VMTP 2025 Needs Assessment

Regional Networks - Introduction

The Regional Network Needs Assessment focuses on intra-regional travel. The essential question of the Regional Networks analysis is: *How does each region need to prepare for its future economic needs?* The approach to the statewide multimodal transportation plan therefore assigns great importance to the economic drivers in each region and future trends in economic development in determining the intra-regional transportation needs. This approach looks at each region distinctly in terms of the existing economic profile, the existing transportation profile, and the future desired economy of the region. The transportation needs are defined by examining how to bridge the gap between the existing conditions and the desired future economy. This assessment relies on an understanding of economic-transportation linkages that was supported by current research on trends in economic development. The resulting approach does not rely on traditional transportation evaluation measures, but instead focuses on strategies to attract and retain the future workforce and support the goods movement needs of Virginia businesses as directed by the VTrans2040 Vision.

1. 2025 Needs Development Process

The Regional Network 2025 Needs were developed based on a six-step process as shown in Figure 1. Each step is described in brief in the paragraphs that follow. Throughout the process of developing the Needs Assessment, stakeholders were engaged to provide data, refine the study team's state and national data sets, and provide critical insights about each region essential to understanding existing conditions and future needs.

Figure 1: Regional Network Needs Development Approach

Step One: Defining Needs Analysis Areas

Regional Networks refer to the major economic regions of the Commonwealth and are based on the designated Metropolitan Planning Organization (MPO) areas in Virginia. MPOs are regions greater than 50,000 in urban area population and are considered the primary centers of Virginia's regional economies. The Regional Network Needs Assessment was based around the 15 current and former MPO areas in the Commonwealth. The initial needs analysis area for each region was defined as the MPO boundary, with the stipulation that if an MPO boundary includes only a portion of a county, the entire county will be included in the needs analysis area. Furthermore, where there is a clear link in a transportation need that supports the regional economy but is outside of the initial analysis area, it may be included for consideration in the regional Needs Assessment. The 15 regional networks and their needs analysis areas for the VMTP 2025 Regional Network Needs Assessment are shown in Table 1.

During the outreach process with each region, areas of unique economic importance were discussed and were considered in the Regional Network Needs Assessment where appropriate. If, for example, there is a particular employment center that is located outside the needs analysis area but is important to the regional economy; or, if a key corridor is located outside the needs analysis area but supports commuters or goods movement that are important to the regional economy, they may be included in the Needs Assessment for that region. Each individual regional profile document will provide additional details on areas that were considered in the Needs Assessment.

The Regional Network includes all transportation infrastructure and facilities inside the regional jurisdiction boundaries. Outside those boundaries, *only those facilities associated with a Regional Network Need that extends beyond the regional analysis area* is considered part of the Regional Network.

The map in Figure 2 shows the Regional Network Initial needs analysis areas as well as the geographies of the other two travel markets in the VMTP, Corridors of Statewide Significance (CoSS) and Urban Development Areas (UDAs).

Table 1: Regional Networks – Initial Needs Analysis Areas

Regional Network	Jurisdictions Included in Baseline Definition
Bristol Area	City of Bristol, City of Abingdon, Washington County
Central Virginia Area	Amherst, Bedford and Campbell Counties, City of Lynchburg
Charlottesville-Albemarle Area	City of Charlottesville, Albemarle County
Danville Area	City of Danville, Pittsylvania County
Fredericksburg Area	Stafford County, City of Fredericksburg, Spotsylvania County
Hampton Roads Area	Isle of Wight, Gloucester, and James-City Counties; Cities of Norfolk, Hampton, Newport News, Virginia Beach, Chesapeake and Suffolk
Harrisonburg-Rockingham Area	City of Harrisonburg and Rockingham County
Kingsport Area	Scott County
New River Valley Area	City of Radford, Montgomery County and Pulaski County
Northern Virginia	Arlington, Fairfax, Loudoun and Prince William Counties; Cities of Alexandria, Fairfax, Falls Church, Manassas and Manassas Park
Richmond Area	Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, and Powhatan Counties; City of Richmond

Regional Network	Jurisdictions Included in Baseline Definition
Roanoke Area	City of Roanoke, City of Salem, Roanoke County, Botetourt County
Staunton-Waynesboro-Augusta Area	Augusta County, City of Staunton and City of Waynesboro
Tri-Cities Area	Chesterfield, Dinwiddie and Prince George Counties; Cities of Colonial Heights, Hopewell and Petersburg
Win-Fred Area	Frederick County and City of Winchester

