

Introduction

Current and anticipated future transportation, development, and demographic trends, combined with a review of recently completed regional plans helps inform development of the Roanoke Valley Transportation Plan Update. This research into Future Factors helps establish perspective on how trends and uncertainty may impact transportation needs and solutions within the region over the coming decades. The factors were grouped into five themes (Figure 1):

Figure 1. Future Factor Themes



The review of future factors establishes a visionary way of thinking as the planning process proceeds into developing a Plan vision and goals and prioritizing needs (Figure 2). Given the futuristic outlook of the Roanoke Valley Transportation Plan, it is important that the plan consider and recognize the role that these future factors will play in shaping the region’s future transportation needs and system. The factors also should inform how the plan’s goals, objectives, and solutions can remain flexible enough to adapt over time as these future factors evolve and future needs change with them. Plan solutions will place priority on increasing transportation system resiliency, enabling the transportation system to recover and adapt as change or disruption occurs.

The impacts of the COVID-19 pandemic on how we use transportation for everyday activities, how we commute to work, and how the entire regional economy functions may result in some permanent changes, like more people working from home. Other recent regional, national, and global events have increased our attention on the nexus between transportation policy and programs with issues like equity, climate change, and technology.

There is a wealth of sources, including media, research, and industry, as well as current policy direction in Virginia and at the national level that can provide sometimes confusing or contradictory information on these topics. This report sifts through this information and characterizes it across five general themes applicable to the region and then individual topics within each theme. At the end of this report, summary findings are presented, as well as the input from a Transportation Technical Committee survey, to help connect future factor highlights to the next steps of the Plan process.

The focus is on the primary technology, social, economic, sustainability, and funding/finance trends – most of which are outside of the sphere of transportation agency control, that could impact future travel demand and multimodal transportation needs within the Roanoke region.

Five Future Factors for the Roanoke Valley

This section includes an overview of the five future factors reviewed by theme, with an emphasis on the potential role of these factors on the transportation and economic futures within the Roanoke Valley.

Technology



Technological “disruption” has reached the transportation industry in the past decade, and technology is expected to have an increasingly large impact on how residents of the Roanoke Valley travel in the coming decades (**Technology Future Factors Table 1**).

Advances in connected and automated vehicle technology are expected to increase safety and efficiency through 2045, and while their long-term impact on development patterns remains unknown there is a potential that they will incentivize dispersed development and exacerbate the conflict between land use/development objectives (protection vs. development), already present in the Roanoke region. Delivery of goods via drones or automated vehicles may increase access to goods and services for residents. Consideration of where drones and other autonomous vehicles can travel, and the connectivity of this infrastructure is important.

In the coming decades, enhanced access to broadband will increase access of residents to remote services and may increase the attractiveness of the region for new residents. New models of transit service delivery, including the introduction of on-demand services, are also proliferating throughout the nation’s urban and small urban areas and may be considered by transit operators to extend traditional fixed-route or demand-response services within the region. The introduction of account-based services that enable users to book and pay for multiple transportation services, known as Mobility as a Service (MaaS), is likely to materialize with multiple public and private providers in the Roanoke Valley. Figure 2 presents an overview of these transportation technologies.

Figure 2. Transportation Technology Examples

Driverless vehicle technologies are likely to transform personal and freight travel

begin to reshape travel from a focus on individual modes to mobility-as-a-service



Unmanned aerial vehicles are a promising tool for system management, package delivery, and even people movement

Alternative fuel vehicles and ownership models, and modes of transportation are emerging, fueled by private sector innovation

Technology Highlights

- Automated vehicle (AV) and connected vehicle (CV) technologies will change how we travel and how goods travel.
- Vehicle ownership models are changing. This could lead to lower ownership rates and more use of shared mobility options.
- Mobility options such as ride-hailing and e-scooters are growing and can help complete first/last mile trips.
- Mobile and web platforms are becoming a part of daily travel decisions.
- Drones could make package delivery more efficient and can manage traffic and assets, and even move people.
- Since the COVID-19 pandemic, many people have experienced daily activities via virtual platforms and employers are making permanent changes to workforce operations based on these experiences and thanks to widespread broadband access.

Table 1 provides a summary of technology future factors, anticipated changes, and the relevance to the transportation and economic future of the Roanoke region.

Table 1: Technology Future Factors

Technology Factor	Anticipated Changes	Relevance to the Roanoke Region
<p>Connected & Automated Vehicles (CAV) Vehicles that are capable of self-driving and communicate with other vehicles and/or infrastructure.</p>	<p>Safety and efficiency improvements from increased levels of automation and connectivity in vehicles through 2045. There is a potential for advanced long-distance freight automation by 2045, which will lower trucking and shipping costs.</p>	<p>Virginia is preparing for the statewide deployment of connected and automated vehicles. The availability of CAVs may influence future development patterns, including potentially incentivizing dispersed development. This could exacerbate the conflict between land use/development objectives (protection vs. development) already present on corridors such as U.S. 460, I-581/U.S. 220, and U.S. 11. Automated truck freight is expected to increase the need for distribution centers and could be relevant to the intermodal center proposed in Elliston.</p>
<p>Drone / Automated Vehicle deliveries Drones are unmanned, often small, aerial vehicles. Automated deliveries may occur in vehicles or small robots.</p>	<p>Delivery of goods via drones or other AVs is anticipated.</p>	<p>Delivery of goods via drones or automated vehicles may increase access to goods and services for residents. In the RVTPO region, consideration of where robots can travel (e.g., sidewalks, bike lanes, greenways, etc.) and the connectivity of this infrastructure is important. This may open up delivery options to areas that do not currently have delivery service, or it could be an equity concern if it does not serve all areas.</p>

