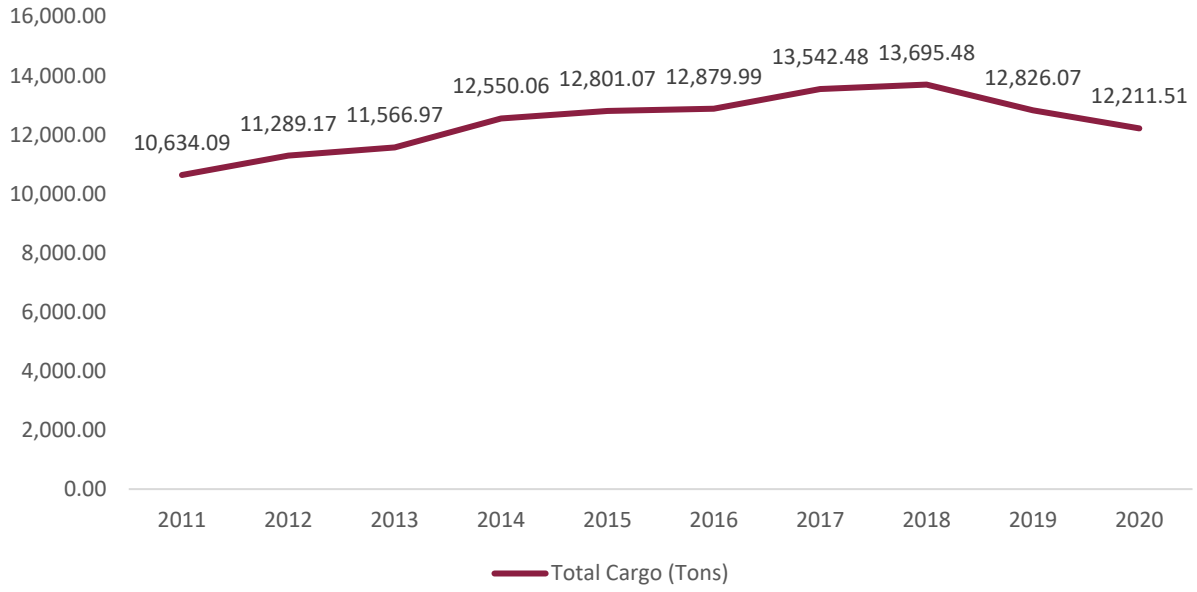


Figure 137: Total Cargo Transported Roanoke Regional Airport (Tons), 2011-2020
Source: Roanoke-Blacksburg Regional Airport

In 2020, there were 259,056 passengers that boarded and alighted at Roanoke station, accounting for 3.8% of total Virginia station usage[3].

4. Broadband

American Community Survey (5-yr) records 84.4% of households in Roanoke County having an internet subscription, slightly higher than national (83%) and state (84.3%) statistics. Figure 14 below shows coverage of DSL/Copper and fiber optic cable in Roanoke County. The majority of the County is covered by DSL, while regions closer to Roanoke City have a mix of fiber optic cable and DSL. Topography is a significant barrier to continuous broadband coverage and one that Roanoke County is continuously looking to overcome.

[3] Amtrak Media Center. 2019 Fiscal Year Amtrak Factsheet. Available: https://media.amtrak.com/fact-sheets/

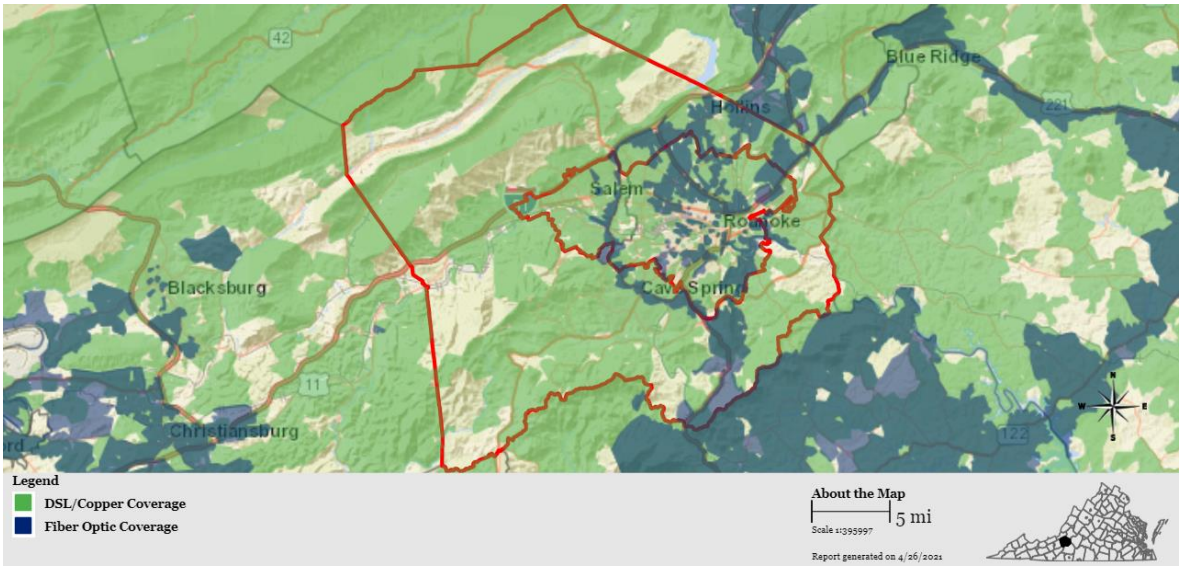


Figure 148: Fiber Optic and DSL Coverage in Roanoke County
Source: Virginia Broadband Available Map (https://broadband.cgit.vt.edu/IntegratedToolbox)

X. Place of Work

Roanoke County has 38,606 jobs and 45,778 workers living within the County[4]. There are 27,559 employees who live outside the County that commute into Roanoke County. Among 45,778 workers, 11,047 are employed in Roanoke County and 34,731 are employed in other counties. Of the total workers living in the County, 34.3% commute to Roanoke City and 12.4% commute to Salem City. Except for Craig, all localities constituting Roanoke MSA are ranked as top destination counties for commuting Roanoke County employees. In total, about 76.5% of workers living in the County are employed within Roanoke MSA.

The mean travel time to work for Roanoke County residents is 23.6 minutes, lower commute times than the state (28.7 min) and nation (26.9 min) means.

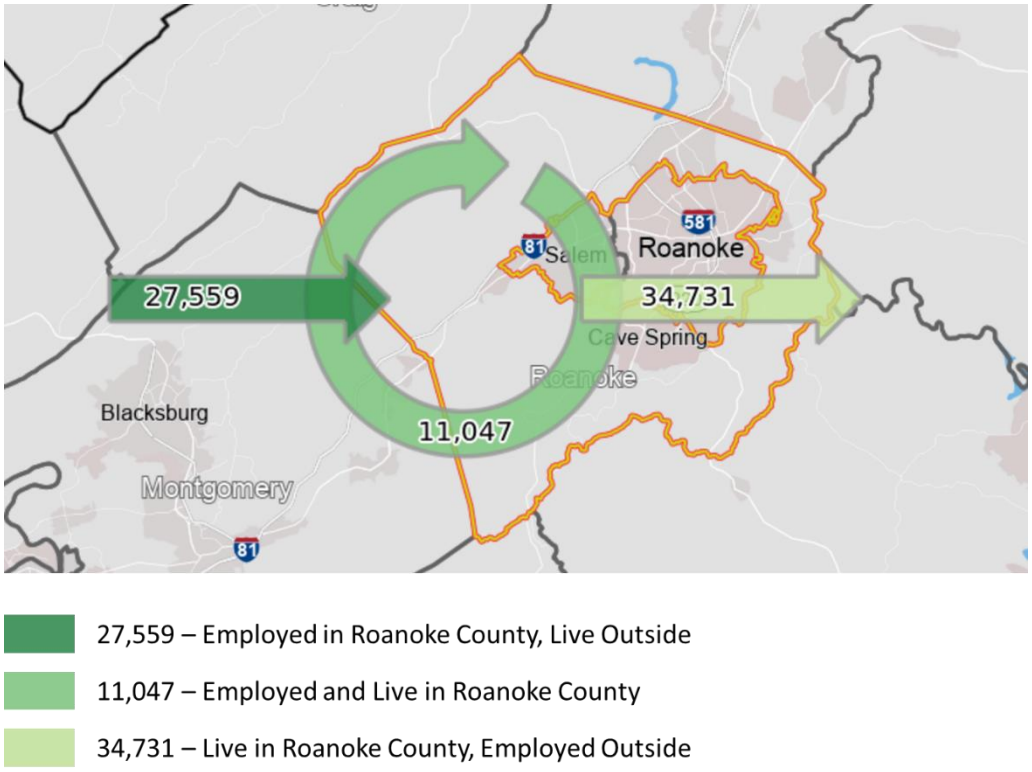


Figure 15: Commuting Pattern in Roanoke County, 2018
Source: U.S. Census Bureau, Center for Economic Studies, Longitudinal Employer-Household Dynamics

[4] U.S Census Bureau. Longitudinal Emplyer-Household Dynamics, 2018. Available: https://lehd.ces.census.gov/data/

XI. Housing

Roanoke County is experiencing an aging housing stock, with a slight increase in the total number housing units over the last decade. Housing prices have increased noticeably despite the older age of housing units. The County has higher levels of owner-occupancy compared to renter-occupancy than both the state and the nation. The County's workers depend on availability of a range of housing at affordable costs. As demonstrated by the regional housing study from RKG Associates, Inc., County workers in retail trade and accommodations and food service industries may struggle to find quality, affordable housing in the County. This is a considerable portion of County residents, as shown by industry employment data.

1. Housing Units

Roanoke County had a total of 40,924 housing units, with 91.3% being occupied, as of 2019. The number of units is distributed fairly equally across county subdivisions. The number of units has continually increased over the past decade, with 3.2% growth between 2010 and 2019.

2. Occupancy, Tenure, and Vacancy

The majority of occupied units are owner-occupied (76.4%) and 23.6% are renter-occupied. This aligns with the County's reputation as a "bedroom community." The percentage of owned housing units compared to rented units does fluctuate slightly between the various County subdivisions. The Catawba district had the highest owner-occupancy rate (89.6%), while Cave Spring had the lowest (67.3%). On average, the household size of owner-occupied units is 2.57 persons and 2.07 persons for renter-occupied units.

Vacancy rates per County subdivision ranging from 5.5% in Catawba to 8.0% in Vinton. The higher vacancy rate in Vinton is most likely explained by the larger portion of rental units. Overall, the rate of both year-round and seasonal vacancies is low as compared to the state and the country. The majority of vacant units are for rent (20%) or sale only (21%).

3. Age of Housing Stock

Roanoke County has an aging housing stock. The majority of housing units in the County were constructed between 1950 and 1999. Almost 25% were constructed between 1970 and 1980. Vinton's median year of construction was older (1973) that other County subdivisions. More newly-constructed housing units can be found in the Cave Spring area.

4. Housing Values, Costs, and Affordability

In 2019, the median housing value in Roanoke County was $215,500—lower than both state ($288,800) and national ($240,500) figures. Average housing value trends higher and has increased noticeably since 2015, experiencing a record growth of 6.5% between 2018 and 2019.

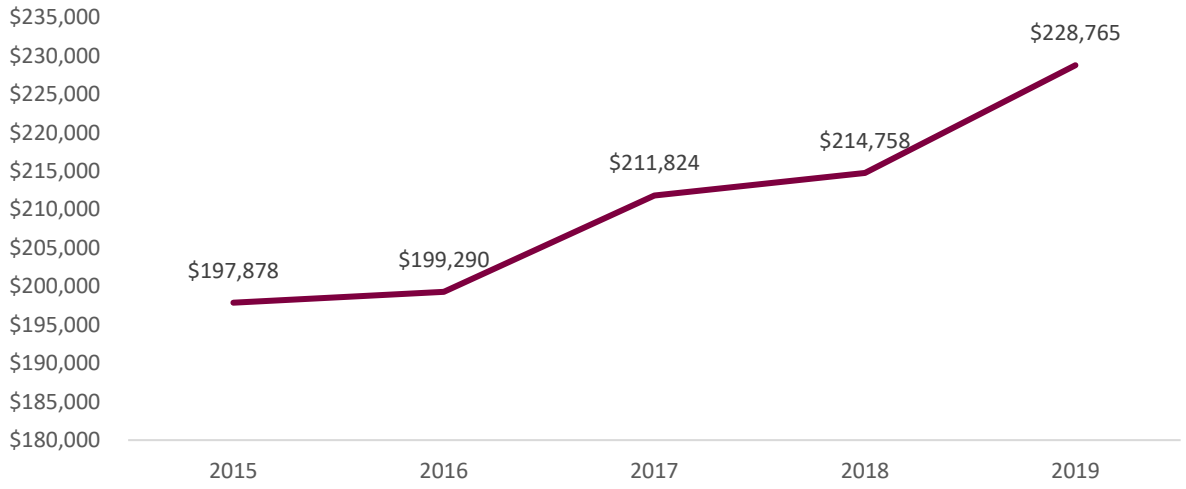


Figure 16: Roanoke Valley Average Home Price, 2015-2019
Source: Roanoke Valley Association of Realtor

The median rent in Roanoke County in 2019 was $1,062, lower than in Virginia ($1,234), but higher than the nation ($956).

The regional housing market analysis conducted by RKG Associates, Inc. showed that housing affordability depends on industry employment and earnings. Roanoke County housing is less attainable for residents working in accommodation and food services, retail trade, and other services except for public administration.

For more information, see Appendix IX.

XII: Tourism Economy

1. Economic Impact

Travel economic impact data from the Virginia Tourism Corporation show that employment and expenditures in tourism increased by 3.8% and 4.5% between 2015-2019. This represents a large increase compared to the total change in the state of Virginia.

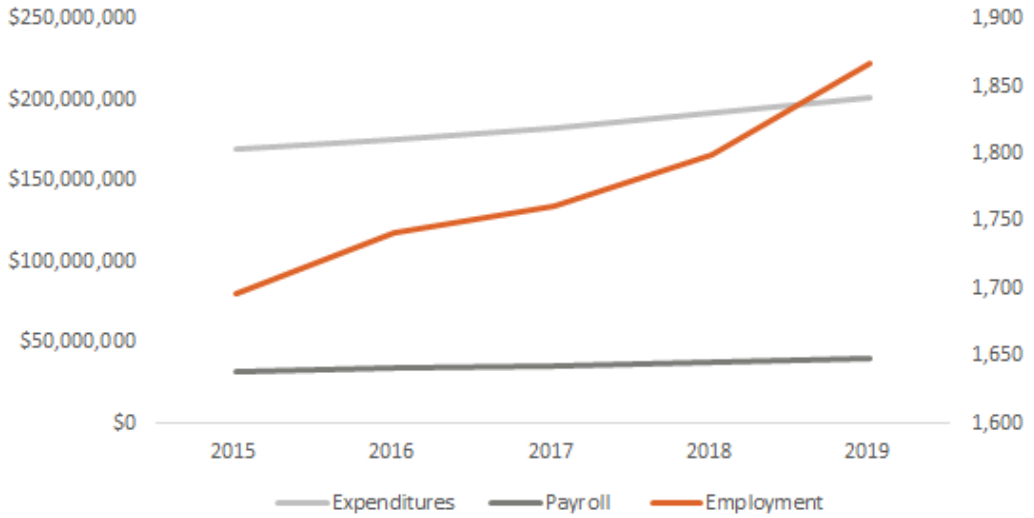


Figure 17: Tourism Expenditure in Roanoke County, 2015-2019
Source: Virginia Tourism Corporation

Local and state tax receipts illustrate the same positive trend. Between 2015-2019, spending by domestic travelers in Roanoke County created an increase of 5.5% in tax revenues for the state treasury. Local governments in Roanoke County directly benefited from domestic travel as well. Domestic travel spending generated a 4.5% increase in local tax revenue for municipal governments.

2. COVID-19 Impacts on Tourism

The Virginia Tourism Corporation published scenario models to illustrate the impact that COVID-19 would have on the Mountain's Region (Alleghany, Bath, Bedford, Botetourt, Covington City, Craig, Franklin, Highland, Roanoke, Roanoke City, and Salem City). The figure below shows the anticipated spending and economic impacts for an upside, baseline, and downside scenario. The scenarios vary in the degree of virus containment and the rate of economic recovery.

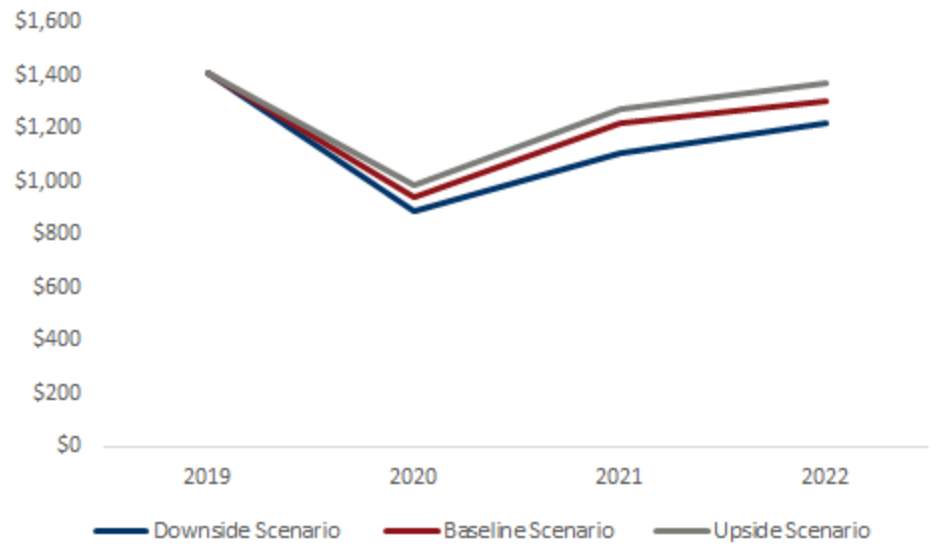


Figure 189: COVID-19 Impacts on Virginia Mountain's Visitor Economy, 2019-2022
Source: Virginia Tourism Corporation

The pandemic created an acute recession, but growth has already resumed. Regulatory limits on travel were only a fraction of the problem. Fear of the virus, economic uncertainty, and loss of income will linger after travel restrictions are eased, curbing the travel sector's recovery. Return to "normal" levels of travel will be a multi-year effort, beginning with domestic travel, followed by regional, international and long-haul international.

Rural and outdoor tourism destinations have been outperforming urban destinations. Recovery will depend on a destination's market mix, but destinations with a high share of domestic and transient visitors have been shown to recover faster, along with destinations with recreation opportunities that allow for social distancing. Roanoke County boasts outdoor attractions such as the Blue Ridge Parkway, Carvins Cove, Explore Park, and the Appalachian Trail, which offer a variety of safe and naturally socially-distant outdoor activities for all seasons.

For more details, see Appendix X.

XII. Agriculture Economy

1. Farms Produces and Economic Impacts

Roanoke County had a total of 262 farms and 26,114 acres of farmland in 2017, according to the USDA Census of Agriculture. Over the past five years, there has been a 6% decrease in the number of farms and 17% less acreage available. The majority of farms in Roanoke County are relatively small-sized: 37% of farms are sized 10 to 49 acres, followed by 50 to 179 acres (32.4%). Family farms comprise 97% of all farms in the area.

In 2017, the total market value of products sold in the County was $2,539,000 and farm-related income totaled $838,000. However, net cash farm income was -$722,000 due to the production expenses in the area. The majority (56%) of the farms had less than $2,500 value of sales, followed by 40% with sales value between $5,000 to $9,999. Only 18% of farms earned over $10,000.

Farm sales accounted for 67% in crops ($1,714,000) and 33% ($825,000) from livestock, poultry, and products. The County's top crop was forage (hay/haylage), which accounted for 95% of croplands. Among livestock, cattle and calves generated the largest sales ($713,000) in the County.

2. Agritourism Assets and Economic Impact

The agritourism industry in the Virginia Mountains region (Alleghany, Bath, Bedford, Botetourt, Covington City, Craig, Franklin, Highland, Roanoke, Roanoke City, and Salem City) drew 366,565 local visitors and 265,443 non-local visitors in 2015. Visitors spent $127.5 million, according to a report written by the Virginia Tech Pamplin College of Business. The report estimates that the economic activity attributed to agritourism in the Virginia Mountains region ranges between $173.4 and $180.6 million as of 2015. The region had 24 farm-based wineries, vineyards, breweries, and distilleries (WVBD) and 94 agritourism venues other than WVBDs. In addition, $11.3 million state and local tax revenue were attributed to agritourism activity in the area.

For more details, see Appendix XI.

XIII. COVID-19 Impact on Local Economy

The Opportunity Insights' Economic Tracker provides new economic impact indicators from COVID-19 with small businesses data and time spent outside the home, in addition to traditional indicators such as unemployment rates. These indicators offer insight into the local economy by showing changed patterns of local businesses and consumers.

Small business revenue in Roanoke County has decreased by 41.9% between January, 2020 and Mid-February, 2021. Businesses experienced drastic revenue drop in March, 2020 and a continued gradual decrease throughout the rest of the 2020 due to the pandemic. The number of newly established small businesses decreased by 36.4% between January, 2020 and Mid-February, 2021, illustrating a similar trend in revenue.

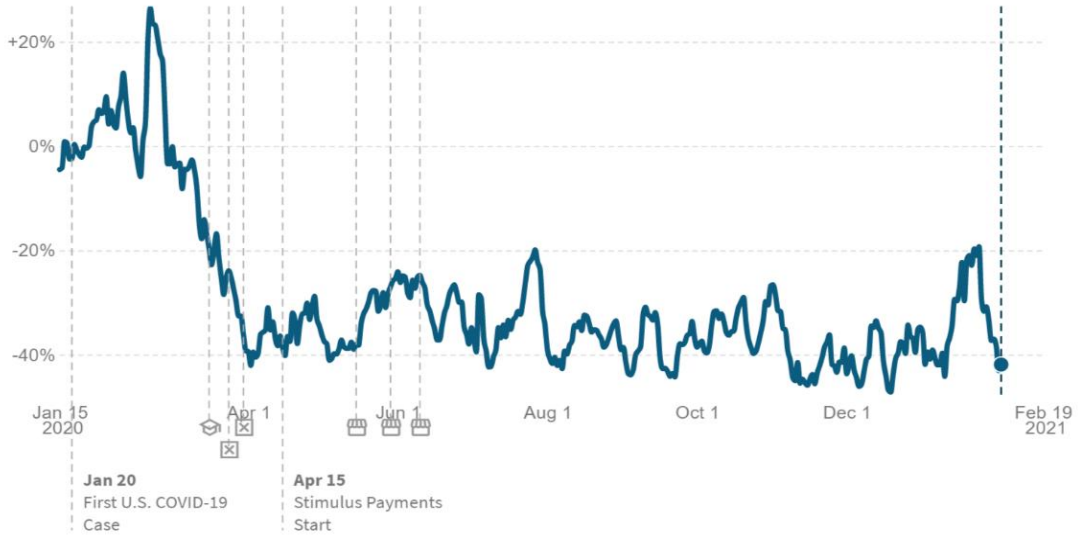


Figure 19: Small Business Revenue, January 2020-Feburary 2021
Source: Opportunity Insights Economic Tracker

Figure 20: Small Business Opens, January 2020-Feburary 2021
Source: Opportunity Insights Economic Tracker

Time spent outside the home has decreased dramatically over the past year[5]. Residents have spent 17.3% less time at grocery locations, suggesting increased grocery deliveries and cautionary tendencies buying groceries. Time spent at retail and restaurant establishments decreased by 20.6%, indicating the significant negative impact had on the food and beverage industry. Additionally, time spent in the workplace decreased by 27.1% due to skyrocketing unemployment rates and work from home policies.

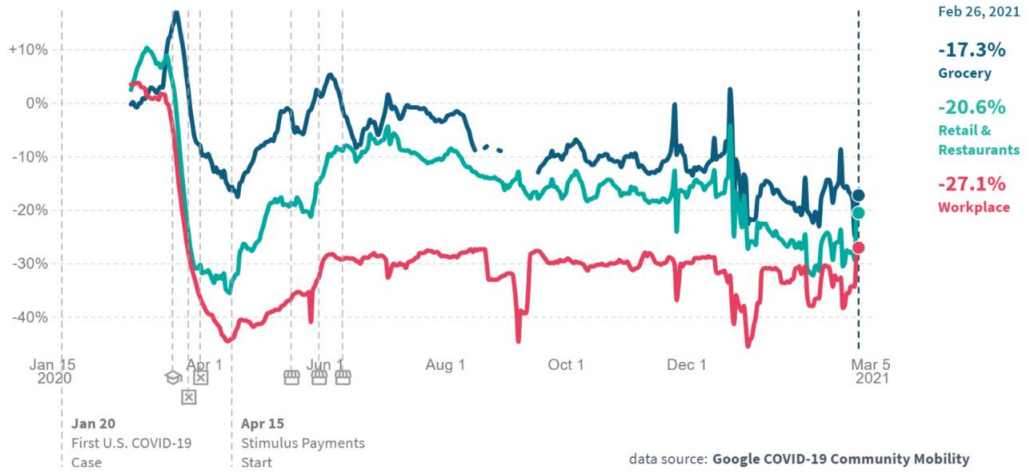


Figure 21: Time Spent outside Home
Source: Opportunity Insights Economic Tracker

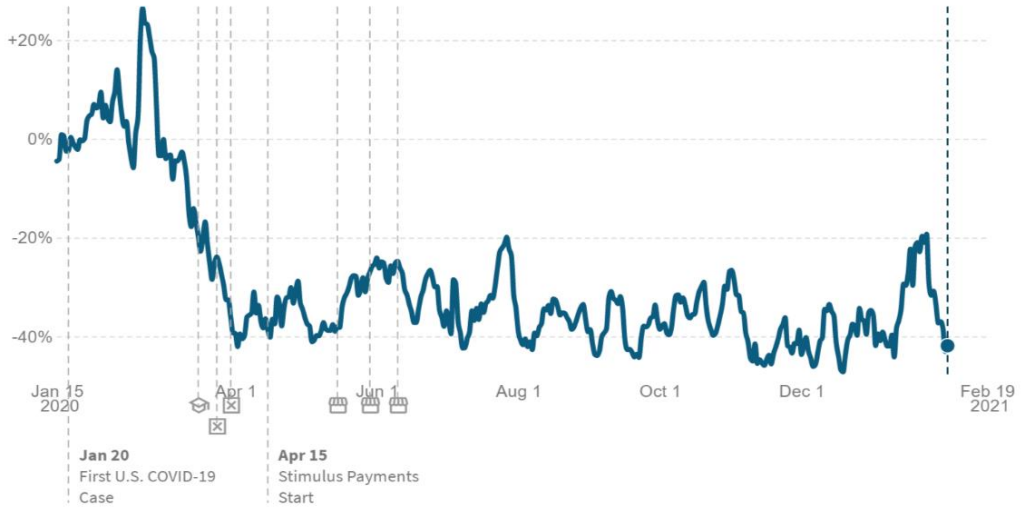


Figure 2210: Small Business Revenue, January 2020-Feburary 2021
Source: Opportunity Insights Economic Tracker

[5] Google COVID-19 Community Mobility Reports, 2020. Available: https://www.google.com/covid19/mobility/

Roanoke County Strategic Plan Survey Results

The Virginia Tech Center for Community and Economic Engagement (CECE) collaborated with Roanoke County's Economic Development Department to develop a survey aimed at uncovering the department's performance as an organization, and the strengths, weaknesses, opportunities and challenges of growing economic development in Roanoke County. Participants were also given an opportunity to share their perspective on the impact of the Coronavirus pandemic on the County's economy.

1. Survey Respondents

This survey was published online and distributed to a mailing list of over 400 stakeholders representing businesses, community organizations, and local, regional, and state governmental bodies. Additionally, a link was open for public comment on the County's website and advertised using their electronic newsletter, Facebook page, and LinkedIn profile. CECE collected responses over the course of a month. During this period, 155 general public responses were collected and 202 stakeholders responded to the survey. Survey respondents represented organizations within Roanoke County, regional organizations that shared a similar/overlapping jurisdiction to the County and the general public. Table 51 details survey respondents by where they live, work, and/or visit.

Table 51. Survey Respondents by Location

Locality	Count
Catawba	52
Cave Spring	167
Hollins	96
Vinton	79
Windsor Hills	62

Survey respondents interacted with Roanoke County in a wide variety of ways. Individuals who work in Roanoke County were among the highest participating respondent groups with 177 responses. Participation was also high among individuals who live in Roanoke County (162 respondents) and visit Roanoke County to shop, dine or meet family/friends (170 respondents). Table 52 details respondents by interaction type.

Table 52. Survey Respondents by Interaction Type

Interaction Type	Count
I live in Roanoke County	162
I work in Roanoke County	177
I visit Roanoke County to shop, dine or meet family/friends	170
I attend school/course in Roanoke County	9
I own a business in Roanoke County	109
I commute through Roanoke County	117
Other	13

Respondents had indicated that, in the future, the electronic newsletter would be the best method for distributing economic development information and updates.

2. Roanoke County

Survey respondents were asked to share their perspectives and opinions of Roanoke County. Specifically, CECE asked respondents to list three words that they felt described the County. Stakeholder and general public responses had positive connotations towards Roanoke County. The majority of respondents noted the natural beauty and culture of Southwest Virginia; words such as "beautiful," "scenic," "mountainous," "friendly," "safe," "conservative," and "clean" were used. Other responses detailed the County's economy with mixed tones. Some respondents used positive words or phrases such as: "growing," "innovative," "open to business," "diverse," "strong," and "hard-working." Other respondents used negative words such as: "blighted," "slow," "crowded," "outdated," "restrained," and "disjointed."

i. Strengths and Opportunities

Respondents were asked to consider the County's top strengths and assets as they relate to economic development. Ranking in priority from 1 to 5, stakeholders and general public respondents agreed that quality of life and recreational/outdoor amenities are leading strengths and assets. A smaller number of respondents indicated that the County's cost of living and K-12 education system were among the area's top assets. Finally, several respondents listed mid-Atlantic position, infrastructure, and the college and university system.

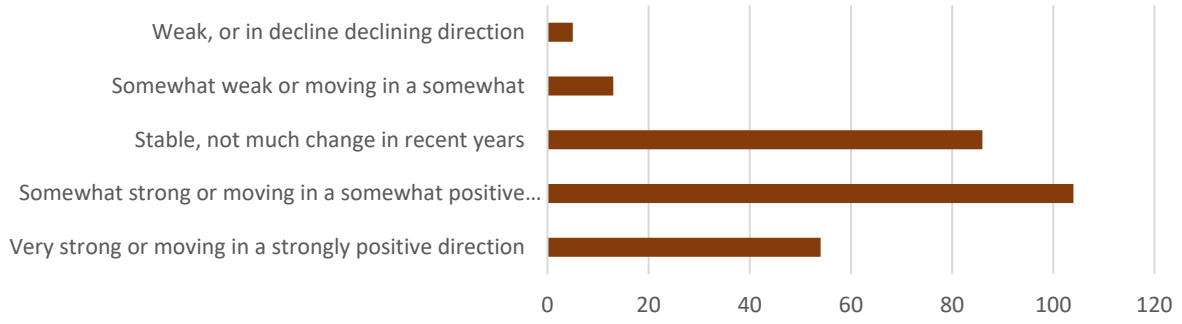
ii. Weaknesses and Challenges

Alternatively, respondents were asked to consider the County's weaknesses or challenges as they relate to economic development. A number of respondents identified a perceived lack of economic opportunity as a detractor in the County. For instance, respondents noted a lack of rewarding career opportunities and quality and availability of workforce. A lack of opportunities for recent secondary and postsecondary graduates was also noted, as well as the resultant aging population and lack of young, skilled professionals. Participants also identified the lack of and/or quality of the County's soft infrastructure (shopping, arts, entertainment, dining, etc.) and hard infrastructure improvements (broadband, housing, build ready sites).

3. Local Economy & Coronavirus Pandemic Impacts

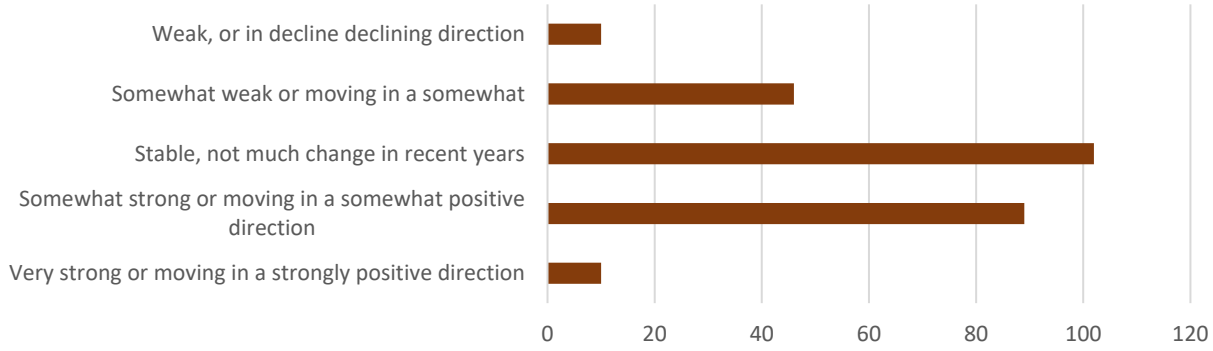
CECE asked survey respondents to describe the County's economy and its development prior to the Coronavirus pandemic. The majority of respondents described the County's economy before the COVID-19 pandemic as robust. Sixty percent of responses used "very strong or moving in a strongly positive direction" or "somewhat strong or moving in a somewhat positive direction" to describe the pre-pandemic economic conditions. Figure 43 details respondents' perspectives on the regional economy prior to the Coronavirus Pandemic.

Figure 23: Perception of Pre-Pandemic Economy



Survey respondents were also asked to describe the current state of County's economy. The majority of respondents used a neutral to somewhat positive sentiment. Forty percent of respondents used the descriptor, "stable, not much change in recent years," and 33% used "strong or moving in a somewhat positive direction."

Figure 24: Perception of Current Economy



Survey respondents were asked to select the County's top five economic development priorities as the County emerges from the COVID-19 pandemic. CECE weighted respondents' answer choices according to the order in which they were selected; first choices were multiplied by five, second choices were multiplied by four, and so on. Supporting existing businesses (score of 328) and recruiting new business to the region (271) were the County's highest-ranking priorities. Attracting high paying jobs and raising income levels was another notable priority, along with retaining & attracting young professionals and building a more resilient, diversified economy. Table 53 details the County's greatest economic development priorities.

Table 53: Top-5 Economic Development Priorities

Answer Choices	1st Choice	2nd Choice	3rd Choice	4th Choice	5th Choice	Score
Supporting existing businesses	165	52	78	24	9	328
Recruiting new business to the region	80	108	36	38	9	271
Attracting high paying jobs/raising income	135	60	30	10	9	244
Retaining & attracting young professionals	30	52	48	26	17	173
Investing in infrastructure	55	24	27	38	10	154

Building a more resilient, diversified economy	70	40	33	18	11	172
Enhancing the quality and availability of workforce	25	52	24	26	11	138
Supporting startups and entrepreneurs	15	36	42	14	10	117
Expanding equitable economic opportunities for all	10	28	18	10	7	73
Becoming more environmentally sustainable	15	16	6	10	2	49
Using creative financing tools to facilitate desired development	5	20	15	6	13	59
Reducing regulatory burden	30	8	18	26	9	91
Increasing availability of commercial and industrial real estate	5	12	9	8	8	42
Other	0	4	0	2	3	9

Survey respondents were asked to share their perspectives and opinions of Roanoke County. When asked how satisfied respondents were with County economic development efforts, general public ratings were slightly lower than stakeholder opinions. The general public had an average rating of 5.7 whereas the stakeholder average rating was 6.5.

CECE asked respondents to list three words that they felt described their ideal vision for Roanoke's County's future economy. Stakeholder and general public responses both agreed on strengthening Roanoke County's economic development. The majority of respondents used words such as "diversify," "innovate," "grow," "inclusivity," and "sustain."

Finally, CECE asked survey respondents to name the top three things they would like to see in Roanoke County in the next five years. The majority of responses shared improvements in broadband, arts/cultural/dining/retail options, and transportation infrastructure. Additionally, a number of respondents indicated that increased labor availability for lower and middle-skill positions was the County's greatest need. Better support for workers, including childcare, wage increases, and housing were also noted. When asked if individuals would be willing to pay higher taxes to enhance the County's economic development position the general public agreed whereas stakeholders were more torn with a decision, 42 agreeing, 44 disagreeing and 42 remaining undecided.

Roanoke County Interview Analysis

The faculty of the Virginia Tech Center for Community and Economic Engagement (CECE) conducted twelve interviews with individuals representing public and private entities familiar with Roanoke County and its Economic Development Department. Interviewees were asked questions intended to reveal their experiences, opinions, and perceptions of the Roanoke County Economic Development Department and the county they oversee. Additionally, interviewees were encouraged to share ideas and strategies that they felt could help the department deliver on its mission of creating a stronger economic future for the county. This document summarizes key findings from this process.

1. Roanoke County: Connections and Impressions

Interviewees were first asked to share their connection with Roanoke County:

- Three participants represented education institutions in the County. One participant engaged with Roanoke County Economic Development in business recruitment and attraction initiatives.
- Two participants represented regional workforce development organizations that work in conjunction with the Roanoke Economic Development Department to support the local business workforce.
- Two participants were industry professionals representing target industries in the County. These participants support localities and regional groups in technical and building aspects of building and land development.
- Two participants worked with the Roanoke County Economic Development Department in the context of regional economic development. These organizations support the department in the development of prospects, infrastructure, and business and industrial sites. These organizations also played a role in coordinating incentive, grant, and loan programs.
- One participant was a business development organization providing small business support to businesses within the Roanoke County region and received economic development services from Roanoke County.
- Finally, two participants represented tourism development in both outdoor recreation and small-town initiatives.

Interviewees were asked to describe their knowledge and interaction with the Roanoke County's Economic Development Department. Each interviewee noted the department's strong role in business attraction and retention in the County and greater region and the Department's attention and efforts contributing to the reputation of the County.

> *"Through the pandemic, Roanoke County's BR&E's work was among the best in region."*
>
> *"I appreciate their efforts with the corridor and town center plans. They have been forward-thinkers along this entire planning process."*

Several participants highlighted the Roanoke County's Economic Development Department's ability to build meaningful relationships, which some interviewees felt have helped the department better leverage its limited resources. Although the department was commended for their ability to connect with businesses to stay informed of the opportunities and challenges that owners face, participants indicated that communication, and especially follow-up, could be even stronger and more frequent.