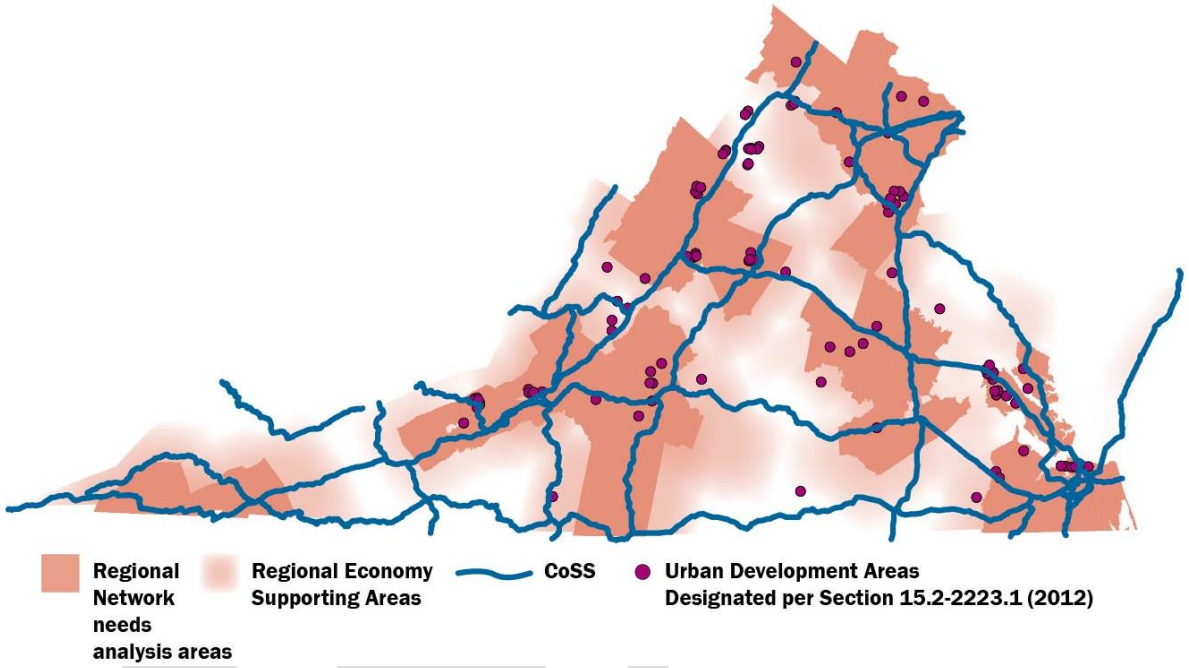

Figure 2: VMTP Travel Markets – Note that new Urban Development Areas have been designated or identified since the completion of this map.

Step Two: Assessing Current Economic Profile

In order to understand the workforce and goods movement needs in our metropolitan regions, the Needs Assessment includes an economic profile with essential information about the population, workers, and employers in the region. The arrangement of the jobs geographically, and particularly in terms of key activity centers, is also part of the economic profile to provide a spatial component that relates land use, economics and transportation.

The study team used available data from state and national sources, as well as input from each region's stakeholders, to identify an overall current economic profile for the region. The components of the current economic profiles layer together demographic and economic characteristics of the region. The Regional Profiles incorporate the following baseline data for each region:

- Demographic Characteristics
- Top Industries by Employment, Output and Location Quotient

- Top Employers
- Activity Centers, their economic and travel characteristics (defined by existing centers of employment and modified by input from stakeholders in each region)

Step Three: Identifying Desired Future Economic Profile

For each region, a future economic profile was developed reflecting anticipated growth industries and targeted growth areas of the region. The study team provided 2025 forecasts of employment and output, and these were discussed with each region relative to existing economic development plans such as any Comprehensive Economic Development Strategy (CEDS) adopted for the region, or other local or regional economic plans. The future economic profile consists of the 2025 forecasts of growth in employment and output by industry, as well as regionally-provided information on initiatives and existing or future activity centers targeted for job growth.

Step Four: Assessing Transportation Conditions

The profile of transportation conditions in each region provides an understanding of existing facilities and services and their performance in serving the region's travel needs. The transportation conditions illustrate both constraints and opportunities to serving each region's future economic needs. The transportation profiles build upon baseline information about each region's roadway and transit networks, airports, ports and freight networks, and are assembled from US, state and regional data sources. They address the following characteristics:

- Commuting Patterns and Modes
    - Based on census data on commute times, jurisdictional commuting patterns, commute modes, and commute origins of workers in regional activity centers
- Multimodal Accessibility to Jobs
    - Based on a census block-group-level accessibility measurement tool that measures auto access to jobs, transit access to jobs, and walk access to jobs within a given travel time
- Freight Accessibility
    - Based on network travel times to the nearest highway interchange, freight airport and freight distribution centers for census block groups
- Highway Network Reliability and Congestion
    - Reliability is based on the buffer index which measures 90th percentile travel times (i.e. worst times occurring approximately 1 in every 10 days) in comparison to median peak period travel times for weekday commute times and peak weekend times using highway system travel time observations (INRIX data). Highway network congestion was measured based on average speed in peak periods and measures of delay using INRIX data.
- Freight Networks and Commodity Flows
    - Using TranSearch data on freight destinations, commodities traveling in and out of each region, and freight mode split.