Technology Factor	Anticipated Changes	Relevance to the Roanoke Region
<p>Broadband Telecommunications cables that provide access to higher-speed Internet and accommodates multiple signal and traffic types.</p>	<p>Broadband availability will expand, providing better access to online services.</p>	<p>As the deficiencies in access to high-speed Internet are ameliorated, residents will have increased ability to access remote services. Access to broadband may increase their attractiveness to new residents. The Broadband Authority will be an important partner. It will be important to add fiber whenever possible if work is being done on a road because it is much easier to install when construction is already happening.</p>
<p>On-Demand Transit Transit that is available upon request, as opposed to that which is operated on a fixed route and schedule.</p>	<p>Increased use of microtransit and on-demand transit in areas where sufficient demand for scheduled transit service does not exist.</p>	<p>On-demand transit has been successfully deployed in large urban and small-town communities across the country, including replacing the entire transit system in Wilson, NC. Transit operators in the Roanoke Valley such as Valley Metro or RADAR may consider the incorporation of on-demand options in the coming years, and this could be relevant to meeting the demand for service in areas that do not currently have transit service.</p>
<p>Mobility as a Service A service that enables users to book and pay for transportation services through one account.</p>	<p>Multiple public or private Mobility as a Service (Maas) providers with a suite of integrated transportation services that may shift some users from owning personal vehicles.</p>	<p>Development of MaaS is actively occurring both in the private sector and at various public sector entities throughout the country. Eventually, the RVTPO region will likely have one or more public or private MaaS providers. This could be beneficial particularly for people with disabilities if there are multiple ways to use the service (phone and online, for example) but it could be a problem for some people if only one option is available.</p>

To facilitate the understanding of connected vehicle (CV) deployment, VDOT has partnered with the Virginia Tech Transportation Institute (VTTI) to create the Virginia Connected Corridors (VCC). The VCC is a CV environment that enables the development and assessment of early stage connected and automated vehicle (CAV) applications.



Virginia Smart Road, Blacksburg, VA
 Source: Virginia Tech Transportation Institute

Society



The trends toward an older and increasingly diverse society, already well underway in the 21st century, are expected to continue in the coming decades (**Table 2**). This will bring the need for expanded transportation services for older adults, persons with disabilities, and others with limited access to private vehicles, as well as increase the urgency to ensure that the transportation services are provided equitably.

The trend towards increasing use of remote services, including telework and tele-medicine, was rapidly accelerated by the COVID-19 pandemic. As the Roanoke Valley emerges from the COVID-19 pandemic, better data on the long-term increase in remote services will be available and should be used to inform future planning efforts. The COVID-19 pandemic has also had wide-ranging impacts on travel patterns, particularly the willingness to use public transportation, ridesharing and ridehailing, that will require monitoring and responsive action in the coming years.

Society Highlights

- Older and more diverse population will require different transportation systems and mobility options.
- Continued shift to virtual daily activities, including working, healthcare, shopping, entertainment.
- Household vehicle ownership preferences changing, particularly as household size decreases.

Table 2 provides a summary of society future factors, anticipated changes, and the relevance to the transportation and economic future of the Roanoke region.

In 2020, the RVARC developed a Regional Housing Market Study Analysis which provided a careful demographic, housing market, and broadband access assessment to help understand the factors creating barriers to housing and recommendations for future housing programs. The results will help decision makers adjust, add, or reconfigure existing programs and strategies to match the needs of current and prospective residents.

More information is available here:
<https://rvarc.org/wp-content/uploads/2021/07/Regional-Housing-Market-Study-Analysis-Complete.pdf>

Regional Housing Market Study Analysis

Roanoke Valley-Alleghany Region

This study provides demographic, economic, household, and housing analyses outlining the shifting market dynamics across the Region.

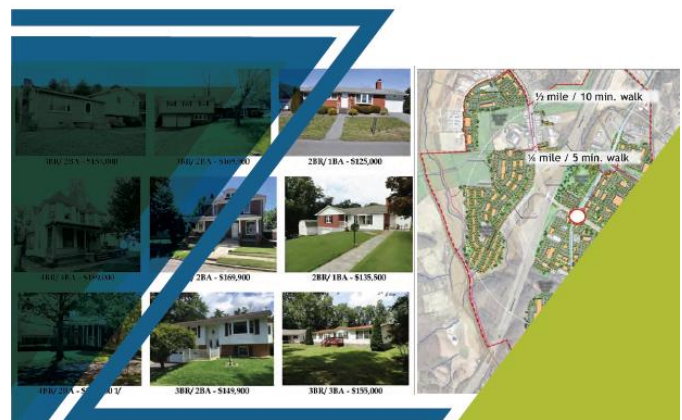


Table 2: Society Future Factors

Society Factor	Anticipated Changes	Relevance to the Roanoke Region
Aging Society	Stagnant population growth and an aging society.	Expanded transportation services for older adults, persons with disabilities, and others with limited access to private vehicles will be necessary as these populations grow in the RVTPO region, particularly in areas that do not have transit or paratransit service.
Equity	There is an urgent need to equitably serve a society that is more diverse in economic, racial and ethnic backgrounds.	The transportation system will need to address barriers to jobs and daily services for lower-income individuals and access to new transportation services.
Increased reliance on remote services	For the foreseeable future, there will be a continued increase/ higher use of remote services (e.g., telehealth) and remote work including less in-person meetings.	Early indications show some companies are transitioning to permanent telework operations that will impact the use of buildings and associated travel. The RVTPO region should monitor the continued use of tele-services and telework at the local level in the early 2020s. This will inform assumptions about the rate at which continued use of remote services will persist in the region in the coming decades and the Broadband Authority is an important asset.
Transportation Impact of the COVID-19 pandemic	The impact of COVID-19 on attitudes toward ridesharing and public transportation and the level of sustained telework is uncertain.	The RVTPO region will need to monitor and respond to usage of these modes and implement best practices to bring people back to these modes and to working in offices, while still supporting flexible and work from home options as the pandemic abates.