The majority of respondents noticed the department's lack of consistency due to staff turnover. Although the department is challenged with being understaffed one participant noted the County's ability to always hit the ground running with new hires.

When asked to rate their experiences with the department the majority of interviewees gave ratings between 7-9, indicating high satisfaction but with some room for improvement.

> *"I would rate them at least a 9 or 10, I lean towards 10 but they're not perfect. They are what is needed."*

2. Roanoke County: Regional Economy

CECE asked interviewees to describe the state of the County's economy. Responses were mainly positive and the majority of participants maintained that the regional economy was stable and strong.

> *"From a layperson's point of view, it seems to be strong/stable. I would hesitate to use the word stagnant, seems like it is teetering on the way to significantly move forward. More tax revenue could better support the county, hopefully there is a path to accomplish that through business attraction. County is doing a good job positioning itself for incoming opportunities."*

A smaller number of interviewees shared more negative sentiments when categorizing the County's economy. They noted a stagnant economy that lacked capitalizing on opportunities for growth.

> *"I would describe it (the economy) as stagnant, it's not moving in a vigorous positive direction, despite COVID downturn. Roanoke has struggled with getting the economy moving. We need to create opportunities for growth."*

i. Perspective: Opportunities & Challenges

Interviewees were asked to share opportunities and challenges present in their fields or industry that they felt could impact the County or greater Roanoke region. Several participants felt that the County is positioned for opportunities, with the potential to harness and improve the educational levels and skills of the existing workforce by connecting them to businesses in the County. Overall, there is opportunity to increase networking and innovative collaboration.

> *"The County recognizes having a high-quality k-12 system is crucial to economic development in terms of attracting and retaining employers. We directly work with CTE programs, including student registered apprenticeship programs. Jill has been helpful in connecting them with local businesses."*

Interviewees were more forthcoming with challenges. Several participants noted the limited funding options that are available to support private developments. Start-up establishments and small businesses were frequently cited as needing greater grant opportunities and modified funding models in order to realistically generate revenue.

> *"Grant opportunities need to be leveraged to support private development. We should increase grants using the funding we received from COVID, especially for small business. Funding is an issue for them (small businesses). They have a hard time getting loans from the bank."*

Participants also related their internal workforce issues to those that other employers might be facing in the County. For instance, several interviewees noted that there was a need to reinforce connections with students and graduates who are entering the workforce during or after high school.

> *"There are a reasonable number of competent students who need to be considering working in the region. Connecting them to businesses is a way for the local workforce development system to make opportunities in the county available and accessible to students and retain them. Be sure that stakeholders and citizens understand the opportunities in their area and that there are pathways to make a good living in the county and region."*

One participant suggested offering creative incentives in hopes of attracting and retaining talent.

> *"What is our hook? We could offer student loan reimbursement or forgiveness. The idea is we need to build talent incentive packages that include programs plus incentives, not just money."*

Other challenges that were mentioned included existing technology (i.e. broadband), open mindedness towards collaboration, building code, and maintaining existing infrastructure.

Interviewees felt that the Economic Development Department could be most helpful by better communicating their understanding of available resources rather than dwelling on the competition.

> *"We should be referring each other and coming together as a team. We need to be collaborating and sharing resources better – sometimes partners trip over each other - leading companies to not being served as well as they could be."*

Some participants stressed the importance of the Economic Development Department continuing to invest their time in attracting new talent and employers. Furthermore, interviewees emphasized the value of having "pad-ready" sites available for business development.

> *"From a Roanoke County standpoint, it's difficult to find property that can be developed. There is not a lot of flat land left but there are opportunities to re-develop buildings that are sitting empty."*

One participant noted the department could be most helpful in furthering housing diversity. A fair amount of affordable housing was said to be had but with the County's aging population and growing reputation as the center for health care, there is a greater need for transitional senior housing and more multifamily units.

3. Roanoke County: Successes & Positive Changes

Interviewees were asked to reflect on the past 3-5 years and discuss some of the most significant successes related to the County's economy or economic development. The majority of interviewees noted Roanoke County's Economic Development Department's branding initiatives throughout the County, specifically the Oak Grove and Hollins Corridor Plans and the 419/Tanglewood Mall developments. Similarly, interviewees recognized the efforts of the department to promote outdoor recreation, shifting their reputation from a railroad town to an outdoor recreation and activity destination.

> *"The county is getting an eclectic feel, which is making a difference in its vibe, a lot of change in last decade with some good growth. There's a craft beer market, mountain bikes, tour-type businesses, high-tech, missile baits."*

Two participants also noted the success of bringing a more diverse workforce to Roanoke County with the Mac Manufacturing facility.

The majority of interviewees noted that effectively marketing the county was the most significant challenge the area has seen in the past 3-5 years. Individuals felt that practitioners and employers did not have adequate information about the county and its offerings/assets in order to make an informed decision about spending their time and money in the county.

> *"Marketing information is an issue. Small business owners often don't have time to market, use social media effectively, etc. Often fail to understand budgeting for marketing and etc."*

Talent retention and attraction were commonly cited weaknesses related to the County's workforce. Participants maintained that the County was losing young professionals to areas that better suited their social needs and career aspirations. Moreover, some participants felt there was a mismatch between the jobs that are desirable to young people and the jobs that are available in the County.

> *"Finding the right talent is interesting. Where we see a gap, is that a lot of our companies are not large enough or not set up to be able to take on recent graduates. Often companies are looking for folks who have 3-5 years of experience. There is a gap of enough entry-level, fresh college grad type or positions."*

Many participants felt that the County's falling population was exacerbating issues already present in the county. These issues are more thoroughly discussed in the regional "weaknesses" section of this document.

> *"The challenge for the county has been not having enough people to meet the demands of business. Region-wide thing, but also a county thing. County's perception of the needs of their citizens in terms of self-sufficiency and skills are inflated."*

4. Roanoke County: Strengths

CECE asked interviewees to describe Roanoke County's strengths that could contribute to growing the economy and advancing economic development. Several participants pointed to the County's transportation infrastructure as a major strength, with its ability to connect individuals to other places in the state in less than a day.

> *"Roanoke County has great proximity to I-81, road and rail. This gives people the ability to connect to other cities and places very conveniently."*

Participants also pointed to the County's rural community with urban assets that attract families. Most participants categorized the County's school system as some of the strongest in the state. The County's single-family homes were also frequently mentioned.

> *"Roanoke County's school system is among the best in the Commonwealth. This is an asset for economic development. They also have an advanced technology center that is able to prepare a significant number of students for employment with relevant technical and soft skills to be successful in the workforce."*

The County's postsecondary providers were also a frequently cited strength, with many interviewees praising the Department's active relationships with these institutions. Some participants indicated that the County's low cost of labor was among its key advantages.

Finally, interviewees mentioned the County's quality of life assets as a strength. Several participants noted the numerous outdoor recreation amenities present throughout the County. Others praised the low cost of living, crime rate, and family-oriented nature of the county.

> "The outdoor amenities are big for attracting businesses and workers. The quality of life is also good."

5. Roanoke County: Weaknesses

Nearly every interviewee mentioned workforce as a weakness, or at least an area of concern, while some categorized the County's workforce as its greatest weakness. Individuals also felt that, overall, there was a limited supply of skilled workers in the County.

> *"Our workforce. Unemployment is too low, if a prospective employer were to relocate here (Roanoke County) we end up poaching from existing workers and businesses for a new one."*

Talent retention and attraction were commonly cited weaknesses related to the County's workforce.

> *"I worry about the demographics: we have an aging population and lack younger workers. We're surrounded by retirees. There needs to be clarity around regional educational assets and the assets that they can provide to workforce development."*

The County also lacks availability of land for building and developing. Some interviewees shared that they were concerned with the desire to bring new industry into the area.

> "*One of the biggest concerns is desire to bring new industry into the area- there needs to be space to do so. County is somewhat limited in where businesses can be located."*
>
> *"One challenge goes back to the geography- a lot of outdoor recreation - however, this limits the availability of large open tracts of developable land. There are limits to the number of companies that can locate. We need to continue to be aggressive and innovative in our approach."*

Others maintained that there was a lack of communication and collaboration that fostered a sense of competition. It was suggested to include a greater diversity of voices who had fresh perspectives on development conversations.

> "Like to see more open forum with whole communities. Often "same old people" in events and discussion and town halls and etc. We need to focus on engagement and inclusion and reaching more people in different ways – excite people to become involved."

6. Participant Suggestion and Recommendations

Participants were asked to identify Roanoke County's single greatest recovery need with respect to the Coronavirus pandemic-related economic downturn. Participants advocated for better business support in the lag-time between the easing of pandemic restrictions and the anticipated post-pandemic boom. It was suggested that the County identify the anchors of their local industries and provide any support necessary to ensure that they remain stable.

> *"The lack of tourism has hurt local economies, but I do not see as big of cuts as expected to businesses and revenue generated. It's going to take time for conventional tourism to recover but outdoor tourism may be better."*
>
> *"There needs to be better messaging to small businesses. They need to feel supported by the community, not just financially."*
>
> *"Providing support and services to the food and beverage industry and hospitality businesses, they experienced decreased employees and services this past year."*

Participants' responses were mixed when asked to identify the county's single greatest economic development need for the County, as a whole. Nonetheless, most participants spoke about developing the public infrastructure necessary to attract businesses and diversify the economy.

> *"To attract businesses and have a high quality of living in the area we need better broadband. This way we can further diversify business and industry landscape in the valley. There is a good mix, however, more diversity could be better."*
>
> *"Public transportation is an issue for the county. Workers need better access to employers."*

Others maintained that the County requires greater talent pools before focusing on growing businesses attraction initiatives.

Interviewees were also asked to share what they felt the Economic Development Department should prioritize in the next 3-5 years. Several respondents noted the county's lack of gathering places or population centers for social interaction. Since Roanoke County is so spread out, it was suggested to create destination centers similar to those found in Salem and the town of Vinton.

> *"Roanoke County is so spread out. Perhaps focus on population centers and "towns". The corridor plans have potential but right now that hurts the county."*

Many participants encouraged prioritization of broadband infrastructure to capitalize on budding occupational opportunities and target industry sectors.

> *"Remote work offers an opportunity. Especially in IT sector. Attract people who want to live here but may work for companies elsewhere at first. Use as a site for remote workers. Outdoor recreation."*

Finally, participants felt that Roanoke County should build off of already-successful initiatives and assets. This could include further development of outdoor recreation to improve the County's quality of life or increased focus on corridor development for added tax revenues and cash flows to communities.

"The outdoors are great for quality of life – such as greenways and trails……makes it easy for visitors and others to scan…."

"Focus on Glenvar and Bonsack corridor development and outdoor and Explore Park investments..."

"Being a lifelong resident, I think we have a beautiful corner of the Country. The natural beauty we have is important for residents and as a draw

Roanoke County Focus Group Analysis

Over the course of a month, the Virginia Tech Center for Economic and Community Engagement and the Roanoke County Economic Development Department conducted five focus group sessions to explore and better understand specific strategic areas that were important to the development of Roanoke County's future economy. Overall, 42 stakeholders participated in real estate, talent and workforce, small business and entrepreneurship, infrastructure, and EDA/Planning work group sessions to share their perspectives and ideas on their respective topic areas.

Sessions began with discussing the current conditions that participants were seeing and experiencing in their industry. Small business and entrepreneurship participants noted the ongoing struggles that certain industries were facing (i.e., retail and restaurants) due to the Coronavirus pandemic.

> *"Small businesses are loyal in Roanoke County, when they establish themselves in the region, they remain in the region and expand if possible. This pandemic has really hurt their success though."*

Many participants in the small business and entrepreneurship focus group believed it was important to offer support and resources to impacted sectors, especially since they account for a substantial portion of employment in the County. However, organizations like the Small Business Development Center (SBDC) were noted to have too many clients and not enough bandwidth to serve all small business inquiries. It was recommended that the County collaborate with the Chamber of Commerce to develop a support network for entrepreneurs and start-ups that included valuable resources such as a mentorship program. Small business participants detailed how entrepreneurs want a liaison to walk them through the process of starting a business and the barriers and convoluted processes they encounter. To address such challenges, some participants also proposed an innovation and entrepreneurship summit where newly established entrepreneurs could have the opportunity to break into local networks and gain a better understanding of available resources.

Attendees acknowledged the success of small business and entrepreneurship marketing programs but suggested that even more could be done to recruit small businesses that are not tethered by geographic location.

> *"Entrepreneurs are coming from other markets to establish themselves in Roanoke County."*

All participants attending the small business and entrepreneurship focus group highlighted the need to identify realistic funding to implement the ideas discussed above. One participant went as far as recommending the creation of a personal finance empowerment center to lay the foundation for financial success. To elaborate, the center would include mentors for specific subject areas and provide connections to organizations offering micro-funding or micro-loan options. Participants agreed that such small amounts of money may serve as a steppingstone, helping people become less dependent on unemployment benefits and generate pathways to entrepreneurship revenue. Finally, one participant explained that a separate capital reserve fund would help with the financial barriers that may delay projects, programs, or deployment of incentives.

Participants attending the Economic Development Association and Planning focus group had strong opinions toward expanding Roanoke County's marketing initiatives to encompass the region, promoting the Greater Roanoke Region's assets. Particularly, one participant suggested advertising CNBC's ranking

of Virginia as one of the Top States to Do Business. Participants believed that regional pooling of resources and a collaborative approach to marketing would only improve the marketability of the area and highlight the assets of each locality that complement each other.

Real estate participants echoed this sentiment: however, they specified that it is important for each locality to decide "who they want to be."

> *"Right now, Roanoke County is a good place to live and raise a family but if the image is to evolve in the future, more development will be required. The County needs to articulate future goals and direction. The County should continue to leverage quality of life because that's something that's going really well for them."*

One similarity among localities is the target industries and patron organizations they support to grow the economy. Participants reported RAMP being successful in accelerating the growth of the technology sector, especially with younger companies. These companies have seen more opportunities to become onshore supply chain replacements for offshore alternatives. Small business and entrepreneurship participants even showed interest in raising third party capital from angel and/or venture investors to further support this sector. Nevertheless, attendees noted the ongoing workforce challenges concerning the availability of middle- to high-skilled workers to fill information technology positions.

Talent and workforce participants confirmed that there is a desperate need of employees with skills training. Participants explained that employers continue to consult with Virginia Western Community College (VWCC) for training resources, but there is a low supply of willing and available trainees. One participant suggested creating a survey to explore barriers, perceptions, and potential improvements that would make such classes/course more attractive. Another participant experienced the success of moving a program to an online platform (e.g., MAT program). The educational institution benefited from allowing more flexibility and "meeting the student where they are." Finally, one participant stated that there is additional potential to recruit individuals who have been out of high school for a moderate period of time (e.g., 5-10 years) and have started a family. Those individuals would benefit from higher incomes, and the County could benefit from filling training courses and open job positions.

Talent and workforce participants agreed that funded opportunities and resources for training, "skilling up," and career development are plentiful. For example, the County recently hired a full-time corporate training specialist to improve capacity for training.

> *"There has never been a time with more public dollars for individuals who want to skill-up."*

One participant has been working with William Byrd High School to connect high school students to potential future career paths. Other participants also encouraged connectivity between high quality educational institutions, active alumni networks, and local businesses. They suggested that a digital marketing campaign advertising these networks could help the County attract more mid- to high-level personnel. Ultimately, such a campaign will need to reflect the assets and resources that talented workers look for when deciding to remain or relocate to the area.

To improve educational systems long-term, participants noted institutions need to bolster CTE, trades job training, and career pathways. Existing and potential Roanoke County residents often prioritize good public schools. The County's high-quality public education system is a big draw for residents deciding to remain in the area. Participants suggested that creating innovation districts or corridors that are

attractive to recently graduated post-secondary students once they complete post-secondary education could help further improve business climate and hiring options for companies.

Talent and workforce participants indicated that employers have the added challenge of considering flexible work schedules to fill open positions in the County after the widespread shifts to remote work during the COVID-19 pandemic.

> *"Positions have been on the cusp of being filled but applicants reject offers when remote work options were not offered."*

One participant explained the value of communicating best practices to employers. To improve their practices, employers may need concrete evidence that higher pay and better shift schedules have proven successful for other businesses. Another participant went as far as advocating for a new County tagline to advertise the County's remote work friendly climate: "The Future of Work." All five focus groups praised the County's promising environment for remote work. It was suggested that the County collaborate with the Roanoke County Chamber of Commerce to create a branding effort to capture employers' flexibility and work-life balance.

These efforts could contribute to Roanoke County's already strong quality of life. Infrastructure focus group participants endorsed continuing investments for quality-of-life assets that attract people, particularly outdoor recreation. Outdoor features such as the Explore Park, greenway infrastructure, and trails were frequently mentioned County assets. Participants believe that it is important to stay central and continue to invest in improvements of existing infrastructure. This includes ensuring that all Roanoke County residents have access to broadband.

Infrastructure participants noted that some rural areas in Roanoke County remain underserved or unserved by telecommunications. Participants went on to dub broadband the "new water line," as it is now a prerequisite for attracting development. Supply chain issues serve as an obstacle for projects where federal dollars are available but there is a lack of supply of product and fiber.

Similarly, there are numerous state and local incentives for job creation but are less common for homebuilders who develop workforce housing and facilitate growth. Focus group attendees maintained that the current housing market conditions have posed significant challenges for the County. These conditions directly impact talent attraction and retention, quality of life, and business attraction. Real estate attendees explained that the current diversity, availability, and affordability of housing in and around the County is lacking. Additionally, there is high demand for multifamily housing which presents a minimal risk for investors and the community. However, real estate participants stressed the widening gap between market revenue and developer prices for new construction is an ongoing threat. They suggested bringing developers to the table (maybe 6 to 8 key players) to learn more about their concerns and challenges. This may give the County the chance to be upfront about what it can bring to the table and discuss questions such as, "how can the upfront cost be as low as possible?" and "how the application process be streamlined from start to finish?"

Infrastructure participants agreed that that the County will need a draw for developers to come build. There is high demand from tenants, users, and investors because of the location and supply chain; however, with rapidly increasing housing demand, costs, and borrowing, this may not be sustainable. The real estate focus group mentioned raising rental and interest rates as some solutions. Participants

noted there is a strategic advantage for incentivizing private investment in housing. The County could help developers by building infrastructure in the right places.

Rezoning was perceived as notoriously difficult and prohibitive to new development by a number of focus group participants. Focus groups commented on the regulatory burden that businesses face and suggested streamlined development and regulatory requirements. Doing so could help decrease developer costs, mitigate the expenses and lack of available developable land, and help strike a balance of greenspace. Additionally, real estate attendees suggested that more flexibility in future land use mapping would allow for more opportunities for developers and help streamline processes. Planning participants explained that future land maps include targeted areas that allow for some contrasting uses and leeway for opposing ideas. However, community engagement is often the tyranny of vocal minority.

Planning participants emphasized that there needs to be mechanisms for greater community voices, and avenues for better dispersion of information. EDA focus group participants echoed this sentiment explaining that better communication with the community about valuable projects, plans, and opportunity costs would minimize resistance from the community and stakeholders. With better communication, the community can better understand that projects are can comprehensively benefit them. Nevertheless, it was noted that there needed to be more diverse perspectives, including women and younger, upcoming generations when considering current and future residents' needs and wants. This includes topics on the balance between walkability, multimodal options, and automobile-friendly infrastructure and parking.

Participants in the real estate focus group described the current conditions of commercial real estate as booming, due to low interest rates that involve many "cash chasing" transactions. Participants went on to detail those properties which were once sitting vacant are now getting scooped up, with high turnover. The same could be said for the demand of industrial real estate, a unique feature in the County, however, this supply is limited. Private real estate development of "flex space" has increased and could present a new opportunity for remote workers, coworking spaces, and entrepreneurs.

Real estate experts were hesitant in predicting the future of office space. Attendees remarked most office users are not forgoing office space, and tenants are continuing to renew leases. Talent and workforce participants confirmed that in-person collaboration is still crucial for some professions, but future needs are unknown and office space may become sector specific. Real estate participants foresee future "experimentation" and suggested that industries will rethink the way they do business moving forward.

> *"Retail will return but smaller, with reduced overhead and a service-focused mentality. Additionally, healthcare telemedicine can only go so far, so this industry will remain in person."*

The small business and entrepreneur focus group noted the need for flexible, creative space that attracts remote workers in the County. One participant noted that some municipal buildings are incorporating co-working spaces to avoid larger investment. Additionally, it was suggested to use the second floor of Tanglewood development to develop an incubation center. Rental rates in other key commercial areas, such as Keagy Village, do not allow for coworking spaces.

Infrastructure attendees consider increased interest in commercial real estate opportunities for greater business expansion and attraction, but noted that most economic development prospects and site

selection experts are looking for capacity, gas, and infrastructure. One participant suggested that The Mountain Valley Pipeline may fill this gap and facilitate gas load growth once completed—speaking with one voice will be critical.

Infrastructure participants noted the usage of electricity is trending up faster than expected, and there has been a shift in industries that are using more electricity. Additionally, large projects are trending, with more megaprojects in development, albeit slow-going, than in the past. One participant noted that interested industries reach out regularly, but prospective companies have concerns about gas supply in the region. This contributes to the need to increase pipeline capacity and meet load growth.

The infrastructure focus group noted that the Roanoke County airport remains an asset for the area and that airline recovery has been faster than expected, with traffic at 85% of 2019 levels. However, business traffic traditionally constituted 60% of all airport traffic and remains exceptionally low. One participant explained to help bring more business travel back, the regional airport will develop additional capacity and try to stabilize flight fares stable.

All focus group participants reinforced the importance of collaboration in one or another. One participant noted that collaboration with Virginia Tech, local and regional organizations, and Roanoke County helped Carilion get through the pandemic. There was consensus among attendees that continuing to build on relationships and push further collaboration can bring even more success. Participants agreed that Roanoke County has a reputation for strong partnerships and can continue to make meaningful connections throughout the region.

“It's not about just us anymore, have to connect with other localities.”

SWOT Synthesis

The Virginia Tech Center for Economic and Community Engagement used its data findings to interpret and offer key strengths, weaknesses, opportunities, and threats in Roanoke County. Major themes from the Roanoke County demographic and economic data overview, public and stakeholder survey, stakeholder interviews, work sessions, and strategic area focus group sessions were synthesized to direct CECE towards strategies around which recommendations could be developed for the purpose of the strategic plan.

Strengths

- Roanoke County's business retention and expansion program is a strong departmental asset that aids existing businesses looking for support and resources. The County's program was a contributor to the ongoing post-pandemic recovery of the County.

  "Through the pandemic, Roanoke County's BR&E's work was among the best in region." [Interview]

- Roanoke County has strong existing relationships that understand the influential role they play in leading County business growth and development.

  "Tom and Jill put in a lot of effort into doing check-ups on their companies. They have a great relationship with their companies. One of top localities in region for BR&E." [Interview]

- Roanoke County's economy is strong and stable and is anticipated to experience job growth in the future.

  The County saw 9% growth in total employment from 2010 to 2020. EMSI projections predict an additional 5.3% growth from 2020 to 2025. Its skilled workforce and strong commercial base are strong contributors to such success. [Roanoke County Overview]

- Roanoke County is well-connected, with highways, rail, and air transport providing access to nearby larger metropolitan areas. Transportation infrastructure improvements support the County's strategic mid-Atlantic position.

  The County has two states (WV and NC), one city with a population over 250,000 (Greensboro, NC), and four major cities with populations over 500,000 (Columbus, Baltimore, Washington D.C., and Charlotte) within a 300-mile ring. Furthermore, the County has lower commute times: the mean travel time to work for Roanoke County residents is 23.6 minutes as compared to mean commute times for the state (28.7 min) and nation (26.9 min). [Roanoke County Overview]

- The County has succeeded in its branding of neighborhood corridor plans and 419 developments, which have sparked interest from residents and prospective businesses. The plans and ongoing developments support economic diversification for the County.

  "I appreciate their efforts with some of the corridor/town center plans and also with this planning process. They've been forward thinking." [Interview]

- The County has numerous outdoor recreation and event opportunities. These include Explore Park, the Blue Ridge Parkway, the Appalachian Trail, several state parks in proximity, and more. These amenities benefit residents and draw in prospective employees to the area.

"The outdoor amenities are big for attracting businesses and workers, things like Explore Park and the trails. The quality of life is also good." [Interview]

- The County has several features that improve its overall quality of life including a vibrant downtown, close-knit communities, natural beauty, low cost of labor and living.

  The County's top five strengths for economic development included quality of life, recreational/outdoor activities and opportunities, and low cost of living. [Survey Results]

- Roanoke County benefits from high levels of educational attainment. County residents have access to high-quality educational institutions and technical education programs including Virginia Western Community College, Radford University, Virginia Tech University, and others.

  Overall, the educational attainment in the County is higher than the state for all segments apart from graduate and professional degrees. There are 22.8% Roanoke County residents that possess a bachelor's degree (3.0% above the national average), and 31.8% of the population hold an associate degree (2.9% above the national average). [Roanoke County Overview]

  "We have high quality education with active alumni bases on LinkedIn and other platforms. We should work with alumni organizations to advertise and connect. People loved living here during college and being closer to Tech." [Focus Group Session]

- The Roanoke County Department of Economic Development has been successful in its rural broadband initiatives. As of 2020, 84.4% of the County had Internet access.

  "Roanoke County has put $4.1 million of mostly grant money — including from federal coronavirus relief funds — toward expansion of internet access, as well as almost $800,000 from taxpayers, bringing high-speed service to several hundred households." [Roanoke County Overview]

- The County has thriving medical and research facilities that have spawned additional partnerships and increased County median household income. Healthcare and social services was the highest employing industry sector, as of 2020. The sector continues to provide quality and well-paying jobs.

  "Collaboration with Virginia Tech, local and regional organizations, and Roanoke County supported Carilion continued development through the pandemic. Continuing to build on relationships and push further collaboration can bring even more success." [Focus Group Session]

  Healthcare positions in Roanoke County have increased by 35% (1,732 jobs) over the past decade. The top contributing occupations earn between $14.00-$32.00 an hour. [Roanoke County Overview]

- The County boasts a high median income, with continuing increases in median and per capita income. The County also has a comparatively smaller income gap.

  The median household income was $71,715 in 2019, a real-dollar increase of 16.0% since 2016. This increase has remained above that of Roanoke MSA, Roanoke-Salem area, and the USA median but lower than the state median. [Roanoke County Overview]

- Roanoke County is becoming more diverse over time.

Minority populations have slightly increased over the decade and the in-migrating population is more diverse than that of the previous decade. Currently, Black or African Americans account for 5.9% of the population. Both Hispanic or Latino (of any race) and Asian make up 3.1% of the population, respectively. [Roanoke County Overview]

- The County maintains the reputation of a suburban community with both rural and urban assets.

  "We [Roanoke County] attract families, have a good school system, single family homes, good track record with businesses, and transparency with elected officials and government departments." [Interview]

Weaknesses

- The County and surrounding region is experiencing an aging population. Youth populations are decreasing.

  Populations over 65 years of age have seen a moderate increase over the past decade. Meanwhile, individuals aged 20 to 40 have seen large population decreases. [Roanoke County Overview]

  "There is a strong demand for multifamily housing due to the aging population that requires a different kind of household." [Focus Group Session]

- Entrepreneurial and start-up support is lacking. Some business owners and other stakeholders face barriers to entry into the entrepreneurial network.

  There are limited ways to engage with these individuals and limited funding available leading to a decrease in establishments over the past decade, 1,966 in 2010 to 1,839 in 2018. [Roanoke County Overview]

  "People moving their businesses here [Roanoke County] can have a hard time breaking into the network and knowing/understanding all of the resources that available to them. We suggest a mentorship network or an innovation and entrepreneurship summit to provide support." [Focus Group Session]

- There is a lack of large developable property, largely due to topography and County boundaries. Regulatory measures may prevent further development.

  "There is a heavy need for available land to develop businesses, we need to take multiple parcels of land to have something big enough, part of the issue is topography. There is not a lot of flat land and only parts are available" [Interview]

- There is limited housing stock and lack of diversity among housing types.

  As of 2018, 81% of the County's residential stock was single family homes. Only 26% of the county's households were renters, with 38% of rental units in single family homes, 61% in multi-unit structures, and 2% of units in mobile homes. [Roanoke County Overview]

- A widening gap exists between income and housing prices at the high and low ends of the income bracket. Households at the higher end of the spectrum may purchase or rent houses

that cost less than what they can afford to spend. Meanwhile, households with lower incomes face shortages of affordable housing options.

Homebuyers in higher income brackets are purchasing "down," buying homes that are cheaper than their real housing purchasing power. Given that about 46% of all owner households in the county earn at or above 120% of Area Median Income (AMI), there is a shortage of homes priced to what those households could technically afford. [Roanoke Valley- Allegheny Regional Commission Housing Study 2021]

Based on affordable housing prices, Roanoke County housing is less attainable for residents working in accommodation and food services, retail trade, and other services except for public administration. [Roanoke County Overview]

- Young workers are not engaging in the community or not attracted to existing career opportunities, causing them to leave the area.

  One of the County's top five most significant weaknesses or challenges related to economic development is their rewarding career opportunities. [Survey Results]

  Over the past five years, the population under 25 years of age has decreased by 17% (972 people) [Roanoke County Overview]

- Roanoke County is an automobile-dependent county that lacks multi-modal transportation access and walkability features in some areas. Individuals without access to a motor vehicle do not have dependable modes of transport for getting to work, school, etc.

  One of the top three things survey respondents wished to see in Roanoke County within the next five years is improved transportation options. [Survey Results]

  "Public wants walkability on a certain scale with multimodal options within a development or neighborhoods to local stores" [Focus Group Session]

- There is a lack of awareness of regional employment opportunities and the County's offerings and assets. Skills and job training opportunities, pathways to employment, and quality of life assets exist but go underutilized.

  "*Be sure that stakeholders and citizens understand the opportunities in their area, there are pathways to make a good living in the county and region, but individuals aren't given the resources to understand." [Interview]*

  "The County website is weak in marketing and exposing our landscape." [Work Group Session]

- Some consider the Business License Tax Rates (BPOL) tax rate to be prohibitive to development. Such regulatory measures may be a barrier to entry for entrepreneurs.

  "What is the impact of BPOL tax rate and other items that the County can control such as regulatory measures (zoning ordinance) on business attraction. Is BPOL a driver for economic development?" [Work Group Session]

- There is a perceived lack of communication between the County, neighboring localities, and state and federal agencies. Information can be "siloed."

  "The County can be most helpful by keeping organizations more knowledgeable about their options and enhance communication to know of available opportunities" [Interview]

- There are gaps in program enrollment where jobs need to be filled in the region, including the healthcare and technical trades sectors.

  For example, the health occupations of registered nurses, nursing assistants, and licensed practical and licensed vocational nurses offer the highest number of jobs in this career cluster—almost 10,000 projected employed in 2026. However, Franklin County Career Center only enrolled 189 students for the academic year of 2018-19. [Roanoke County Overview]

  "Employers are reaching out to colleges for training resources, but there isn't enough of a supply of employees. Demand [Jobs] is high, a high-quality product is available at a great price, but supply of employees is down." [Focus Group Sessions]

- Funding gaps exist for projects, programs, and incentives. There is limited funding available for supporting private business development.

  Start-up establishments and small businesses were frequently cited as needing greater grant opportunities and modified funding models in order to realistically generate revenue. [Focus Group Session]

Opportunities

- Focus on communication with new and established business and organization networks

  "There is a lack of collaboration and communication, a sense of competition is needed instead of collaboration. Need a more abundant mindset." [Interview]

  "I would like them to keep us knowledgeable about options, enhance communication to know of available opportunities" [Interview]

- Pipeline of talent from the strong educational institutions in the region

  "We have high quality education with active alumni bases." [Focus Group Sessions]

- Internship and apprenticeship programs that engage students in the region

  "Understanding Roanoke County's educational reputation and opportunities that are available feeds into the likelihood of the County having a skilled workforce and the ability to attract and train new workers." [Roanoke County Overview]

- Lifelong apprenticeship initiatives for adult training and mentorship programs that support rewarding career options

"There should be more emphasis on adult apprenticeships – perhaps Burton should be involved in this." [Work Session]

- Marketability of regional assets to millennial and graduating populations to retain and attract talent (i.e., retail, dining, arts, culture, and entertainment options)

  "We need to include the younger, upcoming generation when considering what residences, current and future, want." [Work Session]

  "We need to engage with the community and have conversations with college students to see what it would take to retain them as residents." [Work Session]

- Vacant building potential for building/site ready properties for prospective businesses (i.e., flex space)

  "Properties that were sitting are now getting scooped up, there's high turnover now. Private real estate has picked up development of "flex space," We don't have enough industrial supply." [Focus Group Session]

- Benchmark communities that provide insight into Roanoke County's economic progress and ongoing trends

  "It's important for us to have benchmark communities to compare our progress with." [Work Session]

- Industry sectors that are sustainable for remote work and attract positions from outside the region.

  "There is better remote work now, but this is when the experiment starts. Do industries go back to work, not go back, try hybrid?" It's definitely going to contribute to Roanoke's competitive effect. Working from home lowers overhead but collaboration is still needed for some industries. It might become sector specific." [Focus Group Session]

- Outdoor attractions that offer safe and naturally socially distant outdoor activities for all seasons. (i.e., Explore Park, Greenways, Agri-tourism, recreational events)

  One notable observation is that rural and outdoor destinations are currently outperforming urban destinations. Recovery rates will largely depend on a destination's market mix but destinations with a high share of domestic and transient visitors have been shown to recover faster, along with destinations with recreation opportunities that allow for social distancing. [Roanoke County Overview]

- Industries that have been severely impacted by COVID-19 and require business support

"There are ongoing struggles that certain industries are seeing due to the Coronavirus pandemic. Industries like retail, restaurants, and lodging – supporting tourism industries." [Focus Group Session]

- Tanglewood development can bolster business diversity and market Roanoke County as a quality place to live, work and play

  "There is a lot of activity in commercial real estate. The new Tanglewood development will have new tenants, new businesses, and higher rents." [Focus Group Session]

- Health care and technical sectors have strong foundations to expand into R&D opportunities. (i.e., strong local digital literacy, entrepreneurial activity, and connection the tech economy)

  According to the Center for Rural Innovation, web venture per capita indicates strong local digital literacy, entrepreneurial activity, and connection to the tech economy compared to the state, nation, and peer group counties. High active ventures show the per capita rate of sites that are visited frequently. In 2020, Roanoke County has a high number of web ventures per capita as well as high active ventures. [Roanoke County Overview]

- Higher education and other organizations have the ability to partner to facilitate start-up support and develop an entrepreneurial ecosystem.

  "There are opportunities for the Chambers to collaborate on things, e.g. a mentorship network The Gauntlet winners say the mentorship of the Gauntlet is a recurring theme among entrepreneurs as being the most valuable." [Focus Group Session]

- Broadband has national momentum that can be used to improve and expand capacity for underserved County areas.

  "Broadband is the new water line. If you want development, people are looking for broadband access first." [Focus Group Session]

  "2019 American Community Survey (5-yr) records 84.4% of households in Roanoke County having an internet subscription, slightly higher than national (83%) and state (84.3%) statistics." [Roanoke County Overview]

- Harnessing industrial redevelopment and other development trends to appeal to prospective businesses with property interests

  "We are running at an 8 out of 10 in activity right now. There are more cash cashing deals because of the low interest rate. Properties that were sitting are now getting scooped up. People are looking for industrial real estate, unique environment for that here." [Focus Group Session]

Threats

- In addition to reduced employment levels, there is a gap in skilled labor available to replace the aging workforce. The County and greater region is challenged with talent attraction and retention.

Roanoke County's labor force participation rate decreased from 67.3% in 2010 to 61.3% in 2019. Employers are also competing with unemployment support and a large retiring population. [Roanoke County Overview]

As the County emerges from the COVID-19 pandemic, one of Roanoke County's top five economic development priorities should be retaining and attracting young professionals. [Survey Results]

- Regulatory burdens serve as an obstacle to developers and businesses trying to establish themselves in the region.

  One of the County's top five most significant weaknesses or challenges related to economic development is impression or ease of starting/growing a business. [Survey Results]

  "Regulatory burden is prohibitive to new development because of developer costs, where is the balance? There is not enough developable land, so we have to do something with what is available." [Focus Group Session]

- Rising housing costs and lack of diversity present a hurdle to current, future, and incoming residents.

  The availability of housing plays a critical role in determining the County's overall quality of life. Counties with limited housing and high costs of living may find it difficult to attract and retain talent, especially young professionals and young families. [Roanoke County Overview]

  RKG Associates, Inc conducted a regional housing market analysis of the Roanoke Valley-Alleghany region that revealed housing affordability based on industry income. There is a noticeable concern based on affordable housing prices. Roanoke County housing is less attainable for residents working in accommodation and food services, retail trade, and other services except for public administration. [Roanoke County Overview]

- The largest employers cannot single-handedly sustain the future economy.

  Participants are worried that relying on the County's largest employers isn't sustainable, Government and Healthcare. What is the percent of impact on sustainability? [Work Session]

- Corporate restructuring and closings threaten to remove employers from the area and tarnish Roanoke County's reputation.

  The number of newly established small businesses decreased by 36.4% between January, 2020 and Mid-February, 2021, illustrating a similar trend in revenue. [Roanoke County Overview]

- With flexibility afforded by remote work, workers may leave the County to work in places with more amenities or with younger population concentrations.

  "Everybody has a chance to capitalize on remote workers. It the first place to figure out the story that works is going to win population, talent, and new business." [Focus Group Session]

- Small businesses are experiencing difficulties recovering after the COVID-19 pandemic.

Small business revenue in Roanoke County has decreased by 41.9% between January, 2020 and Mid-February, 2021. Businesses experienced drastic revenue drop in March, 2020 and a continued gradual decrease throughout the rest of the 2020 due to the pandemic. [Roanoke County Overview]

"There are ongoing struggles that certain industries are seeing due to the Coronavirus pandemic. Industries like retail, restaurants, and lodging – supporting tourism industries." [Focus Group Session]

- Roanoke County has aging infrastructure and stock of commercial, residential, and industrial buildings.

  A significant majority of housing was constructed between 1950- 1999, with almost 25% being constructed between 1970 and 1980. [Roanoke County Overview]

- The farming population is aging, facing decreasing income and rising real estate taxes.

  Over the past 5 years, there has been a 6% decrease in total number of farms in the County. [Roanoke County Overview]

- There are several competing forces in development processes. Limited land availability leads to competition between residential, tax-exempt uses and economic development land uses. Furthermore, employees are being "poached" by other localities that may have more development-ready sites and available incentives.

  "Prospect visitors are often concerned with workforce. Employment is too low, so businesses end up poaching from existing workers and businesses for new ones." [Interview]

- Childcare services are not meeting post-pandemic demand, which may prevent workers from returning to their employers.