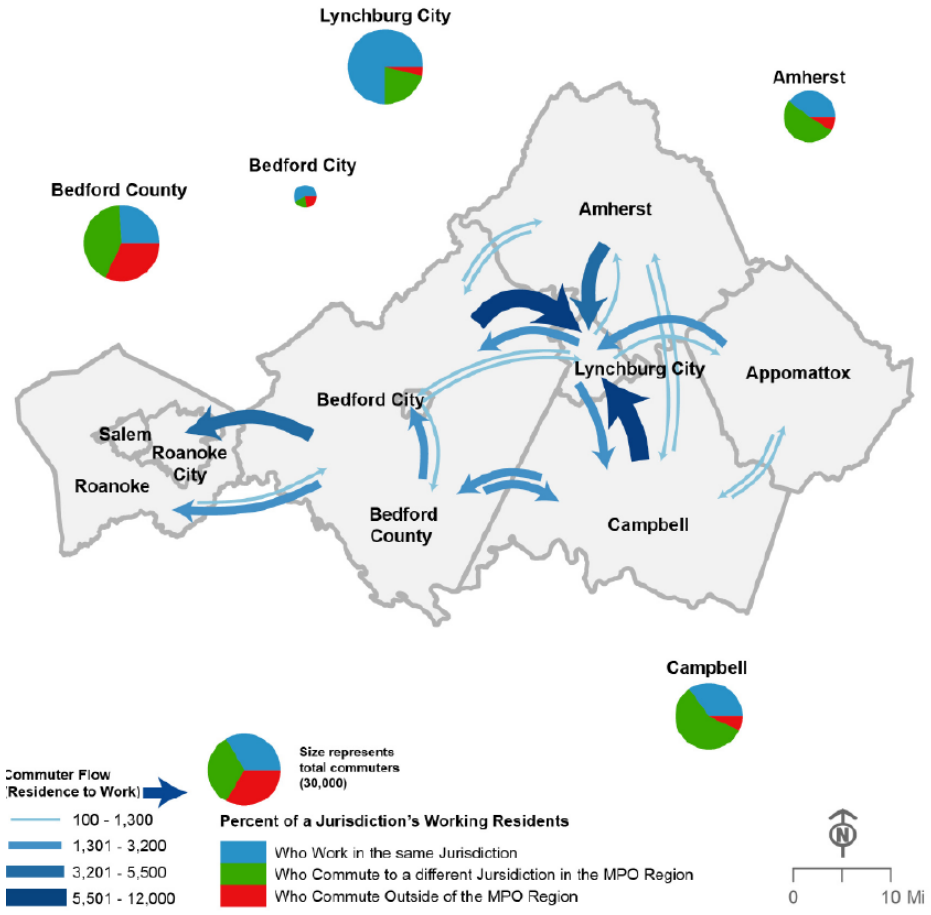

Figure 3: Example of Regional Network Commuting Patterns – Central Virginia Region
Source: US Census, American Communities Survey 2006 – 2010 Commuting Data

Step Five: Incorporating Economic-Transportation Linkages

The linkages between economics and transportation form the cornerstone of the Regional Network Needs Assessment. The research on economic development trends pointed to the importance of workforce attraction/availability and the emergence of placemaking as both a workforce attraction and economic development strategy. Additional economic-transportation linkages were derived by distinguishing between three major types of industry clusters that relate to workforce, goods movement, and transportation needs in some distinctive ways. These clusters are freight-based, knowledge-dependent, and local-serving. Section 2 of this chapter describes in more detail the research on economic development trends and the industry cluster approach that shaped the Needs Assessment.

The study team and stakeholders considered questions such as the following in order to explore and capture the economic-transportation linkages as they occur distinctly in each region.

- What type of transportation access is needed by different types of activity centers?
- How critical are Millennial workers to the future economy? Other key demographic groups?
- What regional workforce attraction/retention factors are key at work and also home locations?
- How will activity centers change over time, and how will that affect accessibility needs?
- Where are emerging activity centers located, and what economic clusters will be focused there?
- Looking at the activity centers:
    - Where are mode choice and walkability important?
    - Where is freight access important?
    - Where is auto access important?
    - What are the travel patterns of existing workers?

Step Six: Developing the Transportation Needs Assessment

The final step in the Regional Network Needs Assessment is a synthesis of all the preceding steps and information. Both the economic and transportation profiles were considered in the development of each region's needs. This process was iterative in nature – the data informed insights about transportation needs, stakeholders suggested and/or affirmed transportation needs based on the Regional Network framework, and stakeholder input was validated with the regional profile data to develop a suitable representation of each region's needs for the statewide plan. For example, the study team and stakeholders looked at the economic needs in comparison to the transportation conditions based on questions such as:

- Do the knowledge- and local- based activity centers have transit access?
- Do the freight- and local-based activity centers have appropriate highway access for freight?
- Are key commuting routes served by transit?
- Are key commuting and/or freight routes affected by bottlenecks?
- Are there reliability issues for commuters and/or freight?
- Are there conflicts between freight transportation and local travel needs?
- Are there barriers to active transportation modes that reduce their viability where they otherwise might be attractive/effective? (Active transportation encompasses all non-motorized transportation.)
- The types of intra-regional transportation needs were simplified into five categories, as shown in Table 2. The Study Team developed a map and a list of needs for each region using these categories. Safety, state of good repair, and other unique needs are also featured on an occasional basis where they are intrinsic to specific intra-regional capacity/operational needs. The needs list includes a brief statement of the economic and transportation profile attributes that are the basis for each Regional Network need, as shown in Table 3.