Economy



Economic changes are being driven by changes in the composition of the labor force, technology change and the types of labor needed, entrepreneurial programs and technology start-ups, and growth in the tourism industry (**Table 3**). In the Roanoke Valley slow population growth, along with an aging population and distant access to larger metropolitan areas, will constrain labor force availability. Exacerbating this trend is the continued decline in the labor market outlook for unskilled workers.

Nine target industries have been identified by the Roanoke Regional Partnership for the region: Transportation Manufacturing, Advanced Manufacturing, Life Sciences, Finance & Insurance, Printing & Packaging, Technology & Innovation, Food & Beverage, Outdoor Industry, and Foreign Investment. The region's largest employment sectors are healthcare, manufacturing and education which have all experienced multimillion-dollar investments over the past few years. The economy is also expanding through new efforts in high tech entrepreneurship, tourism, and outdoor activities.

Fewer retail workers will be needed as shopping continues to shift towards deliveries versus in-store shopping, while the increase in Internet shopping means that space for distribution centers and other associated delivery infrastructure will be important. There is the potential that a continued focus on building an "entrepreneurial eco-system" in the region will help diversify the job base, particularly in high-growth technology businesses. The opportunities for eco-tourism, recreation, and entertainment in the RVTPO region will also continue to increase. Table 3 provides a summary of economic future factors, anticipated changes, and the relevance to the transportation and economic future of the Roanoke region.

Economy Highlights

- While manufacturing employment in the region has declined, it is still an important sector for the region, with opportunities to attract advanced manufacturing employers to support emerging technologies, like batteries and autonomous technologies.
- Healthcare related services is the largest employment sector in the region and is anticipated to continue to grow particularly through development of the Virginia Tech Carilion School of Medicine and Research Institute.
- Technology start-up firm opportunities and businesses associated with a growing and diversifying tourism-based economy represent strong opportunities to attract new investment in the region.
- Developing and maintaining a skilled workforce within the region will be critical to meet the challenges of a growing high-tech and healthcare focused economy.

In 2018 RVTPO studied the connection between transportation and economic development as part of the *Regional Study on Transportation Project Prioritization for Economic Development and Growth*. The resulting document identified key transportation priorities that will enhance the region's economic development opportunities. The region's transportation and economic development goals center around four key areas: connectivity, competitiveness, maintenance, and sustainability. Through transportation investments and regional development policies, the region can eliminate barriers and create new opportunities to foster future economic growth and diversification.

Table 3: Economy Future Factors

Economy Factor	Anticipated Impact/Changes	Relevance to the Roanoke Region
Labor Force	Slower population growth and lower labor force participation will constrain the supply of labor.	<p>In the RVTPO region slow population growth is expected. Employers who cannot find skilled labor may choose to locate in other regions where skilled labor is less constrained. On the other hand, the region may be appealing to people who telework, reducing the region’s reliance on local employers.</p> <p>Workforce training and development programs, especially in new technology areas will be critical to ensure the labor market is ready to support new and expanding employers, particularly those in advanced manufacturing sectors.</p>
Job Types and Skills	There will be a continued decline in the labor market outlook for unskilled workers, particularly as automation continues to advance.	<p>Contract workers, who do not receive employer benefits, are expected to be a greater proportion of the workforce. Income inequality will remain a key concern.</p> <p>Workforce development programs will support training for unskilled workers in new areas, for example like maintaining electric buses and trucks or connected infrastructure systems.</p>
High-Tech Startups and Entrepreneurial Regional	The 2021 RVARC Comprehensive Economic Development Strategy (CEDS) highlights the opportunities and weaknesses within the region related to small-business development in the region. Continued expansion of regional broadband access may help to facilitate more small-business development in both rural and urban areas. Small business growth post-COVID may remain slow, given remaining risks in the overall economy – although with low interest rates and emerging government programs, opportunities do exist.	<p>The region is trying to develop an “entrepreneurial eco-system” that will help attract new start-ups, particularly in the area of technology. The Roanoke-Blacksburg Technology Council, local governments, the Roanoke Regional Partnership, the Chamber of Commerce and the RVARC are working to identify and address key issues that challenge entrepreneurial development. These types of programs will help foster an environment for new, “home-grown” businesses with the region.</p>
Fewer “Brick and Mortar” Retailers	Shopping will continue to shift to deliveries versus visiting physical “brick and mortar” stores.	<p>The ongoing shift from in-store shopping to deliveries will result in fewer physical store fronts and continued increase in the need for distribution centers.</p>
Tourism	Near-term growth of the tourism and recreation industry is expected to continue, especially with travel increases as we emerge from the pandemic. The platform for longer-term growth is strong given existing and planned outdoor amenities and events.	<p>Opportunities will continue to grow in the region for eco-tourism, agri-tourism, recreation, and entertainment as visitors seek to enjoy Virginia’s Blue Ridge.</p>

Sustainability



Environmental quality and climate change will impact the lives of residents in the Roanoke Valley in the coming decades (**Table 4**). In line with the national discussion on managing greenhouse gas emissions and mitigating the impact of climate change, the Commonwealth is taking leading steps to integrate these considerations within the transportation planning and programming process. Part of this response includes the rapid electrification of the transportation system that is expected to take place through the 2030s and will require wide-scale implementation of infrastructure to serve electric vehicles in the Roanoke Valley such as the upgrades to electric vehicle charging stations recently completed in Salem. Alternative energy sources are expected to comprise a greater share of overall energy usage across the country and in the RVTPO region.