  "COVID has creating obstacles for residents returning back to work. Childcare is more important now that ever. Employees can't return to their employers because children have to stay home and don't have the resources that are needed." [Interview]

- Employees struggle with barriers to access (i.e., transportation, cost) their jobs and essential services (i.e. doctors appointment, grocery store, government building, etc).

  "I think that they need to recognize the diversity of the county that has taken place over the past years. The fact that public transportation doesn't serve the county and the county doesn't develop multimodal options is a big problem for workers. They have businesses that are right outside of the city and workers have been impacted." [Interview]

Goals and Strategies

VT CECE consulted our findings from a series of focus-group-style small group input sessions, the SWOT analysis, and work sessions with the Roanoke County's Board of Supervisors and the County's Economic Development team to develop this strategic action plan. The Plan includes a vision, mission and four corresponding core goal areas, each with associated objectives and tactics, or action steps.

Vision**:** *Roanoke County is the choice community for high quality living, investing and working because we value and invest in people, place, business and opportunity.*

Mission: *To attract and facilitate the growth of businesses, jobs and population that increase taxable investment, provide sustainable community resources and ensure an outstanding quality of life.*

The following goal areas align with the proposed vision to value and invest in people and opportunity; place and quality of life; innovation and entrepreneurship; and industry and business.

Goal Area #1: Value and Invest in Industry and Business

Roanoke County invests in the resources and support necessary to drive industrial and commercial development and existing business growth.

Strategy 1: **Support and encourage infrastructure expansion, industrial site development, and desirable commercial and residential projects for business attraction and expansion.**

Objective 1A: Reduce barriers to development of desirable and high-priority industrial, commercial, and high-need residential projects.

Tactic 1A.1: Continue to encourage consistent communication and collaboration among and between County departments and officials to avoid "silos" within the County's regulatory processes to facilitate more streamlined procedures.

Tactic 1A.2: Regularly invite and collect input from the development community to identify barriers and needs, and provide recommendations for solutions to County officials and departments.

Tactic 1A.3: Convene a one-time or annual forum-type event that brings developers, investors, officials, and resource and funding partners together to share more about the hurdles they encounter, to identify available resources and address barriers and gaps.

Objective 1B: Champion County participation in regional industrial site development projects, such as the Wood Haven Technology Park.

Tactic 1B.1: Engage with Industrial Facilities Authorities and the Roanoke Regional Partnership to identify and quantify County and Regional ROI projections for joint site projects and company locations and expansions.

Objective 1C: Identify creative pathways and partnerships for developing more challenging or high-priority properties within Roanoke County.

Tactic 1C.1: Research and recommend incentives such as fee waivers or financing partnerships for targeted sites and growth areas, including possible incentives for homebuilders that create workforce housing and facilitate growth in targeted County locations.

Tactic 1C.2: Leverage transportation, infrastructure and other available resources to encourage business growth in targeted areas.

Objective 1D: Manage a robust Business Retention and Expansion program (BR&E) to advance executive relationships and support existing business expansions.

Tactic 1D.1: Conduct annual visits with County businesses to determine and address concerns, provide assistance and connect them to local and regional resources.

Strategy 2: **Continue to support the attraction and growth of targeted industry clusters, or sub-sectors, such as life sciences companies, automotive or transportation and equipment manufacturers.**

Objective 2A: Actively identify and engage key stakeholders in collaborative initiatives geared towards advancing targeted industry sectors

Tactic 2A.1: Seek grant funding with regional partners to identify opportunities and create value added tangible resources in support of business growth within targeted sectors.

Objective 2B: Identify creative financing tools, sources, and incentives to advance development projects that are consistent with area plans and targeted business sectors.

Tactic 2B.1: Explore the potential, amounts, sources, and uses for a capital reserve fund, revolving loan program, or other solutions to address gaps for businesses, projects, programs, and incentives.

Objective 2C: Market development opportunities to prospective businesses, developers and site selection consultants.

Goal Area #2: Value and Invest in People and Opportunity

Roanoke County places people at the forefront of its economic development mission and encourages widespread economic opportunity.

Strategy 1: **Facilitate improved alignment between supply of and demand for skilled labor in the County and region (such as education-to-work pathways) and encourage collaboration and communication among public, private, and nonprofit institutions and agencies that provide education, employment and training-related services from pre-K through post-career.**

Objective 1A: ***Review and enhance existing business retention and expansion (BR&E) activities to more regularly and intentionally engage employers (including industry and high-growth potential small businesses) in identifying challenges and conditions for recruiting, hiring, training, and retention.***

Tactic 1A.1: Plan and convene semi-annual business roundtable events to share information and identify resources around challenges and trends in key industries, including workforce and talent concerns.

Objective 1B: ***Support Roanoke County's K-12 school system in engaging with County and regional employers. Participate in program development or expansion to facilitate better alignment between the educational system and in-demand jobs and skill gaps.***

Tactic 1B.1: Identify Roanoke County employer opportunities for K-12 student internships, work experiences and classroom learning (such as company site visits or guest speakers).

Tactic 1B.2: Actively engage in Career and Technical Education (CTE) program expansion and alignment with employer needs. Consider supporting or developing special events or activities such as a "manufacturing day," which may include site visits and/or industry speakers and sponsorships.

Tactic 1B.3: Develop a marketing or talking-points fact sheet (updated annually) on Roanoke County schools as an economic development asset, to assist in marketing the County to employers and prospects (including information on CTE or special programs, experiential opportunities, and positive school performance measures).

Objective 1C: ***Engage and collaborate with other education and workforce partners (such as area colleges and the workforce development board) on identifying training needs and marketing opportunities, and adapting existing offerings to better serve employers and respond to employer-identified workforce needs.***

Tactic 1C.1: Meet with education and workforce providers to best develop working practices and a plan for rapidly responding to more acute or critical workforce development needs. (e.g. develop a check-list for the Roanoke County BR&E team to consult when an employer or employers have a critical near-term need. Staff can follow the checklist to connect employer and training partners and mobilize other resources to help address that need more rapidly.)

Tactic 1C.2: Develop a marketing or talking points fact sheet (updated annually) on area workforce development and educational institutions as an economic development asset, to assist in working with existing employers and in marketing the County to new employers and prospects (includes information on VWCC or other programs, experiential opportunities, and resources for employers, such as funding or services).

Strategy 2: **Continue to engage in expanding and advancing regional talent attraction and retention initiatives.**

Objective 2A: ***Coordinate with County employers and industry to understand their needs and effectively represent their interests in regional talent initiatives.***

Tactic 2A.1: Share information about regional talent collaborations and initiatives with County employers to update businesses on regional efforts and provide them with an opportunity to participate in these initiatives.

Tactic 2A.2: Facilitate relationships between businesses and higher education and encourage industry participation in available internship programs to attract and retain promising graduates from the region's colleges and universities.

Objective 2B: ***Identify, assess, and market County assets and conditions that contribute to regional talent attraction and retention.***

Tactic 2B.1: Inventory County assets that are in demand or contributing factors to location decisions of targeted talent segment populations such as young professionals, middle management, executives, etc. Use these assets in County marketing materials and offer for inclusion in regional materials.

Tactic 2B.2: Explore opportunities to continue to develop these and other assets, through County investment and support as well as through regional collaboration (e.g. greenway and trail development; blueways or river access; urban district/village style development; etc.)

Objective 2C: ***Continue regional cooperation and collaboration in marketing talent attraction and retention initiatives.***

Tactic 2C.1: Partner in providing networking and social opportunities for young professionals to help connect them to County assets and employers. This could include special events such as a County-focused annual event for young professionals or the creation or expansion of regional alumni networks.

Tactic 2C.2: Explore additional new campaigns to promote civic engagement opportunities to newcomers, youth, young professionals, and more diverse populations (offering them a voice in County organizations, boards, and commissions to connect more intentionally about talent attraction and retention).

Tactic 2C.3: Market employment and lifestyle opportunities and regional assets to college graduates and young professionals in cooperation with regional partners.

Goal Area #3: Value and Invest in Innovation and Entrepreneurship

Roanoke County is a community that values and supports innovation and entrepreneurial success.

Strategy 1: **Continue to develop and encourage a strong entrepreneur and business-friendly climate.**

Objective 1A: ***Simplify and streamline the process for starting or expanding a business in Roanoke County.***

Tactic 1A.1: Enhance County support for, and visibility of, small business liaison and navigation activities (by working directly with new entrepreneurs and existing small businesses to aid in navigating County and town processes and policies; to help them connect with and access resources such as financing or business assistance; and linking to County and town retail or office and industrial spaces).

Objective 1B: ***Expand and strengthen business support resources for entrepreneurs.***

Tactic 1B.1: Actively engage with Regional Chamber and Small Business Development Center (and similar entities) in improving accessibility, reach, and local awareness of services provided.

Tactic 1B.2: Partner in designing resource materials or web portal that provides streamlined and visible information on available resources for entrepreneurs.

Tactic 1B.3: Champion and promote existing small business recognition activities and campaigns in the County. Explore the creation of additional potential programs such as annual awards, awareness campaigns, or other special events.

Strategy 2: **Support regional innovation activities and position the County as a desirable location for high-growth potential entrepreneurs.**

Objective 2A: ***Connect County entrepreneurs to regional innovation resources and engage with regional innovators and start-ups (particularly in technology, life sciences, and research) to connect them with County-focused opportunities.***

Tactic 2A.1: Be actively engaged in the regional innovation ecosystem to identify partnership opportunities with the region's stakeholders to enhance the County's innovation capacity.

Objective 2B: ***Assess the need and potential for developing one or more new innovation/technology hubs, business incubators, or coworking spaces focused on a specific cluster or grouping of high-growth potential entrepreneurs and that would fill a gap or niche opportunity in the region's innovation ecosystem.***

Tactic 2B.1: Conduct or contract a study (opportunity analysis and feasibility assessment) to further examine this opportunity and identify existing gaps, needs and locations.

Tactic 2B.2: Meet individually with key innovation ecosystem stakeholders to explore partnership opportunities.

Objective 2C: Research and identify funding and other incentives for encouraging innovation and high growth entrepreneurship.

Tactic 2C.1: Develop a general inventory of comparative aspirational locality examples and national best practices.

Tactic 2C.2: Identify and leverage non-County resources such as private venture capital or state and federal funding sources to gain better access and refer such resources to County businesses.

Strategy 3: Partner in site or building development for spaces where high-growth potential small businesses could land or grow (technology or life-science sector company office or research spaces, that could attract companies exiting RAMP or other entrepreneur programs).

Objective 3A: Partner with RAMP, The Advancement Foundation, Verge, and other entrepreneur support organizations and innovation ecosystem partners to identify and assess the needs for diverse types of entrepreneur spaces in the region.

Tactic 3A.1: Inventory County properties and spaces that may match the ecosystem needs for entrepreneurial business growth and expansion in the region.

Tactic 3A.2: *Spearhead developer-public-private stakeholder conversations to develop spaces for entrepreneurs and high-growth potential companies.*

Tactic 3A.3: Identify and leverage grant funding and public-private partnerships to facilitate the creation of an innovation/technology hub for entrepreneurs.

Objective 3B: Market Roanoke County's innovation strengths and assets to high-growth potential start-ups and early-stage ventures in the region and beyond.

Tactic 3B.1: Consider creating a platform to highlight entrepreneurs and celebrate existing business successes within the innovation ecosystem.

Goal Area #4: Value and Invest in Place and Quality of Life

Roanoke County invests in growing and maintaining sustainable places and quality of life assets that add value for businesses, workers, and residents.

Strategy 1: Continue to support corridor plan implementation and business district development in community hubs to support live-work-learn-play environments with diverse housing and business options.

Objective 1A: Identify partnerships, grants, or other incentive opportunities that help encourage private investment and business formation or expansion in targeted corridors or community business hubs.

Tactic 1A.1: Evaluate the feasibility of creating business improvement districts in targeted commercial corridors.

Tactic 1A.2: Create an incentive and financing plan for high-priority investment opportunities and recommend implementation strategies to County policymakers and leaders.

Objective 1B: Promote incentives and investment opportunities to developers, investors, and businesses.

Tactic 1B.1: Develop an outreach and marketing plan to promote opportunities to realtors, private sector investors and developers (locally, regionally, and out-of-area).

Tactic 1B.2: Host or partner in planning and conducting one or more events, programs, or tours for developers and investors.

Tactic 1B.3: Work with property owners and regional partners to align business trends with available real estate.

Objective 1C: Continue to support and encourage infrastructure improvements in targeted areas of the County to drive new residential and commercial growth.

Tactic 1C.1: Advocate and speak on behalf of businesses for broadband access, transportation connectivity, and accessibility, including multimodal types of access, to ensure that customers and workers can readily access businesses in more concentrated areas.

Tactic 1C.2: Continue to engage and partner in regional initiatives to advance alternative solutions to infrastructure and transportation improvements (such as Ride Solutions) and to engage and partner in regional planning initiatives on behalf of business and industry.

Strategy 2: **Be an active partner and promoter of Roanoke County's livability, or quality of place, assets.**

Objective 2A: Continue to partner and support sustainable tourism and outdoor economy initiatives. Support parks, recreation, and tourism partners in developing and advancing the inventory of outdoor infrastructure and activities (i.e. greenways, rivers, streetscapes, Explore Park) that have been positively impacted by the Coronavirus pandemic.

Tactic 2A.1: Maintain active engagement in regional initiatives such as Roanoke Outside and Virginia's Blue Ridge to market and brand the County to attract new visitors to the County.

Tactic 2A.2: Encourage entrepreneurship and business growth in recreation and tourism sector (including outfitters, breweries, etc.) through partnership with and enhanced support for business support intermediaries (Small Business Development Center, Advancement Foundation, etc.) and through encouraging programming and events targeting this sector.

Objective 2B: Maintain Roanoke County's suburban and rural identity and appeal.

Tactic 2B.1: Support agriculture and rurally-located enterprises through engagement with regional partners to strengthen local and regional initiatives (such as the Catawba Sustainability Center).

Tactic 2B.2: Help position Roanoke County as a location of choice for remote workers and work-from-home entrepreneurs in suburban and rural areas by advocating for, and supporting investments in, essential infrastructure such as broadband and cellular service.

Objective 2C: Continue to support the County's top employing industry sectors who have been most negatively impacted by the Coronavirus pandemic such as, retail, restaurants, and accommodations.

Tactic 2C.1: Continue direct outreach to pandemic-impacted businesses and the facilitation of business access to federal and state support resources.

Objective 3A: ***Collaborate with regional partners to explore changing conditions that resulted from the Coronavirus pandemic (such as alternative and remote work opportunities) and are accelerating living and working trends.***

Tactic 3A.2: Engage with regional, state, and national experts and analysts on a regular basis to identify and understand relevant trends and conditions and how these apply or differ across

Tactic 3A.1: ***Communicate and share information on trends and conditions with companies, partners, and County leaders.***

Objective 3B: ***Identify possible strategies, responses, or adaptations to trends and conditions that may be of greatest relevance for Roanoke County's business base and in alignment with the Economic Development department's core functions.***

Tactic 3B.1: Convene business leaders or partners around specific opportunities, or partner in regional strategy development and encourage Roanoke County industry and partner engagement.

Objective 4A: Continue to actively monitor, inventory and position vacant and underutilized properties to enhance the County's economic position for business growth.

Tactic 4A.1: Develop a plan for targeting underutilized properties and promoting redevelopment projects consistent with the County's vision.

Tactic 4A.2: Work with regional partners to identify and prepare large sites for future economic development projects with the Western Virginia Regional Industrial Facilities Authority.

Tactic 4A.3: Continue to engage property owners and regional partners to facilitate the County's development and redevelopment goals.

Appendix I: Demographic Summary

1. Population Changes

There are 94,495 people living in Roanoke County in 2020. This marks a 2.3% (2,094 person) increase in the County's population from 2010-2020. The rate of population growth in Roanoke County exceeded that of the Roanoke Metropolitan Statistical Area (MSA) over the past decade (1.8%). The County, however, grew at a slower rate compared to the state (7.2%) and nation (6.9%). The total population in Roanoke County is projected to grow by 1.3% by 2030, or 1,128 individuals.

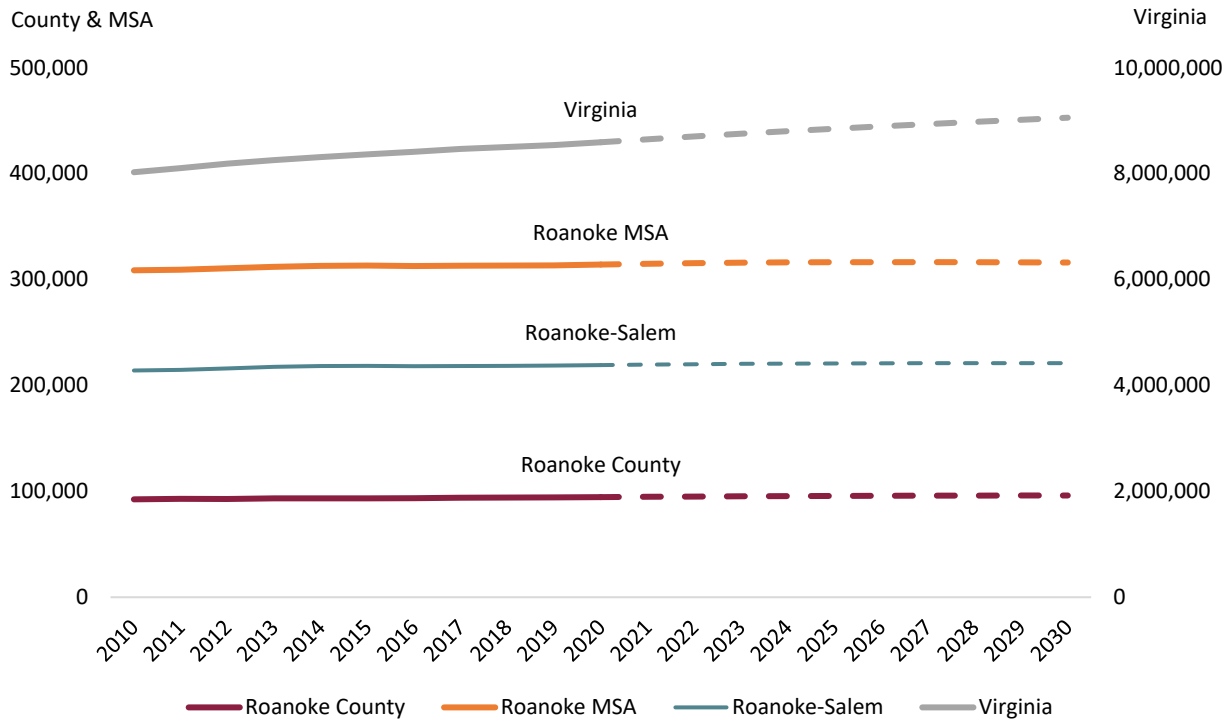


Figure 25: Estimated Total Population, 2010-2030

Source: EMSI Developer 2021.2. Datarun

Roanoke County is one of the few counties in western Virginia that both experienced an increase in population from 2010-2020 and is slated for future growth. Figure 26 below illustrates that only Bedford, Montgomery, Floyd, and Rockbridge are expected to have greater population growth than Roanoke County over the next decade.

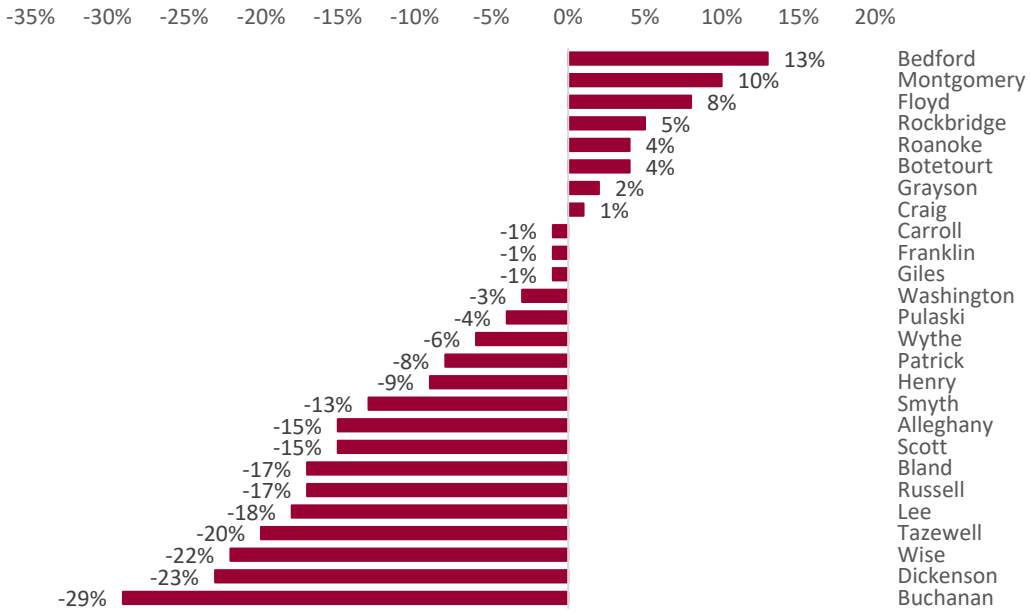


Figure 26: Change (%) of Estimated Population in Southwest Virginia Counties, 2010-2030
Source: EMSI Developer 2021.2. Datarun

The Roanoke MSA is estimated to grow by 2% between 2010-2030. The MSA's population increase is not as great as the other MSAs across the Commonwealth, but still higher than most southwest Virginia MSAs with the exception of Blacksburg-Christiansburg MSA.

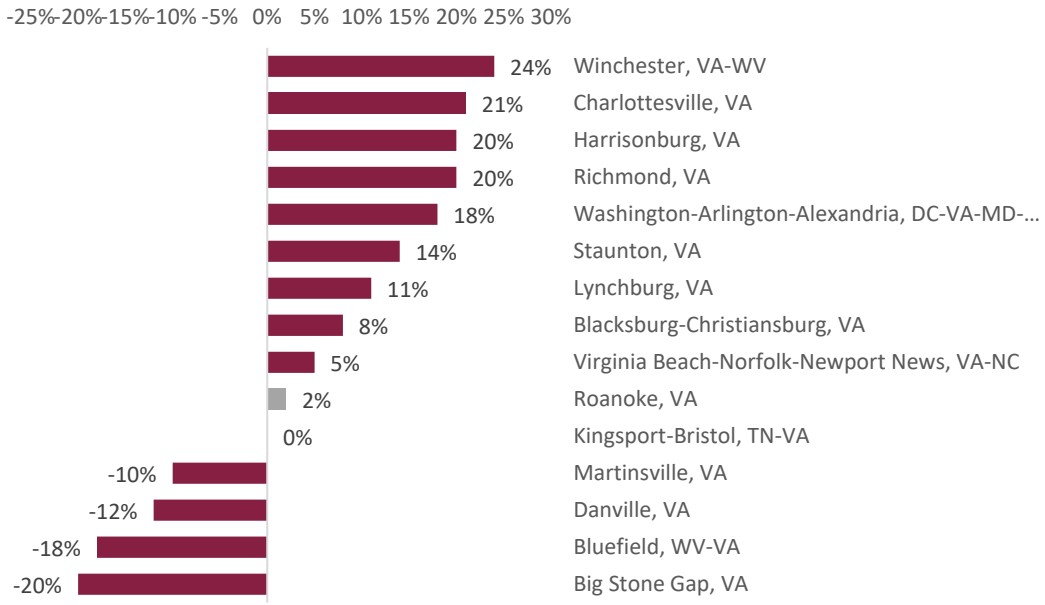


Figure 27: Change (%) of Estimated Population in Virginia MSAs, 2010-2030
Source: EMSI Developer 2021.2. Datarun

2. Population by Age

Roanoke County's population over 65 years of age has seen a large change of 32% (5,095 individuals) over the past decade and is projected to continue to grow by 19% (4,019 individuals) between 2020-2030. Meanwhile, individuals aged 40 to 65 have seen moderate population decreases of 12% or 3,498 individuals between 2010-2020 and is projected to lose 1,113 individuals (5%) in the next ten years. Figure 4 illustrates the County's notable population changes by age.

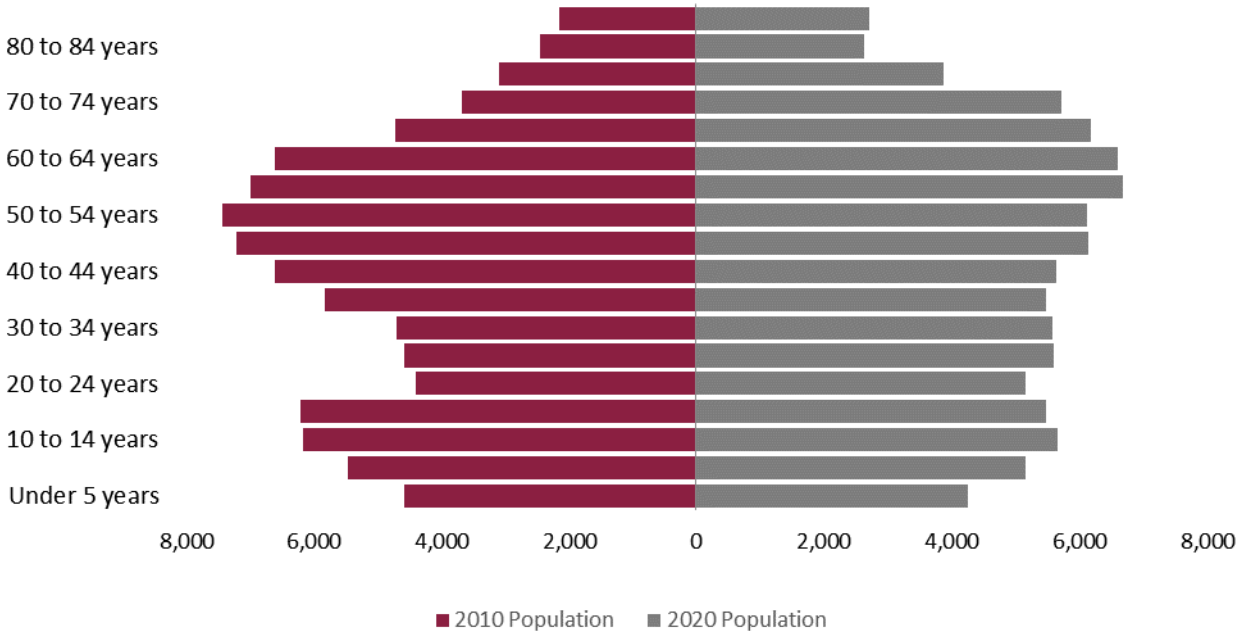


Figure 28: Roanoke County Population Change by Age, 2010-2020
Source: EMSI Developer 2021.1 Datarun

3. Population by Race

Roanoke County has a majority white population, with 85.8% identified as non-Hispanic white in 2019, according to American Community Survey (ACS). Black or African Americans account for 5.9% of the population. Both Hispanic or Latino (of any race) and Asian make up 3.1% of the population respectively. Minority populations have slightly increased over the decade, but their absolute population sizes are still smaller compared to white.

Appendix II: Education and Workforce

1. Educational Attainment

a. Total Educational Attainment

Educational attainment relates to the County's current and future available pipeline of talent. Overall educational attainment for the County is higher than the state of Virginia for all segments with the exception of graduate and professional degrees. 22.8% of Roanoke County residents possess a bachelor's degree (3.0% above the national average), and 31.8% hold an associate's degree (2.9% above the national average).

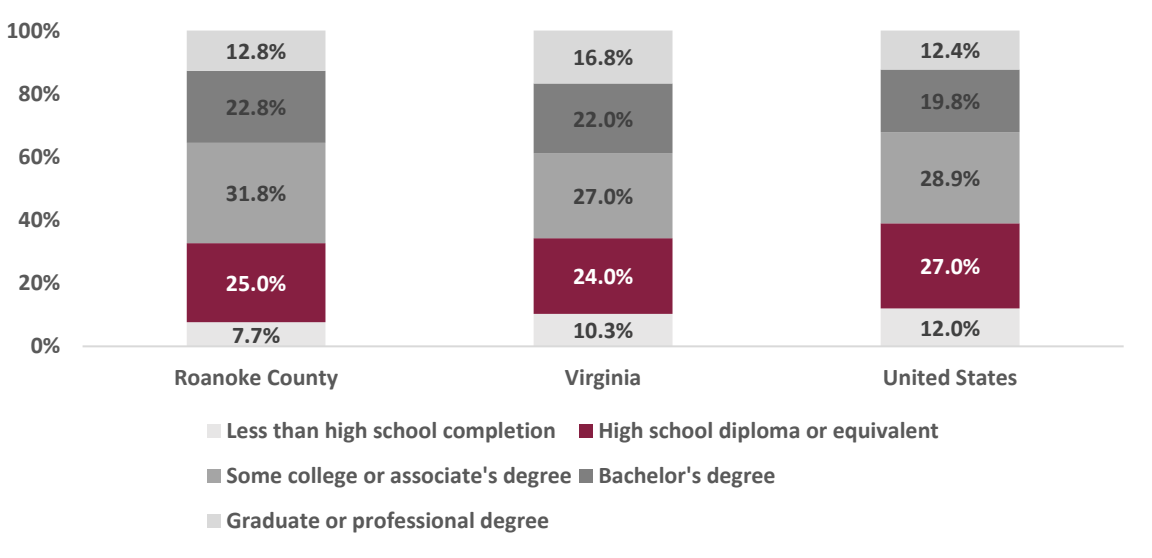


Figure 29: Education Attainment of 25 years and over, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

b. Education Attainment by Gender

Roanoke County does not appear to have a sizeable gender gap in educational attainment. However, Figure 30 illustrates that fewer Roanoke County have completed high school compared to their male counterparts. This is in contrast to the United States Census who reports that compared to men, women are more likely to have completed high school and are almost as likely to have completed college.

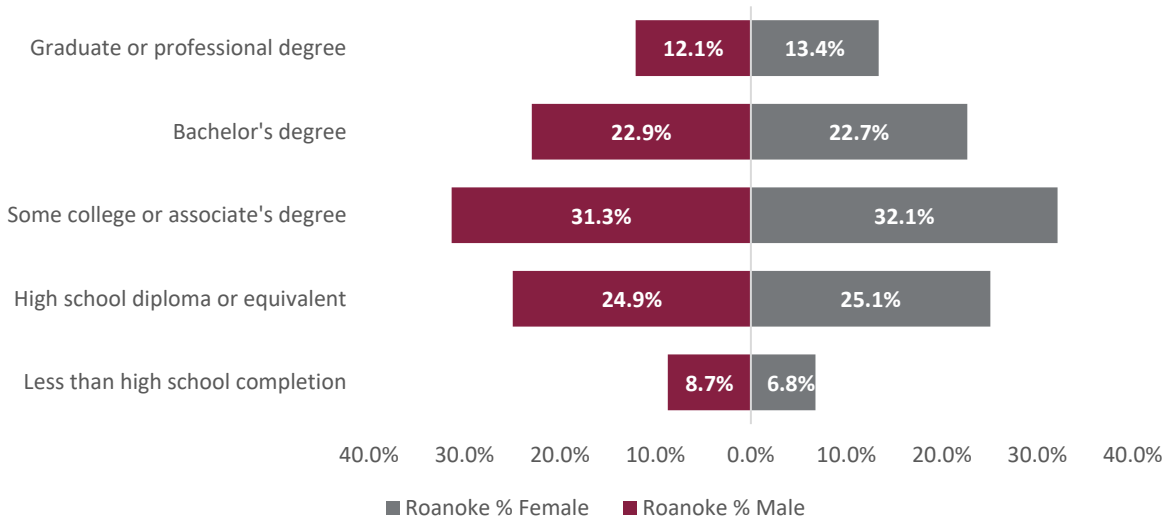


Figure 30: Education Attainment by Gender in Roanoke, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

c. Education Attainment by Race and Ethnicity

Roanoke County's high school graduation rates for those aged 25 years and over is higher than for the nation as a whole[6]. Particularly, minority populations have higher high school diploma rates compared to the U.S. averages. The small sample size accounts for significantly high graduation rates of American Indians/Alaska Natives and Asian and Pacific Islander populations.

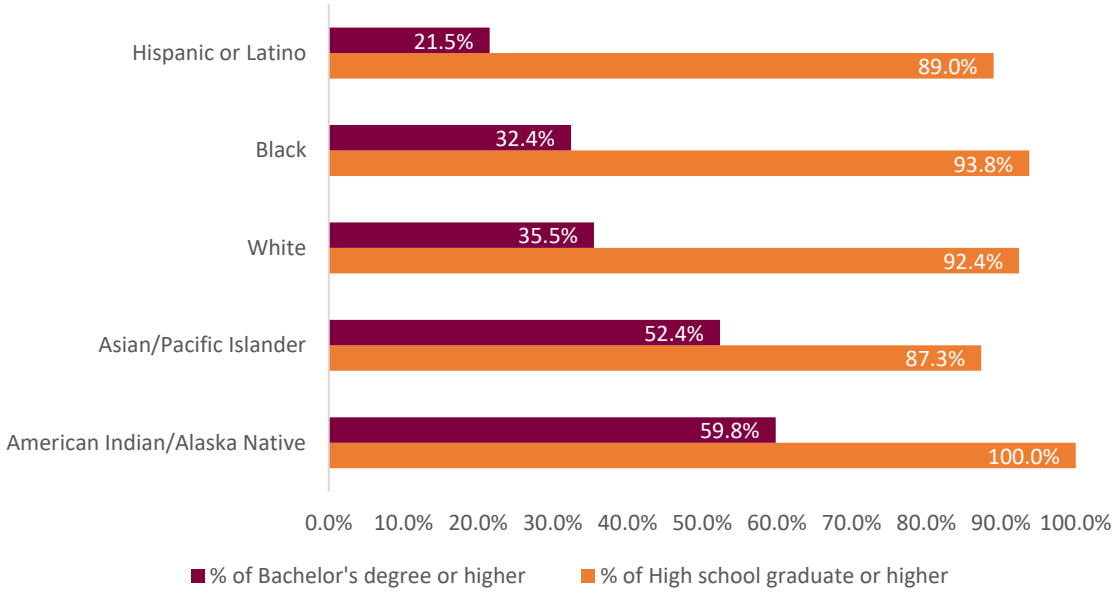


Figure 31: Educational Attainment by Race and Ethnicity, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

[6] USA Census Bureau. American Community Survey. Education Attainment. 2019.

d. Poverty and Education Attainment

In 2019, 6.2% of the Roanoke County population had income below the poverty level[7]. Of the in-poverty population, the largest proportion (33.5%) had attained some college education or an associate's degree. This is in contrast to the in-poverty population for the state and nation who have high school graduates accounting for the greatest proportion (33.5% and 33.8% respectively).

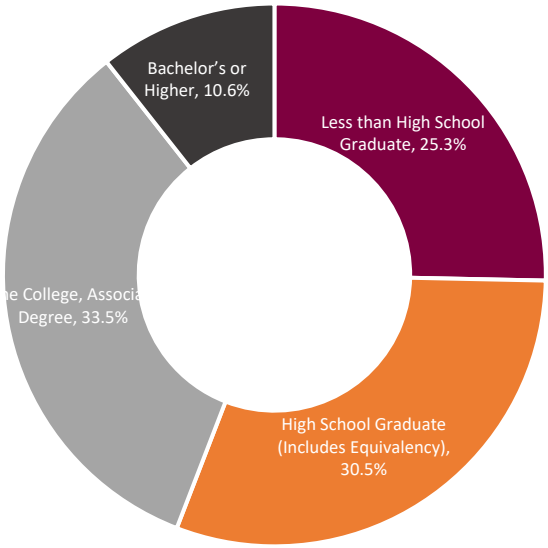


Figure 32: Education Attainment of the Population in Poverty Status, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

The County's median incomes of high school graduates and some college and associate graduates are slightly higher than state and national averages, while incomes of those with a bachelor's degree or higher are lower. This may reflect the County's job market and could suggest lower employer wages, a lower number of higher wage jobs, and/or a difficulty with attracting and retaining college-educated workers.

[7] USA Census Bureau. American Community Survey. Income in the Past 12 Months (In 2019 Inflation-Adjusted Dollars)

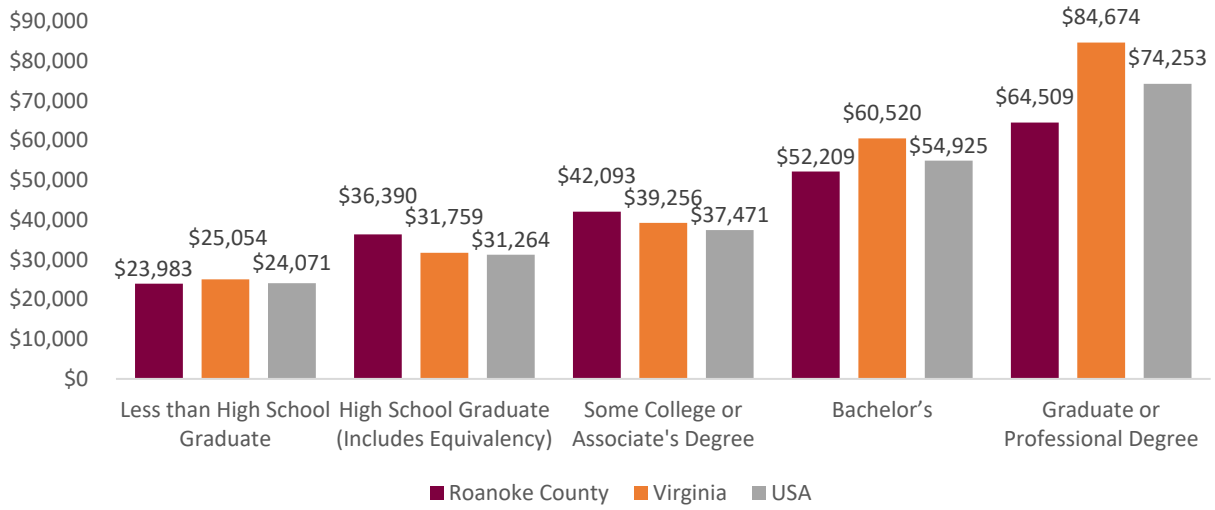


Figure 33: Median Earnings by Educational Attainment for Population Age 25 and Over, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

2. Education Profile

a. Continuing Education Plans

The majority of Roanoke County high-school graduates reported on planning to attend a four-year (45.2%) or two-year college (33.5%). A higher percentage of graduates in the County chose to attend a two-year college compared to the state average of 25.2%. About 15% of students had plans to directly enter the workforce, translating to 165 young entry-level workers choosing employment upon graduation. These trends align with the continuing education plans of the graduating classes of the previous five years.