Transportation Need	General Description
Corridor Reliability / Congestion	Mitigate recurring inconsistency of travel times for passengers
	Reduce the impact of acute congestion points on the network
	Mitigate recurring inconsistency of travel times for freight
	Improve freight access to key destinations via desired travel modes
Network Connectivity	Enhance network connections to improve travel efficiency
Transportation Demand Management	Manage transportation demand to optimize transportation system performance while meeting user needs
Modal Choice	Increase the flexibility to choose alternative travel options
	Improve or establish access by transit to key destinations
	Improve the opportunity to make trips via walking and/or biking
Walkable & Bikeable Places	Enhance communities and activity centers to provide safe, sociable walking environments with a variety of destinations

Table 2: Types of Regional Network Transportation Needs. Source: Michael Baker International

E. Route 58/I-264 Corridor	
NEED	**The Route 58/I-264 Corridor is an important artery for the movement of commuters and connects multiple regional activity centers with knowledge based workforces. This corridor lacks transit access, bike access, transportation demand management programs, and has lower network connectivity. The I-264 corridor itself is a barrier to north-south movements.**
ECONOMIC	This corridor serves multiple knowledge-based and local-serving activity centers. Several are targeted future growth areas with plans for higher density, mixed-use development that can improve transportation efficiency through walk, bike and transit access.
TRANSPORT	The issues along this corridor include lack of connectivity for north-south movements, which puts pressure on the east-west routes and particularly the I-264 crossings and interchanges; and lack of mode choice for peak period trips and to avoid high traffic levels associated with beach access.

Table 3: Example of Regional Network Needs Detail. Source: Michael Baker International

2. Economic Factors Shaping Regional Transportation Needs

To understand and apply the linkages between transportation and the economy in the VMTP 2025 Regional Network Needs Analysis, the Study Team crafted an analytical framework to help relate economic characteristics to transportation at a regional level. The Study Team also used unique research prepared by the Southeastern Institute of Research (SIR) that captures emerging trends in economic development and these trends' implications for transportation.

Analytical Framework for Linking Economics and Transportation

The Regional Network Needs Assessment seeks to link economics and transportation in a way that is meaningful and appropriate for a statewide plan but, at the same time, can reflect each region's dynamics and priorities. The study team developed a framework that is broad enough to be applicable to statewide analysis, while providing a meaningful way to characterize the economic dynamics within each region. As with any set of generalizations, the framework has shortcomings and risks over-simplification. The Study Team was mindful of these pitfalls and attempted to use the best of the framework without over-simplifying the unique characteristics of each region.

The primary feature of the framework is a focus on core economic clusters as a basis for linking economy and transportation. Each economic cluster has the potential to be different in terms of land use, commuting patterns, and other aspects of regional accessibility that are essential to attracting and retaining these businesses and their workforce. These different characteristics and each region's mix of economic clusters combine to create unique needs, opportunities and constraints related to accessibility. The three industry clusters are:

- Knowledge-Based – those industries that tend to rely on skilled labor and serve a broader market than Virginia
- Local Serving – generally those industries that serve the local population
- Freight-Based – those industries for which the majority of industry output is dependent on freight transportation (also referred to as freight dependent)

Under this approach, a region with greater emphasis on manufacturing or warehousing (within the freight-based cluster) will have a greater focus on freight intermodal needs than a region with stronger knowledge-based service industries, where passenger intermodal needs would be a greater concern. Similarly, different clusters are concerned with different kinds of accessibility – both for employees and the businesses with which they interact. Figure 7 provides an illustration of the differences between these clusters.

In reality, there is more complexity to each cluster and there is definitely overlap between them as well. The Local Serving cluster in many ways is a hybrid of the other two – it has worker as well as customer accessibility concerns similar to the knowledge-based sector, but it also has goods movement concerns

that resemble many of the freight-based industries. In general, this cluster tends to grow in proportion to the regional population. The local-serving businesses are an important part of ensuring that the lifestyle and livability characteristics of a region (for example, entertainment, education and health care) are adequate to attract and retain workers and businesses. However, in some regions, the government or education employment might also in effect be an 'export' industry, such as a University town or military base, in which case the local serving cluster would have even more in common with the knowledge-based cluster. Table 3 provides the sorting of 2-digit North American Industry Classification System (NAICS) code industry classifications into the three industry clusters. This sorting is unique to Virginia in that data on the export vs local component of the sectors and their inter-dependence with other industries were considered in determining the classification of 2-digit industries into the three groupings.