Increased attention to the need to protect watersheds and sensitive ecosystems, as well as enhance overall environmental quality, will likely also lead many localities to consider the implementation of smart development principles to help manage municipal systems (e.g., water, sewer, utilities) and choose land development patterns during redevelopment or new development or properties. This attention is associated with both resident and local business environmental and personal mobility values and how that plays out in local development decisions.

Table 4 provides a summary of economic future factors, anticipated changes, and the relevance to the transportation and economic future of the Roanoke region.

Sustainability Highlights

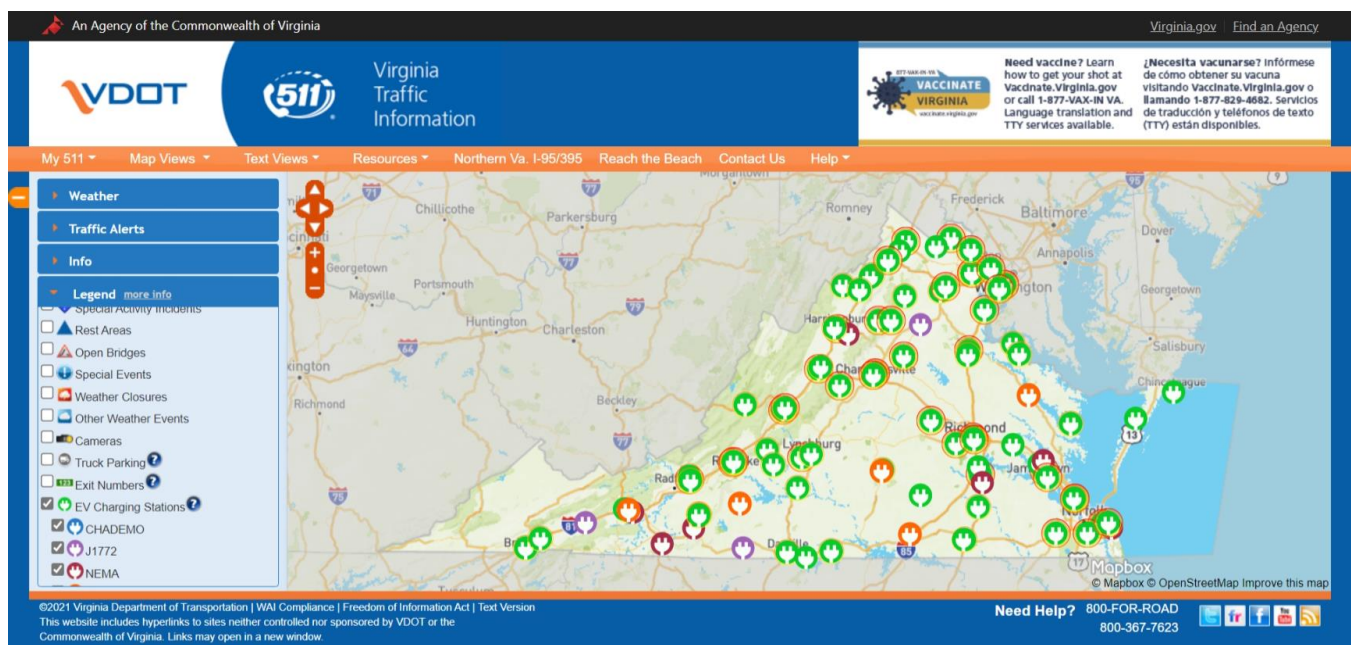
- More attention placed on electrifying the transportation system within agency fleets (including transit) and providing the infrastructure to ensure reliable use of electric vehicles.
- New design, construction, and maintenance strategies and materials to mitigate environmental impacts of transportation and better protect infrastructure from severe weather events.
- Enhanced priority on the protection of natural lands and farmlands and new technologies to better manage all infrastructure systems collaboratively, including utilities.

Table 4: Sustainability Future Factors

Sustainability Factors	Anticipated Impact/Changes	Relevance to the Roanoke Region
Climate Change	In Virginia, climate change could result in less snowfall, more inland flooding, as well as more extreme heat and severe weather events.	There will be a focus on mitigating the impact of climate change events and reducing the climate impacts of our transportation system. Alternatives to single-occupant driving will be critical. The greenway network offers an alternative and protects floodplains.

Sustainability Factors	Anticipated Impact/Changes	Relevance to the Roanoke Region
Electrification	Rapid electrification of the transportation system is expected to take place through the 2030s.	Market-wide and equitable implementation of infrastructure to serve electric vehicles is needed. More state and municipal fleets will transition to electric vehicles, requiring new maintenance facilities and workforce training.
Alternative Energy	Alternative energy sources are expected to comprise a greater share of overall energy usage.	More opportunities for low-impact/low-cost energy sources, like solar and wind, to support push toward zero-carbon transportation.
Natural Resources	Increased focus on protecting watersheds and sensitive ecosystems to persevere and enhance water and overall environmental quality.	Implementation of environmentally friendly and sustainable development principles to help manage municipal systems and develop or redevelop property. Potential for more preservation of natural lands as means to continue to support ecotourism.
Alternatives to single occupant vehicles	Reduced vehicle ownership, increased reliance on micromobility, shared rides, transit, active transportation, and tele-services	Adaption of policies and infrastructure, reallocation of road space. Potential conflicts over curb space and road space.