Table 54: Continuing Education Plans, 2019-2020

Division Name	Two-year Colleges	Four-year Colleges	Other Education	Employment	Military	No Plans	Total Graduates
Roanoke County	379 (33.5%)	511 (45.2%)	30 (2.7%)	165 (14.6%)	34 (3.0%)	11 (1.0%)	1,130
Virginia	23,590 (25.2%)	44,649 (47.8%)	4,245 (4.5%)	11,870 (12.7%)	3,171 (3.4%)	5,975 (6.4%)	93,500

Source: Virginia Department of Education

b. Career and Technical Education Completions

State Council of Higher Education for Virginia statistics reported over 4,800 students enrolling in Roanoke County high school institutions during the 2017-2018 school year. Additionally, 519 students (10.85%) completed Career and Technical Education and 819 students (17.0%) participated in dual enrollment[8].

[8] Virginia Department of Education, CTE Annual Performance Report, 2017-2018. Available: https://www.doe.virginia.gov/instruction/career_technical/statistics_reports/index.shtml

Table 55: Career and Technical Education Completion, 2017-2018

County	Enrollment	CTE Completions	CTE Completions %	Dual Enrollment	Dual Enrollment %
Roanoke County	4,804	519	10.8%	819	17.0%

Source: Virginia Department of Education, 2017-2018; State Council of Higher Education for Virginia, 2017-2018

c. Postsecondary Pipeline

Health professions and related programs had the greatest postsecondary program completions (993) for the Roanoke County, City of Roanoke, and City of Salem region. These degrees offer a wide variety of careers in nursing, the medical/clinical field, business administration and management, and biological and physical sciences. Program career pathways reported having high annual openings (3,732) and strong projected job changes in the next ten years (6.2%).[9]

Table 56: Postsecondary Pipeline, 2019

Program Description	2019 Completions	Completions % Change (2013-2019)
Health Professions and Related Programs	993	-9%
Business, Manage., Marketing, and Related Support Services	298	-32%
Liberal Arts and Sciences, General Studies and Humanities	207	-33%
Social Sciences	140	-23%
Multi/Interdisciplinary Studies	133	66%
Visual and Performing Arts	103	-8%
Engineering Technologies and Engineering-Related Fields	95	-9%
English Language and Literature/Letters	79	-21%
Personal and Culinary Services	69	-23%
Computer and Information Sciences and Support Services	67	-50%
Psychology	62	-16%
Biological and Biomedical Sciences	60	-14%
Mechanic and Repair Technologies/Technicians	58	152%
Parks, Recreation, Leisure, and Fitness Studies	58	45%
Precision Production	40	471%
Communication, Journalism, And Related Programs	36	44%
Engineering	35	46%
History	34	-26%
Family and Consumer Sciences/Human Sciences	30	100%
Construction Trades	30	-14%
Natural Resources and Conservation	27	23%
Legal Professions and Studies	24	-4%
Homeland Security, Law Enforcement, Firefighting and Related	24	-59%
Physical Sciences	24	50%
Foreign Languages, Literature, and Linguistics	22	22%
Education	19	19%
Mathematics and Statistics	13	-32%
Philosophy and Religious Studies	13	-7%
Science Technologies/Technicians	10	Insf. Data
Agriculture, Agriculture Operations, and Related Sciences	7	-68%
Area, Ethnic, Cultural, Gender, And Group Studies	3	-25%

[9] EMSI. Datarun 2021.1 Industry Table.

Source: EMSI Developer 2021.1 Datarun

Virginia Western Community College produced the greatest amount of program completions (1,210 individuals) within the Roanoke County, Roanoke City, and Salem City region. However, Radford University-Carilion saw the greatest amount of growth (32%) in its number of completions, an increase of 133 completers between 2013-2019.

Table 57: Postsecondary Pipeline Institutions, 2019

Description	2019 All Program Completions	% All Programs Completions Change (2013-2019)
Virginia Western Community College	1,210	5%
Roanoke College	474	(1%)
Radford University-Carilion	417	32%
American National University	416	(42%)
Hollins University	261	(4%)

Source: EMSI Developer 2021.1 Datarun

Table 58: 2019 Fall Headcount Enrollments

Institution	Undergraduate	Graduate	Total
Virginia Western Community College	6,303	0	6,303
Hollins University	668	130	798
Roanoke College	2,014	0	2,014
Jefferson College of Health Sic (RU)	776	352	1128
Virginia Tech Carilion School of Medicine	0	43	43
American National University	741	28	769
Miller-Motte Technical College-Roanoke	75	0	75

Source: State Council for Higher Education for Virginia (2019) Fall Headcount Report

Virginia Western Community College and Roanoke College represent the greatest undergraduate enrollment with a combined 8,317 students in 2019, accounting for 75% of undergraduate students among all Roanoke County, City of Salem, and City of Roanoke institutions. Hollins University and Jefferson College of Health Sciences were the top two institutions for 2019 graduate program enrollment, 482 students or 87% of total 2019 graduate program enrollment. This presents a large talent pool potential that can become a strength and opportunity for Roanoke County.

3. Labor Force Participation

Roanoke County's labor force participation rate has decreased from 67.3% in 2010 to 61.3% in 2019. Labor force participation also fell at the national and statewide level during the same period, although participation decline in Roanoke County was more significant. This could be due to changes in the county's population during the same period; the over-65 population grew while the population aged 45-64 saw decline.

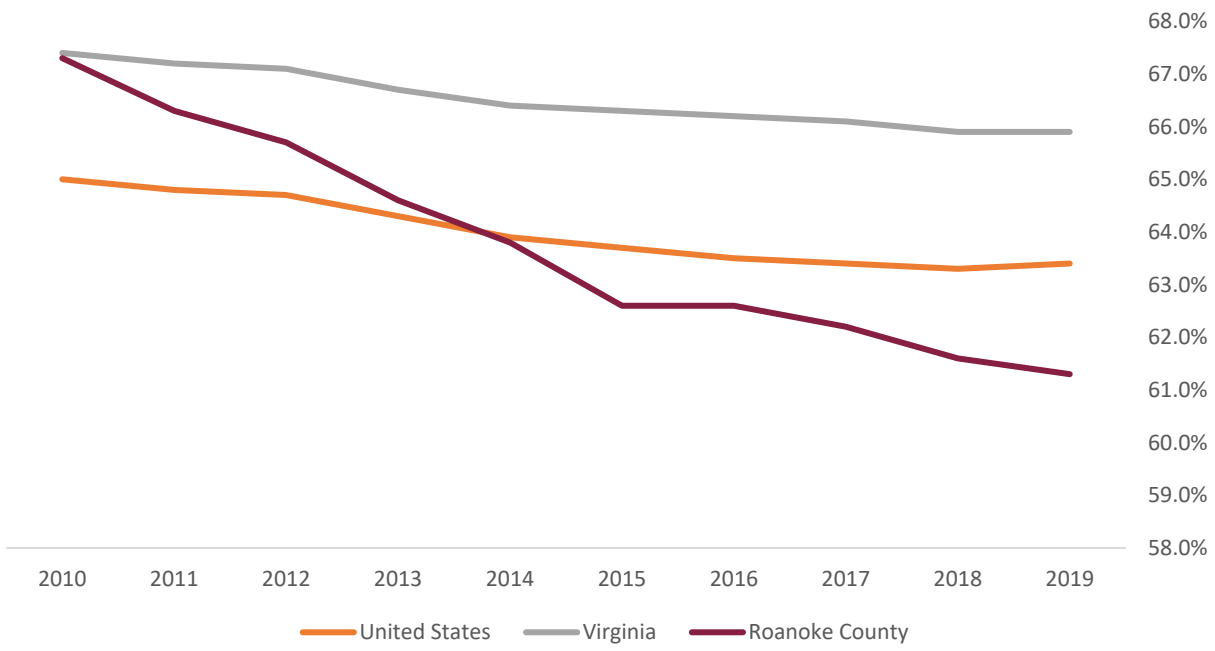


Figure 34: Labor Force Participation Rate, 2010-2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

4. Workforce Age

Roanoke County's greatest population of labor force participants is over the age of 45 years, which is comparable to state and national figures. Similarly, a smaller population aged 20 to 34 years participate in the labor force across all three locations. Roanoke County, along with southwest Virginia in general is continuing to experience an aging population with the growth of the population 65 years and over. Figure 35 below shows the details of the population in the labor force by age in 2019.

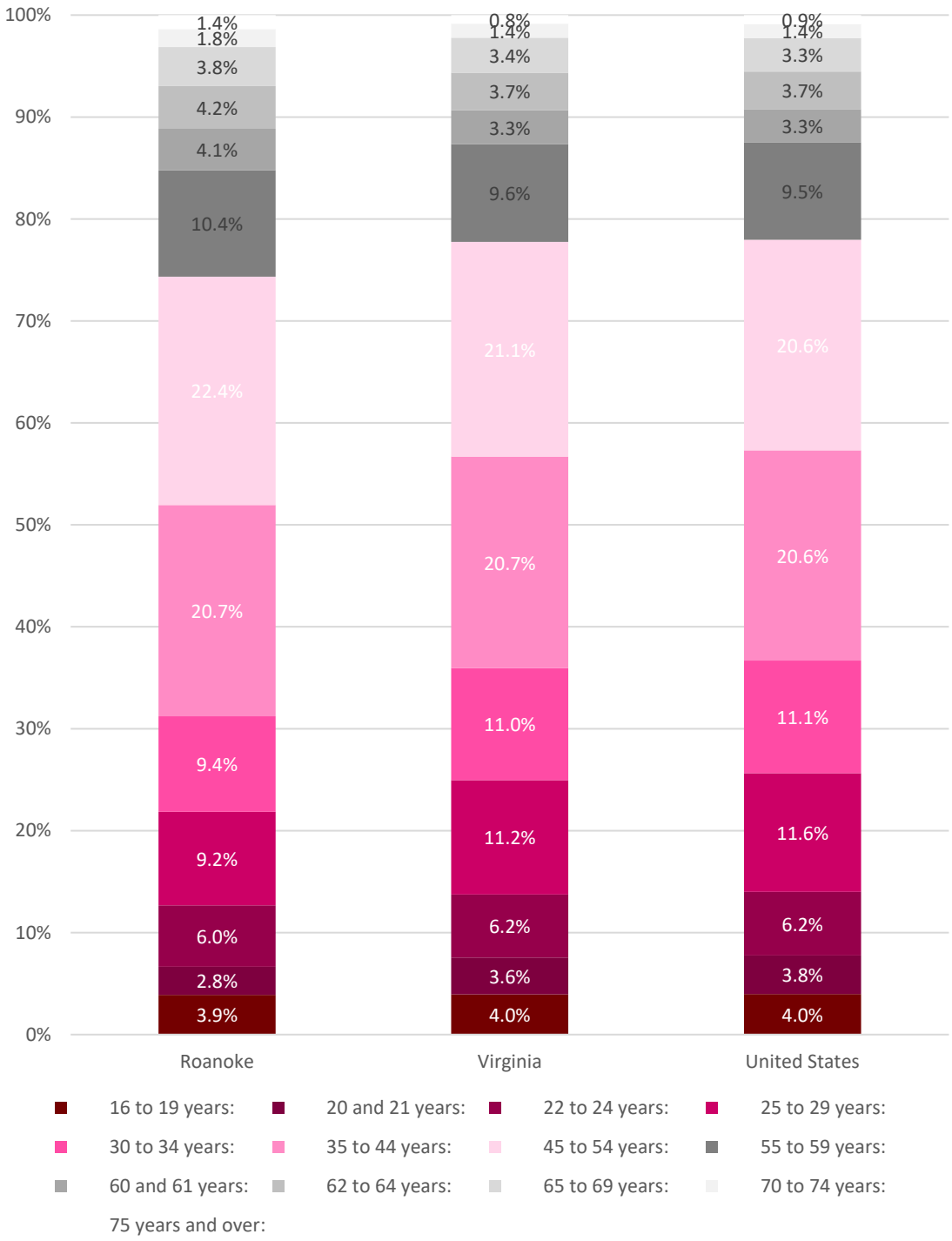


Figure 35: Population in the Labor Force by Age, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

Appendix III: Income, Poverty, and Social Mobility

1. Income

There are different ways to measure, or consider income. Most economists use median income per capita. The median income per capita is the point at which half the people in an area earn more than this amount and half earn less than this amount. The median tends to minimize the presence of a few extremely wealthy people, who can skew the amount.

Roanoke County's median household income was $71,715 in 2019, a real-dollar increase of 16.0% since 2016, according to American Community Survey (ACS) 1-year estimates. This significant growth in median household income is partially attributed to greater development in the field of healthcare. This increase has remained above that of Roanoke MSA, Roanoke-Salem area, and the USA median but lower than the state median, as seen in Figure 36 below.

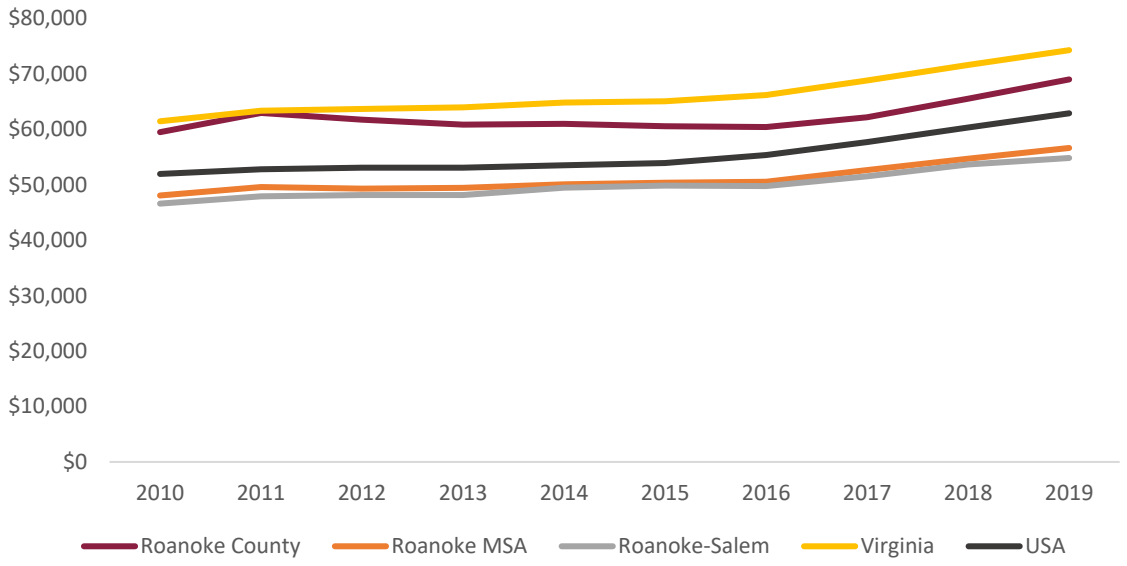


Figure 36: Inflation Adjusted Median Household Income in Roanoke County and Other Geographies, 2010-2019

Source: U.S. Census Bureau, American Community Survey 5-year estimates

The average household income of Roanoke County was $93,210 in 2019, $21,495 higher than the median income. This number includes total income per household, and average household size is about 2.5 people. Unlike the median income, which is much higher than the nation as a whole, the County's average household income is similar to that of USA. This suggests Roanoke County has a larger number of households earning incomes closer to the median compared to that across the United States. In general, this illustrates a narrower gap between the rich and poor households.

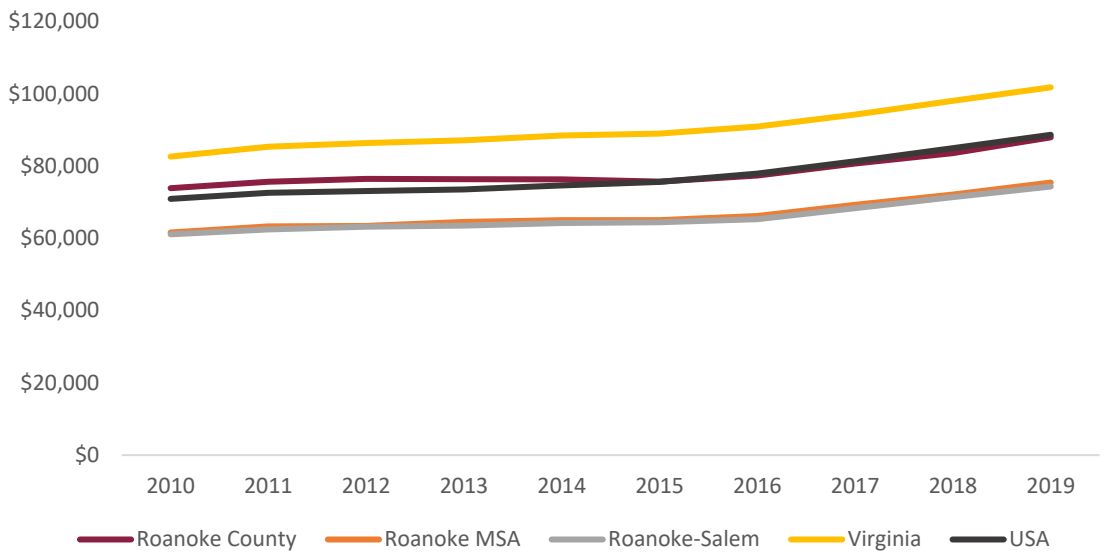


Figure 37: Mean Household Income in Roanoke County and Other Geographies, 2010-2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

Per capita income was $38,803 in 2019, a gradual real-dollar increase of 17.5% since 2015 after a quick downtick in the previous year. Per capita income for a locality is the total income for the area divided by the number of residents. It is important to note that a small number of extremely wealthy people in one area can raise the average suggesting Roanoke County's per capita income may be misleading.

Growth in the size of the workforce and in the productivity of that workforce are sources of per capita income increases[10]. Either can increase the overall size of the economy but only strong productivity growth can increase per capita GDP and income.

[10] Stone B.C., "Economic Growth: Causes, Benefits, and Current Limits," *Center on Budget and Policy Prioritites,* 2016 [Online]. Available: https://www.cbpp.org/research/economy/economic-growth-causes-benefits-and-current-limits

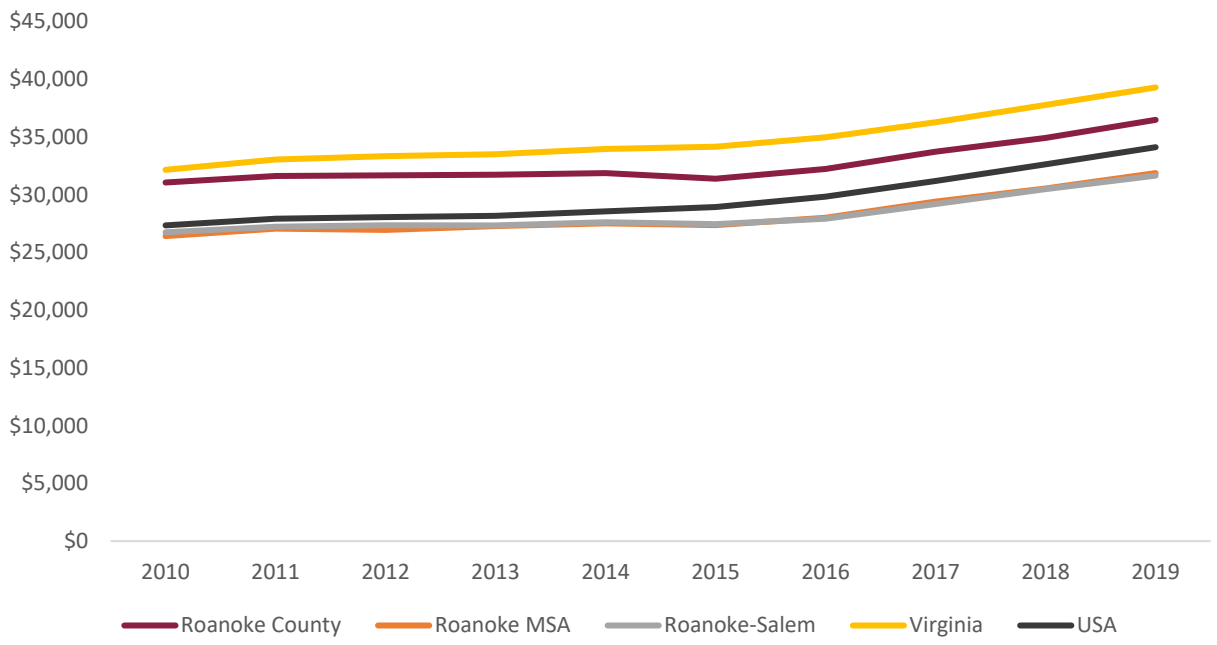


Figure 38: Inflation-Adjusted Per Capita Income in Roanoke County and Other Geographies, 2010-2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

Looking at the past decade, Roanoke County has had the lowest increase rate from 2010 to 2019 in all three indicators compared to its counterparts. However, the County has experienced relatively steady real-dollar increases in its most recent five years to the point of surpassing the state's growth rate in average household income and per capita income.

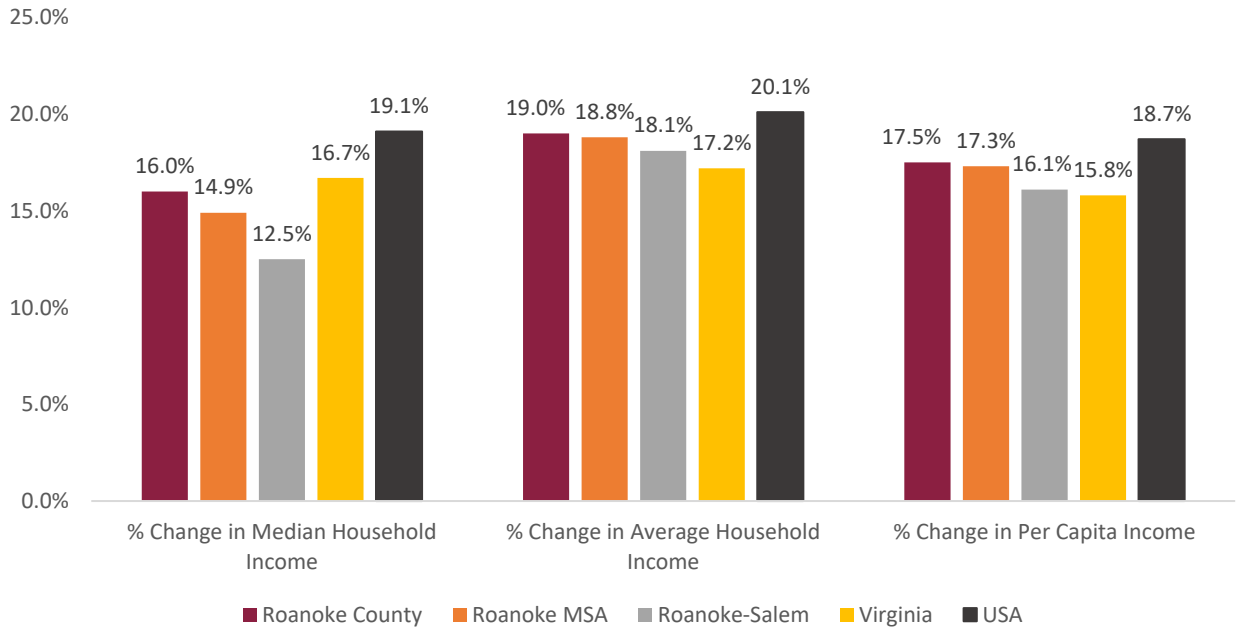


Figure 39: Inflation-Adjusted Income Change in Roanoke County and Other Geographies, 2015-2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

When comparing the County's income increases with 133 other Virginiana cities and counties, Roanoke County placed 74th in median household income, with a growth rate of 16.0% in the last five years. The average household income was ranked relatively high in 54th place with a 19.0% increase, and per capita income had placed 61st, with a 17.5.0% increase.

2. Poverty Rate

Roanoke County had a poverty rate of 6.9% between 2015-2018[11]. This is a lower population compared to both state and national figures for the same time period. The United States population was 13.4% impoverished while Virginia was slightly lower at 10.6%.

3. Social Mobility

Social mobility data from Opportunity Atlas show children's outcomes in adulthood using anonymized data overlaid on Census tracts with American Community Surveys[12]. Table 59 below illustrates social mobility for children from low-income parents in Roanoke County in comparison to the national median. According to these resources, between 2014-2015, 10% of children who grew up in Roanoke County have an average household income (in their mid-30s) in the top 20% of the national income distribution for children born in the same year. Over 30% of children have an average income in the top 1% of the nation. As both fractions are higher than the national median (9.6% for the top 20% and 13% for the top 1%), the County has a slightly higher social mobility rate.

[11] American Community Survey. Income in the Past 12 Months (In 2019 Inflation-Adjusted Dollars) 2015-2018. Available: https://data.census.gov/cedsci/table?q=Income%20and%20Poverty&tid=ACSST1Y2019.S1901&hidePreview=true
[12] Roanoke County, VA Household Income at Age 35, 2014-2015. Available: https://www.opportunityatlas.org/

Table 59: Social Mobility for Children from Low-income Parents, 2005-2015

Indicator	Roanoke County	County Median in the United States
Household income	$33,000	$33,000
Incarceration Rate	2.3%	2%
Individual Income (Excluding spouse)	$23,000	$23,000
Fraction married	43%	42%
Spouse's income	$36,000	$34,000
Employment rate	73%	74%
Highschool Graduation rate	85%	80%
College graduation rate	25%	17%
Hours worked per week	31	29
Hourly Wage ($/Hour)	**$17**	**$15**
Frac. In Top 20% Based on Household Income	**10%**	**9.6%**
Frac. In Top 1% Based on Household Income	**0.31%**	**0.13%**
Frac. In Top 20% Based on Individual Income	**11%**	**10%**
Frac. In Top 1% Based on Individual Income	**0.29%**	**0.15%**
% Staying in Same Commuting Zone as Adults	72%	65%
% Staying in Same Tract as Adults	23%	27%
Household Income (In Commuting Zone)	$30,000	$31,000
Individual Income (Stayed in Commuting Zone)	$20,000	$21,000
Household Income for U.S. Natives	$35,000	$34,000
Household Income for Immigrants	$41,000	$38,000
Individual Income for U.S. Natives	$25,000	$23,000
Individual Income for Immigrants	$28,000	$27,000
Number of Children	5,400	3,300

Source: Opportunity Atlas (https://www.opportunityatlas.org/)

Appendix IV: Industries

1. Roanoke County Industry

i. Industry by Employment

Health care and social assistance is the top industry by employment in 2020 with 6,866 jobs. Jobs in the industry have increased by 37% over the last decade. Retail trade and government are the second and third most employed industries in the County. While the size of employment is relatively small compared to the top industries, jobs in transportation and warehousing have increased by 85% between 2010-2020.

Table 60: Industry by Employment

NACIS	Description	2010 Jobs	2020 Jobs	Change	% Change
62	Health Care and Social Assistance	4,999	6,866	1,867	37%
44	Retail Trade	5,548	5,300	-248	-4%
90	Government	4,634	4,772	139	3%
54	Professional, Scientific, and Technical Services	3,904	4,688	785	20%
31	Manufacturing	2,863	3,879	1,016	35%
81	Other Services (except Public Administration)	2,914	3,442	527	18%
52	Finance and Insurance	3,671	3,121	-550	-15%
72	Accommodation and Food Services	2,622	3,076	454	17%
56	Admin. and Support and Waste Manage. and Remediation Services	3,309	2,829	-480	-15%
23	Construction	2,271	2,646	375	16%
53	Real Estate and Rental and Leasing	2,173	2,369	196	9%
48	Transportation and Warehousing	1,210	2,240	1,030	85%
61	Educational Services	1,021	1,453	432	42%
55	Management of Companies and Enterprises	1,004	1,368	364	36%
42	Wholesale Trade	1,543	1,333	-210	-14%
71	Arts, Entertainment, and Recreation	1,037	1,149	112	11%
51	Information	754	512	-242	-32%
11	Agriculture, Forestry, Fishing and Hunting	336	277	-59	-18%
22	Utilities	213	208	-5	-2%

Source: EMSI Developer 2021.1 Datarun

ii. Employment Concentrated Industries

Management of companies and enterprises has the highest location quotient (LQ) as a sector. However, the professional, scientific, and technical services sector has the greatest specialization amongst its national industries. The health care and social assistance sector has multiple subsectors that have high LQs, indicating the County has a strong health care industry with diversified demands.

Table 61: Employment Concentrated Industries

NAICS	Description	2020 LQ
55	***Management of Companies and Enterprises***	***2.13***

551111	Offices of Bank Holding Companies	13.57
551112	Offices of Other Holding Companies	4.04
551114	Corporate, Subsidiary, and Regional Managing Offices	1.75
54	***Professional, Scientific, and Technical Services***	***1.40***
541513	Computer Facilities Management Services	95.85
541191	Title Abstract and Settlement Offices	4.15
541830	Media Buying Agencies	3.05
22	***Utilities***	***1.39***
221330	Steam and Air-Conditioning Supply	4.02
221122	Electric Power Distribution	3.20
221310	Water Supply and Irrigation Systems	1.53
62	***Health Care and Social Assistance***	***1.19***
624210	Community Food Services	9.41
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	5.07
624221	Temporary Shelters	5.02
61	***Educational Services***	***1.17***
611513	Apprenticeship Training	3.18
611692	Automobile Driving Schools	2.43
611630	Language Schools	1.75

Source: EMSI Developer 2021.1 Datarun

iii. Industries by GRP

Health care and social assistance generated the largest gross regional product ($453,453,807) in the County in 2020. Manufacturing ($393,953,600) and professional, scientific, and technical services ($352,337,709) are the industries with second and third largest GRP.

Table 62: Industries by GRP, 2020

NAICS	Industry	2020 GRP
62	Health Care and Social Assistance	$453,453,807
31	Manufacturing	$393,953,600
54	Professional, Scientific, and Technical Services	$352,337,709
52	Finance and Insurance	$336,094,672
90	Government	$304,125,866
44	Retail Trade	$281,155,334
42	Wholesale Trade	$190,612,159
23	Construction	$170,855,311
55	Management of Companies and Enterprises	$158,196,212
22	Utilities	$144,873,988

Source: EMSI Developer 2021.1 Datarun

2. Roanoke Regional Industry

i. Industry by Employment

Health care and social assistance is the top industry by employment in 2020 with 24,259 jobs. Jobs in the industry have increased by 12% over the last decade. Government and retail trade are the second and third most employed industries in the regional economy. While the size of employment is relatively small compared to the top industries, jobs in transportation and warehousing, educational services, and arts, entertainment, and recreation have increased between 15%-17% between 2010-2020.

Table 63: Industry by Employment

NACIS	Description	2010 Jobs	2020 Jobs	Change	% Change
62	Health Care and Social Assistance	24,259	27,140	2,882	12%
90	Government	24,985	23,566	-1,418	-6%
44	Retail Trade	22,257	20,124	-2,133	-10%
31	Manufacturing	16,289	17,250	962	6%
72	Accommodation and Food Services	13,033	12,978	-55	0%
81	Other Services (except Public Administration)	11,821	12,729	908	8%
23	Construction	12,105	12,710	605	5%
54	Professional, Scientific, and Technical Services	10,083	10,391	308	3%
48	Transportation and Warehousing	8,942	10,336	1,394	16%
52	Finance and Insurance	9,814	9,863	49	1%
56	Administrative and Support and Waste Management and Remediation Services	10,710	9,597	-1,113	- 10%
53	Real Estate and Rental and Leasing	7,923	8,424	502	6%
42	Wholesale Trade	7,363	7,468	105	1%
55	Management of Companies and Enterprises	4,565	4,877	312	7%
61	Educational Services	3,713	4,337	624	17%
71	Arts, Entertainment, and Recreation	2,914	3,361	447	15%
11	Agriculture, Forestry, Fishing and Hunting	2,936	2,682	-254	-9%
51	Information	2,308	1,616	-693	-30%
22	Utilities	558	439	-119	-21%

Source: EMSI Developer 2021.1 Datarun

ii. Employment Concentrated Industries

Management of companies and enterprises has the highest location quotient (LQ) as a sector, 1.76 LQ in 2020. However, the manufacturing sector has the greatest specialization amongst its national industries with its top industreis ranging between 24.66-29.36 LQ in 2020. The wholesale trade and construction sectors have multiple subsectors that have high LQs, indicating diversified demands in the region.

Table 64: Employment Concentrated Industries

NAICS	Description	2020 LQ
55	***Management of Companies and Enterprises***	***1.76***
551111	Offices of Bank Holding Companies	3.46
551112	Offices of Other Holding Companies	1.41

551114	Corporate, Subsidiary, and Regional Managing Offices	1.76
31-33	***Manufacturing***	***1.31***
322130	Paperboard Mills	29.36
321911	Wood Window and Door Manufacturing	28.90
335311	Power, Distribution, and Specialty Transformer Manufacturing	24.66
62	***Health Care and Social Assistance***	***1.19***
624221	Temporary Shelters	4.09
624210	Community Food Services	2.40
622110	General Medical and Surgical Hospitals	1.90
42	***Wholesale Trade***	***1.18***
423810	Construction, Mining Machinery and Equip. Merchant Wholesalers	6.88
424920	Book, Periodical, and Newspaper Merchant Wholesalers	5.38
424940	Tobacco and Tobacco Product Merchant Wholesalers	3.83
23	***Construction***	***1.13***
237130	Power and Communication Line and Related Structures Construction	3.48
237310	Highway, Street, and Bridge Construction	2.67
238170	Siding Contractors	2.18

Source: EMSI Developer 2021.1 Datarun

iii. Industries by GRP

Manufacturing generated the largest gross regional product ($2,157,626,092) in the region in 2020. Health care and social assistance ($1,996,995,729) and government ($1,795,948,926) are the industries with second and third largest GRP.

Table 65: Industries by GRP, 2020

NAICS	Industry	2020 GRP
31	Manufacturing	$2,157,626,092
62	Health Care and Social Assistance	$1,996,995,729
90	Government	$1,795,948,926
52	Finance and Insurance	$1,253,782,393
42	Wholesale Trade	$1,240,085,103
44	Retail Trade	$1,090,455,005
23	Construction	$879,492,039
54	Professional, Scientific, and Technical Services	$874,982,945
48	Transportation and Warehousing	$629,991,234
56	Administrative and Support and Waste Management and Remediation Services	$507,790,166

Source: EMSI Developer 2021.1 Datarun

Appendix V: Occupations

1. Roanoke County Occupation

i. Top 20 Occupations below $15 per Hour

Retail salespersons, fast food and counter workers, and cashiers are the top three most employed jobs with median hourly earnings below $15.00. All occupations with this rate of pay typically do not require any formal educational credentials to enter the job market.

Table 66: Top 20 Occupations Below $ 15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education
41-2031	Retail Salespersons	1,256	201	$12.46	None
35-3023	Fast Food and Counter Workers	1,103	207	$9.16	None
41-2011	Cashiers	1,093	197	$9.55	None
53-7065	Stockers and Order Fillers	906	121	$12.02	H.S diploma
31-1131	Nursing Assistants	901	110	$12.68	Postsecondary
31-1128	Home Health and Personal Care Aides	805	125	$10.39	H.S diploma
53-7062	Laborers/Freight, Stock, Material Movers	764	108	$13.35	None
37-2011	Janitors/Cleaners, Except Maids	698	103	$11.43	None
33-9032	Security Guards	577	91	$13.74	H.S diploma
35-3031	Waiters and Waitresses	544	115	$8.96	None
51-2098	Misc. Assemblers and Fabricators	496	64	$14.92	H.S diploma
37-2012	Maids and Housekeeping Cleaners	458	70	$9.68	None
39-5012	Hairdressers/Hairstylists, and Cosmetic	429	62	$13.42	Postsecondary
53-3058	Passenger Vehicle Drivers, Except Bus	423	70	$11.55	H.S diploma
37-3011	Landscaping/Groundskeeping Workers	416	62	$11.46	None
25-9045	Teaching Assistants, Except Postsec.	403	43	$9.38	Some college
47-2061	Construction Laborers	398	47	$13.27	None
39-9011	Childcare Workers	389	72	$8.81	H.S diploma
43-4171	Receptionists and Information Clerks	374	51	$13.02	H.S diploma
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	330	48	$10.86	None

Source: EMSI Developer 2021.1 Datarun

ii. Top 20 Occupations at or above $15 per Hour

Real estate sales agents have the largest employment (1,009 jobs) in 2020, followed by customer service representatives (908 jobs) and office clerks (879 jobs). Although many of the jobs with hourly earnings above $15 require bachelor's degrees or higher, the top three largest occupations in the County only require a H.S diploma.

Table 67: Top 20 Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education

41-9022	Real Estate Sales Agents	1,009	97	$23.62	H.S diploma
43-4051	Customer Service Representatives	908	122	$15.70	H.S diploma
43-9061	Office Clerks, General	879	119	$15.40	H.S diploma
53-3032	Heavy and Tractor-Trailer Truck Drivers	868	104	$20.38	Postsecondary
29-1141	Registered Nurses	806	72	$31.21	Bachelor's
41-3021	Insurance Sales Agents	567	77	$23.24	H.S diploma
43-3031	Bookkeeping, Accounting, and Auditing	526	67	$17.72	Some college
11-1021	General and Operations Managers	524	48	$41.28	Bachelor's
41-1011	First-Line Supervisors of Retail Sales	516	61	$18.12	H.S diploma
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	512	79	$16.73	H.S diploma
13-2052	Personal Financial Advisors	508	53	$44.50	Bachelor's
43-1011	First-Line Supervisors of Office & Admin. Support	459	48	$25.21	H.S diploma
11-9198	Personal Service, Entertainment and Recreation Managers, Except Gambling	457	43	$21.77	Bachelor's
29-2061	Licensed Practical/Vocational Nurses	437	37	$22.31	Postsecondary
25-2021	Elementary Teachers, Except Special Ed.	422	37	$23.28	Bachelor's
49-9071	Maintenance and Repair Workers	422	43	$17.92	H.S diploma
41-4012	Sales Rep; Wholesale and Manuf, Except Tech & Sci. Products	421	60	$27.02	H.S diploma
25-1099	Postsecondary Teachers	418	53	$31.20	Doctoral
13-2011	Accountants and Auditors	387	41	$31.75	Bachelor's
47-2031	Carpenters	377	38	$16.91	H.S diploma

Source: EMSI Developer 2021.1 Datarun

iii. Top In-Demand Occupations below $15 per Hour

The top in-demand occupations below $15 hourly earnings are fast food and counter workers, followed by retail salespersons and cashiers. Considering that both fast food and counter workers and cashiers are already the second-largest employed jobs in the County, it might imply high turnovers of these positions. Most of the in-demand occupations do not require any formal educational credentials or only a high school diploma.