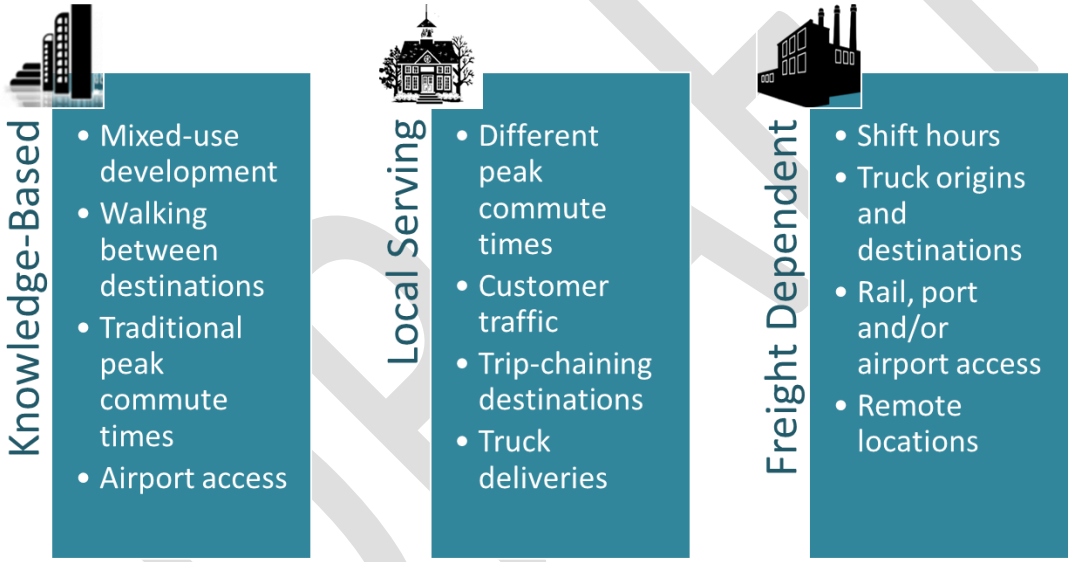

Figure 7: Illustration of the Three Industry Clusters in the VMTP Regional Network Analytical Framework

NAICS - 2DIGIT	Industry Name	Cluster
11	Agriculture, Forestry, Fishing and Hunting	Freight Dependent
21	Mining, Quarrying, and Oil and Gas Extraction	Freight Dependent
22	Utilities	Freight Dependent
23	Construction	Freight Dependent
31	Manufacturing	Freight Dependent
32	Manufacturing	Freight Dependent
33	Manufacturing	Freight Dependent
42	Wholesale Trade	Freight Dependent
44	Retail Trade	Local serving
45	Retail Trade	Local serving
48	Transportation and Warehousing	Freight Dependent
49	Transportation and Warehousing	Freight Dependent
51	Information	Knowledge
52	Finance and Insurance	Local serving
53	Real Estate and Rental and Leasing	Local serving
54	Professional, Scientific and Technical Services	Knowledge
55	Management of Companies and Enterprises	Knowledge
56	Administrative and Support and Waste Management and Remediation Services	Knowledge
61	Educational Services	Local serving
62	Health Care and Social Assistance	Local serving
71	Arts, Entertainment, and Recreation	Local serving
72	Accommodation and Food Services	Local serving
81	Other Services, except Public Administration	Local serving
92	Public Administration	Local serving

Table 3: Division of 2-Digit NAICS Code Industry Classifications into the Three "Buckets" of VMTP Industry Clusters Source: Economic Development Resource Group (EDR Group)

Economic Development Trends Research

Study Team partner Southeastern Institute of Research (SIR) conducted three phases of research on economic development trends that provided input to the regional network Needs Assessment. This research had the following objectives:

- Identifying key trends shaping the future of Virginia
- Understanding how the economic development industry views location decisions and the role of transportation and mobility
- Understanding how the business community views location decisions and the role of transportation and mobility

To fulfill these objectives, the research effort entailed the following:

1. Secondary Research – SIR identified, assessed and inventoried current studies, reports, whitepapers and articles on site selection practices and placemaking.

2. Qualitative Research – SIR conducted 40 in-depth interviews with leaders in site selection and economic development from across Virginia and the United States.
3. Quantitative Research – SIR conducted 15-minute online survey with 185 corporate site selection officials across the United States - *Site Selection* magazine readers.

Placemaking in Economic Development – The New Paradigm

The first phase of SIR's research revealed that a new paradigm is emerging in economic development. The traditional model for economic development focused on recruiting and attracting employers through site-based opportunities. While this model gave attention to a region's workforce, quality of life, and other factors, the idea was to create jobs first and attract workers second. The new paradigm focuses on attracting and retaining the workforce first, through community attractiveness that increasingly is known as placemaking. The new paradigm is summarized in Figure 3. (Note that the SIR report *Placemaking, Transportation and Economic Development: A Review of Secondary Research and Key Trends* is incorporated by reference and provides all detailed references discussed in the paragraphs that follow.)

Figure 3: New Paradigm for Economic Development. Source: Southeastern Institute of Research

Create a Great Place

The research refers to a Project for Public Spaces article "What Makes a Successful Place?" that identifies four key qualities of successful places:

1. They are accessible
2. People are engaged in activities there
3. The space is comfortable and has a good image
4. It is a sociable place

Placemaking, in turn, can be defined as, "A multi-faceted approach to the planning, design, and management of localities, regions, and public spaces. Placemaking capitalizes on a local community's assets, inspiration, and potential, with the intention of creating locations that promote people's health, happiness, and well-being."