On July 7, 2021, VDOT announced the availability of a new feature on the 511 Virginia website and mobile app that helps drivers locate electric vehicle (EV) charging stations. According to the Environmental Protection Agency’s (EPA’s) Alternative Fuel Center data, as of July 2021, there are 898 public electric charging stations with a combined 2,470 charging outlets in Virginia.



Funding & Finance



Fundamental changes to transportation revenue sources, pricing structures, and travel costs will have impacts on how, and how often, people travel (**Table 5**). These changes will also adjust how transportation agencies make funding decisions. Since the 1950s, federal and state gas taxes have been a primary funding source for transportation. Both the Federal and state gas tax has fallen well behind inflation over the past 30 years.

In the 2020 General Assembly, [HB 1414](#), the Governor’s Omnibus Transportation Package, adopted changes to transportation funding in Virginia. The legislation helps address declines in state revenues collected from the existing gas tax even as the overall vehicle miles traveled (VMT) on Virginia roadways increases. These declines will be further exacerbated by the impacts of electrification.

Ultimately, to address the non-sustainable approach of gas taxes, new transportation revenue sources are being explored. Virginia has already instituted an annual electric vehicle (EV) fee for EVs registered in Virginia. As part of the Omnibus Transportation Package, the Department of Motor Vehicles is developing a program enabling EV owners to participate in a mileage-based fee program. This is modeled after a successful program which started in [Utah](#) in 2018. These new revenue sources may change the incentives around travel behavior. For example, a shift to road usage charges may reduce driving and increase the use of other modes or remote services.

Changes in transportation system pricing, especially in urban areas, are occurring across the country. For example, in downtown Roanoke, dynamic or increased parking and curb pricing may be used to moderate demand and distribute travel demand across the modes. Fare free and “fare capping” transit pricing that reduces the cost of transit, are models that could also be considered in the RVTPO region.

Finally, as labor and material costs continue to rise, in many cases faster than inflation or revenue, capital spending on transportation projects will be increasingly constrained. The need to prioritize transportation spending, and to couple it with policies that balance demand and the use of all available modes, will be needed to provide a transportation system that meets the needs of the Roanoke Valley.

Funding and Finance Highlights

- Transportation revenue sources will experience a period of significant change over the next few decades, at all levels, including from Federal sources.
- Emerging methods to offset the revenue impacts of EVs are including new ideas like mileage-based fees. These types of changing user fees may change travel behavior.
- Virginia continues to be a national leader in the successful use of public private partnerships. This is anticipated to continue, especially in high value, congested corridors.
- The benefits of regional and corridor-based funding programs, like I-81, will continue to help foster accelerated project development and implementation.
- New design, construction, materials, and project delivery approaches will continue to explore methods to reduce costs and extend asset lifecycles.

Table 5 provides a summary of funding and finance future factors, anticipated changes, and the relevance to the transportation and economic future of the Roanoke region.

Table 5: Funding & Finance Future Factors

Funding & Finance Factors	Anticipated Impact/Changes	Relevance to the Roanoke Region
Revenue Sources	Changes to transportation revenue sources (e.g., shift from gas tax to road usage charges) will occur. The gas tax will increasingly need to be supplemented by new sources.	The necessity of raising revenue for transportation infrastructure and services in new ways may impact travel demand and mode usage.
Pricing	Increase in pricing, and introduction of new models of pricing, of curb space and parking in urban areas. Fare free and “fare capping” transit pricing that reduces the cost of transit is also occurring across the country.	In the RVTPO region, the impact of dynamic or increased parking pricing and curb use policies may be considered in the region’s downtowns.
Costs	Labor and material costs will continue to rise, in many cases faster than inflation or revenue, leading to further constraints especially on capital spending.	The need to prioritize transportation spending and couple it with policies that balance demand and the use of all available modes will be needed.

On June 23, 2021, the Commonwealth Transportation Board took action to adopt FY 2022 budgets for the Commonwealth Transportation Fund, VDOT, and DRPT consistent with revenue forecasts and finances projected within the Commonwealth Transportation Fund and the 2022 – 2027 Six-Year Improvement Program (SYIP). Total operating revenues for FY 2022 are expected to be 4.6 percent greater than the FY 2021 budget, in part due to one-time Federal and State revenues in 2021 resulting from stimulus packages.

Note, the Future Factors analysis for funding was developed prior to the passage of the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, in November 2021. Overall, the BIL could total an annual 20 to 30 percent increase in annual formula funding for surface transportation from USDOT, in addition to an increase in opportunities to compete for discretionary federal grants.

The BIL is consistent with Virginia’s and the Roanoke Valley’s multimodal transportation priorities. It will help advance investments in critical infrastructure and promote policy and programming in emerging areas important to the region, like complete streets, safety, and connecting communities. The RVTP provides direction on how RVTPO will work with partners to optimize its approach to maximize Federal opportunities to achieve regional and statewide goals.