Table 68: Top In-Demand Occupations Below $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Avg. Annual Openings	Median Hourly Earnings	Entry-Level Education
35-3023	Fast Food and Counter Workers	1,103	137	14%	1,657	207	$9.16	None
41-2031	Retail Sales	1,256	-165	-12%	815	201	$12.46	None
41-2011	Cashiers	1,093	57	5%	1,051	197	$9.55	None
31-1128	Home Health and Personal Care	805	121	18%	665	125	$10.39	H.S diploma
53-7065	Stockers and Fillers	906	295	48%	586	121	$12.02	H.S diploma
35-3031	Waiters/ Waitresses	544	-46	-8%	854	115	$8.96	None
31-1131	Nursing Assistants	901	94	12%	687	110	$12.68	Postsecond
53-7062	Laborers/Freight, Stock, and Material Movers	764	126	20%	808	108	$13.35	None

37-2011	Janitors/Cleaners, Except Maids	698	37	6%	438	103	$11.43	None
33-9032	Security Guards	577	92	19%	436	91	$13.74	H.S diploma

Source: EMSI Developer 2021.1 Datarun

iv. Top In-Demand Occupations at or above $15 per Hour

Customer service representatives are the top in-demand occupation with hourly earnings above $15, followed by office clerks. Both occupations follow the same trend for jobs below $15 per hour, making them largely employed in the County. The majority of in-demand jobs at or above $15 per hour require a H.S diploma for typical entry level education.

Table 697: Top in-demand Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Annual Openings	Median Hourly Earnings	Entry-Level Education
43-4051	Customer Service Rep.	908	85	10%	545	122	$15.70	H.S diploma
43-9061	Office Clerks	879	-176	17%	581	119	$15.40	H.S diploma
53-3032	Heavy and Tractor-Trailer Truck Drivers	868	239	38%	473	104	$20.38	Postsecond
41-9022	Real Estate Sales	1,009	69	7%	24	97	$23.62	H.S diploma
43-6014	Secretaries & Admin Assistants, Except Legal, Medical, and Executive	512	22	4%	269	79	$16.73	H.S diploma
41-3021	Insurance Agents	567	74	15%	55	77	$23.24	H.S diploma
29-1141	Registered Nurses	806	319	66%	227	72	$31.21	Bachelor's
43-3031	Bookkeeping, Accounting, and Auditing Clerks	526	-143	-21%	280	67	$17.72	Some college
41-1011	First-Line Supervisors of Retail Sales Workers	516	-83	-14%	148	61	$18.12	H.S diploma
41-4012	Sales Rep; Wholesale & Manufacturing, Except Tech. and Sci.c Products	421	-31	-7%	135	60	$27.02	H.S diploma

Source: EMSI Developer 2021.1 Datarun

2. Roanoke Regional Occupation

i. Top 20 Occupations below $15 per Hour

Retail salespersons, fast food and counter workers, and stockers and order fillers are the top three most employed jobs with median hourly earnings below $15.00. Occupations with this rate of pay typically do not require a high level of education. No formal education or a high school diploma are typically required to enter the job market.

Table 70: Top 20 Occupations Below $15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education

41-2031	Retail Salespersons	5,060	854	$12.41	None
35-3023	Fast Food and Counter Workers	4,368	884	$9.32	None
53-7065	Stockers and Order Fillers	3,844	484	$12.12	H.S diploma
41-2011	Cashiers	3,392	709	$9.85	None
31-1131	Nursing Assistants	2,976	377	$12.80	Postsecondary
31-1128	Home Health and Personal Care Aides	2,849	461	$10.85	H.S diploma
53-7062	Laborers/ Freight, Stock, and Material	2,711	484	$13.27	None
37-2011	Janitors and Housekeeping Cleaners	2,704	409	$12.36	None
51-2098	Miscell. Assemblers and Fabricators	2,453	329	$14.80	H.S diploma
35-3031	Waiters and Waitresses	2,240	543	$8.98	None
37-2012	Maids and Housekeeping Cleaners	2,040	313	$10.08	None
53-3058	Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	1,948	298	$13.08	H.S diploma
47-2061	Construction Laborers	1,844	226	$13.44	None
11-9013	Farmers/Ranchers, $ Other Ag. Manager	1,682	213	$14.24	H.S diploma
39-5012	Hairstylists, and Cosmetologists	1,566	228	$13.59	Postsecondary
37-3011	Landscaping and Groundskeeping	1,507	235	$13.31	None
35-2014	Cooks, Restaurant	1,473	238	$12.71	None
39-9011	Childcare Workers	1,427	287	$8.87	H.S diploma
25-9045	Teaching Assistants, Except Postsec.	1,366	153	$13.94	Some college
33-9032	Security Guards	1,326	271	$12.41	H.S diploma

Source: EMSI Developer 2021.1 Datarun

ii. Top 20 Occupations at or above $15 per Hour

Registered nurses have the largest employment (4,529 jobs) in 2020, followed by heavy tractor-trailer truck drivers (3,733 jobs) and real estate sales agents (3,601 jobs). The majority of occupations at or above $15 per hour require a high school diploma or bachelor's degrees.

Table 71: Top 20 Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	Annual Openings	Median Hourly Earnings	Entry-Level Education
29-1141	Registered Nurses	4,529	337	$31.66	Bachelor's
53-3032	Heavy and Tractor-Trailer Truck Drivers	3,733	477	$20.77	Postsecondary
41-9022	Real Estate Sales Agents	3,601	356	$22.94	H.S diploma
43-4051	Customer Service Representatives	3,470	477	$16.15	H.S diploma
43-9061	Office Clerks, General	3,192	462	$15.52	H.S diploma
11-1021	General and Operations Managers	2,119	188	$40.96	Bachelor's
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	2,052	301	$16.86	H.S diploma
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2,010	265	$17.50	Some college
41-1011	First-Line Supervisors of Retail Sales Workers	1,958	241	$18.07	H.S diploma
41-3021	Insurance Sales Agents	1,802	247	$24.14	H.S diploma
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and	1,773	247	$27.78	H.S diploma
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,759	187	$24.64	H.S diploma

49-9071	Maintenance and Repair Workers, General	1,642	171	$17.72	H.S dipoloma
11-9198	Personal Service Managers, All Other; Entertainment and Recreation Managers,	1,610	156	$23.91	Bachelor's
47-2031	Carpenters	1,609	181	$17.28	H.S dipoloma
13-2011	Accountants and Auditors	1,503	151	$30.88	Bachelor's
25-2021	Elementary School Teachers, Except Special Education	1,458	128	$33.90	Bachelor's
53-3033	Light Truck Drivers	1,452	190	$19.60	H.S dipoloma
25-1099	Postsecondary Teachers	1,326	190	$32.31	Doctoral
13-2052	Personal Financial Advisors	1,311	148	$44.81	Bachelor's

Source: EMSI Developer 2021.1 Datarun

iii. Top In-Demand Occupations below $15 per Hour

The top in-demand occupations below $15 hourly earnings are retail salesperson, followed by fast food and counter workers and cashiers. These occupations are already the first and second-largest employed jobs in the region, suggesting high turnovers of these positions. Most of the in-demand occupations do not require any formal educational credentials or only a high school diploma.

Table 72: Top In-Demand Occupations Below $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Avg. Annual Openings	Median Hourly Earnings	Entry-Level Education
41-2031	Retail Salespersons	5,060	(743)	(13%)	3,687	854	$12.41	None
35-3023	Fast Food Workers	4,368	510	13%	6,795	884	$9.32	None
53-7065	Stockers and Order Fillers	3,844	930	32%	2,687	484	$12.12	H.S diploma
41-2011	Cashiers	3,392	(696)	(17%)	3,693	709	$9.85	None
31-1131	Nursing Assistants	2,976	347	13%	2,028	377	$12.80	Postsecondary
31-1128	Home Health and Personal Care Aides	2,849	917	47%	2,373	461	$10.85	H.S diploma
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2,711	(565)	(17%)	2,890	484	$13.27	None
37-2011	Janitors and Cleaners	2,704	(118)	(4%)	1,858	409	$12.36	None
51-2098	Miscell. Assemblers and Fabricators	2,453	717	41%	1,640	329	$14.80	H.S diploma
35-3031	Waiters and Waitresses	2,240	(477)	(18%)	3,564	543	$8.98	None

Source: EMSI Developer 2021.1 Datarun

iv. Top In-Demand Occupations at or above $15 per Hour

Registered nurses are the top in-demand occupation with hourly earnings above $15, followed by heavy tacker-trailer truck drivers. The region's emerging health care cluster has resulted in a demand for nursing positions. Similarly, transportation and warehousing continue to expand in the region, especially from recent impacts from the Coronavirus pandemic, resulting in a surplus of truck driving positions. The majority of in-demand jobs at or above $15 per hour require a H.S diploma for typical entry level education.

Table 73: Top In-Demand Occupations At or Above $15 Per Hour

SOC	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 Hires	Annual Openings	Median Hourly Earnings	Entry-Level Education
29-1141	Registered Nurses	4,529	229	5%	1,103	337	$31.66	Bachelor's
53-3032	Heavy and Tractor-Trailer Truck Drivers	3,733	631	20%	1,833	477	$20.77	Postsecondary
41-9022	Real Estate Sales Agents	3,601	287	9%	88	356	$22.94	H.S diploma
43-4051	Customer Service Representatives	3,470	333	11%	2,081	477	$16.15	H.S diploma
43-9061	Office Clerks, General	3,192	(1,284)	(29%)	2,023	462	$15.52	H.S diploma
11-1021	General and Operations Managers	2,119	268	14%	911	188	$40.96	Bachelor's
43-6014	Secretaries and Admin. Assistants, Except Legal/Medical/Executive	2,052	43	2%	1,075	301	$16.86	H.S diploma
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2,010	(820)	(29%)	1,041	265	$17.50	Some college
41-1011	First-Line Supervisors of Retail Sales Workers	1,958	(333)	(15%)	682	241	$18.07	H.S diploma
41-3021	Insurance Sales Agents	1,802	390	28%	227	247	$24.14	H.S diploma

Source: EMSI Developer 2021.1 Datarun

Appendix VI: Industry Clusters

1. Existing Clusters

i. Business and Financial Services

a. Employment

Roanoke County's business and financial services cluster is composed of 14,206 employees across 29 industry groups in 2020. The business and financial services cluster is Roanoke County's largest cluster by employment in 2020, growing by 467 jobs from 2010-2020, marking a 3% increase in employment. The computer systems design and related services industry group accounted for 18% of cluster employment in 2020 and 5% of cluster growth over the past decade. Two other industry groups saw comparatively lower growth during this period: management of companies and enterprises and agencies, brokerages, and other insurance related activities. Table 74 details employment trends for the business financial services cluster. Please consult Appendix VII in this document for industry level data.

Table 74: Employment Change, Business and Financial Services Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
5415	Comp. Systems Design and Related	1,957	1,130	2,511	554	28%
5511	Mgmt of Companies and Enterprises	1,004	440	1,333	328	33%
5242	Agencies, Brokerages, and Other Insurance Related Activities	669	2,062	941	272	41%
5251	Insurance and Employee Benefit Funds	0	691	202	202	Insf. Data
5416	Mgmt, Sci., and Tech. Consulting	318	475	480	162	51%
5413	Arch., Eng., and Related Services	216	159	336	120	56%
5239	Other Financial Investment Activities	593	735	709	116	20%
5311	Lessors of Real Estate	906	962	996	90	10%
5617	Services to Buildings and Dwellings	831	192	910	79	10%
5222	Nondepository Credit Intermediation	73	77	149	76	103%
5221	Depository Credit Intermediation	245	234	317	71	29%
5231	Securities and Commodity Contracts Intermediation and Brokerage	71	167	139	69	97%
5411	Legal Services	206	272	265	59	29%
5312	Offices of Real Estate and Brokers	604	95	659	55	9%
5616	Investigation and Security Services	386	19	437	51	13%
5418	Ad., Public Relations, and Related	101	0	135	34	33%
5622	Waste Treatment and Disposal	20	35	25	5	25%
5615	Travel and Reservation Services	17	14	14	(3)	(20%)
5417	Scientific Research and Development Services	48	65	39	(9)	(19%)
5414	Specialized Design Services	72	362	61	(11)	(16%)
5322	Consumer Goods Rental	80	605	66	(14)	(17%)
5321	Auto Equipment Rental and Leasing	38	203	21	(18)	(46%)
5611	Office Administrative Services	119	56	82	(37)	(31%)
5614	Business Support Services	161	799	120	(41)	(25%)
5619	Other Support Services	140	82	79	(61)	(44%)
5419	Other Pro., Sci., and Tech. Services	615	61	552	(62)	(10%)
5412	Accounting, Tax, Bookkeeping Services	370	559	282	(88)	(24%)
5613	Employment Services	1,613	1,219	1,084	(529)	(33%)

5241	Insurance Carriers	1,756	1,023	654	(1,102)	(63%)
		13,230	12,793	13,600	370	3%

b. Location Quotient & Gross Regional Product

The computer systems design and related services industry group led the business and financial cluster in LQ in 2020. This industry group has an LQ of 3.69 during 2020, indicating strong regional specialization. Insurance and employment benefit funds, management of companies and enterprises, insurance carriers, and investigation and security services were also industry groups in this cluster with an LQ exceeding 1.5. The computer systems design and related services industry group accounted for the greatest contribution to the business and financial services cluster's $1.06 billion GRP, generating $2.0 million (19%) in 2019. Additionally, Roanoke County's business and financial services cluster accounted for 27% of the County's total GRP of $3.9 billion in 2019. Table 75 details location quotient and gross regional product for the business and financial services cluster.

Table 75: LQ & GRP, Business and Financial Services Cluster, Roanoke County, 2010-2020

NAIC	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
5415	Computer Systems Design and Related Services	3.97	3.42	3.69	$204,806,089
5511	Management of Companies and Enterprises	1.88	1.80	1.89	$157,725,355
5242	Agencies, Brokerages, and Other Insurance Activities	1.52	1.47	1.43	$69,420,981
5251	Insurance and Employee Benefit Funds	0.00	0.00	3.32	$9,854,031
5416	Mgmt, Scientific, and Technical Consulting Services	0.63	0.75	0.66	$27,951,692
5413	Architectural, Engineering, and Related Services	0.51	0.46	0.71	$29,608,531
5239	Other Financial Investment Activities	0.97	1.00	0.92	$36,569,167
5311	Lessors of Real Estate	1.15	1.07	1.00	$50,599,298
5617	Services to Buildings and Dwellings	0.89	0.82	0.85	$24,398,957
5222	Nondepository Credit Intermediation	0.42	0.52	0.81	$29,391,551
5221	Depository Credit Intermediation	0.53	0.62	0.68	$58,056,064
5231	Securities/Commodity Contracts Intermediation and Brokerage	0.36	0.86	0.77	$16,808,869
5411	Legal Services	0.52	0.60	0.67	$33,705,814
5312	Offices of Real Estate Agents and Brokers	1.23	1.06	1.03	$13,354,409
5616	Investigation and Security Services	1.56	1.77	1.52	$17,293,208
5418	Advertising, Public Relations, and Related Services	0.65	0.35	0.76	$8,982,308
5622	Waste Treatment and Disposal	0.77	0.56	0.94	$3,295,375
5615	Travel Arrangement and Reservation Services	0.26	0.28	0.20	$516,141
5417	Scientific Research and Development Services	0.27	0.41	0.18	$1,444,508
5414	Specialized Design Services	0.70	0.57	0.48	$2,103,324
5322	Consumer Goods Rental	1.27	1.10	1.46	$6,815,145
5321	Automotive Equipment Rental and Leasing	0.69	0.57	0.31	$4,072,721
5611	Office Administrative Services	0.62	0.39	0.35	$3,945,261
5614	Business Support Services	0.53	0.61	0.41	$5,345,742
5619	Other Support Services	1.27	1.43	0.67	$2,131,710
5419	Other Professional, Scientific, and Technical Services	1.27	1.11	0.92	$24,736,717
5412	Accounting, Tax Preparation, Bookkeeping Services	1.02	0.94	0.71	$18,979,092
5613	Employment Services	2.19	1.32	1.28	$83,498,382
5241	Insurance Carriers	5.00	2.95	1.84	$117,548,898

					$1,062,959,338

c. Shift Share

Shift share analysis is a measure of regional competitiveness. An industry is competitive if its growth is greater than the national average; in other words, its "competitive effect" is greater than zero. Roanoke County's business and financial services cluster was expected to create an estimated 3,309 jobs from 2010-2020, based on national economic performance and national industry-specific performance. Roanoke County's business and financial services cluster underperformed this projection by 2,939 jobs, indicating that the industry is uncompetitive. Job loss in the insurance carrier industry group was undeniably the source of this cluster's low competitiveness. This industry group individually underperformed expected job creation by 1,178 jobs over the past decade. Table 76 details shift share values for the local business and financial services cluster.

Table 76: Shift Share, Business and Financial Services Cluster, Roanoke County, 2010-2020

NAIC	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
5415	Computer Systems Design and Related Services	549	281	830	554	(276)
5511	Mgmt of Companies and Enterprises	222	144	366	328	(38)
5242	Agencies, Brokerages, and Other Insurance Activities	270	96	366	272	(93)
5251	Insurance and Emp. Benefit Funds	(0)	0	(0)	202	203
5416	Mgmt, Sci., and Tech. Consulting	110	46	155	162	7
5413	Arch., Eng., and Related Services	2	31	33	120	87
5239	Other Financial Investment Activities	89	85	174	116	(58)
5311	Lessors of Real Estate	137	130	267	90	(177)
5617	Services to Buildings/Dwellings	25	119	144	79	(65)
5222	Nondepository Credit Intermediation	(5)	11	6	76	70
5221	Depository Credit Intermediation	(28)	35	7	71	64
5231	Securities and Commodity Contracts Intermediation and Brokerage	(13)	10	(3)	69	72
5411	Legal Services	(21)	29	9	59	50
5312	Offices of Real Estate Agents and Brokers	123	87	210	55	(155)
5616	Investigation and Security Services	21	55	76	51	(25)
5418	Ad., Public Relations, and Related	3	15	18	34	16
5622	Waste Treatment and Disposal	(2)	3	1	5	4
5615	Travel and Reservation Services	(1)	2	1	(3)	(5)
5417	Sci. R&D Services	5	7	12	(9)	(21)
5414	Specialized Design Services	9	10	19	(11)	(31)
5322	Consumer Goods Rental	(32)	12	(21)	(14)	7
5321	Auto Eqpmt Rental and Leasing	4	6	10	(18)	(27)
5611	Office Administrative Services	16	17	33	(37)	(70)
5614	Business Support Services	(25)	23	(2)	(41)	(39)
5619	Other Support Services	(6)	20	14	(61)	(75)

5419	Other Pro., Sci., and Tech. Services	81	88	169	(62)	(232)
5412	Accounting, Taxes, Bookkeeping	(5)	53	48	(88)	(136)
5613	Employment Services	60	231	291	(529)	(820)
5241	Insurance Carriers	(176)	252	76	(1,102)	(1,178)
		1,411	1,897	3,309	370	(2,939)

d. Specialized Industries

Just as four-digit industry groups are a building block of larger two-digit sectors, six-digit industries are a building block of 4-digit industry groups. The computer facilities management services industry, a component of the computer systems design and related services industry group, led the cluster in LQ, with an LQ value of 95.85 in 2020. This individual six-digit industry accounted for 5% of employment growth for the entire business and financial services cluster from 2010-2020. Table 77 details key trends for specialized industries within the business and financial services cluster.

Table 77: Industries by Specialization, Business and Financial Services Cluster, Roanoke County, 2010-2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 – 2020 % Change	Competitive Effect	2020 LQ	2020 GRP
541513	Computer Facilities Management Services	2,277	510	29%	(185)	95.85	$178,348,990
551111	Offices of Bank Holding Companies	52	52	Insf. Data	52	13.57	$9,353,780
524127	Direct Title Insurance Carriers	175	137	364%	136	8.86	$20,909,476
525110	Pension Funds	202	202	Insf. Data	202	8.46	$9,854,031
561611	Investigation Services	154	138	855%	137	7.30	$6,689,014
561312	Executive Search Services	62	Insf. Data	Insf. Data	54	4.90	$5,732,365
561421	Telephone Answering Services	49	29	153%	31	4.25	$2,921,362
541191	Title Abstract and Settlement Offices	87	54	162%	48	4.15	$8,941,620
551112	Offices of Other Holding Companies	93	82	733%	80	4.04	$15,198,419
541830	Media Buying Agencies	17	Insf. Data	Insf. Data	11	3.05	$1,571,175
524126	Direct Property and Casualty Insurance Carriers	389	(974)	(71%)	(988)	2.81	$68,539,349
561330	Professional Employer Organizations	252	14	6%	41	2.78	$34,760,523
532283	Home Health Equipment Rental	25	(6)	(20%)	2	2.70	$3,940,501
524291	Claims Adjusting	122	12	10%	(31)	2.51	$4,424,629
541890	Other Services Related to Advertising	80	38	93%	27	2.44	$4,952,414
524292	Third Party Administration of Insurance and Pension Funds	176	131	288%	105	2.29	$16,255,660
522291	Consumer Lending	73	58	401%	56	2.14	$9,599,439
541620	Environmental Consulting Services	85	52	157%	45	2.14	$4,990,209
551114	Corporate, Subsidiary, and Regional Managing Offices	1,188	195	20%	(179)	1.75	$133,173,156
541922	Commercial Photography	41	Insf. Data	Insf. Data	28	1.74	$1,036,340
532289	All Other Consumer Goods Rental	40	26	193%	21	1.74	$2,798,468

541720	Research and Development in the Social Sciences and Humanities	30	Insf. Data	Insf. Data	26	1.66	$1,319,719
562212	Solid Waste Landfill	17	Insf. Data	Insf. Data	15	1.60	$2,330,019
531130	Lessors of Miniwarehouses	232	44	24%	(11)	1.59	$11,121,090
541940	Veterinary Services	175	(37)	(17%)	(112)	1.56	$9,414,412
561710	Exterminating and Pest	52	37	237%	32	1.39	$2,870,489
561612	Security Guards and Patrol	242	(97)	(29%)	(163)	1.24	$8,293,345
524210	Insurance Agencies and	603	117	24%	(148)	1.23	$45,819,349
523120	Securities Brokerage	128	62	95%	66	1.16	$14,734,945
541930	Translation and Interpretation	37	11	41%	(5)	1.16	$647,447
522130	Credit Unions	83	40	95%	30	1.12	$12,009,693
561492	Court Reporting and	17	(9)	(33%)	(1)	1.10	$506,312
531110	Lessors of Residential	549	46	9%	(116)	1.08	$27,450,724
541213	Tax Preparation Services	62	8	16%	9	1.06	$1,884,445
561320	Temporary Help Services	709	(562)	(44%)	(881)	1.04	$39,582,916
531210	Offices of Real Estate Agents	659	55	9%	(155)	1.03	$13,354,409
561311	Employment Placement	61	(37)	(38%)	(39)	1.02	$3,422,578
541199	All Other Legal Services	11	(5)	(34%)	(13)	1.02	$1,010,967
		9,306	567	6%	(1,776)		$739,763,779

e.. Regional Comparison

Roanoke County's computer facilities management services industry group accounts for a considerable portion of the employment, job creation, GRP, specialization, associated with the Greater Roanoke Regional business and financial services cluster. This is due to the County's great specialization in the computer systems design and related services, and management of companies and enterprises industry groups. While these industry groups are some of the largest and most productive in the region, a number of other industry groups play similarly important roles.

ii. Information Technology and Telecommunications

a. Employment

Roanoke County's information technology and telecommuting cluster was composed of 2,218 jobs across eleven industry groups between 2010-2020. This cluster saw significant growth (21%) over the past decade; 224 jobs were lost between 2010-2015 and 606 jobs were added between 2015-2020, amounting to 382 jobs added over the past decade. Table 78 details employment change for the local information technology and telecommunications cluster.

Table 78: Employment Change, Information Technology and Telecommunications Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
2382	Building Equipment Contractors	528	585	949	421	80%
3332	Industrial Machinery Manufacturing	<10	16	190	Insf. Data	Insf. Data
3342	Communications Equipment Manufacturing	<10	24	111	Insf. Data	Insf. Data
3343	Audio and Video Equipment Manufacturing	<10	119	12	Insf. Data	Insf. Data

3344	Semiconductor and Other Electronic Component Manufacturing	411	262	485	75	18%
3345	Nav., Measuring, Electromed., and Control Instruments Mnfg	169	162	<10	Insf. Data	Insf. Data
3353	Electrical Equipment Manufacturing	100	59	189	89	90%
3359	Other Electrical Equipment and Component Manufacturing	104	64	29	(75)	(72%)
5173	Wired and Wireless Telecommunications Carriers	466	241	201	(265)	(57%)
5174	Satellite Telecommunications	0	<10	<10	Insf. Data	Insf. Data
5417	Scientific Research and Development Services	48	77	39	(9)	(19%)
		1,836	1,612	2,218	382	21%

The existing information technology and telecommunications cluster largely employs electricians, HVAC mechanics and installers, plumbers, and miscellaneous assemblers and fabricators. Information technology occupations account for a small portion of cluster jobs. Low education and experience requirements make these jobs easily attainable, however, moderate to long term training is required to obtain competency in each occupation. Wages for many of these positions are competitive with occupations requiring similar credentials in the larger Greater Roanoke Region.

b. Location Quotient and Gross Regional Product

The industrial machinery manufacturing industry group led the information technology and telecommunications cluster in LQ in 2020. This industry group had an LQ of 6.01 during 2020, indicating strong regional specialization. Six out of eleven industry groups in this cluster had an LQ exceeding 1.0. Business equipment contractors and wire and wireless telecommunications carriers industry groups accounted for the greatest contribution to the information technology and telecommunications cluster's $242 million GRP, generating $140 million (58%) in 2020. Additionally, Roanoke County's information technology and telecommunications cluster accounted for 6% of the County's total GRP of $3.9 billion in 2020. Table 79 details location quotient and gross regional product for the information technology and telecommunications cluster.

Table 79: LQ & GRP, Information Technology and Telecommunications Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
2382	Building Equipment Contractors	0.98	0.96	1.36	$69,807,966
3332	Industrial Machinery Manufacturing	0.04	0.51	6.01	$19,084,716
3342	Communications Equipment Manufacturing	0.09	1.03	4.89	$7,003,514
3343	Audio and Video Equipment Manufacturing	1.22	21.06	2.29	$1,407,862
3344	Semiconductor and Other Electronic Mnfg	4.15	2.70	5.05	$46,684,755
3345	Nav., Measuring, Electromed., and Control Instruments Mnfg	1.54	1.52	0.07	$505,119
3353	Electrical Equipment Manufacturing	2.70	1.50	4.97	$19,339,152
3359	Other Electrical Equipment and Component Mnfg	3.24	1.81	0.76	$6,445,357
5173	Wired and Wireless Telecommunications Carriers	1.97	1.10	1.04	$69,774,201
5174	Satellite Telecommunications	0.00	1.64	1.53	$221,945
5417	Scientific Research and Development Services	0.27	0.41	0.18	$1,444,508
					$241,719,095

c. Shift Share

The local information technology and telecommunications cluster was expected to create an estimated 148 jobs from 2010-2020, based on national economic performance and national industry-specific performance. This cluster added 382 jobs during the past decade, surpassing expected change by 234 jobs. Significant competitiveness for this cluster can be seen with a value of 234. The rate of job creation significantly increased from 2015-2020, yielding a more favorable competitive effect for the second half of the decade. Table 80 details shift share values for the local information technology and telecommunications cluster.

Table 80: Shift Share, Information Technology and Telecommunications Cluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
2382	Building Equipment Contractors	100	76	175	421	246
3332	Industrial Machinery Manufacturing	(0)	0	0	Insf. Data	189
3342	Communications Equipment Manufacturing	(1)	0	(1)	Insf. Data	109
3343	Audio and Video Equipment Manufacturing	(1)	1	0	Insf. Data	6
3344	Semiconductor and Other Electronic Mnfg	(58)	59	1	75	74
3345	Nav., Measuring, Electromed., and Control Instruments Mnfg	(18)	24	6	Insf. Data	(168)
3353	Electrical Equipment Manufacturing	(8)	14	6	89	83
3359	Other Electrical Equipment and Component Mnfg	9	15	24	(75)	(99)
5173	Wired and Wireless Telecommunications Carriers	(143)	67	(76)	(265)	(189)
5174	Satellite Telecommunications	(0)	0	(0)	Insf. Data	4
5417	Scientific Research and Development Services	5	7	12	(9)	(21)
		(115)	263	148	382	234

d. Specialized Industries

The power, distribution, and specialty transformer manufacturing industry, a component of the electrical equipment manufacturing industry group, led the cluster in LQ, with an LQ value of 29.72 in 2020. Additionally, four other industries have LQ values that exceeded 10.0. These individual six-digit industries accounted for 40% of employment growth for the large industry cluster from 2010-2020. Table 81 details key trends for specialized industries within the information technology and telecommunications cluster.

Table 81: Industries by Specialization, Information Technology and Telecommunications Cluster, Roanoke County, 2010-2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 – 2020 % Change	Competitive Effect	2020 LQ	2020 GRP
335311	Power/Distribution/Specialty Transformer Manufacturing	219	219	Insf. Data	219	29.72	$23,210,649
334290	Other Communications Equipment Manufacturing	128	Insf. Data	Insf. Data	126	25.60	$7,864,519
334417	Electronic Connector Mnfg	108	(72)	(40%)	(116)	18.53	$3,213,120
333249	Other Ind. Machinery Mnfg	213	213	Insf. Data	212	13.06	$28,343,827
335921	Fiber Optic Cable Mnfg	33	8	30%	(7)	10.27	$9,790,674

334413	Semiconductor and Related Device Manufacturing	344	138	67%	134	7.20	$40,491,928
334310	Audio and Video Equip. Mnfg	28	Insf. Data	Insf. Data	21	4.90	$3,492,033
517410	Satellite Telecommunications	<10	Insf. Data	Insf. Data	4	1.54	$216,179
238210	Electrical Contractors and Other Wiring Installation Contractors	443	269	154%	211	1.44	$26,064,006
541720	R& D in the Social Sciences and Humanities	26	Insf. Data	Insf. Data	22	1.43	$1,118,493
334512	Auto Enviro Control Mnfg for Residential, Commercial, and Appliance Use	<10	Insf. Data	Insf. Data	(38)	1.34	$276,886
517311	Wired Telecommunications Carriers	188	(261)	(58%)	(215)	1.17	$59,901,308
		1,731	514	2%	573		203,983,624

e. Regional Comparison

Roanoke County's information technology and telecommunications cluster shares similarities with the regional information technology and telecommunications cluster, namely in the growing role of electrical equipment manufacturing. Additionally, Roanoke County and the Region experienced tremendous growth whereas the state remained stagnant amongst its development in information technology and telecommunications, indicating a strong specialization for the Region in this field. The regional information technology and telecommunications was competitive with respect to job creation from 2010-2020, growing 9% (502 jobs). Roanoke County's local cluster followed suit, created 382 jobs during the same period. A small number of industry groups experienced moderate employment losses over the past decade, which narrowly offset gains in the County's comparatively large telecommunications industry groups.

iii. Construction Services (Existing Cluster)

Roanoke County's construction cluster is composed of two district subclusters: utility, power transmission, and other civil and heavy contractors; and residential and nonresidential building construction and contractors. Roanoke County's construction cluster has seen a reasonable growth in employment over the past decade (388 jobs) and market experts foresee demand for workers increasing in 2021 and onward[13].

a. Employment

Roanoke County's construction cluster was composed of 2,872 jobs across 13 industry groups in 2020. The local construction cluster saw a 16% growth in employment from 2,484 jobs in 2010 to 2,872 jobs in 2020.

[13] Deloitte (2020). 2020 engineering and construction industry outlook. Retrieved from: https://www2.deloitte.com/us/en/pages/energy-and-resources/articles/engineering-and-construction-industrytrends.html ; L.inchpin (Oct 2020). Trends in the construction industry outlook in 2021. Retrieved from: https://linchpinseo.com/trends-the-construction-industry/.

i. Utility, Power Transmission, and other Heavy or Civil Contractors Subcluster

The utility, power transmission, and other heavy or civil contractors subcluster accounted for 28% of employment within the larger construction services cluster. Calculating employment change from 2010-2020 yields a 12% growth in industry group employment. Table 82 details employment change for the local utility, power transmission, and other heavy or civil contractor services subcluster.

Table 82: Employment Change, Utility, Power Transmission, and other Heavy or Civil Contractors Subcluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
2371	Utility System Construction	55	120	173	118	213%
2389	Other Specialty Trade Contractors	424	350	408	(16)	(4%)
2211	Electric Power Generation, Transmission and Distribution	189	201	184	(5)	(2%)
2213	Water, Sewage and Other Systems	23	<10	23	(0)	(1%)
2379	Other Heavy and Civil Engineering Construction	<10	<10	19	Insf. Data	Insf. Data
2373	Highway, Street, and Bridge Construction	35	10	<10	Insf. Data	Insf. Data
2212	Natural Gas Distribution	<10	<10	<10	Insf. Data	Insf. Data
		728	686	807	97	206%

ii. Residential and Nonresidential Building Construction and Contractors Subcluster

The residential and nonresidential building construction and contractors subcluster accounted for 72% of local construction services cluster employment in 2020. This cluster also experienced a small net-change in employment over the past decade, largely due to growth in the building equipment contractors industry group. Industry groups related to land subdivision and foundation, structure, and build exterior contractors saw some employment decline during this period, however, not to the extent necessary to offset gains elsewhere. Table 83 details employment change for the local residential and nonresidential building construction and contractors subcluster.

Table 83: Employment Change, Residential and Nonresidential Building Construction and Contractors Subcluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
2382	Building Equipment Contractors	528	438	949	421	80%
2383	Building Finishing Contractors	478	585	420	(58)	(12%)
2372	Land Subdivision	34	295	19	(16)	(46%)
2361	Residential Building Construction	312	239	344	32	10%
2381	Foundation, Structure, and Building Exterior Contractors	280	136	218	(62)	(22%)
2362	Nonresidential Building Construction	123	<10	105	(19)	(15%)
		1,756	1,699	2,055	299	17%

b. Location Quotient and Gross Regional Product

LQ values fell for all but two industry groups in this cluster from 2010-2020, largely due to employment decline, stagnancy, or slow growth. The construction cluster's GRP was more evenly divided among

industry groups in this subcluster compared to other existing industries. Together, these subclusters generated $144.3 million in 2020, which accounted for 4.2% of the County's GRP in 2020.

i. Utility, Power Transmission, and other Heavy or Civil Contractors Subcluster

The utility, power transmission, and other heavy and civil contractors subcluster is the greatest area of specialization in the larger construction cluster. The electric power generation, transmission and distribution industry group led this subcluster in specialization, with an LQ of 1.88 in 2020. LQ declined for the majority of industry groups in this subcluster, although decline in the utility system construction industry group was exaggerated by the nature of employment change for this group. The utility, power transmission, and other heavy or civil contractors subcluster supplied the largest portion (58%) of the construction services cluster's total GRP in 2020. Table 84 details location quotient and gross regional product for the local utility, power transmission, and other heavy or civil contractors subcluster.

Table 84: LQ & GRP, Utility, Power Transmission, and other Heavy or Civil Contractors Subcluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
2211	Electric Power Generation, Transmission and Distribution	1.74	1.88	1.81	$137,970,989
2389	Other Specialty Trade Contractors	1.30	1.02	0.41	$21,822,863
2371	Utility System Construction	0.50	0.90	1.12	$17,773,426
2213	Water, Sewage and Other Systems	1.49	0.21	1.40	$4,405,620
2373	Highway, Street, and Bridge Construction	0.43	0.12	0.10	$763,960
2212	Natural Gas Distribution	0.04	0.03	0.04	$143,447
2379	Other Heavy and Civil Engineering Construction	0.02	0.02	0.41	$1,515,005
					$184,395,309

ii.. Residential and Nonresidential Building Construction and Contractors Subcluster

Only one industry group in the residential and nonresidential building construction and contractors subcluster had an LQ value that exceeded 1.0 in 2020: building equipment contractors. The remaining five industry groups in this subcluster had LQ values ranging from 0.44-0.91 in 2020. The residential and nonresidential building construction subcluster generated $131 million in 2020, over half of which was supplied by the building equipment contractors industry group. Overall, this subcluster accounted for 42% of construction cluster GRP for 2020. Table 85 details location quotient and gross regional product for the local residential and nonresidential building construction and contractors subcluster.

Table 85: LQ & GRP, Residential and Nonresidential Building Construction and Contractors Subcluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
2383	Building Finishing Contractors	1.19	1.04	0.91	$22,556,787
2382	Building Equipment Contractors	0.98	0.96	1.36	$69,807,966
2361	Residential Building Construction	1.02	0.81	0.84	$17,659,310
2381	Foundation, Structure, and Building Exterior Contractors	1.01	0.79	0.63	$10,713,542
2362	Nonresidential Building Construction	0.62	0.61	0.44	$10,052,697
2372	Land Subdivision	1.36	0.36	0.90	$895,786

					$131,686,088

c. Shift Share

Roanoke County's construction services cluster was expected to add 602 jobs from 2010-2020, based on national economic performance and national industry-specific performance. Instead, only 388 were added to the local construction cluster during this period. The performance of the local cluster yielded a competitive effect value of -214, suggesting that job change in Roanoke County's construction cluster was not competitive over the past decade.

i. Utility, Power Transmission, and Other Heavy or Civil Contractors Subcluster

The majority of the utility, power transmission, and other heavy and civil contractors subcluster yielded negative competitive effect values, for a combined competitive effect of -90 from 2010-2020. Low competitiveness for this subcluster was exacerbated by sporadic employment change within the utility systems construction industry group. Actual competitiveness was more than likely higher, although still negative. Table 86 details shift share values for the local utility, power transmission, and other heavy or civil contractors subcluster.

Table 86: Shift Share, Utility, Power Transmission, and other Heavy or Civil Contractors Subcluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
2211	Electric Power Generation, Transmission and Distribution	(16)	18	2	118	11
2389	Other Specialty Trade Contractors	(11)	41	30	(16)	(104)
2371	Utility System Construction	7	5	13	(5)	52
2213	Water, Sewage and Other Systems	(0)	2	2	(0)	(22)
2373	Highway, Street, and Bridge Construction	(1)	3	2	Insf. Data	(27)
2212	Natural Gas Distribution	(0)	0	0	Insf. Data	(0)
2379	Other Heavy and Civil Engineering Construction	(0)	0	0	Insf. Data	0
		(22)	70	49	97	(90)

ii. Residential and Nonresidential Building Construction and Contractors Subcluster

All six industry groups in this subcluster yielded negative competitive effect values, for a combined competitive effect of -277 from 2010-2020. Residential building construction tended to have lower competitiveness compared to other industry groups in this subcluster. Table 87 details shift share values for the local residential and nonresidential building construction and contractors subcluster.