People Will Come

Communities that have a focus on placemaking are achieving their desired result, with both younger and older workers (and in some cases, also retirees) seeking out places that achieve their values for livability. A generational lens is helpful to understanding these livability values. Specifically:

- Millennials desire to live in urban, rather than suburban, environments, particularly in light of their overall tendency to delay household formation (i.e., marriage and children)
    - An analysis published by City Observatory finds that young, highly educated Americans are increasingly moving to the close-in neighborhoods of the nation's large metropolitan areas.
    - Survey data highlighted in a Wall Street Journal article shows that 88% of Millennials want to be in an urban setting.
- Millennials do not rely on a car as their sole means of transportation.
    - A study conducted by the American Public Transportation Association found that communities that attract Millennials have a multitude of transportation choices.
    - Millennial research published by Michigan Future showed that 82% of respondents would prefer to commute to work by foot, bike, or public transportation.
- Boomers want to age in place
- Despite their age difference, Boomers and Millennials share some commonalities in what they want in a community. Chief among these common interests is the desire for more and better non-car transportation options.
    - Majorities of both groups say there are not enough transportation alternatives where they live (59% of Millennials and 58% of Boomers).
    - Both generations feel that affordable and convenient transportation alternatives to the car are at least somewhat important when deciding where to live and work (81% of Millennials and 77% of Boomers as reported in the *Investing in Place* report).

Jobs Will Follow

As the quantitative research described later in this section shows, employers increasingly seek a location that already has the workforce they need. Communities, in turn, are learning that making investments that attract workers does bear fruit in terms of jobs and economic growth. The *Chasing the Past* report presents a framework entitled the "New Economy" where the key strategy is focused on attracting and retaining talent, not companies. One of the most important elements of the New Economy is the idea that talented knowledge workers create jobs two ways: employers follow the talented, and talented entrepreneurs create new businesses.

Communities that understand these linkages also have an advantage in the coming battle for workers. SIR's analysis shows that from 2012 to 2022, the core of the workforce aged 25-54 will grow by only 1.9%, which falls short of the overall 5.5% increase in the labor force and could fall substantially short of anticipated economic growth. Only the pool of older workers, aged 55+ is anticipated to grow at a faster rate – 28.8% in this time period. The older workers are an important part of the talent pool, offering both wealth and entrepreneurial skills. Communities that have existing target worker groups will want to strategically retain them to avoid losses in the battle for workers. If communities want to grow by increasing the supply of younger workers, they will have to attract them from elsewhere. The competition will be fierce.

The Community Thrives

Economic success is a key outcome of the new paradigm, as evidenced in cities such as Denver, CO and Minneapolis, MN that are early adopters of this approach. There are success stories in smaller cities, too, including Chattanooga, TN and Asheville, NC. Placemaking can be linked to job creation, but it also brings a host of positive economic effects that are linked to transportation. Walkability and proximity to transit in particular have been shown to help areas perform better economically.

- Walkability is associated with increased office, residential, and retail rents, retail revenues, and for-sale residential values according to the Walk this Way report.
- Commercial real estate located in more walkable sites commands higher property values and is associated with a higher net operating income according to an academic paper.
- A report published by the American Public Transportation Association and the National Association of Realtors found that households in transit sheds had more resilient property values and lower average transportation costs that the region as a whole.

Views from Economic Development Professionals

The qualitative research that SIR conducted entailed a 'deep dive' with economic development professionals to understand successes, failures, emerging trends, and current issues in business attraction. Figure 4 presents a sampling of direct quotes that capture the insights relevant to VTrans. In summary, economic development professionals strongly supported the emerging paradigm of placemaking and the rising need to attract employers via an existing, talented pool of workers.

"COMPANIES EXPANDING OR RELOCATING KNOW THAT 85 PERCENT OR MORE OF THEIR WORKERS WILL COME FROM THE POPULATION ALREADY IN PLACE." - SITE SELECTION CONSULTANT

"LOCATION DECISIONS TODAY START—AND END—WITH, 'DO THEY HAVE THE PEOPLE WE WANT?'" - SITE SELECTION CONSULTANT

"THE PIPELINE OF WORKERS IS THE ULTIMATE DRIVING FORCE OF ALL RELOCATION DECISIONS TODAY."- SITE SELECTION CONSULTANT

"IF A COMMUNITY OR REGION DOESN'T HAVE CAPACITY OR ASSETS IN PLACE—THINGS LIKE ROADS AND BUILDINGS—THEN IT WON'T EVEN GET INTO THE INITIAL CONSIDERATION SET." - SITE SELECTION CONSULTANT

"WE KNOW WE ARE TEN YEARS BEHIND OTHER MARKETS OUR SIZE WHEN IT COMES TO TRANSIT, ESPECIALLY LIGHT RAIL. IT'S HOLDING US BACK, FOR SURE."- ECONOMIC DEVELOPMENT LEADER

Figure 4: Sample Quotes from Qualitative Research on Economic Development Trends. Source: SIR

Business Community Views on Location Decisions

The quantitative survey of business location specialists provides additional insight into the drivers of site selection. It also enables inferences about different attitudes and preferences along industry lines or other respondent characteristics. The survey respondents spanned a broad range of company sizes and types, with 53% reporting revenue of over $10 million, 68% with fewer than 5,000 employees, and 64% with facilities in more than one state. Over two-thirds of respondents are partially or primarily responsible for their company's site selection.

This phase of research strongly supports the insight from the preceding phases that workers are a key driver of business location decisions. While site selections may start with location basics, once those 'table stakes' are met, the key for any location decision across all industry clusters is the availability of workers now and in the future. As noted by one respondent, "The economics will work themselves out, but if you do not have a skilled workforce and it is not a location that is conducive to recruiting a skilled workforce, the site does not work."