Roanoke Valley Trends Through 2045

As part of the process of updating the Roanoke Valley Transportation Plan, RVTPO staff worked with each jurisdiction to develop updated population and growth forecasts through 2045 consistent with recent trends and future land use plans. The projected population growth through 2045 is shown in **Figure 3** and projected growth in employment is shown in **Figure 4**.

Figure 3: Population Growth, 2019-2045

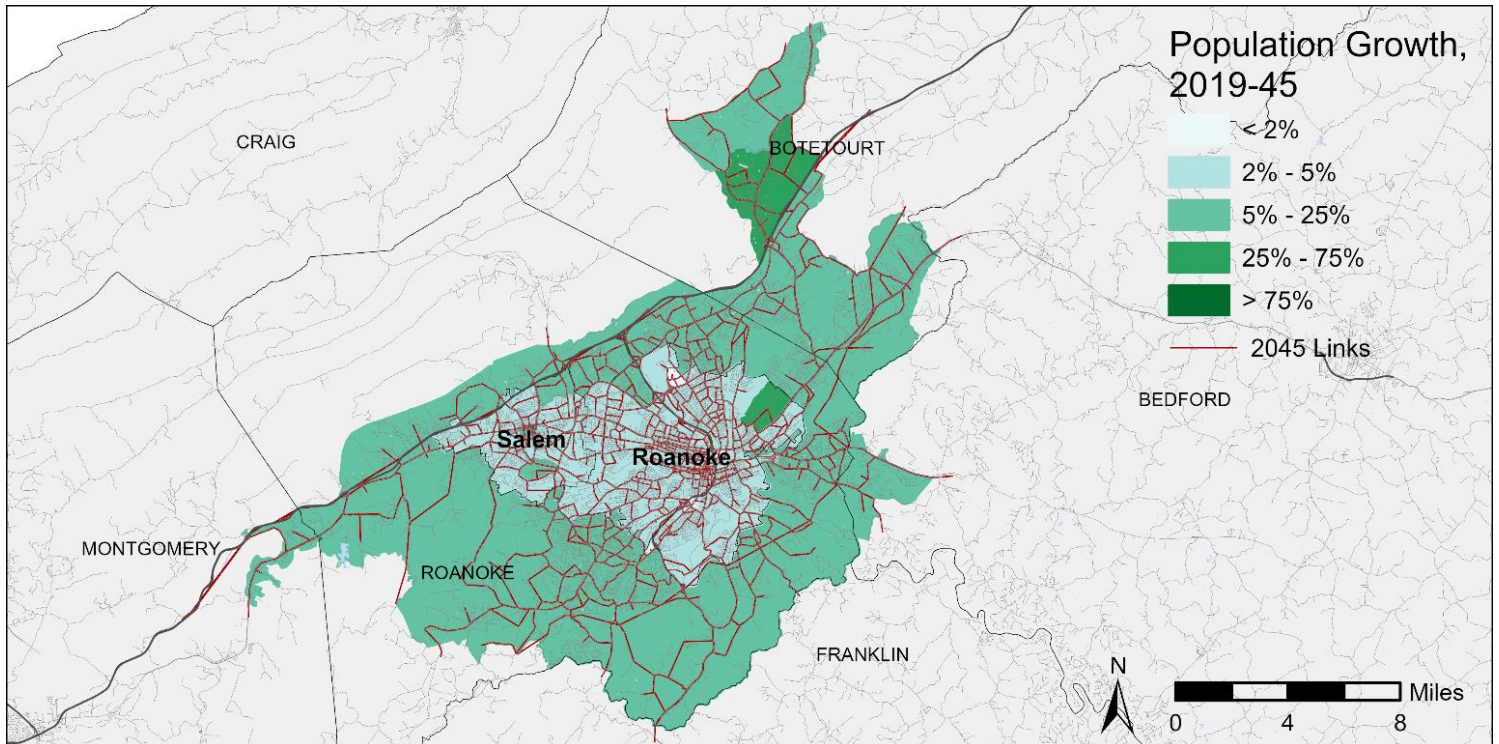
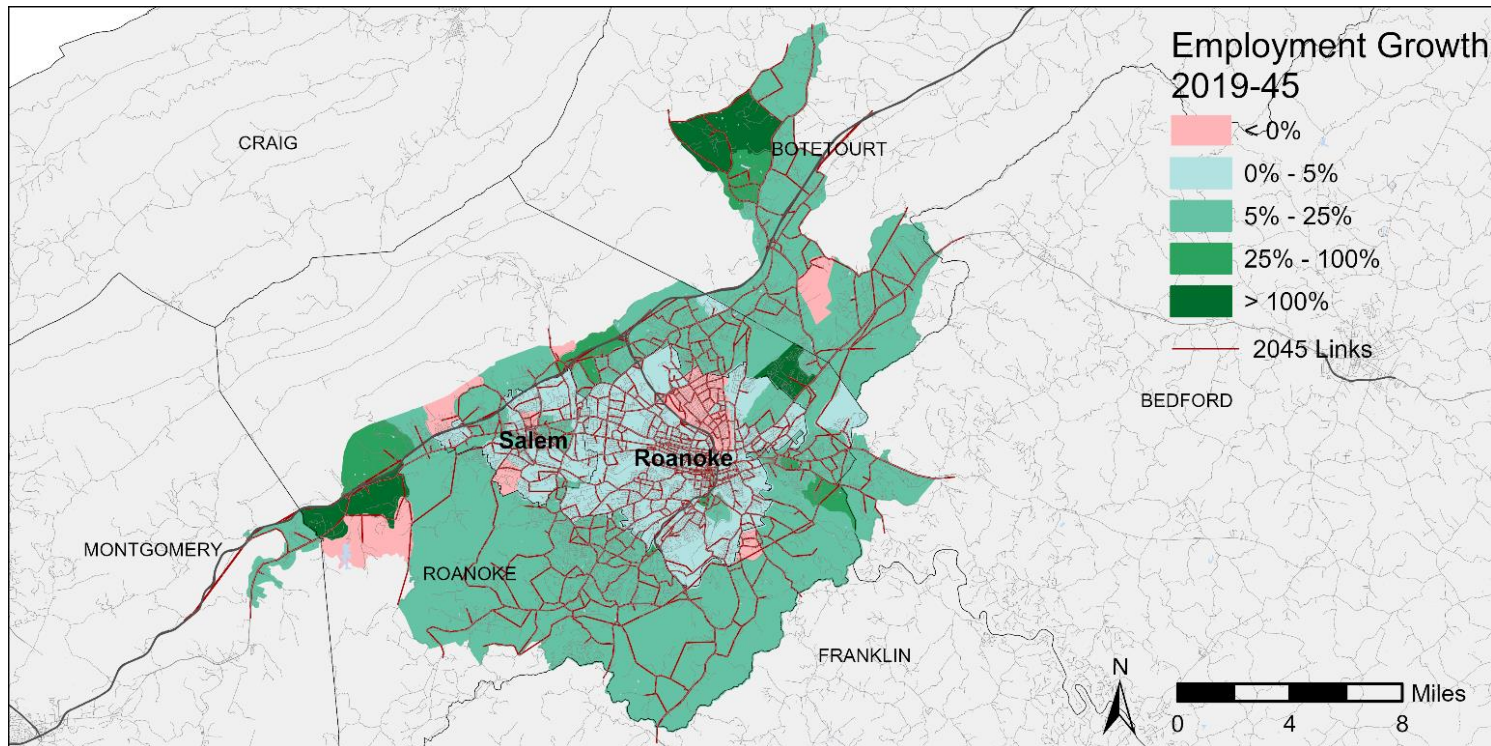