Table 87: Shift Share, Residential and Nonresidential Building Construction and Contractors Subcluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
2383	Building Finishing Contractors	(15)	46	31	421	(72)
2382	Building Equipment Contractors	31	51	82	(58)	(25)
2361	Residential Building Construction	36	30	66	(16)	(83)
2381	Foundation/Structure/Building Exterior Contractors	4	27	31	32	(73)

2362	Nonresidential Building Construction	4	12	16	(62)	(4)
2372	Land Subdivision	(11)	3	(7)	(19)	(20)
		50	170	220	299	(277)

d. Specialized Industries

Fourteen 6-digit industries in the construction cluster had LQ values that exceeded 1.0 in 2020. The steam and air-conditioning supply industry within the water, sewage and other subcluster, led the construction services cluster specialization, with an LQ of 4.02 in 2020.

i. Utility, Power Transmission, and Other Heavy or Civil Contractors Subcluster

The utility, power transmission, and other heavy and civil contractors subcluster contained six industries with LQ values exceeding 1.0 in 2020. The steam and air-conditioning supply industry had the highest LQ at 4.02 in 2020. One other industry in this subcluster had an LQ value that exceeded 2.0 for the same year. Table 88 details key trends for specialized industries within the local utility, power transmission, and other heavy or civil contractors subcluster.

Table 88: Industries by Specialization, Utility, Power Transmission, and other Heavy or Civil Contractors Subcluster, Roanoke County, 2010 - 2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 LQ	Competitive Effect	2020 GRP
221330	Steam and Air-Conditioning Supply	<10	0	Insf. Data	4.02	<10	$71,239
221122	Electric Power Distribution	182	91	100%	3.20	182	$137,433,391
237120	Oil and Gas Pipeline and Related Structures Construction	67	<10	Insf. Data	1.66	67	$8,843,601
238990	All Other Specialty Trade Contractors	320	279	15%	1.64	320	$17,488,308
221310	Water Supply and Irrigation Systems	21	23	(9%)	1.53	21	$4,334,381
237110	Water and Sewer Line and Related Structures Construction	71	49	46%	1.28	71	$5,126,986
		661	442	49%		121	$173,297,906

ii. Residential and Nonresidential Building Construction and Contractors Subcluster

Eight industries in the residential and nonresidential building and contractors subcluster had LQ values exceeding 1.0 in 2020, with two industries exceeding 2.0; siding contractors and other building equipment contractors. Electrical contractors and other wiring installation was the only industry with a significant positive competitive effect of 325. Table 89 details key trends for specialized industries within the local residential and nonresidential building construction and contractors subcluster.

Table 89: Industries by Specialization, Residential and Nonresidential Building Construction and Contractors Subcluster, Roanoke County, 2010 - 2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 LQ	Competitive Effect	2020 GRP
238170	Siding Contractors	52	32	155%	2.63	29	$2,357,797

238290	Other Building Equipment Contractors	108	64	149%	2.37	53	$9,412,906
238210	Electrical Contractors and Other Wiring Installation Contractors	550	376	215%	1.83	325	$41,379,993
236117	New Housing For-Sale Builders	47	(21)	(31%)	1.77	(37)	$3,118,627
238140	Masonry Contractors	76	(62)	(45%)	1.28	(69)	$4,110,191
238390	Other Building Finishing Contractors	36	5	16%	1.06	(2)	$1,810,721
238310	Drywall and Insulation Contractors	106	16	17%	1.04	1	$6,447,223
238330	Flooring Contractors	57	(19)	(25%)	1.01	(36)	$3,266,293
		1,032	391	451%		264	$71,903,751

e. Regional Comparison

A point of distinction between the local and regional construction clusters was growth. The local Roanoke County construction cluster saw a large increase in employment from 2010-2020. This above-average performance was reduced by lack luster, noncompetitive, growth at the regional level during the same period. This growth discrepancy magnified the local cluster's footing in the regional cluster; Roanoke County now accounts for a larger share of regional construction employment and has experienced growing specialization across many local construction industries. Continued rise amid regional decline could continue to expand Roanoke County's role in the regional market as specialization shifts to other areas in the Greater Roanoke Region.

Although the local construction cluster is considerably more diversified compared to its existing cluster counterparts, it could have greater diversity in construction and finishing product manufacturing. In the Greater Roanoke Region construction and finishing product manufacturing industries have a large employment concentration (8.3) and specialization (470), whereas the majority of industries in this regional subcluster do not have strong employment concentration in Roanoke County and only one industry is responsible for accounting for 19% of this subclusters regional employment (694 of 3,533). This could indicate areas of opportunity and growth to further secure Roanoke County's construction specialization position.

iv. Transportation, Warehousing, and Logistics Cluster

The transportation, warehousing, and logistics cluster includes industries engaged in the storage, warehousing, and shipment of freight. This cluster largely employs workers with Commercial Driver's Licenses, administrative and office workers, and manual labor. A total of 2,402 workers (6% of County employment) were employed in businesses belonging to this cluster in 2020. The transportation, warehousing, and logistics cluster contains three areas of specialization: support activities for road transportation, local messenger services and delivery, and merchant wholesalers. Roanoke County's transportation, warehousing, and logistics cluster has significantly grown since the Coronavirus Pandemic from increased e-commerce demand for transportation and logistics companies. Demand for commercial real estate for class-A warehouses to serve as final-mile distribution centers near large population centers is growing in particular and is projected to continue in the future.

a. Employment

Roanoke County's transportation, warehousing, and logistics cluster was composed of 2,402 jobs across 13 industry groups in 2020. The local cluster grew by 11% (725 jobs) from 2010-2020. The support activities for road transportation industry group accounted for 68.9% of local cluster employment in 2020. The local messenger services and local delivery industry group, and the couriers and express

delivery services industry group were also notable areas of employment growth during this period. Table 90 details employment change for the local transportation, warehousing, and logistics cluster.

Table 90: Employment Change, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2015 - 2020 Change	2015 - 2020 % Change
3342	Communications Equipment Manufacturing	<10	24	111	87	356%
4231	Motor Vehicle and Parts and Supplies Merchant Wholesalers	97	117	109	(8)	(7%)
4241	Paper and Paper Product Merchant Wholesalers	125	44	34	(10)	(22%)
4244	Grocery and Related Product Merchant Wholesalers	118	276	244	(32)	(11%)
4246	Chemical and Allied Products Merchant Wholesalers	11	16	44	28	177%
4248	Beer/Wine/Distilled Alcoholic Beverage Merchant Wholesalers	210	206	264	58	28%
4821	Rail Transportation	164	151	107	(44)	(29%)
4841	General Freight Trucking	388	386	421	35	9%
4842	Specialized Freight Trucking	281	200	207	7	3%
4881	Support Activities for Air Transportation	<10	35	81	45	128%
4882	Support Activities for Rail Transportation	<10	19	36	17	90%
4884	Support Activities for Road Transportation	<10	55	171	116	209%
4922	Local Messengers and Local Delivery	29	39	151	111	281%
4931	Warehousing and Storage	256	345	665	320	93%
		1,690	1,914	2,644	730	38%

b. Location Quotient and Gross Regional Product

The beer, wine, and distilled alcoholic beverage merchant wholesalers industry group led this cluster in specialization (4.92 LQ) for 2020. Two additional industry groups had LQ's exceeding 4.0 during the same year: support activities for road transportation (4.56) and communications equipment manufacturing (4.89). The local transportation, warehousing, and logistics cluster accounted for a small portion (6.4%) of the County's GRP in 2020. Table 91 details location quotient and gross regional product for the local transportation, warehousing, and logistics cluster.

Table 91: LQ & GRP, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
3342	Communications Equipment Manufacturing	0.09	1.03	4.89	$7,003,514
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	1.11	1.23	1.15	$15,924,413
4241	Paper and Paper Product Merchant Wholesalers	3.57	1.27	1.03	$6,821,001
4244	Grocery and Related Product Merchant Wholesalers	0.60	1.32	1.19	$18,473,906
4246	Chemical and Allied Products Merchant Wholesalers	0.33	0.45	1.16	$10,398,989
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	4.70	3.94	4.92	$34,338,249
4821	Rail Transportation	2.81	2.36	1.97	$14,849,396
4841	General Freight Trucking	1.00	0.90	0.91	$33,852,876
4842	Specialized Freight Trucking	2.38	1.48	1.52	$16,014,723
4881	Support Activities for Air Transportation	0.05	0.67	1.37	$5,666,937
4882	Support Activities for Rail Transportation	0.08	1.97	3.75	$2,147,193
4884	Support Activities for Road Transportation	0.26	1.51	4.56	$9,643,322
4922	Local Messengers and Local Delivery	0.71	0.94	1.53	$1,903,978

4931	Warehousing and Storage	1.35	1.40	1.79	$36,361,309
					$213,399,806

c. Shift Share

The local transportation, warehousing, and logistics cluster was expected to create 510 jobs, based on national economic performance and national industry-specific performance. The local transportation, warehousing, and logistics cluster surpassed this projection by 444 jobs, indicating regional competitiveness. The support activities for road transportation and warehousing and storage industry groups led this cluster in competitiveness from 2010-2020. Table 92 details shift share for the local transportation, warehousing, and logistics cluster.

Table 92: Shift Share, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
3342	Communications Equipment Manufacturing	(1)	0	(1)	Insf. Data	109
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	(3)	14	11	12	1
4241	Paper and Paper Product Merchant Wholesalers	(22)	18	(4)	(91)	(87)
4244	Grocery and Related Product Merchant Wholesalers	(8)	17	9	126	118
4246	Chemical and Allied Products Merchant Wholesalers	1	2	2	33	31
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	20	30	50	54	4
4821	Rail Transportation	(30)	23	(7)	(57)	(50)
4841	General Freight Trucking	34	56	90	34	(56)
4842	Specialized Freight Trucking	13	40	53	(74)	(127)
4881	Support Activities for Air Transportation	0	0	1	Insf. Data	78
4882	Support Activities for Rail Transportation	0	0	0	Insf. Data	35
4884	Support Activities for Road Transportation	1	1	3	Insf. Data	161
4922	Local Messengers and Local Delivery	39	4	44	122	78
4931	Warehousing and Storage	222	37	259	409	150
		268	242	510	954	444

d. Specialized Industries

The 6-digit refrigerated warehousing and storage industry, a component of the four-digit warehousing and storage industry group, drove the transportation, warehousing, and logistics cluster employment growth during this period. The other communications equipment manufacturing and local messengers and local delivery industries also positively contributed to cluster growth. Additionally, employment growth in all three of these industries was competitive from 2010-2020. Table 93 details key trends for specialized industries within the local transportation, warehousing, and logistics cluster.

Table 93: Industries by Specialization, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 LQ	Competitive Effect	2020 GRP

334290	Other Communications Equipment Manufacturing	110	Insf. Data	Insf. Data	22.71	109	$6,215,506
423110	Automobile and Other Motor Vehicle Merchant Wholesalers	82	43	109%	2.43	38	$12,636,828
424130	Industrial and Personal Service Paper Merchant Wholesalers	21	9	67%	1.25	7	$3,865,631
424410	General Line Grocery Merchant Wholesalers	207	Insf. Data	Insf. Data	3.36	203	$15,369,878
424450	Confectionery Merchant Wholesalers	18	(80)	(81%)	1.15	(95)	$1,477,555
424690	Other Chemical and Allied Products Merchant Wholesalers	44	34	330%	1.44	32	$10,398,989
424810	Beer and Ale Merchant Wholesalers	258	49	24%	8.82	10	$33,501,426
482110	Rail transportation	107	(57)	(35%)	1.97	(50)	$14,849,396
484122	General Freight Trucking, Long-Distance, Less Than Truckload	209	9	5%	2.53	(39)	$21,576,787
484210	Used Household and Office Goods Moving	64	20	44%	2.34	13	$2,594,704
484220	Specialized Freight (except Used Goods) Trucking, Local	140	(95)	(40%)	2.02	(136)	$13,390,550
488190	Other Support Activities for Air Transportation	79	Insf. Data	Insf. Data	2.32	76	$5,655,325
488210	Support Activities for Rail Transportation	36	Insf. Data	Insf. Data	3.75	35	$2,147,193
488490	Other Support Activities for Road Transportation	154	Insf. Data	Insf. Data	12.66	148	$8,700,997
492210	Local Messengers and Local Delivery	151	122	420%	1.53	78	$1,903,978
493120	Refrigerated Warehousing and Storage	426	253	146%	23.78	201	$24,311,333
		2,107	880	72%		630	$178,596,076

e. Regional Comparison

As mentioned earlier, Roanoke County offers strong roadway connectivity; the County is conveniently located in a day's drive to large metro centers, and a regional airport, with international airport connectivity, with air cargo capabilities located nearby. The transportation, warehousing, and logistics cluster saw differing trends at the County and regional level. The Greater Roanoke Region's transportation, warehousing, and logistics cluster has seen a large decline in employment (-7%) and specialization (-4,400) over the past decade, largely due to the losses seen in the warehousing and storage industry group. Roanoke County, however, has seen large continuous growth between 2010-2020, 38% (730 jobs), and remained competitive in warehousing and storage, which has contributed to the local cluster's strong specialization (444). Paper product manufacturing and rail transportation were the top two contributors to job loss and non-competitiveness for both local and regional cohorts.

v. Hospitality and Tourism

The hospitality and tourism industry cluster includes industries engaged in live sporting events, travel accommodation services, and providing other amusement and recreation services.

a. Employment

Roanoke County's hospitality and tourism cluster was composed of 1,283 employees across 9 industry groups in 2020. The hospitality and tourism cluster shrank by 65 jobs from 2010-2020, marking a 1% decline in employment. The spectator sports industry group accounted for the only growth in cluster

employment in 2020 (100 jobs), 1% of cluster growth. Table 9 details employment change for the hospitality and tourism cluster.

Table 94: Employment Change, Hospitality and Tourism Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
7112	Spectator Sports	107	157	207	100	94%
7139	Other Amusement and Recreation Industries	600	569	551	(48)	(8%)
5322	Consumer Goods Rental	80	56	66	(14)	(17%)
4539	Other Miscellaneous Store Retailers	235	192	167	(68)	(29%)
7213	Rooming and Boarding Houses, Dormitories, and Workers' Camps	23	16	10	(13)	(55%)
7211	Traveler Accommodation	264	236	249	(15)	(6%)
7121	Museums, Historical Sites, and Similar Institutions	22	18	17	(4)	(20%)
5615	Travel Arrangement and Reservation Services	17	19	14	(3)	(20%)
4872	Scenic and Sightseeing Transportation, Water	<10	0	<10	Insf. Data	Insf. Data
		1,347	1,163	1,282	(65)	(1%)

b. Location Quotient and Gross Regional Product

The spectator sports industry group led the hospitality and tourism cluster in LQ in 2020. This industry group had an LQ of 1.75 during this year, indicating strong regional specialization. Other amusement and recreation industries and consumer goods rental were also industry groups in this cluster with an LQ exceeding 1.0. The other amusement and recreation industries industry group accounted for the greatest contribution to the hospitality and tourism cluster's $39 million GRP, generating $14.6 million (37%) in 2020. Table 95 details location quotient and gross regional product for the hospitality and tourism cluster.

Table 95: LQ & GRP, Hospitality and Tourism Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
7112	Spectator Sports	1.16	1.56	1.75	$1,270,526
7139	Other Amusement and Recreation Industries	1.59	1.50	1.56	$14,606,484
5322	Consumer Goods Rental	1.27	1.10	1.46	$6,815,145
4539	Other Miscellaneous Store Retailers	1.36	1.02	0.91	$6,449,702
7213	Rooming and Boarding Houses, Dormitories, and Workers' Camps	1.82	0.98	0.62	$194,512
7211	Traveler Accommodation	0.56	0.46	0.56	$8,470,029
7121	Museums, Historical Sites, and Similar Institutions	0.61	0.42	0.42	$701,758
5615	Travel Arrangement and Reservation Services	0.26	0.28	0.20	$516,141
4872	Scenic and Sightseeing Transportation, Water	0.35	0.00	0.18	$32,988
					$39,057,285

c. Shift Share

Roanoke County's hospitality and tourism cluster was expected to eliminate an estimated 21 jobs from 2010-2020, based on national economic performance and national industry-specific performance. Roanoke County's hospitality and tourism cluster underperformed this projection by 87 jobs, indicating that the industry is uncompetitive. Job loss in the other miscellaneous store retailers industry group was a large source of this cluster's poor competitiveness. This industry group underperformed expected job creation by 90 jobs over the past decade. Table 96 details shift share values for the local hospitality and tourism cluster.

Table 96: Shift Share, Hospitality and Tourism Cluster, Roanoke County, 2010-2020

NAIC	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
7112	Spectator Sports	19	15	35	100	66
7139	Other Amusement and Recreation Industries	(108)	86	(22)	(48)	(27)
5322	Consumer Goods Rental	(32)	12	(21)	(14)	7
4539	Other Miscellaneous Store Retailers	(11)	34	23	(68)	(90)
7213	Rooming and Boarding Houses, Dormitories, and Workers' Camps	5	3	8	(13)	(21)
7211	Traveler Accommodation	(45)	38	(7)	(15)	(8)
7121	Museums, Historical Sites, and Similar Institutions	1	3	4	(4)	(9)
5615	Travel Arrangement and Reservation Services	(1)	2	1	(3)	(5)
4872	Scenic and Sightseeing Transportation, Water	(0)	0	0	Insf. Data	(1)
		(172)	193	21	(65)	(87)

d. Specialized Industries

The nature parks and other similar institutions industry, a component of the museums, historical sites, and similar institutions industry group, led the cluster in LQ, with an LQ value of 5.03 in 2020. Racetracks, home health equipment rental, and fitness and recreational sports centers industries indicated good regional specialization with LQ values over 2.0. Table 97 details key trends for specialized industries within the hospitality and tourism cluster.

Table 97: Industries by Specialization, Hospitality and Tourism Cluster, Roanoke County, 2010 - 2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 – 2020 % Change	Competitive Effect	2020 LQ	2020 GRP
712190	Nature Parks and Other Similar Institutions	15	(6)	(29%)	(14)	5.03	$544,551
532283	Home Health Equipment Rental	25	(6)	(20%)	2	2.70	$3,940,501
713940	Fitness and Recreational Sports Centers	377	(28)	(7%)	(16)	2.33	$7,905,951
711212	Racetracks	36	7	25%	9	2.08	$154,105
711219	Other Spectator Sports	131	69	110%	38	1.96	$473,914
532289	All Other Consumer Goods Rental	40	26	193%	21	1.74	$2,798,468

453991	Tobacco Stores	69	1	2%	(29)	1.67	$2,302,112
713910	Golf Courses and Country	123	30	32%	36	1.35	$4,857,907
711211	Sports Teams and Clubs	40	24	152%	19	1.17	$642,507
713950	Bowling Centers	16	(21)	(57%)	(11)	1.06	$503,169
453998	All Other Miscellaneous Store	71	(43)	(38%)	(46)	0.80	$3,247,861
453910	Pet and Pet Supplies Stores	27	(12)	(31%)	(16)	0.78	$899,729
721110	Hotels (except Casino Hotels)	242	(17)	(7%)	(12)	0.65	$8,363,716
721191	Bed-and-Breakfast Inns	<10	Insf. Data	Insf. Data	(0)	0.63	$87,443
721310	Rooming and Boarding	10	(13)	(55%)	(21)	0.62	$194,512
713990	All Other Amusement and	34	(27)	(45%)	(31)	0.54	$1,215,025
532210	Consumer Electronics and	<10	Insf. Data	Insf. Data	(6)	0.39	$76,176
561510	Travel Agencies	<10	Insf. Data	Insf. Data	(8)	0.25	$344,667
		1,283	(70)	(5%)	(105)		$38,552,315

e. Regional Comparison

Unlike Roanoke County's local hospitality and tourism cluster, the Greater Roanoke Region saw moderate growth in the other amusement and recreation industry group, increasing by 10% over the past decade and remaining competitive (296) in the region. The only positive growth Roanoke County received was in the spectator sports industry group, 94% (100 jobs) between 2010 – 2020, which filtered into the Greater Roanoke Regions industry group growth. Spectator sports in GRR gained 134 jobs (39% growth) in the past ten years. Overall, the local Roanoke County and GRR existing hospitality and tourism cluster saw stagnant growth whereas the state saw decline for the same time period.

vi. Retail and Restaurants

The retail and restaurants cluster includes industries engaged in selling merchandise and providing food service to patrons. A total of 8,127 workers (20% of County employment) were employed in businesses belonging to this cluster in 2020. The retail and restaurants cluster is the second cluster by employment for the county and contributes over $10 million to the County's GRP.

a. Employment

Roanoke County's retail and restaurants cluster was composed of 8,372 jobs across 31 industry groups in 2020. The local cluster grew by 3% (244 jobs) from 2010-2020. The restaurants and other eating places, grocery stores, general merchandise stores, including warehouse clubs and supercenters industry groups accounted for 16% of local cluster employment in 2020. These industry groups saw large employment growth in the past decade. Table 98 details employment change for the local retail and restaurants cluster.

Table 98: Employment Change, Retail and Restaurants, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
7225	Restaurants and Other Eating Places	2,184	2,519	2,517	333	15%
4451	Grocery Stores	889	1,205	1,222	333	37%
4441	Building Material and Supplies Dealers	410	398	468	58	14%
4543	Direct Selling Establishments	388	458	454	65	17%
4523	General Merchandise Stores, including Warehouse Clubs and Supercenters	207	477	411	204	99%

4461	Health and Personal Care Stores	349	345	351	2	1%
4411	Automobile Dealers	279	412	317	38	14%
7115	Independent Artists, Writers, and Performers	245	257	302	57	23%
4522	Department Stores	484	334	245	(239)	(49%)
4511	Sporting Goods, Hobby, and Musical Instrument Stores	191	339	232	42	22%
4471	Gasoline Stations	321	214	229	(92)	(29%)
7223	Special Food Services	150	147	219	69	46%
4533	Used Merchandise Stores	233	275	208	(24)	(10%)
4541	Electronic Shopping and Mail-Order Houses	450	374	187	(264)	(59%)
4539	Other Miscellaneous Store Retailers	235	192	167	(68)	(29%)
4481	Clothing Stores	202	126	128	(73)	(36%)
4413	Automotive Parts, Accessories, and Tire Stores	144	154	123	(21)	(15%)
4431	Electronics and Appliance Stores	129	108	106	(23)	(18%)
4412	Other Motor Vehicle Dealers	64	76	78	14	22%
4422	Home Furnishings Stores	67	53	75	9	13%
4532	Office Supplies, Stationery, and Gift Stores	165	166	68	(97)	(59%)
4482	Shoe Stores	45	57	56	11	26%
4512	Book Stores and News Dealers	62	62	37	(25)	(41%)
4483	Jewelry, Luggage, and Leather Goods Stores	31	38	35	4	14%
4421	Furniture Stores	44	44	35	(9)	(21%)
4452	Specialty Food Stores	64	43	30	(34)	(53%)
4442	Lawn and Garden Equipment and Supplies Stores	32	33	28	(4)	(11%)
4531	Florists	50	49	26	(23)	(47%)
4542	Vending Machine Operators	16	12	<10	Insf. Data	Insf. Data
4453	Beer, Wine, and Liquor Stores	0	<10	<10	Insf. Data	Insf. Data
7224	Drinking Places (Alcoholic Beverages)	<10	<10	0	Insf. Data	Insf. Data
		8,127	8,977	8,372	244	3%

b. Location Quotient and Gross Regional Product

The used merchandise stores industry group led this cluster in specialization (2.49 LQ) for 2020. Three additional industry groups had LQ's exceeding 1.5 during the same year: grocery stores (1.72), book stores and news dealers (1.73), sporting goods, hobby, and musical instrument stores (1.62). The retail and restaurants cluster accounted for a 10% ($38 million) of the County's GRP in 2020. Table 99 details location quotient and gross regional product for the local retail and restaurants cluster.

Table 99: LQ & GRP, Retail and Restaurants Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
7225	Restaurants and Other Eating Places	0.95	0.95	1.01	$76,553,315
4451	Grocery Stores	1.32	1.69	1.72	$53,238,555
4441	Building Material and Supplies Dealers	1.46	1.37	1.51	$36,266,698
4543	Direct Selling Establishments	1.31	1.40	1.33	$13,374,174
4523	General Merch. Stores, including Warehouse Clubs and Supercenters	0.48	0.94	0.78	$18,830,064
4461	Health and Personal Care Stores	1.17	1.09	1.13	$20,018,042

4411	Automobile Dealers	0.92	1.16	0.89	$36,649,275
7115	Independent Artists, Writers, and Performers	0.84	0.77	0.73	$3,043,345
4522	Department Stores	1.31	1.02	1.03	$9,960,311
4511	Sporting Goods, Hobby, and Musical Instrument Stores	1.25	1.95	1.62	$9,956,290
4471	Gasoline Stations	1.40	0.87	0.93	$14,646,109
7223	Special Food Services	0.64	0.52	0.73	$8,803,116
4533	Used Merchandise Stores	3.17	3.06	2.49	$5,204,435
4541	Electronic Shopping and Mail-Order Houses	4.59	2.55	1.06	$16,160,901
4539	Other Miscellaneous Store Retailers	1.36	1.02	0.91	$6,449,702
4481	Clothing Stores	0.65	0.42	0.53	$4,020,971
4413	Automotive Parts, Accessories, and Tire Stores	1.01	1.00	0.79	$9,767,380
4431	Electronics and Appliance Stores	0.85	0.77	0.88	$9,506,412
4412	Other Motor Vehicle Dealers	1.41	1.69	1.68	$8,204,714
4422	Home Furnishings Stores	0.98	0.72	1.10	$5,075,557
4532	Office Supplies, Stationery, and Gift Stores	1.33	1.50	0.83	$2,528,582
4482	Shoe Stores	0.89	1.02	1.30	$2,262,792
4512	Book Stores and News Dealers	1.48	1.96	1.73	$1,242,764
4483	Jewelry, Luggage, and Leather Goods Stores	0.63	0.74	0.87	$1,581,205
4421	Furniture Stores	0.70	0.70	0.59	$1,674,969
4452	Specialty Food Stores	0.83	0.54	0.42	$1,872,925
4442	Lawn and Garden Equipment and Supplies Stores	0.82	0.78	0.61	$1,895,182
4531	Florists	1.41	1.52	0.89	$975,429
4542	Vending Machine Operators	0.76	0.69	0.52	$192,027
4453	Beer, Wine, and Liquor Stores	0.00	0.14	0.18	$552,397
7224	Drinking Places (Alcoholic Beverages)	0.01	0.03	0.00	$0
					$380,507,636

c. Shift Share

The local retail and restaurants cluster was expected to create 918 jobs, based on national economic performance and national industry-specific performance. The local retail and restaurants cluster underperformed this projection by 674 jobs, indicating the is not competitive in this industry. The electronic shopping and mail-order houses industry group was primarily responsible for this cluster's uncompetitive ranking from 2010-2020. Table 100 details shift share for the local logistics cluster.

Table 100: Shift Share, Retail and Restaurants Cluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
7225	Restaurants and Other Eating Places	(75)	313	238	333	95
4451	Grocery Stores	(51)	127	76	333	257
4441	Building Material and Supplies Dealers	0	59	59	58	(1)
4543	Direct Selling Establishments	16	56	72	65	(7)
4523	General Merchandise Stores, including Warehouse Clubs and Supercenters	25	30	54	204	150
4461	Health and Personal Care Stores	(25)	50	25	2	(23)

4411	Automobile Dealers	21	40	61	38	(22)
7115	Independent Artists, Writers, and Performers	78	35	113	57	(55)
4522	Department Stores	(232)	69	(163)	(239)	(76)
4511	Sporting Goods, Hobby, and Musical Instrument Stores	(33)	27	(5)	42	47
4471	Gasoline Stations	(12)	46	34	(92)	(126)
7223	Special Food Services	25	21	47	69	22
4533	Used Merchandise Stores	7	33	40	(24)	(65)
4541	Electronic Shopping and Mail-Order Houses	318	65	383	(264)	(646)
4539	Other Miscellaneous Store Retailers	(11)	34	23	(68)	(90)
4481	Clothing Stores	(70)	29	(41)	(73)	(33)
4413	Automotive Parts, Accessories, and Tire Stores	(3)	21	18	(21)	(39)
4431	Electronics and Appliance Stores	(42)	19	(24)	(23)	1
4412	Other Motor Vehicle Dealers	(5)	9	4	14	11
4422	Home Furnishings Stores	(7)	10	3	9	6
4532	Office Supplies, Stationery, and Gift Stores	(75)	24	(52)	(97)	(45)
4482	Shoe Stores	(12)	6	(5)	11	17
4512	Book Stores and News Dealers	(39)	9	(30)	(25)	4
4483	Jewelry, Luggage, and Leather Goods Stores	(9)	4	(5)	4	9
4421	Furniture Stores	(8)	6	(2)	(9)	(8)
4452	Specialty Food Stores	(11)	9	(1)	(34)	(32)
4442	Lawn and Garden Equipment and Supplies Stores	3	5	7	(4)	(11)
4531	Florists	(14)	7	(7)	(23)	(17)
4542	Vending Machine Operators	(6)	2	(4)	Insf. Data	(4)
4453	Beer, Wine, and Liquor Stores	(0)	0	0	Insf. Data	8
7224	Drinking Places (Alcoholic Beverages)	(0)	0	(0)	Insf. Data	(1)
		(247)	1,166	918	244	(674)

d. Specialized Industries

The 6-digit hobby, toy, and game stores industry, a component of the four-digit sporting goods, hobby, and musical instrument stores industry group, drove the retail and restaurants cluster employment growth during this period. The supermarkets and other grocery and limited-service restaurants industries also positively contributed to cluster growth. Additionally, employment growth in all three of these industries were competitive from 2010-2020. Table 101 details key trends for specialized industries within the local retail and restaurants cluster.

Table 101: Industries by Specialization, Transportation, Warehousing, and Logistics Cluster, Roanoke County, 2010-2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 LQ	Competitive Effect	2020 GRP
451120	Hobby, Toy, and Game Stores	164	102	165%	4.63	116	$8,111,054
451212	News Dealers and Newsstands	11	Insf. Data	Insf. Data	3.27	9	$437,775
441228	Motorcycle, ATV, and All Other Motor Vehicle Dealers	60	24	66%	2.73	30	$6,443,342
453310	Used Merchandise Stores	208	(24)	(10%)	2.49	(65)	$5,204,435

442210	Floor Covering Stores	55	10	23%	2.35	6	$4,435,057
722514	Cafeterias, Grill Buffets, and Buffets	59	(27)	(31%)	2.25	(5)	$1,419,827
446191	Food (Health) Supplement Stores	48	16	49%	2.09	4	$2,133,916
444110	Home Centers	377	70	23%	1.96	15	$25,795,234
445110	Supermarkets and Other Grocery (except Convenience) Stores	1,156	306	36%	1.74	232	$50,389,483
453991	Tobacco Stores	69	1	2%	1.67	(29)	$2,302,112
444120	Paint and Wallpaper Stores	16	1	10%	1.46	(1)	$1,738,961
451211	Book Stores	26	(32)	(55%)	1.45	(5)	$804,989
451140	Musical Instrument and Supplies Stores	16	4	40%	1.44	5	$568,566
445120	Convenience Stores	67	27	68%	1.44	24	$2,849,072
454310	Fuel Dealers	28	10	57%	1.40	12	$3,626,038
444130	Hardware Stores	58	3	5%	1.39	(1)	$6,876,040
453210	Office Supplies and Stationery Stores	35	(4)	(10%)	1.37	11	$1,778,133
454390	Other Direct Selling Establishments	426	55	15%	1.33	(23)	$9,748,136
441210	Recreational Vehicle Dealers	18	(10)	(35%)	1.31	(25)	$1,761,372
448210	Shoe Stores	56	11	26%	1.30	17	$2,262,792
444210	Outdoor Power Equipment Stores	12	(1)	(10%)	1.30	(3)	$1,077,230
722330	Mobile Food Services	50	Insf. Data	Insf. Data	1.26	35	$2,411,641
446110	Pharmacies and Drug Stores	212	(13)	(6%)	1.21	(1)	$15,236,084
722513	Limited-Service Restaurants	1,239	189	18%	1.12	(48)	$38,939,187
441310	Automotive Parts and Accessories Stores	112	7	7%	1.08	(7)	$8,259,125
454110	Electronic Shopping and Mail-Order	187	(264)	(59%)	1.06	(646)	$16,160,901
452319	All Other General Merchandise Stores	148	75	102%	1.05	45	$5,328,668
452210	Department Stores	245	(239)	(49%)	1.03	(76)	$9,960,311
447110	Gasoline Stations with Convenience Stores	224	(88)	(28%)	1.02	(129)	$14,289,020
		5,383	263	5%		(503)	$250,348,500

e. Regional Comparison

Roanoke County's retail and restaurants cluster experienced 3% growth (244 jobs), whereas the Greater Roanoke Region experienced 7% decline between 2010-2020. The majority of growth that was seen in the Greater Roanoke Region's retail and restaurants cluster was derived from Roanoke County's success in three of its subclusters: general merchandise stores, including warehouse clubs and supercenter, grocery stores, and restaurants and other eating places, which helped offset some of the large losses the region saw in electronic and appliance stores, and gasoline stations. Nevertheless, the retail and restaurant cluster accounts for the largest employing cluster in both the Region (30,975 jobs) and Roanoke County (8,799 jobs).

2. Emerging Clusters

i. Healthcare

The healthcare cluster is composed of industries vested in healthcare, research, development, manufacturing, and provision of pharmaceutical and medical products, and other support industries, such as waste disposal. The emerging healthcare cluster largely employs nurses, manual labor,

technicians, counselors, and pharmacists. The County's healthcare cluster has been an emerging industry cluster over the last decade. Approximately 6,784 workers were employed in businesses belonging to this cluster in 2020, which accounted for 16% of County employment. Nevertheless, new facilities have opened and continue to thrive in the County as part of the larger regional industry cluster. The success of these facilities and national growth trends may indicate an opportunity for growth, particularly with respect to residential and rehabilitation care.

a. Employment

The local healthcare cluster was composed of 6,784 jobs across 18 industry groups in 2020. The local cluster grew by 36% (1,786 jobs) 2010-2020. The recent establishment of the Carilion Clinic/Virginia Tech Institute, has greatly increased employment in the local healthcare cluster. The 4-digit general medical and surgical hospitals industry group led the local cluster in employment. This industry group experienced 4126% employment growth from 2010-2020. Table 102 details employment change for the local healthcare cluster.

Table 102: Employment Change, Healthcare Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
6211	Offices of Physicians	707	854	1,001	294	42%
6212	Offices of Dentists	389	461	391	3	1%
6213	Offices of Other Health Practitioners	299	383	399	100	33%
6214	Outpatient Care Centers	38	109	164	125	326%
6215	Medical and Diagnostic Laboratories	72	132	68	(4)	(6%)
6216	Home Health Care Services	637	603	667	30	5%
6219	Other Ambulatory Health Care Services	43	46	67	24	55%
6221	General Medical and Surgical Hospitals	16	638	668	652	4126%
6222	Psychiatric and Substance Abuse Hospitals	0	0	0	0	0%
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	<10	244	310	Insf. Data	Insf. Data
6231	Nursing Care Facilities (Skilled Nursing Facilities)	1,226	1,227	1,318	92	7%
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	67	126	219	152	227%
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	609	484	289	(320)	(53%)
6239	Other Residential Care Facilities	21	10	103	82	400%
6241	Individual and Family Services	493	649	426	(67)	(14%)
6242	Community Food and Housing, and Emergency and Other Relief Services	0	128	202	202	Insf. Data
6243	Vocational Rehabilitation Services	<10	415	242	Insf. Data	Insf. Data
6244	Child Day Care Services	377	303	251	(126)	(33%)
		4,999	6,813	6,731	35%	809

b. Location Quotient and Gross Regional Product

The specialty hospitals industry group led the local cluster in specialization with an LQ of 5.07 in 2020. The nursing care facilities (skilled nursing facilities) (3.32) and vocational rehabilitation services (2.99) industry groups had similar high county employment concentration. The local healthcare cluster generated $455 million in 2020, which accounted for 12% of the County's GRP. Table 103 details location quotient and gross regional product for the local healthcare cluster.

Table 103: LQ & GRP, Healthcare Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
6211	Offices of Physicians	1.03	1.17	1.33	$107,565,410
6212	Offices of Dentists	1.66	1.83	1.58	$34,629,040
6213	Offices of Other Health Practitioners	0.94	1.02	0.96	$18,900,467
6214	Outpatient Care Centers	0.23	0.54	0.62	$14,478,629
6215	Medical and Diagnostic Laboratories	1.07	1.78	0.87	$4,772,273
6216	Home Health Care Services	1.65	1.30	1.32	$36,680,800
6219	Other Ambulatory Health Care Services	0.52	0.51	0.71	$3,638,218
6221	General Medical and Surgical Hospitals	0.01	0.54	0.55	$67,474,474
6222	Psychiatric and Substance Abuse Hospitals	0.00	0.00	0.00	$0
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	0.04	4.24	5.07	$29,394,221
6231	Nursing Care Facilities (Skilled Nursing Facilities)	2.74	2.85	3.32	$70,411,145
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	0.41	0.73	1.21	$8,911,773
6233	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	2.91	2.05	1.12	$10,500,902
6239	Other Residential Care Facilities	0.45	0.23	2.30	$5,161,258
6241	Individual and Family Services	1.26	1.06	0.57	$14,358,308
6242	Community Food and Housing, and Emergency and Other Relief Services	0.00	2.90	4.01	$10,743,765
6243	Vocational Rehabilitation Services	0.00	4.48	2.99	$12,116,150
6244	Child Day Care Services	0.82	0.73	0.67	$6,002,996
					$455,739,830

c. Shift Share

Roanoke County's healthcare cluster was expected to create an estimated 979 jobs during this period, based on national economic performance and industry specific performance. This cluster exceeded expectations by 807 jobs, marking considerable local competitiveness. Competitive growth in the specialty hospital industry group and more moderate competitiveness elsewhere was most notably offset by non-competitiveness in the continuing care retirement communities and assisted living facilities for the elderly and family services industry groups. Table 104 details shift share values for the local healthcare cluster.