Thus, the process of site selection today is actually site elimination. Site selection consultants identify a set of sites that meet the fundamental requirements of a potential location and then eliminate those that cannot deliver the desired workforce today or tomorrow. For regions, the workforce can be

'delivered' by retaining young workers who might otherwise outmigrate, attracting the mobile segment(s) of the workforce into the region, and/or retraining the existing workers in the region.

Top Drivers of Business Location Decisions

The survey asked several questions about the most important location factors and site selection attributes in order to determine patterns in the responses. Key findings are as follows:

- Three of four respondents identified workforce availability as either the single most important or second most important factor in site selection
- Current and future availability of the region's workforce rated highest among site selection attributes (rated 4 or 5 out of 5 in importance by over 80% of respondents)
- Connectivity formed the second tier of important site attributes, with telecom system availability ranking slightly higher than the quality of the overall transportation system (rated 4 out 5 by 73% and 70% of respondents, respectively)
- Government/Community partnership and quality of life ranked in the next tier, with over 60% of respondents rating these attributes 4 or 5 out of 5 in importance.
- Listed among specific location attributes, highway access was rated as important by 85% of respondents

Transportation Factors in Business Location Decisions

Respondents were asked about the importance of a variety of transportation factors in their site selection decisions. Highway accessibility rated the highest, followed by airport and public transit accessibility. Biking and walking were rated lower. Those respondents that were familiar with the importance of placemaking for community attractiveness gave all transportation factors a higher importance rating, however, with particularly substantial differences in the reported importance of major airport, public transit, and biking/walking availability.

As discussed at the beginning of this section, understanding the differentiation in importance of transportation factors to different industry clusters is key to the economic-transportation linkages in the VMTP Regional Network Needs Assessment. The quantitative survey was designed to allow results to be analyzed by the same three industry clusters, and the results reveal appreciable differences in the rated importance of different transportation factors:

- After highway accessibility, which was rated highest by all sectors, inbound/outbound shipping costs were rated second by freight-dependent industries while accessibility to a major airport was rated second by knowledge-based industries
- Knowledge-based and local-serving industries rated Public Transit Services in the second tier of importance, while freight-dependent industries placed low importance on this factor
- Port accessibility was dramatically more important to freight-dependent industries than to the other sectors
- Generally speaking, the knowledge-based and local-serving sectors valued community-related transportation elements higher than freight-dependent industries, such as access to healthcare, recreational access, and mobility for older and physically challenged residents.

Figures 5 and 6 provide the survey responses to the key transportation questions, broken out by industry cluster.

Note: The small sample size means these findings among industry clusters can be used to observe directional differences only.

Differences in How Industry Clusters Rate the Importance of Transportation Are Apparent

Top Two Box Scores

Importance	Freight Dependent	Knowledge	Local Serving
Highway accessibility	85%	85%	86%
Accessibility to major airport	51%	80%	69%
Accessibility to regional airport	44%	70%	64%
Inbound and outbound shipping costs	77%	52%	48%
Public transit services	28%	54%	55%
Intermodal transfer facilities	59%	30%	42%
Intracity rail service (subway, light rail, metro)	23%	31%	41%
Intercity railroad service (freight, passenger)	44%	24%	33%
Biking and walking facilities and designated pathways	13%	22%	36%
Waterway or ocean port accessibility	51%	13%	22%

Freight-dependent respondents are thinking from an organizational perspective, not a worker's one.

n = 184

81 Q14. In regard to transportation, how important is each of the following?

Figure 5: Summary of Responses to SIR Survey Question #14 by Industry Cluster

Note: The small sample size means these findings among industry clusters can be used to observe directional differences only.

Different Ratings for Community-Related Transportation Elements Among Industry Clusters:

Top Two Box Scores

Transportation System That:	Freight Dependent	Knowledge	Local Serving
Makes businesses easily accessible for their clients	50%	65%	73%
Provides access to school and educational opportunities for all residents	53%	45%	53%
Provides access to medical services and healthcare for its residents	41%	49%	54%
Actively seeks ways to reduce or limit the negative impact of transportation on the environment	41%	43%	49%
Provides mobility for those without vehicles	34%	41%	38%
Makes recreation and entertainment opportunities easily accessible	22%	35%	49%
Ensures the mobility of those with physical limitations, such as older residents and those with physical challenges	25%	35%	47%

n = 164

Q39. How important is each of the following community-related transportation elements when evaluating a site?

83

SIR

Figure 6: Summary of Responses to SIR Survey Question #39by Industry Cluster

Additional Insights from Quantitative Research

The survey research explored several attitudes and perceptions on the part of site selection experts. One of the key insights, noted above, is that those site selection professionals who already appreciate the importance of placemaking also place a higher value on location factors related to transportation and also quality of life. One could infer that the respondents who did not rate these factors as highly are expecting others, such as community leaders, to determine what is needed to attract the workforce to an area – their primary concern is that the workforce is there. A final important insight from the research is that the survey respondents displayed a low awareness of the battle for workers discussed under the first phase of research. This low awareness presented in a national pool of businesses suggests that Virginia planners may have a competitive tool available: *Investing in making Virginia's quality of life tops in the nation for younger workers will keep the Commonwealth's 21st century economy moving.*

Summary of Findings

Combining the framework for the Regional Network analysis and the findings of the economic development research yields a set of insights regarding economic-transportation linkages for the VMTP.