Figure 4: Employment Growth, 2019-2045



This Plan update process also supported RVTPO work with VDOT to update the travel demand model for the Roanoke region. The model enables RVTPO to use current and future population and employment data to model total vehicle travel on regional roadways and identify current and future congestion issues. The Roanoke Valley-Alleghany Regional Commission (RVARC)’s 2021 Comprehensive Economic Development Strategy (CEDS) provides a comprehensive review of socio-economic trends in the region that will influence the region’s economic development. A summary of anticipated trends in the Roanoke Valley, based on the CEDS and the update to the travel demand model, is found in **Table 6**.

Table 6: Roanoke Valley Trends

Factor	Anticipated Trend
Population	<p>The entire region is forecasted to grow by 14,500 people from 2019 to 2045, with a total population of 254,840 people. Growth is forecasted to occur proportionally across the region, with the most substantive growth occurring in Botetourt and Roanoke Counties.</p> <p>The region has an older population than the median age of the Commonwealth. This share of older residents is expected to continue to grow and lead to a shrinking workforce.</p>
Economy	<p>Median income is increasing in the region as are employment opportunities. The entire region is forecasted to add nearly 10,000 new jobs from 2019 to 2045, with a total of 152,000 jobs. Occupations requiring a bachelor’s or postgraduate degree are expected to grow at a slow pace, but the number of jobs requiring less education than this will decline. Prior to the pandemic, all localities in the Roanoke Valley saw their average annual unemployment rate decrease and their total number of businesses increase.</p>
Industry Sectors	<p>Two industries will grow due to regional drivers: general manufacturing (an existing strong industry for the region) and food and beverage manufacturing (an emerging industry for the region).</p> <p>The industry with the highest relative concentration in the Roanoke Valley is Wood/Paper. Employment in the Wood/Paper cluster is projected to contract in the region about 1.4 percent per year over the next 10 years.</p> <p>The fastest growing sector in the region is expected to be Professional, Scientific, and Technical Services, with a 0.6 percent year-over-year rate of growth. Over the next year, the fastest growing occupation group in the Roanoke Valley is expected to be Healthcare Support Occupations, with a 0.9 percent year-over-year rate of growth.</p>
Transportation	<p>In a test of the impact of connected and automated vehicles through the use of the regional travel demand model, vehicle miles traveled (VMT) could increase modestly, by about 0.4 percent, due to increased capacity and shorter travel times.</p> <p>The region continues to invest in infrastructure projects to improve connectivity between the Roanoke Valley and the New River Valley and Lynchburg regions. The Roanoke region can expect to see an increase in the capacity of several interstates/state routes and the development of new transit options or improvement of existing ones enabling more reliable inter-regional connections.</p>

How the Factors Could Impact the Trends

The development of population and employment forecasts and the transportation demand and performance outcomes through 2045 are based on past trends, current travel behavior, and projected changes based on what we know today. The future factors show that many of the trends could change in directions that substantially impact transportation needs and, ultimately, solutions.

For example, increases in availability of remote work could result in an increase in population, as workers are no longer tied to physical locations and can choose to live where they want. Attracting younger workers could in turn result in an increase in more dense, mixed-use housing development. The introduction of a network of shared, automated, and connected vehicles may lead to lower rates of car ownership and more multi-modal travel, and limit increases in vehicle miles traveled as predicted, or, conversely it could lead to increases in vehicle miles traveled if used as an opportunity to live further from work or take trips via car that they would not otherwise have taken.