Table 104: Shift Share, Healthcare Cluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
6211	Offices of Physicians	(9)	101	93	294	201
6212	Offices of Dentists	(22)	56	34	3	(31)
6213	Offices of Other Health Practitioners	59	43	102	100	(2)
6214	Outpatient Care Centers	19	6	24	125	101
6215	Medical and Diagnostic Laboratories	3	10	14	(4)	(18)
6216	Home Health Care Services	130	91	221	30	(191)
6219	Other Ambulatory Health Care Services	1	6	8	24	16
6221	General Medical and Surgical Hospitals	(1)	2	1	652	650
6222	Psychiatric and Substance Abuse Hospitals	0	0	0	0	0

6223	Specialty Hospitals	0	0	0	Insf. Data	307
6231	Nursing Care Facilities	(279)	176	(103)	92	195
6232	Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	(0)	10	10	152	143
6233	Continuing Care Communities and Assisted Living Facilities for the Elderly	76	87	164	(320)	(484)
6239	Other Residential Care Facilities	(3)	3	0	82	82
6241	Individual and Family Services	399	71	470	(67)	(537)
6242	Community Food and Housing, and Emergency and Other Relief Services	0	0	0	202	202
6243	Vocational Rehabilitation Services	(0)	0	(0)	Insf. Data	241
6244	Child Day Care Services	(112)	54	(58)	(126)	(68)
		262	717	979	1,786	807

d. Specialized Industries

The 6-digit community food services industry led the cluster in LQ in 2020 (9.41). Two emerging areas of specialization in the local cluster were the specialty hospital industry (a component of the specialty hospital industry group (except psychiatric and substance abuse)) and the temporary shelters industry (a component of the community food and housing, and emergency and other relief services industry group). Other residential care facilities and vocational rehabilitation services were other areas of emerging specialization. Table 105 details key trends for specialized industries within the local healthcare cluster.

Table 105: Industries by Specialization, Healthcare Cluster, Roanoke County, 2010-2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 LQ	Competitive Effect	2020 GRP
621111	Offices of Physicians	975	297	44%	1.35	209	$105,353,648
621210	Offices of Dentists	391	3	1%	1.58	(31)	$34,629,040
621330	Offices of Mental Health Practitioners	114	33	40%	1.34	(15)	$5,186,220
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	136	58	73%	1.03	28	$7,282,170
621492	Kidney Dialysis Centers	73	46	174%	2.03	34	$6,386,853
621493	Freestanding Ambulatory Surgical and Emergency Centers	65	Insf. Data	Insf. Data	1.53	63	$5,982,751
621511	Medical Laboratories	63	(3)	(4%)	1.12	(21)	$4,211,669
621610	Home Health Care Services	667	30	5%	1.32	(191)	$36,680,800
621910	Ambulance Services	57	Insf. Data	Insf. Data	1.18	52	$2,865,050
622310	Specialty Hospitals	310	Insf. Data	Insf. Data	5.07	307	$29,394,221
623110	Nursing Care Facilities	1,318	92	7%	3.32	195	$70,411,145
623220	Residential Mental Health and Substance Abuse Facilities	106	Insf. Data	Insf. Data	1.65	101	$4,901,088
623311	Continuing Care Retirement Communities	160	68	74%	1.23	46	$6,192,931
623312	Assisted Living Facilities for the Elderly	129	(388)	(75%)	1.01	(543)	$4,307,971

623990	Other Residential Care Facilities	103	82	400%	2.30	82	$5,161,258
624210	Community Food Services	98	98	Insf. Data	9.41	97	$6,312,465
624221	Temporary Shelters	104	104	Insf. Data	5.02	104	$4,431,300
624310	Vocational Rehabilitation Services	242	Insf. Data	Insf. Data	2.99	241	$12,116,150
		5,112	1,286	34%		759	$351,806,729

e. Regional Comparison

The regional healthcare cluster is largely dependent on two more locally established and specialized clusters in Roanoke County and the City of Roanoke. Data suggest that many counties in the Greater Roanoke Region rely on these two locations to satisfy their healthcare needs. This is especially the case for more specialized healthcare services. Roanoke County has experienced recent growth in its healthcare cluster over the past decade. Similar to other emerging local clusters, growth during this period was limited to a small number of industry groups that were regionally important healthcare industries. The development of niche services, such as outpatient care and other residential care facilities had seen tremendous growth and present important opportunities for the County considering the region's aging population.

ii. Advanced Material Manufacturing

The advanced material manufacturing cluster includes industries vested in metal, glass, and plastic manufacturing as well as machine shops, R & D, and equipment manufacturing for communication and electrical components. The emerging advanced materials manufacturing cluster largely employs scientists, physicists, and engineers and related production chain positions. The County's advanced material manufacturing cluster has approximately 6,784 workers employed in businesses belonging to this cluster, which account for 16% of County employment. Nevertheless, new facilities have opened and continue to thrive in the County as part of the larger regional industry cluster. The success of these facilities and national growth trends may indicate an opportunity for growth.

a. Employment

Approximately 1,913 workers were employed in businesses belonging to Roanoke County's advanced materials manufacturing cluster. Prominent industry groups in this cluster include product manufacturing, machinery and equipment manufacturing, and scientific research and development. The plastics product manufacturing industry group led the cluster in job creation over the past decade. Alternatively, the machine shops industry group saw decline. Table 106 details employment change for the local advanced material manufacturing cluster.

Table 106: Employment Change, Advanced Material Manufacturing Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
3261	Plastics Product Manufacturing	146	236	205	59	41%
3272	Glass and Glass Product Manufacturing	132	232	173	41	31%
3315	Foundries	<10	<10	51	Insf. Data	Insf. Data
3323	Architectural and Structural Metals Manufacturing	201	263	264	63	31%
3325	Hardware Manufacturing	204	237	234	30	15%

3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	129	110	75	(55)	(42%)
3332	Industrial Machinery Manufacturing	<10	16	190	Insf. Data	Insf. Data
3335	Metalworking Machinery Manufacturing	57	59	55	(1)	(2%)
3342	Communications Equipment Manufacturing	<10	24	111	Insf. Data	Insf. Data
3344	Semiconductor and Other Electronic Component Manufacturing	411	262	485	75	18%
3359	Other Electrical Equipment and Component Manufacturing	104	64	29	(75)	(72%)
5417	Scientific Research and Development Services	48	77	39	(9)	(19%)
		1,436	1,579	1,913	477	33%

b. Location Quotient and Gross Regional Product

Roanoke County's advanced materials manufacturing cluster contained nine industry groups with LQ values exceeding 1.0 in 2020, including: communications equipment manufacturing (4.89); semiconductor and other electronic component manufacturing (5.05); industrial machinery manufacturing (6.01); glass and glass product manufacturing (7.21); and hardware manufacturing (37.21). The County's advanced materials manufacturing cluster generated $199 million in 2020, accounting for 5% of the County's total GRP. Table 107 details location quotient and gross regional product for the advanced material manufacturing cluster.

Table 107: LQ & GRP, Advanced Materials Manufacturing Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
3261	Plastics Product Manufacturing	1.08	1.61	1.36	$23,382,968
3272	Glass and Glass Product Manufacturing	5.76	9.68	7.21	$19,604,375
3315	Foundries	0.03	0.02	1.79	$5,005,261
3323	Architectural and Structural Metals Manufacturing	2.30	2.65	2.59	$35,678,333
3325	Hardware Manufacturing	32.04	36.20	37.21	$28,699,916
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	1.46	1.05	0.78	$3,865,491
3332	Industrial Machinery Manufacturing	0.04	0.51	6.01	$19,084,716
3335	Metalworking Machinery Manufacturing	1.23	1.15	1.18	$2,926,066
3342	Communications Equipment Manufacturing	0.09	1.03	4.89	$7,003,514
3344	Semiconductor and Other Electronic Component Manufacturing	4.15	2.70	5.05	$46,684,755
3359	Other Electrical Equipment and Component Manufacturing	3.24	1.81	0.76	$6,445,357
5417	Scientific Research and Development Services	0.27	0.41	0.18	$1,444,508
					$199,825,258

c. Shift Share

The local advanced materials manufacturing cluster was expected to add 132 jobs from 2010-2020, based on national economic performance and national industry-specific performance. Roanoke County exceeding expectations by 345 jobs, suggesting that the local cluster is exceeding national cluster growth. Growth in the County's communication equipment manufacturing industry group and industrial machine manufacturing industry group were very competitive during this period. Table 108 details shift share values for the local advanced material manufacturing cluster.

Table 108: Shift Share, Advanced Material Manufacturing Cluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
3261	Plastics Product Manufacturing	2	21	23	59	37
3272	Glass and Glass Product Manufacturing	(8)	19	11	41	30
3315	Foundries	(0)	0	(0)	Insf. Data	50
3323	Architectural and Structural Metals Manufacturing	12	29	41	63	22
3325	Hardware Manufacturing	(25)	29	4	30	26
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	(4)	19	14	(55)	(69)
3332	Industrial Machinery Manufacturing	(0)	0	0	Insf. Data	189
3335	Metalworking Machinery Manufacturing	(5)	8	3	(1)	(4)
3342	Communications Equipment Manufacturing	(1)	0	(1)	Insf. Data	109
3344	Semiconductor and Other Electronic Component Manufacturing	(58)	59	1	75	74
3359	Other Electrical Equipment and Component Manufacturing	9	15	24	(75)	(99)
5417	Scientific Research and Development Services	5	7	12	(9)	(21)
		(74)	206	132	477	345

d. Specialized Industries

Roanoke County's advanced materials manufacturing cluster was most specialized in the six-digit flat glass manufacturing industry in 2020; this industry had an LQ value of 58.04. Relatedly, hardware manufacturing industry had the second highest LQ within the County's advanced materials manufacturing cluster at 37.21 in 2020. Other communications equipment manufacturing is another area of specialization for the County's advanced materials manufacturing cluster, which experienced significant LQ growth (22.3) from 2010-2020 alongside positive job change. Table 109 details key trends for specialized industries within the local advanced material manufacturing cluster.

Table 109: Industries by Specialization, Advanced Materials Manufacturing Cluster, Roanoke County, 2010-2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 LQ	Competitive Effect	2020 GRP
326199	All Other Plastics Product Manufacturing	205	59	41%	2.64	38	$23,382,968
327211	Flat Glass Manufacturing	171	39	30%	58.04	19	$19,471,151
331523	Nonferrous Metal Die-Casting Foundries	50	50	Insf. Data	8.85	50	$4,913,417
332312	Fabricated Structural Metal Manufacturing	236	217	1150%	9.79	213	$33,394,615
332510	Hardware Manufacturing	234	30	15%	37.21	26	$28,699,916
333249	Other Industrial Machinery Manufacturing	188	188	Insf. Data	12.21	187	$18,626,685
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	53	(3)	(5%)	3.22	(2)	$2,635,145

334290	Other Communications Equipment Manufacturing	110	Insf. Data	Insf. Data	22.71	109	$6,215,506
334413	Semiconductor and Related Device Manufacturing	419	214	104%	8.77	210	$44,196,419
334417	Electronic Connector Manufacturing	62	(118)	(66%)	10.85	(157)	$1,591,541
335921	Fiber Optic Cable Manufacturing	29	3	11%	9.21	(9)	$6,419,986
541720	Research and Development in the Social Sciences and Humanities	30	Insf. Data	Insf. Data	1.66	26	$1,319,719
		1,787	814	84%		710	$190,867,068

e. Regional Comparison

Roanoke County's advanced materials manufacturing cluster shares similarities with the regional advanced materials manufacturing cluster, namely in the growing plastics product manufacturing and architectural and structural metals manufacturing. Additionally, Roanoke County, the Region, and State have all experienced decline in machine shop, turned product; and screw, nut, and bolt manufacturing employment from 2010-2020, indicating that a larger trend is at play. Overall growth and competitiveness was similar between the Region and Roanoke County. The regional advanced material manufacturing cluster was competitive with respect to job creation from 2010-2020, growing 41% (998 jobs) similar to Roanoke County, 33% (444 jobs). A small number of industry groups experienced moderate employment growth over the past decade, which narrowly offset losses in the County's other electrical equipment and component manufacturing industry group.

iii. Forest and Wood Products

The forest and wood products cluster includes industries vested in wood or paper product manufacturing, and wood preservation. The emerging forest and wood products cluster largely employs scientists, physicists, engineers and related production chain positions. The County's forest and wood products cluster has approximately 798 workers employed in businesses belonging to this cluster.

a. Employment

Approximately 798 workers were employed in businesses belonging to Roanoke County's forest and wood products cluster. Prominent industry groups in this cluster include other wood products manufacturing and converted paper product manufacturing, which have seen tremendous growth between 2010-2020. Conversely, the sawmills and wood preservation industry group saw significant job decline for the same period. Table 110 details employment change for the local forest and wood products cluster.

Table 110: Employment Change, Forest and Wood Products Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 Jobs	2015 Jobs	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change
3211	Sawmills and Wood Preservation	114	287	103	(11)	(9%)
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	40	105	<10	Insf. Data	Insf. Data
3219	Other Wood Product Manufacturing	128	106	388	260	204%
3221	Pulp, Paper, and Paperboard Mills	0	0	<10	Insf. Data	Insf. Data
3222	Converted Paper Product Manufacturing	195	159	303	107	55%
		477	657	798	321	67%

b. Location Quotient and Gross Regional Product

Roanoke County's forest and wood products cluster contained five industry groups, three of which have LQ values exceeding 1.0 in 2020, including: sawmills and wood preservation (4.13), other wood product manufacturing (5.78), and converted paper product manufacturing (4.48). The County's forest and wood products cluster generated $72 million in 2020, accounting for 2% of the County's total GRP. Table 111 details location quotient and gross regional product for the forest and wood products cluster.

Table 111: LQ & GRP, Forest and Wood Products Cluster, Roanoke County, 2010-2020

NAICS	Description	2010 LQ	2015 LQ	2020 LQ	2020 GRP
3211	Sawmills and Wood Preservation	4.51	11.00	4.13	$10,064,173
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	2.20	5.30	0.05	$78,200
3219	Other Wood Product Manufacturing	2.06	1.63	5.78	$30,674,752
3221	Pulp, Paper, and Paperboard Mills	0.00	0.00	0.12	$87,281
3222	Converted Paper Product Manufacturing	2.60	2.26	4.48	$31,263,967
					$72,168,373

c. Shift Share

The local forest and wood products cluster was expected to add 11 jobs from 2010-2020, based on national economic performance and national industry-specific performance. Roanoke County exceeding expectations by 310 jobs, suggesting that the local cluster is exceeding national cluster growth. Growth in the County's other wood product manufacturing industry group and converted paper product manufacturing industry group were very competitive during this period. Table 112 details shift share values for the forest and wood products cluster.

Table 112: Shift Share, Forest and Wood Products Cluster, Roanoke County, 2010-2020

NAICS	Description	Ind. Mix Effect	Nat'l Growth Effect	Expected Change	2010 - 2020 Change	Competitive Effect
3211	Sawmills and Wood Preservation	(14)	16	2	(11)	(13)
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	3	6	8	Insf. Data	(47)
3219	Other Wood Product Manufacturing	(4)	18	14	260	246
3221	Pulp, Paper, and Paperboard Mills	(0)	0	(0)	Insf. Data	3
3222	Converted Paper Product Manufacturing	(42)	28	(14)	107	121
		(57)	68	11	321	310

d. Specialized Industries

Roanoke County's forest and wood products cluster was most specialized in the six-digit wood preservation industry in 2020; this industry had an LQ value of 41.29, however, negative job change in the past decade. Stationery product manufacturing is another area of specialization for the County's forest and wood product cluster having an LQ value of 19.55 and experiencing 39% job growth between 2010-2020. Table 113 details key trends for specialized industries within the local forest and wood products cluster.

Table 113: Industries by Specialization, Forest and Wood Products Cluster, Roanoke County, 2010-2020

NAICS	Description	2020 Jobs	2010 - 2020 Change	2010 - 2020 % Change	2020 LQ	Competitive Effect	2020 GRP
321114	Wood Preservation	100	(10)	(9%)	41.29	(25)	$9,978,288
321911	Wood Window and Door Manufacturing	379	258	212%	9.22	246	$30,346,877
322211	Corrugated and Solid Fiber Box Manufacturing	114	51	80%	2.56	48	$17,202,882
322230	Stationery Product Manufacturing	184	52	39%	19.55	104	$13,707,246
		778	351	82%		373	$71,235,293

e. Regional Comparison

The Greater Roanoke Region contains far more industry groups that are specialized in the region. However, other wood product manufacturing and converted paper product manufacturing illustrated growth trends for both local and regional clusters over the past decade. The regional sawmill and wood presentation industry group in the forest and wood product cluster experienced tremendous growth, 48% (167 jobs) and specialization. Roanoke County has been declining in specialization and jobs in this industry group since 2015.

Appendix VI: Business Start-ups and Establishments

1. Number of Establishments by Industry

Retail trade had the largest number of establishments (266) in Roanoke County, generating $1,126,152,000 in sales and employing 4,267 individuals in 2018. Health care and social assistance, professional, scientific, and technical services, finance and insurance, and accommodation and food services were the remaining top establishment contributors. Table 114 reports that health care and social assistance, and retail trade are also the largest employing industries in the County.

Table 1148: Establishments by Industry in Roanoke County, 2018

NAICS	Industry	Number of establishments	Sales, value of shipments, or revenue ($1,000)	Annual payroll ($1,000)	Employee
44-45	Retail trade	266	1,126,152	109,178	4,267
62	Health care and social assistance	230	417,489	186,369	4,628
54	Professional, scientific, and technical services	219	324,022	89,462	1,431
52	Finance and insurance	190	No data	177,106	3,647
72	Accommodation and food services	156	159,504	44,286	3,079
81	Other services (except public administration)	146	80,516	21,055	804
53	Real estate and rental and leasing	115	72,016	19,212	528
56	Administrative and support and waste management and remediation services	108	84,403	45,291	1,577
42	Wholesale trade	88	471,681	57,371	1,049
31-33	Manufacturing	65	941,821	172,279	3,098
48-49	Transportation and warehousing	33	59,094	28,875	501
51	Information	31	No data	36,113	574
61	Educational services	28	8,415	2,999	152
71	Arts, entertainment, and recreation	28	15,326	4,985	360

Source: US Economic Census

2. Numbers of New Startups and Closing Establishments

The number of total establishments in the county has gradually decreased throughout the decade. Startup businesses at the age of 0 to 5 have followed the same trend. The number of closing businesses has fluctuated since 2010, but has experienced a gradual decrease overall.

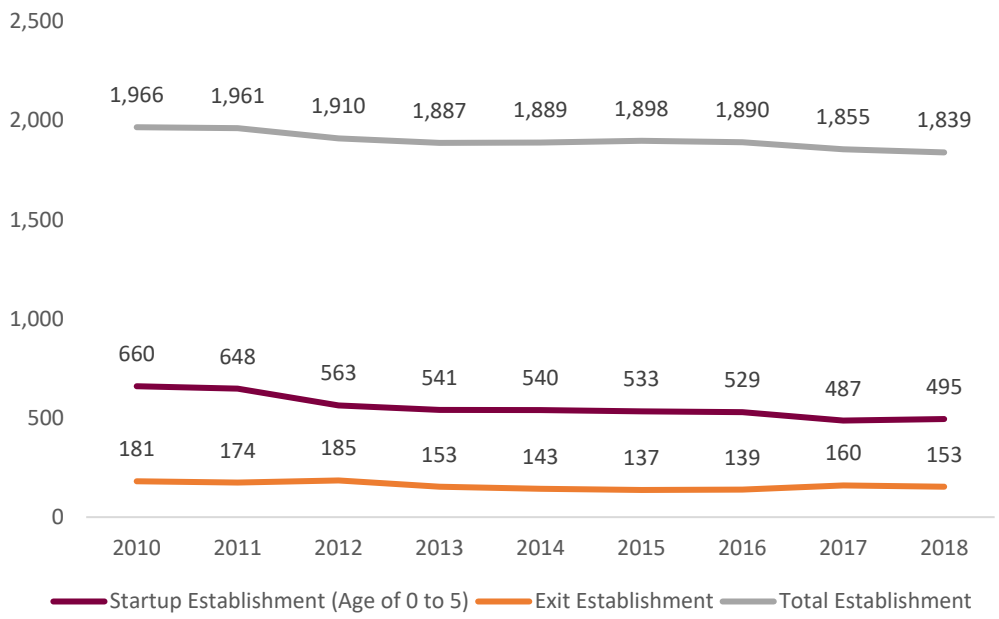


Figure 40: Number of New Startup and Closing Establishments, 2010-2018
Source: US Census Business Dynamics Statistics

3. Employment by Business Establishment Size in 2019

The majority of jobs in the County are provided by small-medium size enterprises, accounting for 42.6% of employment in 2019. Mid-size and small companies hire 24.8% and 22.8% of employees respectively.

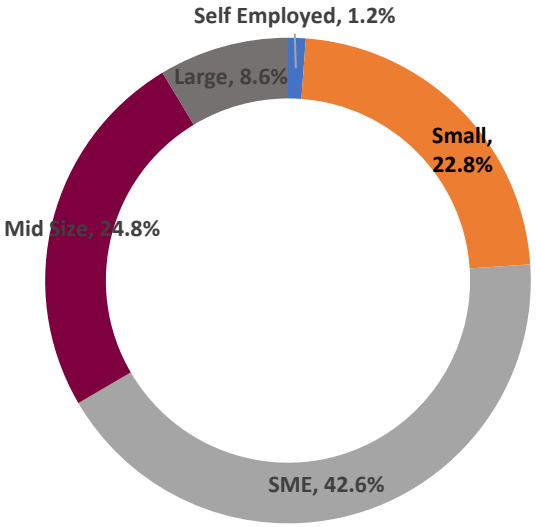


Figure 41: Employment by Business Establishment Size, 2019
Source: YourEconomy.com

4. Web Venture Per Capita and Highly Active Ventures

Web venture per capita indicates strong local digital literacy, entrepreneurial activity, and connection to the tech economy compared to the state, nation, and peer group counties[14]. High active ventures show the per capita rate of sites that are visited frequently. In 2020, Roanoke County has a high number of web ventures per capita as well as high active ventures.

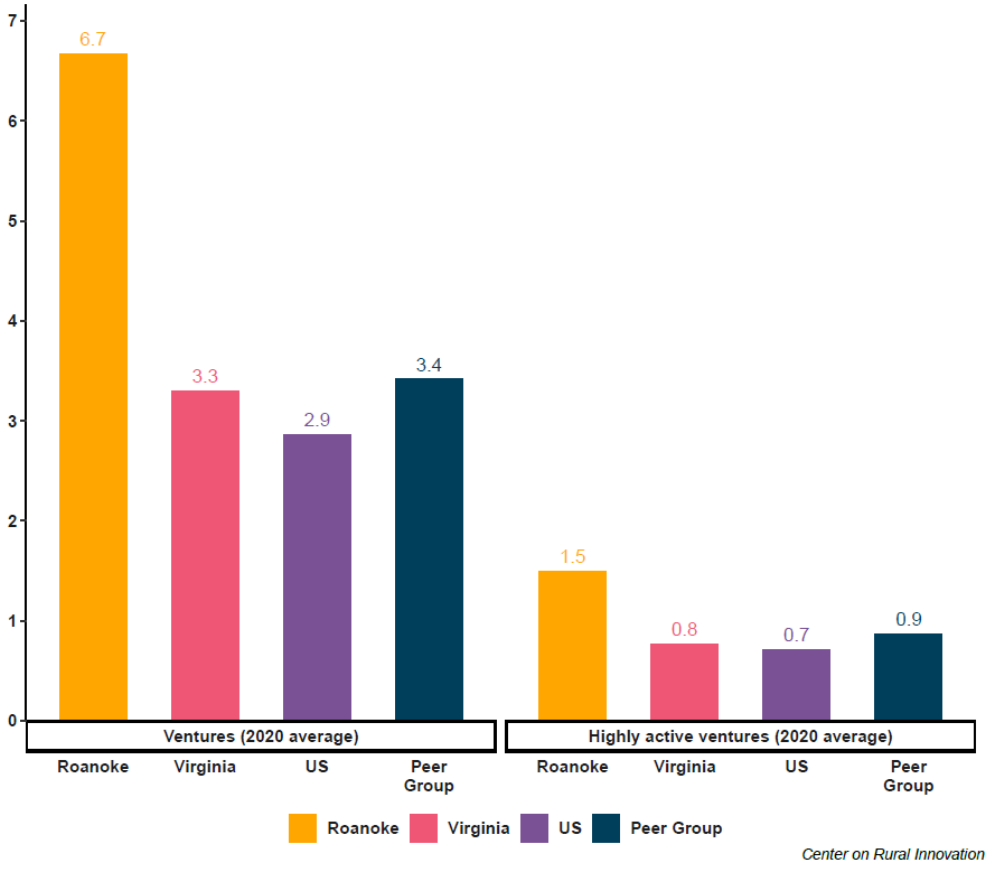


Figure 42: Web Ventures per Capita and Highly Active Ventures, 2020
Source: Center on Rural Innovation

[14] Center on Rural Innovation. Available: https://ruralinnovation.us/

Appendix VII: Housing

1. Housing Units and Occupancy

In 2019, Roanoke County had a total of 40,924 housing units reported by the American Community Survey, with 91.3% of those units being occupied. The County vacancy rate of 8.7% was higher than state (10.4%) and nation (12.1%) data figures, however, the number of units has continually increased over the past decade, experiencing a 3.2% growth period.

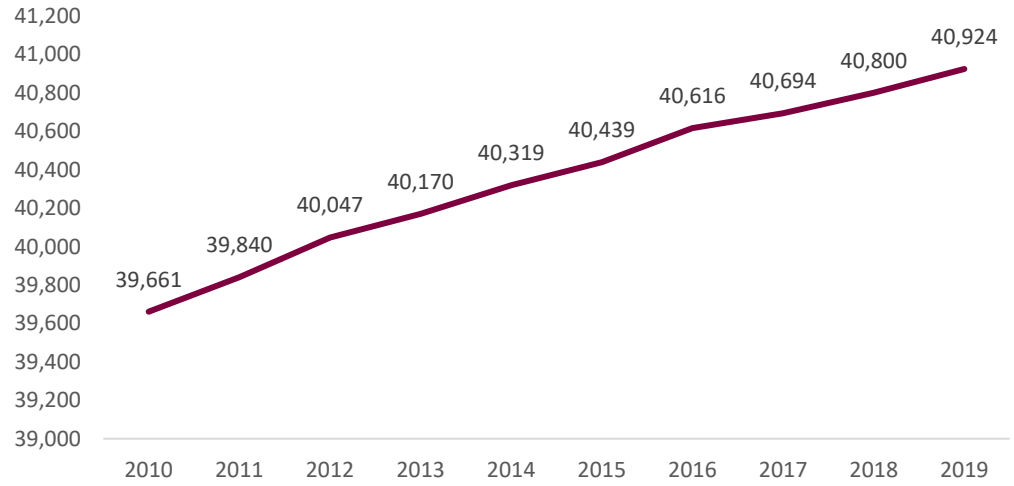


Figure 43: Housing Units in Roanoke, 2010-2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

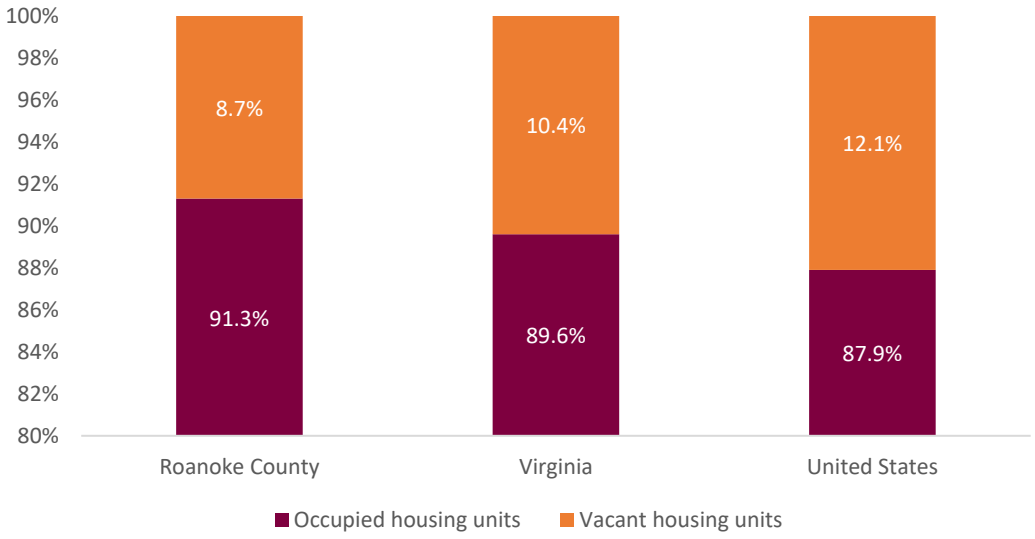


Figure 44: Housing Occupancy, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

Housing units in Roanoke County are distributed relatively equally across County subdivisions. The Cave Spring district contains the largest number of houses (21.5%) while Catawba has the smallest number (19.0%). The highest vacancy rate is found in Vinton (8.0%), likely due to the large number of rental houses that are present in the district.

Table 115: Housing Units by County Subdivision, 2019

County Subdivision	Catawba	Cave Spring	Hollins	Vinton	Windsor Hills
Housing Units	7,765	8,792	8,493	7,966	7,908
%	19.0%	21.5%	20.8%	19.5%	19.3%

Source: U.S. Census Bureau, American Community Survey 5-year estimates

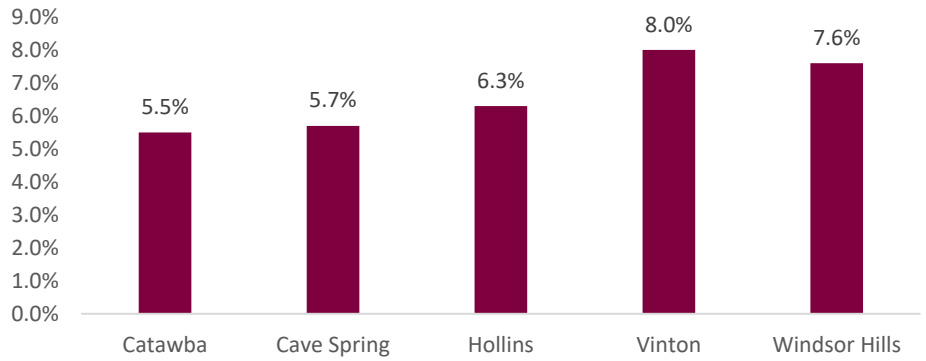


Figure 45: Vacancy Rate by County Subdivision, 2019

Source: U.S. Census Bureau, American Community Survey 5-year estimates

2. Vacant Units by Category

The majority of vacant units are for rent (20%) or sale only (21%) in Roanoke County. Vacancy for seasonal, recreational, or occasional use (17%) is relatively low compared to state (24.0%) and national (33.0%) figures.

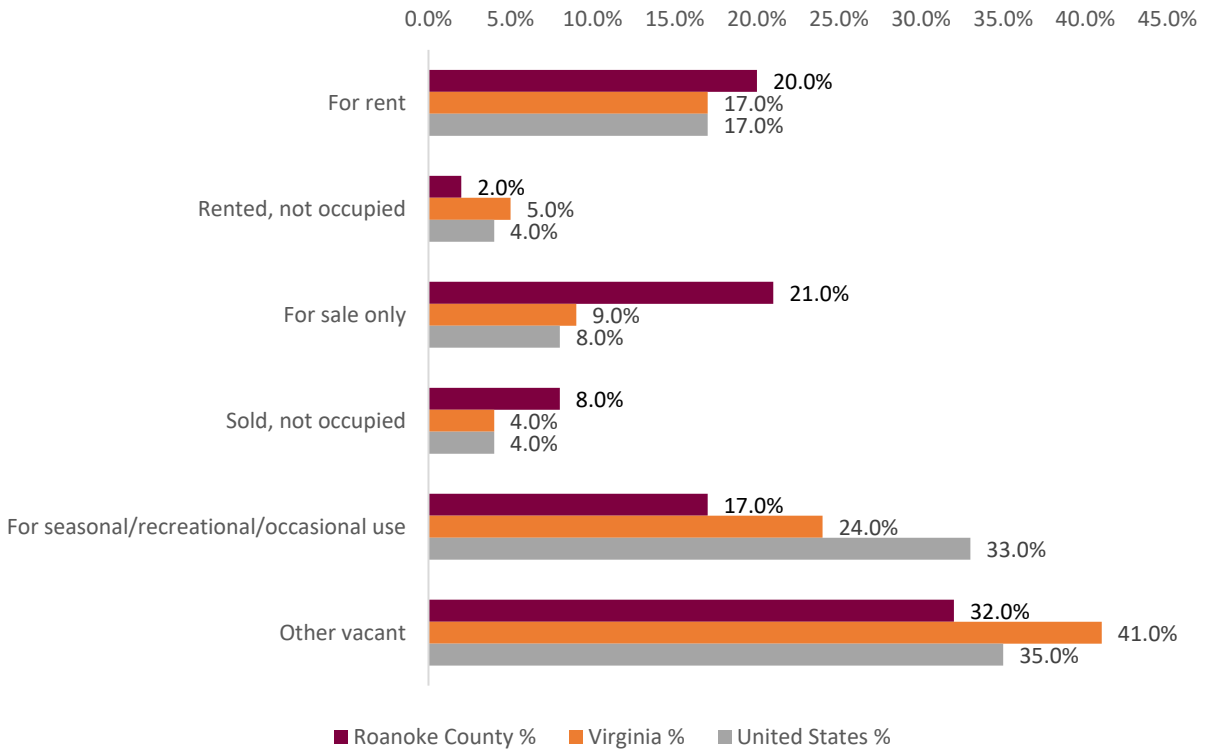


Figure 46: Vacancy Units by Category, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

1. Housing Tenure

Roanoke County has 76.4% of owner-occupied housing units, a relatively high value compared to the state (66.1%) and nation (64.1%). However, the average household size of an owner-occupied unit and renter-occupied unit in the County is relativity equal to state and national averages. Owner-occupied units average 2.57 individuals, 0.10 less compared to state and national averages. The average household size of a renter-occupied unit is 2.07 people, 0.30 people less than state and national averages.

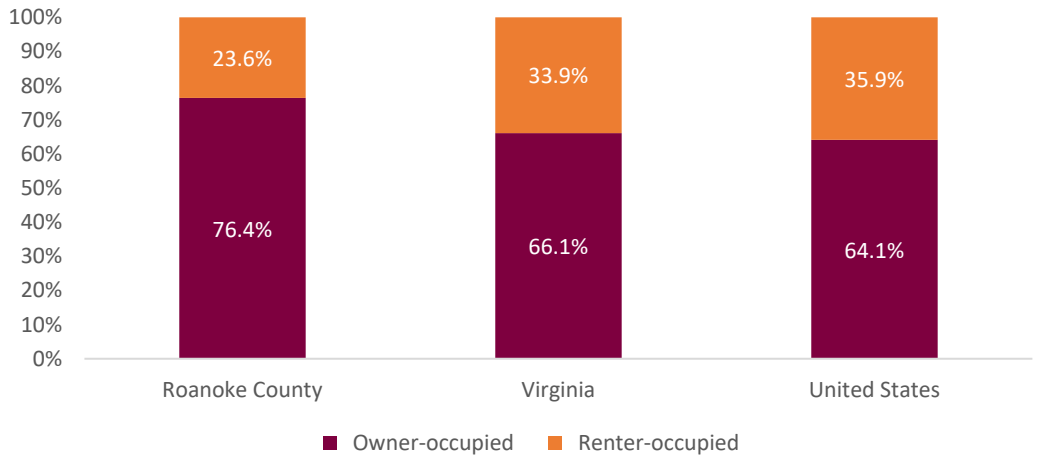


Figure 47: Housing Tenure, 2019

Source: U.S. Census Bureau, American Community Survey 5-year estimates

Despite the relatively equal housing unit distribution, tenure statuses are different across the County subdivisions. Catawba district has the highest owner-occupancy rate of 89.6%, while Cave Spring has the lowest at 67.3%.

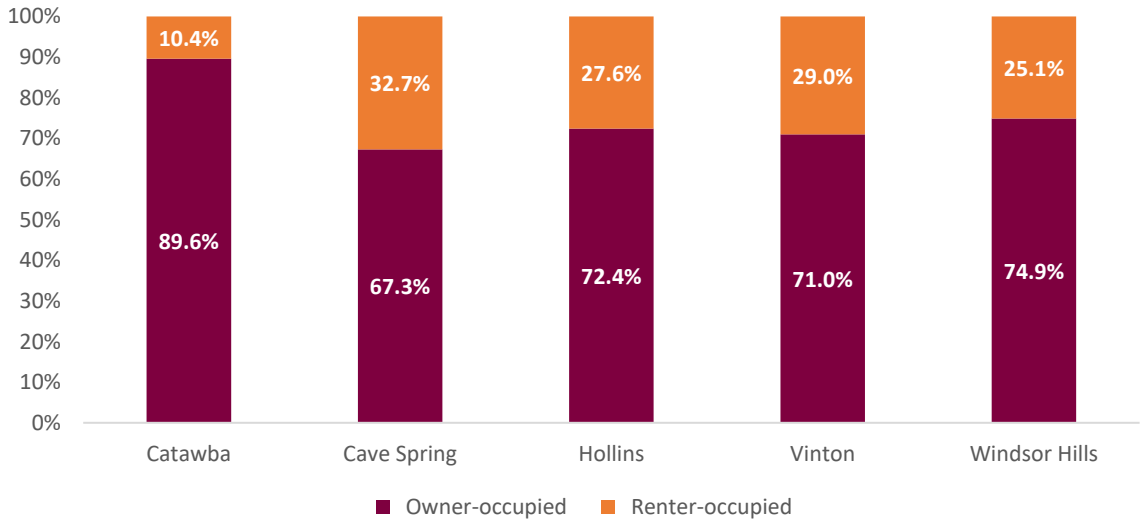


Figure 48: Tenure by County Subdivision, 2019

Source: U.S. Census Bureau, American Community Survey 5-year estimates

4. Housing Year Built

The majority of houses were constructed between 1950- 1999. Only a small number of housing units (5.1%) were built since 2010. The large amount of aged housing structures suggests the need for renovations, upkeep, and maintenance to maintain a viable housing stock for new and existing Roanoke

County residents.

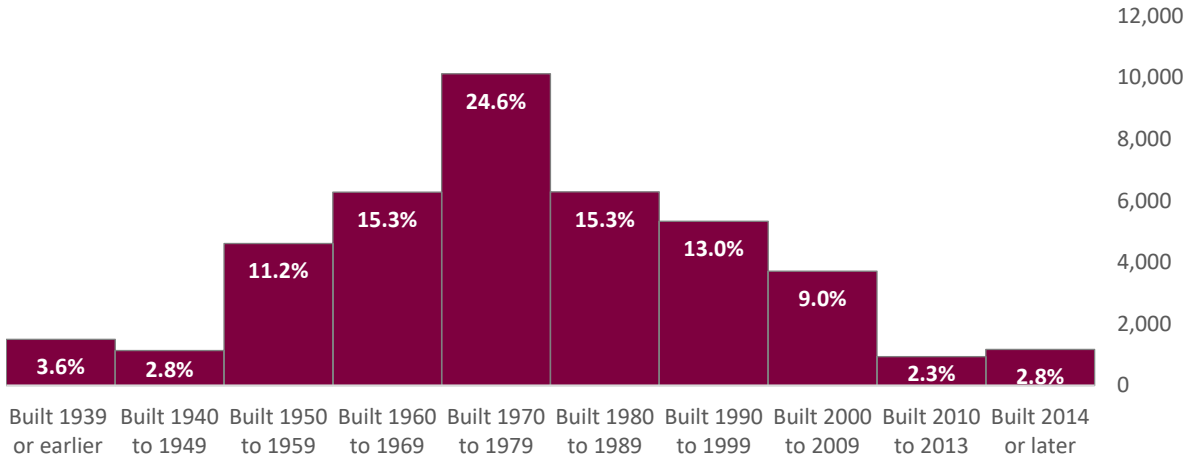


Figure 49: Housing Year Built in Roanoke, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

Vinton's median year of housing construction is 1973, relatively older compared to other districts in Roanoke County. The most recent built housing units are found in the Cave Spring district with a median year of 1980.