These insights help provide overall direction for the Regional Network analysis. They also enable each region to be viewed through a lens that considers how its unique economic and transportation characteristics translate to a set of needs that will attract and retain the 21st century workforce and support the goods movement needs of Virginia businesses.

Applying the New Paradigm and Economic Development Trends to Regional Networks

The most important and consistent findings of the economic development research point to two key trends that will be critical to achieving Virginia's future desired economy:

1. Workforce is key to attracting businesses
2. Transportation investments that support placemaking will make regions more attractive to critical workforce segments, particularly the talented and entrepreneurial Millennials and Boomers

Each of these conclusions must be applied to Virginia's metropolitan regions with an eye toward the industry mix, land use patterns, transportation conditions, and the values unique to each area. The analytical framework and outreach process of the Regional Network Needs Assessment is designed to produce a customized interpretation of these key conclusions. For example, regions that are stronger in manufacturing and/or warehousing will prioritize goods movement overall and particularly in their freight activity centers, but they likely will still find opportunities to invest in placemaking in regional downtowns and high-tech activity centers that have the potential to attract Millennial workers and/or entrepreneurial Boomers.

Taking the two conclusions together, another important insight is that the battle for workers is a compelling reason to consider region-wide strategies to attract Millennials and Boomers with two key items they seek: *walkable places and modal choice*. Prosperous regions of the future will offer walkable places and modal choice to Millennials and Boomers. These strategies will work differently in regions with different land use densities, residential development patterns, and amenities such as outdoor recreation. However, it is vital to the overall VTrans Vision and Goals that Virginia regions recognize this emerging trend and apply it suitably in their regions. In the Regional Network analysis, the Study Team has shared the research insights with each region, discussed how the trends are emerging now in each region, and worked with stakeholders to identify areas where these strategies can be applied in the Needs Assessment.

Applying Detailed Research Findings in the Regional Network Approach

The detailed research findings provide important insights into the different values placed on types of transportation need by the three industry clusters. The Study Team held exercises to explore these differences in values and priorities with the Multimodal Advisory Committee and Freight Transportation Technical Advisory Committee and with stakeholder groups in many of the metropolitan regions as well. These discussions provided a general sense of the variations in importance placed on different transportation needs, and they provided insight into the economic-transportation linkages in the VMTP. For example, there was strong agreement that the knowledge sector industries place more value on multimodal transportation and public transit in particular because of their relationship to Millennials and, in many cases, their more urban or downtown locations. At the same time, the discussions about

how local serving and freight-based clusters might need public transit for customers and/or workers were also helpful and insightful for the Regional Network Needs Assessment.

The quantitative survey results, supported by the other phases of research and stakeholder input, yield a broad set of correlations between transportation needs and the industry clusters as shown in Table 4. These correlations are presented strictly as high, medium and low to convey the breadth of conditions that may occur in different industries within a given cluster and in different regional conditions. The table is useful as an overall guideline for relating the economic conditions and future desired economy of each region to the most important types of transportation needs. The correlations shaped many of the questions in the needs analysis as described in the Approach section, such as focusing on whether knowledge-based activity centers are walkable places, whether freight-dependent activity centers have strong access to freight transportation facilities, and whether local-serving activity centers have a choice of modes.

Economic and Transportation Correlation Table			
	Local Sector	Knowledge Sector	Freight Sector
Highway Access	HIGH	HIGH	HIGH
Passenger Reliability	MED	HIGH	MED
Bottleneck Relief	MED	HIGH	HIGH
Freight Reliability	MED	MED	HIGH
Freight Accessibility	MED	LOW	HIGH
Network Connectivity	HIGH	HIGH	MED
Transportation Demand Management	LOW	MED	MED
Modal Choice	HIGH	HIGH	MED
Transit Access	MED	HIGH	MED
Active Transportation Options	MED	MED	LOW
Walkable Places	MED	HIGH	LOW

Table 1: Economic and Transportation Correlation. Source: Summary correlations based on national research and survey of national Industry Site Selection Professionals conducted by OIPI Consultant Team.

In keeping with these findings, the Regional Network Needs Assessment links economic strategies with transportation needs through findings such as the following:

- Congested corridors that serve freight-based activity centers are the focus of "corridor reliability" needs in order to remove bottlenecks and improve travel time reliability for freight.

- Multimodal network connectivity is identified as a need in areas where knowledge and local-serving activity centers have physical barriers (water, railroads, highways) that hinder the opportunities for replacing car trips with walking or bicycling.
- In several regions, knowledge-based activity centers are the focus of "Walkable/Bikeable Places" needs, in keeping with the high value the knowledge industry cluster places on walkable places.
- Modal choice is identified as a need for knowledge and local-serving commuters in both corridors and activity centers that lack transit access to jobs.
- Freight-based activity centers that lack highway accessibility are the focus of network connectivity recommendations in several regions.