As the need to mitigate and limit the impact of climate change becomes ever more urgent, the focus on expanding trips taken by means other than the car may lead to increased pricing to manage demand and ultimately lower vehicle miles traveled by car. Finally, if successful, efforts to create a new “entrepreneurial ecosystem” in Roanoke, could attract new residents and young workers and shift employment in the region from the manufacturing sector to other sectors.

RVTPO worked with the Transportation Technical Committee (TTC) in April 2021 to complete a survey seeking input on the level of importance of each factor and each topic within each factor on the region’s transportation future. The results of this survey are presented in Figure 5.

Figure 5: Future Factors Survey Result

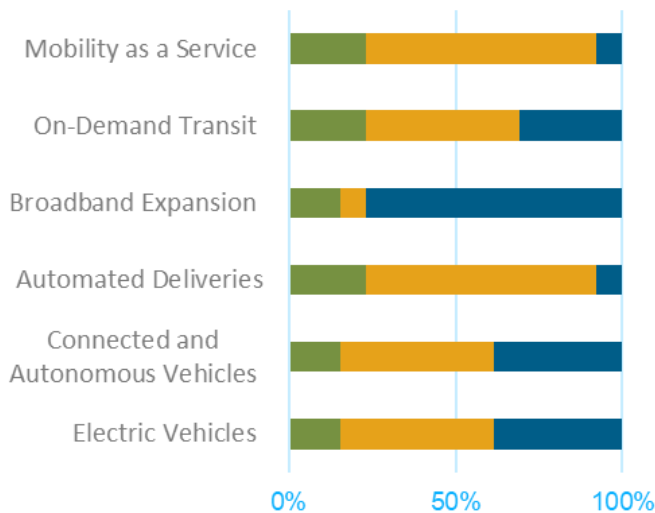
Level of Importance of Each Factor to Region's Future



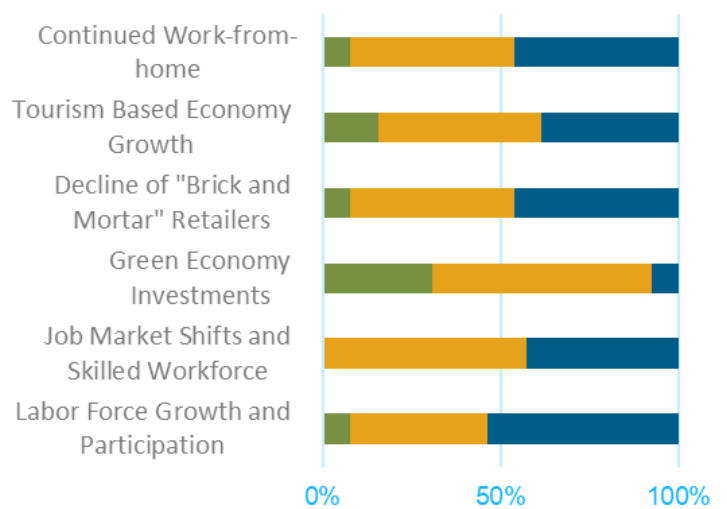
Level of Importance of Topics within Each Factor

Low Medium High

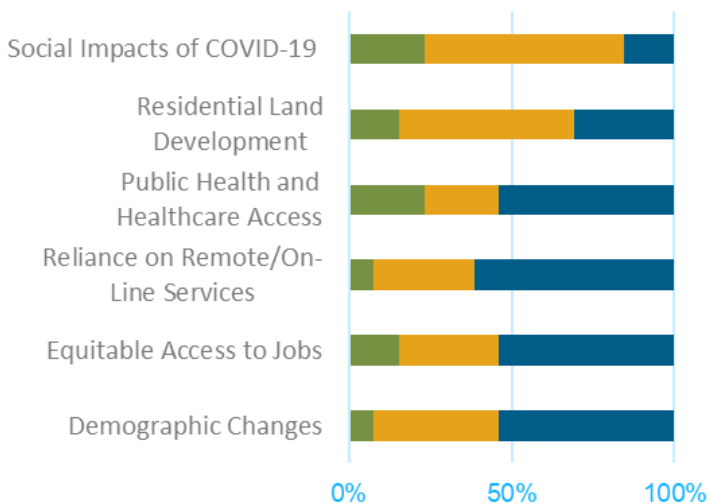
Technology



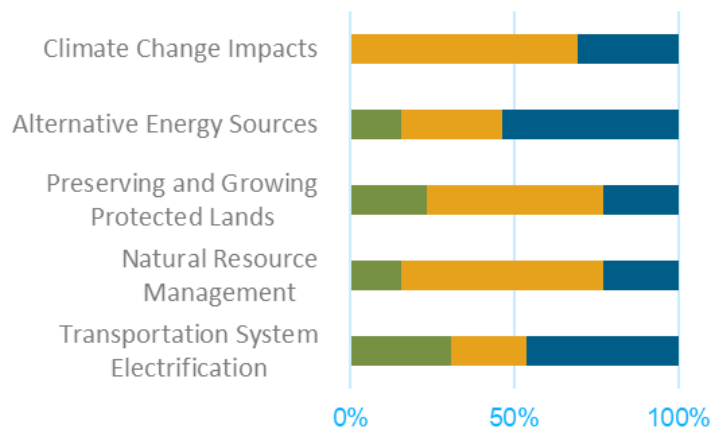
Economy



Society



Sustainability



Funding

90% of respondents noted that decreased revenue from traditional sources is a "high-importance" factor.