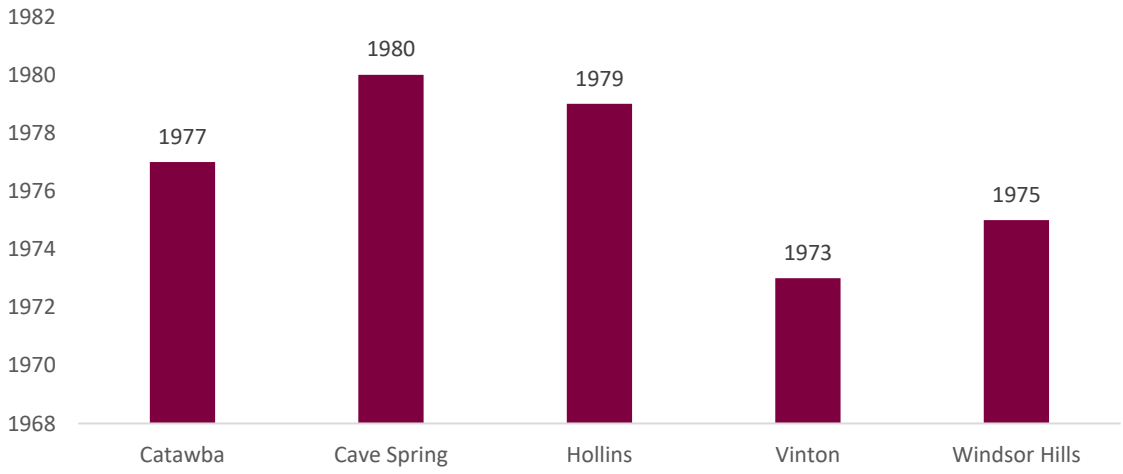


Figure 50: Median Year Built by County Subdivision, 2019
Source: U.S. Census Bureau, American Community Survey 5-year estimates

5. Residential Units Sold

There are 5,283 residential units sold in the Roanoke Valley-Alleghany region in 2019[15]. The number of units sold annually has increased since 2015 with the exception of 2018, when the U.S experienced a housing market crash. The volume of sales for total housing units sold has also increased annually, with $1,217,431,000 in 2019. Similarly, average home prices have continually increased since 2015, recording record growth (6.5% increase) between 2018-2019.

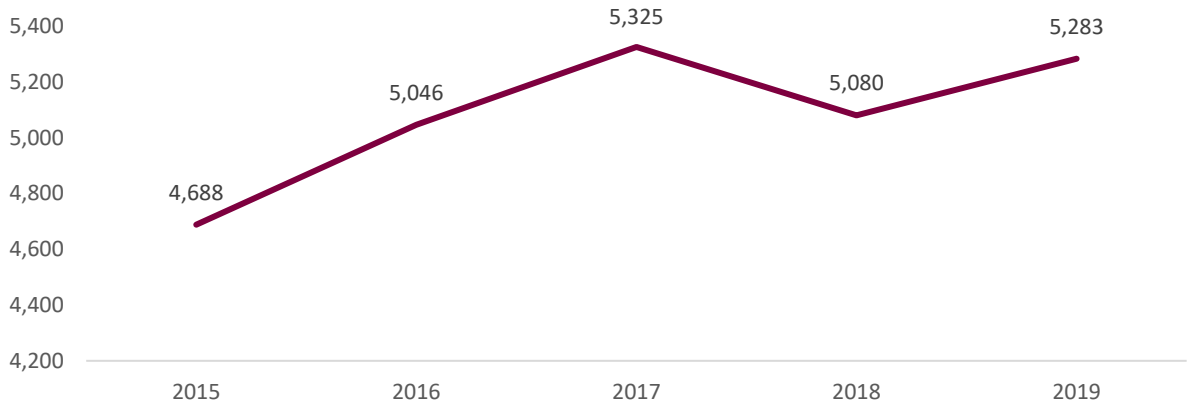


Figure 51: Roanoke Valley Annual Residential Units Sold, 2015-2019
Source: Roanoke Valley Association of Realtor

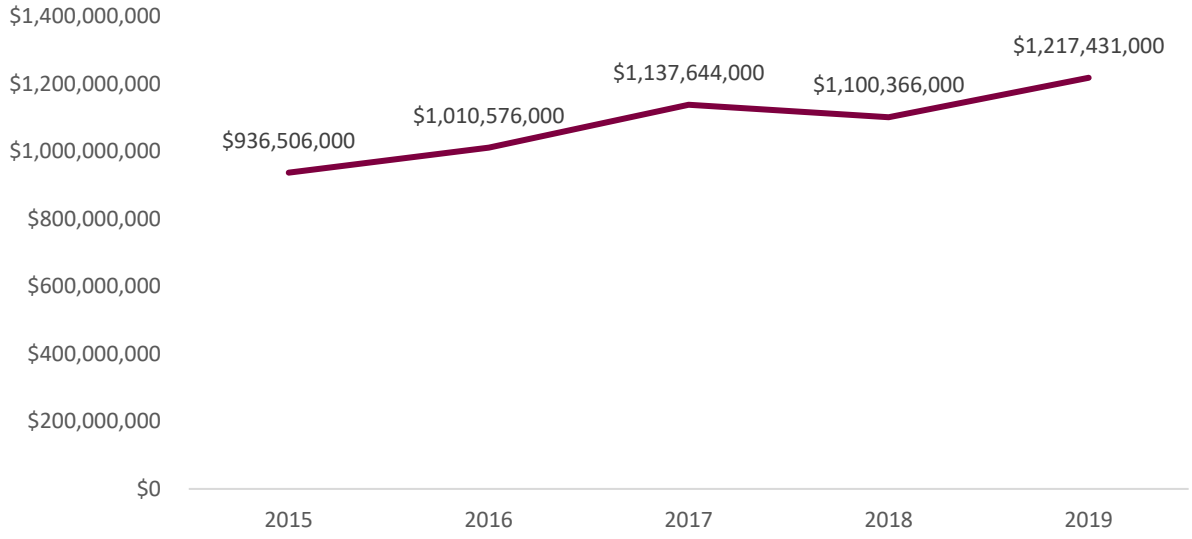


Figure 5211: Roanoke Valley Annual Residential Units Volume Sold, 2015-2019
Source: Roanoke Valley Association of Realtor

[15] Roanoke Valley Assocation of Realtors, Roanoke Valley Home Sales Report, 2019. Available: https://www.rvar.com/images/pdfs/ext_linked/home_sales_detailed.pdf

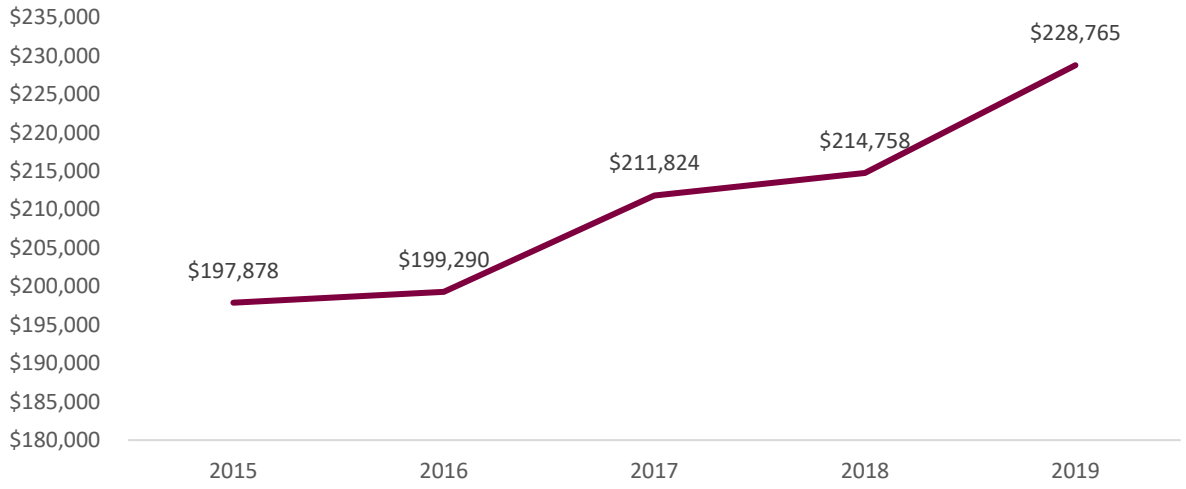


Figure 53: Roanoke Valley Average Home Price, 2015-2019
Source: Roanoke Valley Association of Realtor

6. Housing Value

The median housing value in Roanoke County was $215,500 in 2019, lower than both state ($288,800) and national ($240,500) figures. American Community Survey reports that the majority of owner-occupied units' range between $150,000-$499,999. The median rent in Roanoke County was $1,062 in 2019, lower than median rent in Virginia ($1,234), but higher than the nation ($956). The monthly rent for the majority of the units in the county is between $500-$1,499.

7. Housing Affordability Based on Top 10 Industry Sectors

RKG Associates, Inc conducted a regional housing market analysis of the Roanoke Valley-Alleghany region that revealed housing affordability based on industry income. Table 118 displays a noticeable concern that based on affordable housing prices, Roanoke County housing is less attainable for residents working in accommodation and food services, retail trade, and other services except for public administration.

Table 1169: Housing Affordability Based on Industry Income

Industry	Industry Jobs	Average Earnings	Affordable Home Price	Affordable Rent
Health Care	26,168	$63,865	$237,179	$1,774
Government	24,285	$64,232	$238,542	$1,784
Retail Trade	17,728	$33,188	$123,252	$922
Manufacturing	17,359	$70,473	$261,722	$1,958
Accommodation and Food Services	13,968	$19,976	$74,185	$555
Construction	10,684	$56,630	$210,312	$1,573
Other Services (except Public Administration)	9,490	$27,906	$103,636	$775
Admin. and Support and Waste and Remediation	8,947	$37,011	$137,449	$1,028
Professional, Sci., and Tech. Services	8,494	$69,306	$257,386	$1,925
Transportation and Warehousing	7,909	$58,157	$215,982	$1,615

Source: Roanoke Valley-Alleghany Region Regional Housing Market Analysis Study

8. Residential Density

In 2019, 91,630 individuals populated housing units in Roanoke County. Relatively equal population distributions were found among the county's districts, the Cave Spring district had the largest residential population (20.7%) whereas the Vinton district had the smallest (19.0%).

Table 117: Residential Density by County Subdivision, 2019

County Subdivision	Catawba	Cave Spring	Hollins	Vinton	Windsor Hills
Residential Population	18,265	18,968	18,511	17,444	18,441
%	19.9%	20.7%	20.2%	19.0%	20.1%

Source: U.S. Census Bureau, American Community Survey 5-year estimates

Appendix VIII: Tourism Economy

1. COVID-19 Impacts on Tourism

Virginia's Blue Ridge, comprised of three counties (Franklin, Botetourt, and Roanoke) and two cities (Roanoke and Salem), generated $892 million in direct travel expenditures in 2018 with Roanoke County contributing 22.5%. Expenditures in tourism increased by 4.5% over the past five years, $169,392,080 in 2015 to $201,059,489 in 2019, a large increase compared to the total change in the state of Virginia. Domestic traveler's spending estimates include employment, payroll income, and state and local tax revenue directly generated by these expenditures in the County over the past five years[16]. Roanoke County employment increased from 1,696 to 1,867 between 2015-2019, a 3.8% net-increase.

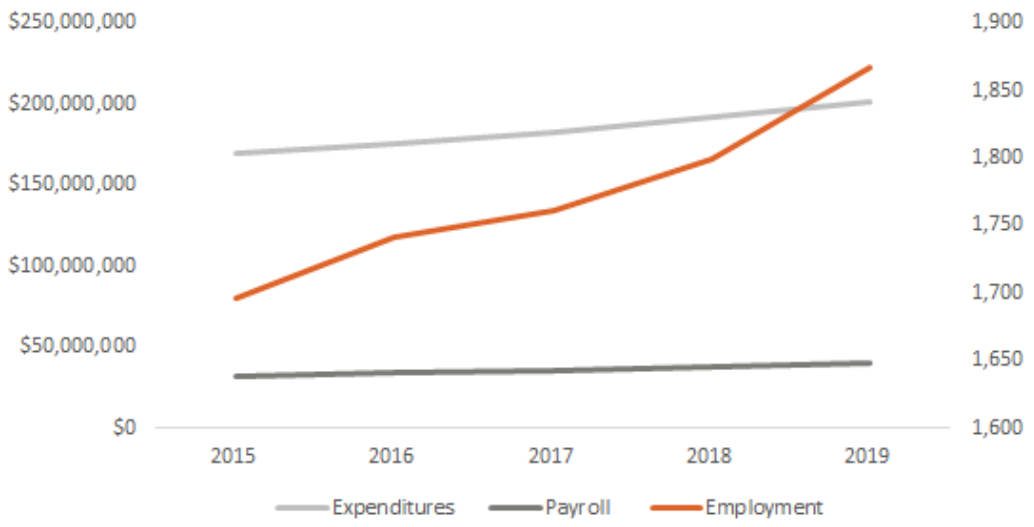


Figure 54: Tourism Expenditure in Roanoke County, 2015-2019
Source: Virginia Tourism Corporation

Local and state tax receipts illustrate the same positive trend. Virginia's Blue Ridge generated $29.2 million in local taxes in 2018, indicating a 22.3% contribution from Roanoke County. Domestic travel spending generated a 4.5% ($923,669) increase in local tax revenue for municipal governments, increasing from $5,590,421 in 2015 to $6,514,090 in 2019. Additionally, between 2015-2019, spending by domestic travelers in Roanoke County created an increase of 5.5% ($1,301,663) in tax revenues for the state treasury, growing from $6,911,081 in 2015 to $8,212,744 in 2019.

[16] Virginia Tourism Corporation, 2019 Travel Economic Impact Data Report, Roanoke County

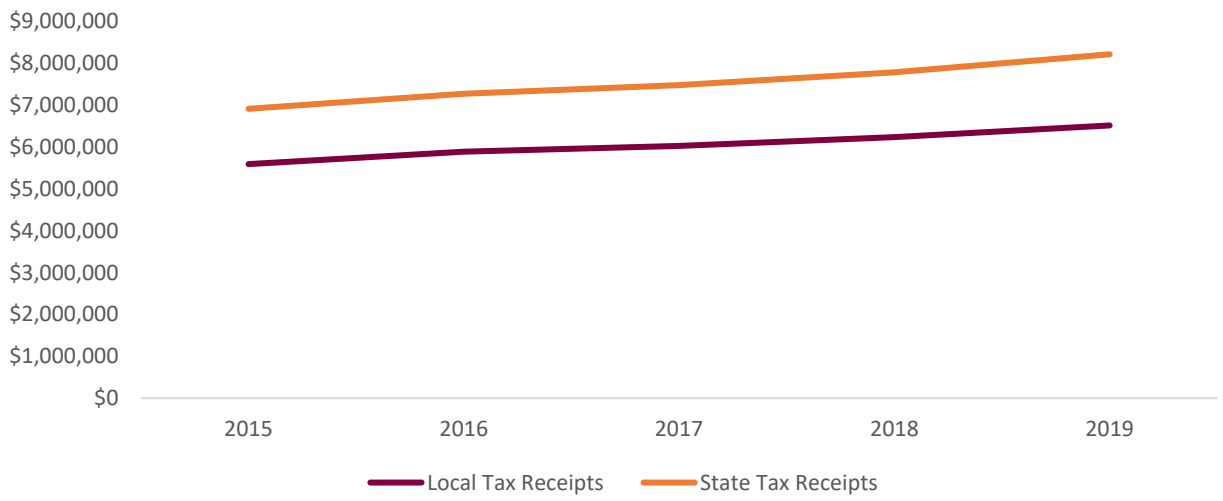


Figure 55: Tax Travel Impact in Roanoke County, 2015-2019
Source: Virginia Tourism Corporation

In 2018, Virginia's Blue Ridge increased its regional tourism campaign through vistal imagery and video marketing. In 2019, the organizations website was receiving over 4,500 unique visitors per day, a 14% increase from 2018. In 2019, Roanoke County collected its highest meals (restaurant) tax of $4,517,454 before experiencing impacts for the Coronavirus pandemic[17]. Meals tax reported a $365,811 loss for the year 2020. Figure 56 illustrates the gradual growth and fluctuation in restaurants tax over the past five years.

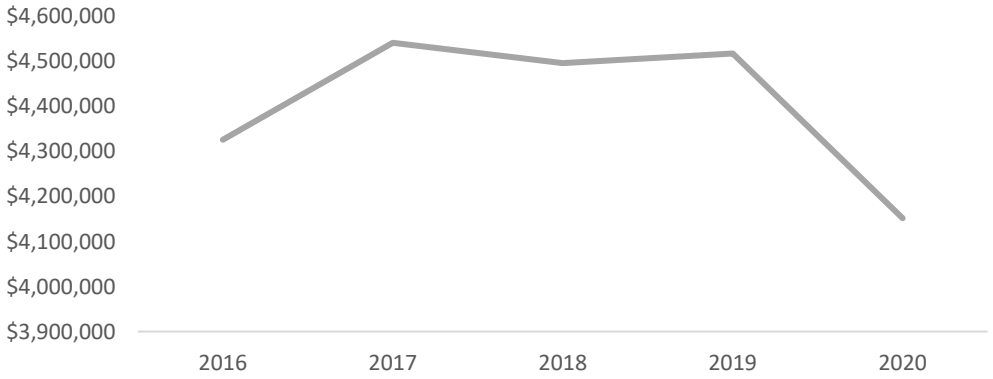


Figure 56: Meals (Restaurant) Tax Impact in Roanoke County, 2016-2020
Source: Virginia Tourism Corporation

Virginia's Blue Ridge has seen its 10th year of consecutive growth in hotel room revenue indicating strong visitor experiences and supporting activities drawing individual to the region. Trends in Roanoke County confirm this sentiment up to 2019 before the Coronavirus pandemic impacted the accommodation sector.

[17] Auditor of Public Accounts, UVA Weldon Cooper Center for Public Service, 2019 Virginia Excise Tax Collections

Figure 57 illustrates Roanoke County's growth in transient occupancy (hotel and motel) tax and decline in 2020. Between 2016-2019, transient occupancy tax saw a 8% growth ($118,991) before losing $400,477 (26.9%). Lodging occupancy rates further confirm the impact and slow recovery that has affected accommodation services. Some recovery has been seen over the past year, 39.6% in 2020 compared to 51.0% in 2021[18], however rates have yet to return to pre-pandemic values.

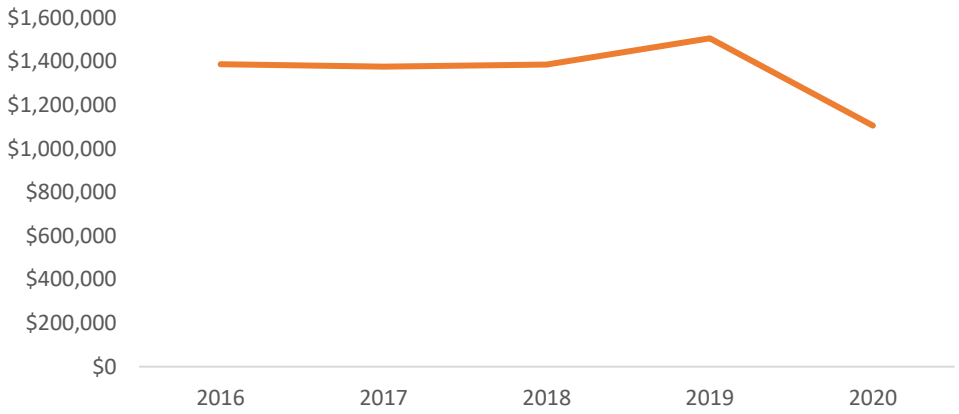


Figure 57: Transient (Hotel and Motel) Tax Impact in Roanoke County, 2016-2020
Source: Virginia Tourism Corporation

Examining ongoing traveler responses from monthly surveys that identify the travel behavior and demographics of various travelers to Virginia, the primary purposes for visiting Virginia's larger Mountain region, comprised of eight counties (Alleghany, Bath, Bedford, Botetourt, Craig, Franklin, Highland, and Roanoke) and 13 cities and towns (Bedford, Buchanan, Clifton Forge, Covington, Fincastle, Hot Springs, New Castle, Roanoke, Rocky Mount, Salem, Troutville, Vinton, and Warm Springs) were primarily to visit family and friends (48%). However, outdoor recreation (11%), entertainment/sightseeing (14%), and other pleasure/personal reasons (11%) were also cited.

On average, travelers spent 3.6 nights and $641 per trip and the majority of respondents were married (63%). It is also important to note that 27% of survey responses were traveling with children and 35% had an annual household income of 100K or more. Respondents cited visiting relatives (32%), shopping (32%), visiting historical sites/churches (24%), and rural sightseeing (23%) as the top activities that took place in the region. Of the cities and counties that make up the Virginia Mountain, Roanoke was cited as the top most visited location (35%), with Richmond (25%) and Charlottesville (21%) being second and third most popular.

[18] Smith Travel Research (STR), Lodging Report June 2021.

The Virginia Tourism Corporation published scenario models to illustrate the impact that COVID-19 would have on the Mountain's Region (Alleghany, Bath, Bedford, Botetourt, Covington City, Craig, Franklin, Highland, Roanoke, Roanoke City, and Salem City). The figure below shows the anticipated spending and economic impacts for an upside, baseline, and downside scenario. The scenarios vary in the degree of virus containment and the rate of economic recovery.

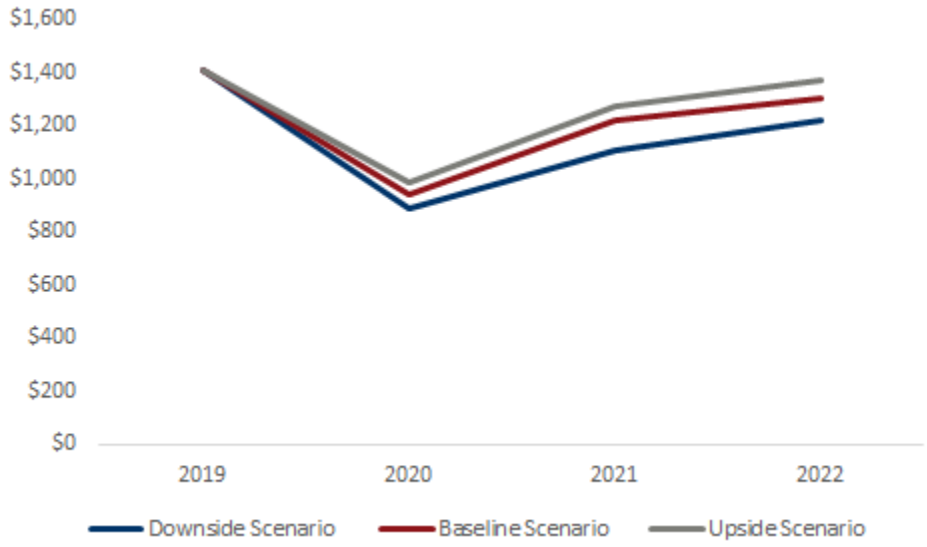


Figure 58: COVID-19 Impacts on Virginia Mountain's Visitor Economy, 2019-2022
Source: Virginia Tourism Corporation

The pandemic created an acute recession, but growth has already resumed. Regulatory limits on travel were only a fraction of the problem. Fear of the virus, economic uncertainty, and loss of income will linger after travel restrictions are eased, curbing the travel sector's recovery. Return to "normal" levels of travel will be a multi-year effort, beginning with domestic travel, followed by regional, international and long-haul international.

Rural and outdoor tourism destinations have been outperforming urban destinations. Recovery will depend on a destination's market mix, but destinations with a high share of domestic and transient visitors have been shown to recover faster, along with destinations with recreation opportunities that allow for social distancing. Roanoke County boasts outdoor attractions such as the Blue Ridge Parkway, Carvins Cove, Explore Park, and the Appalachian Trail, which offer a variety of safe and naturally socially-distant outdoor activities for all seasons.

Appendix IX: Agriculture Economy

1. Farms Produces and Economic Impacts

Roanoke County had a total of 262 farms and 26,114 acres of farmland in 2017[19]. Over the past five years, there has been a 6% decrease in the number of farms and 17% less acreage available. The majority of farms in Roanoke County are relatively small-sized, 37.0% of farms are sized 10 to 49 acres, followed by 50 to 179 acres (32.4%). Family farms comprise 97% of all farms in the area.

The estimated market value of land and buildings is averaged at $572,455 per farm and $5,743 per acre. The estimated market value of all machinery and equipment is $14,518,000 in the County and an average of $55,410 per farm. In 2017, the total market value of products sold in the County was $2,539,000 and farm-related income totaled $838,000. However, net cash farm income was -$722,000 due to the production expenses in the area. The majority (56%) of the farms have less than $2,500 value of sales, followed by 40% with sales value between $5,000 to $9,999. Only 18% of farms earn over $10,000.

Farm sales account for 67% in crops ($1,714,000) and 33% ($825,000) from livestock, poultry, and products. Among crops, Nursery, Greenhouse, Floriculture, and Sod generate the largest sales ($743,000). Other Crops and Hay make the second-largest sales ($580,000). This is partly due to the County's top crop being forage (hay/haylage) which accounts for 95% of croplands. Among livestock, Cattle and calves generate the largest sales ($713,000) in the County. The tables below illustrate the detailed inventory of crops and livestock.

Table 118: Top Crops in Acres in Roanoke County

Top Crops	In Acres
Forage (hay/haylage), all	4,692
Corn for silage or greenchop	160
Vegetables harvested, all	51
Cultivated Christmas trees	30
Apples	24

Source: USDA 2017 Census of Agriculture

Table 11910: Livestock Inventory in Roanoke County

Livestock	Inventory
Broilers and other meat-type chickens	No data
Cattle and calves	2,413
Goats	360
Hogs and pigs	19
Horses and ponies	571
Layers	450
Pullets	59
Sheep and lambs	94
Turkeys	No data

Source: USDA 2017 Census of Agriculture

[19] USDA Census of Agriculture, 2017 County Profile. Available: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Virginia/cp51161.pdf

2. Agritourism Assets and Economic Impact

The agritourism industry in the Virginia Mountains region (Alleghany, Bath, Bedford, Botetourt, Covington City, Craig, Franklin, Highland, Roanoke, Roanoke City, and Salem City) drew 366,565 local visitors and 265,443 non-local visitors in 2015. Visitors spent $127.5 million according to a report written by the Virginia Tech Pamplin College of Business[20].

The report estimates that the economic activity attributed to agritourism in the Virginia Mountains region ranges between $173.4 million and 180.6 million when the multiplier effects are modeled based on the annual consumer spending in 2015. The region has 24 farm-based wineries, vineyards, breweries, and distilleries (WVBD) and 94 agritourism venues other than WVBDs. In addition, $11.3 million state and local tax revenue are attributed to agritourism activity in the area.

[20] Magnini V.P., "The Economic and Fiscal Impacts of Agrictourism in Virginia," Virginia Tecg Pamplin College of Business, Apr. 2017. Available: https://www.vatc.org/wp-content/uploads/2020/01/The-Economic-and-Fiscal-Impacts-of-Agritourism-In-Virginia.pdf

Appendix X: Definitions

1. Clusters and Subclusters

A cluster is defined as "…a regional concentration of related industries in a particular location."[21] Clusters broadly include firms vested in the production or provision of a good or service as well as suppliers, research, development, and technical support firms, and, in some cases, regulatory bodies and institutions of higher education. According to the BEA, clusters are created when the density of related industries or economic activity reaches a "critical mass" where firms begin to enjoy location certain location advantages. These advantages include the development of regional industry-specific supply chains, a specialized labor pool, and support from regional agencies and institutions. Overall, clusters bolster regional specialization and competitiveness and are important for driving job creation and private investment.

Industry clusters are classified into two broad groups: traded clusters and local clusters. Traded clusters are groups of related industries that serve markets outside of their Region. These clusters not only compete in their respective regional markets, but also in markets across the nation. Additionally, in that these regions serve national and international markets, they are not bound to any particular Region. Instead, these clusters carefully select locations that offer specific location advantages, such as those offered by clusters. Local clusters differ from traded clusters in that they primarily serve the market in which they are located. Employment in these clusters tends to be proportional to the Region's population. Finally, these clusters largely do not compete with out-of-Region firms. No cluster is purely traded or purely local, rather, most clusters offer a mix of traded and local elements while favoring one of these structures.

Some industry clusters, such as construction and manufacturing, are broad and contain an array of diverse industry groups. In this case, clusters can be divided into subclusters, which further group related industries within a particular cluster. Subclusters are important for isolating distinct areas of specialization within larger clusters.

2. NAICS Terminology[22]

The North American Industry Classification System (NAICS) is a used by federal statistical agencies to classify and group businesses. Businesses are grouped based on their primary function. For example, two manufacturing firms would be grouped into the manufacturing sector. NAICS uses a hierarchical structure, containing five categories, which range from least specific (sector) to most specific (national industry):

- Sector (2-Digit Code)
    - Subsector (3-Digit Code)
        - Industry Group (4-Digit Code)
            - NAICS Industry (5-Digit Code)
                - National Industry (6-Digit Code)

[21] 2 U.S. Economic Development Administration. "Clusters 101." Retrieved from: http://clustermapping.us/content/clusters-101

[22] United States Census Bureau, "NAICS Codes," Retrieved from: https://www.census.gov/programssurveys/economic-census/guidance/understanding-n

Sectors are the broadest groupings and contain the most individual businesses and industries. There are 21 two-digit sectors that group businesses into broad categories such as agriculture, manufacturing, healthcare, etc. For example, the 2-digit manufacturing sector contains beverage manufacturing firms and steel manufacturing firms and foundries, amongst many others. The commonality between these two firms is manufacturing, so they are both grouped within the same general sector. Three-digit subsectors are smaller components of sectors that divide individual industries into slightly more specific categories. To keep with our previous example, a beverage manufacturing firm would be grouped into the 3-digit beverage and tobacco manufacturing subsector while a foundry would be grouped into the primary metal manufacturing subsector.

Similarly, 4-digit industry groups classify establishments under an even more specific activity. For example, a beverage manufacturing firm would be grouped in the more specific beverage manufacturing industry group and a foundry would be grouped in the iron and steel mills and ferroalloy manufacturing industry group. Industry groups are important components of the NAICS structure in that they group a manageable number of similar industries into relatively specific industry groups and represent an analytical "sweet spot" in this classification system. Four-digit NAICS codes are the primary unit of analysis for this document.

Five-digit NAICS industries and 6-digit national industries are the most specific NAICS classifications. These two categories group firms engaged in very similar or identical activities. For example, the 4-digit beverage manufacturing industry group contains four 5-digit NAICS industries, including soft drink and ice manufacturing, breweries, wineries, and distilleries. More specifically again, the five-digit soft drink manufacturing NAICS industry contains three six-digit industries: soft drink manufacturing, bottled water manufacturing, and ice manufacturing. Six-digit NAICS codes are the secondary unit of analysis for this document.

Overall, the NAICS structure groups smaller numbers of industries into more specific classifications as the number of "digits" increases. NAICS 3, 4, 5, and 6-digit codes can be thought of as the building blocks of two-digit sectors. For example, 2-digit sectors are composed of 3-digit subsectors; 3-digit subsectors are composed of 4-digit industry groups, and so on. Table 1A further details the NAICS structure.

Table 1A: 2012 North American Industry Classification System Structure

NAICS STRUCTURE	EXAMPLE 1: SOFT DRINK MANUFACTURING
SECTOR (2-DIGIT)	31-Manufacturing
SUBSECTOR (3-DIGIT)	312-Beverage and Tobacco Manufacturing
INDUSTRY GROUP (4-DIGIT)	3121-Beverage Manufacturing
NAICS INDUSTRY (5-DIGIT)	31211-Soft Drink and Ice Manufacturing
NATIONAL INDUSTRY (6-DIGIT)	312111-Soft Drink Manufacturing

Source: United States Census Bureau

3. Standard Occupational Classification[23]

Similar to NAICS, the Standard Occupation Classification (SOC) is a federal statistical standard used to classify and group workers. Similar again, SOC uses a hierarchical system. There are 23 two-digit SOC

[23] U.S. Bureau of Labor Statistics. "Standard Occupational Classification." Retrieved from: https://www.bls.gov/soc/

groups that classify workers into broad categories, such as healthcare workers, production workers, etc. There are 98 three-digit minor groups that group workers into more specific categories. Finally, there are 459 four-digit broad occupations and 867 five-digit detailed occupations that group workers into increasingly more specific categories.

While NAICS and SOC can both be used to count employment, there are distinct differences between these two statistical standards. The most important difference between these two statistical standards is the way in which employment is counted. NAICS counts employment at the establishment level. For example, if a soft drink manufacturing firm employed 350 people, all 350 jobs would be counted within the six-digit soft drink manufacturing NAICS group. SOC, however, counts individual workers across all establishments. For example, machine operators within the same beverage manufacturing firm would be counted alongside all other machine operators across all firms within a local economy. Simply put, NAICS considers all employees within a single firm when counting industry employment. SOC however, considers individual workers with similar responsibilities across all firms in counting occupational employment.

4. Location Quotient (LQ)

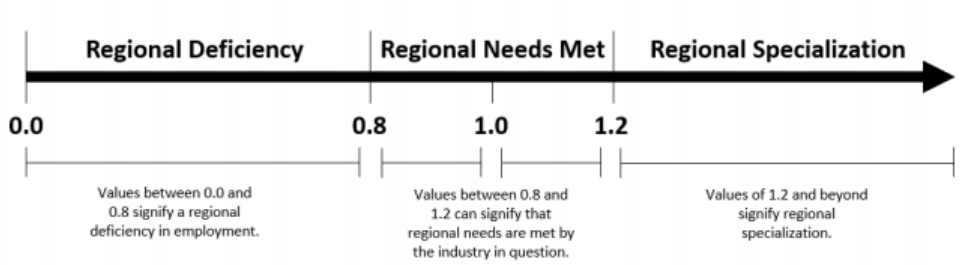
A measure of the concentration of an industry within a Region compared to the national average.

To calculate LQ for a given industry:

1. Find the percentage of industry jobs in the regional economy: $R = \frac{\text{Jobs in industry X in region}}{\text{Total jobs in region}}$
2. Find the percentage of industry jobs in the national economy: $N = \frac{\text{Jobs in industry X in U.S.}}{\text{Total jobs in U.S.}}$
3. Divide R by N to get the ratio of jobs in the Region compared to the nation: $LQ = \frac{R}{N}$

An LQ value of 1.0 signifies a) that the concentration of an industry in a Region is typical of all regions of the United States and b) that local production meets local demand for the industry's goods or services. LQ values greater than 1.2 suggest that a Region is specialized in that industry (net exporter), while a value of less than 0.8 suggest that a Region relies on other regions to meet local demand (net importer). Figure 2 visualizes LQ values.

Figure 1A: Location Quotient



Source: EMSI "Understanding Location Quotients"

5. Gross Regional Product (GRP)

GRP is a measure of the final market value of all goods and services produced in a Region.

$$GRP = Earnings + Taxes + Profits - Subsidies$$

Gross Regional Product is a scaled-down version of Gross Domestic Product (GDP), the metric used to calculate national economic output. GRP is the sum of 4 values across all businesses and industries in a Region:

1. **Earnings**: the total "take-home pay", including wages, salaries, benefits, bonuses, and owner income.
2. **Taxes**: the total amount paid to the government, including property taxes, sales taxes, excise taxes, and licensing fees.
3. **Profits:** Remaining income after paying earnings and taxes.
4. **Subsidies**: Money from government to businesses. This value is subtracted because it is paid for by taxes, which have already been counted.

6. Shift Share[24]

A series of 4 measures that attribute change in regional employment to national, industry, and local factors.

1. **National Growth Effect**: An estimate of regional industry jobs gained or lost based only on overall national growth. For example, when the national economy grows or shrinks by 5%, NGE assumes that regional industry jobs will grow or shrink by the same amount.

$$NGE = National\ growth\ rate\ (\%) \times Jobs\ in\ industry\ X\ in\ region$$

2. **Industrial Mix Effect:** Not all industries experience national growth or decline equally, however. IME focuses on the change within the industry being studied by comparing the industry growth rate to the national growth rate before estimating jobs gained or lost.

$$Industry\ growth\ rate\ (\%) - National\ growth\ rate\ (\%) = Industry\ Premium$$

$$IME = Industry\ Premium \times Jobs\ in\ industry\ X\ in\ region$$

3. **Expected Change**: Adding together the NGE and IME gives a more accurate estimate of the number of jobs a Region should expect to gain or lose for an individual industry based on national and industry trends.

$$Expected\ Change = NGE + IME$$

4. **Competitive Effect**: Compares the actual change in jobs to the Expected Change, revealing unique regional patterns of competitiveness.

$$Competitive\ Effect = Actual\ Change - Expected\ Change$$

Shift share utilizes these values to compare job change for a particular regional industry to job change for the larger national industry. This comparison is important for contextualizing regional job growth and understanding areas of regional competitiveness.

First, shift share analyzes national industry growth based on two factors: national growth effect (NGE) and industrial mix effect (IME). As mentioned above, NGE shows the amount of jobs created or

[24] EMSI, "Understanding Shift Share." Retrieved from: https://kb.emsidata.com/methodology/all-about-shift-share/

eliminated in an industry due to national economic growth. Similarly, IME shows the amount jobs created or eliminated in and industry due to national industry-specific performance. These two metrics are combined to arrive at expected change, which is the amount of jobs change that could be expected in a Region based on national economic performance and industry-specific performance.

Expected change is compared to actual change to arrive at competitive effect. As mentioned above, competitive effect indicates what amount of job change is a result of local competitive advantages. Competitiveness is achieved when actual change exceeds expected change, yielding a positive competitive effect value. Alternatively, an expected change value that exceeds actual change is indicative of low competitiveness and yields a negative competitive effect value.