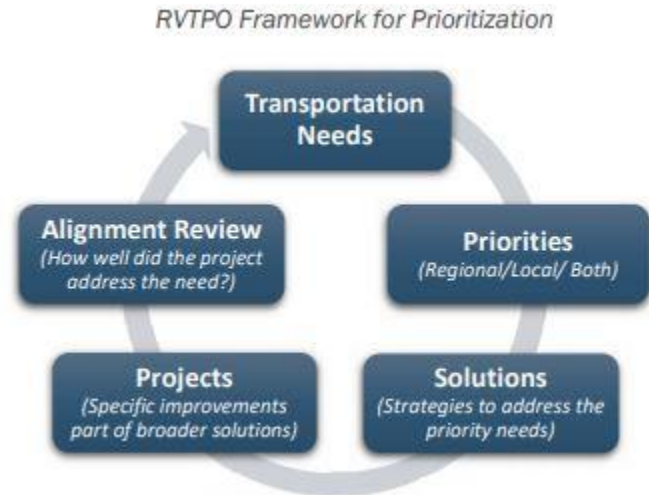


Roanoke Valley Transportation Needs Assessment

Approved April 22, 2021

In February 2017, the RVTPO Policy Board adopted a Framework for Prioritization to guide the development of regional transportation priorities based on a comprehensive regional needs assessment. Members saw value in assessing the transportation needs in the region and considering that information before working through the process to identify the priority needs that the region should be addressing, evaluating potential solutions, and ultimately pursuing priority projects to address those priority needs.



After conducting research to explain what constitutes a transportation need, staff shared the findings with the Policy Board and Transportation Technical Committee at Fall 2020 meetings. Transportation needs are not things such as a sidewalk, roadway or bus as these are examples of solutions to address needs. Rather, transportation needs describe the reasons why people or goods move from an origin to a destination and the impediments they encounter in trying to move. In essence, a transportation need is the problem people or businesses experience getting to where they are going or moving what they are selling/receiving while the transportation infrastructure/service/program is the solution to the need.

A transportation need:

- states a problem, not a specific solution, and
- could be solved by multiple possible solutions.

Thus, as part of the plan's 2045 update, staff reviewed several sources to provide a comprehensive assessment of the transportation needs in the region:

1. Existing plans – Previous RVTPO and other transportation-related regional/local plans/studies
2. RVTPO Surveys since Vision 2040 – Other public input on previous RVTPO plans/programs since the adoption of the Vision 2040 plan
3. 2020 Citizen Survey for the 2045 long-range plan
4. 2019 Travel Demand Model
5. VTrans statewide approved needs from January 2020
6. Consolidated Needs Assessment

The primary goal of the Needs Assessment is to inventory the transportation needs of the Roanoke Valley and a strength of the assessment is the quantity of information processed.

The content shared in each source sometimes referenced a transportation need directly and other times only referenced possible or preferred strategies, solutions or projects from which staff extrapolated, not necessarily a defined need, but a need category. After reviewing the sources, staff identified four categories of transportation needs: Safety, Congestion/Reliability, Access, or System Management (Maintenance/Operations). Staff assigned need categories to projects that did not have defined needs described to assist in understanding the overall picture, but a limitation of the assessment is the subjective nature of the categorization some of which was also self-categorized by citizens. For some sources, staff comments were added to help explain the need category assignment.

Developing these need categories was an iterative process. The VTrans statewide approved need categories fit the regional and local needs expressed in plans and surveys imperfectly. In the 2020 Citizen Survey, the Priority Ranking screen allowed for six categories which were chosen to reflect similar goal areas from VTrans and the Vision 2040 plan whereas the Map Markers screen allowed four categories which were chosen to reflect what kind of transportation problems citizens would indicate. For existing plans and surveys since Vision 2040, staff was able to interpret one or more corresponding need categories where needs were not described. However, some possible solutions/projects were more difficult to assess and sometimes subjective.

The following summaries and ArcGIS online maps have been assembled to reflect the compiled transportation needs. The information in these maps was compiled from a variety of sources and therefore the number of records (points or lines) does not reflect the number of problems, the number of people reporting problems, or the relative importance of a location or road to the region. The methodology is described in later sections.

- RTVPO Consolidated Transportation Needs ([online map](#), [excel file](#)) shows:
 - Pertinent information from the information gathered from regional surveys and existing plans
 - See Section 5, Consolidated Needs Assessment
- RTVPO Transportation Needs ([online map](#))
 - Contains all the information shown in the following four maps
- RTVPO Safety Needs ([online map](#)) shows:
 - Top Crashes identified in the Roanoke Valley Regional Transportation Safety Study
 - Safety concerns noted in the Long-range plan survey
 - Safety concerns identified in surveys since the adoption of Vision 2040 (points and lines)
 - Safety concerns identified in existing plans (points and lines)
 - VTrans UDA safety needs and Pedestrian safety needs
 - Crashes from July 2015 – June 2020 (fatality, serious injury, moderate injury, minor injury, and property damage only)
- RTVPO Congestion/Reliability Needs ([online map](#)) shows:
 - Traffic concerns noted in the Long-range plan survey



- Traffic concerns identified in surveys since the adoption of Vision 2040 (points and lines)
- Traffic concerns identified in existing plans (points and lines)
- VTrans Regional Network and Corridors of Statewide Significance Reliability and Congestion needs
- RVTPO Access Needs ([online map](#)) shows:
 - Access concerns noted in the Long-range plan survey
 - Access concerns identified in surveys since the adoption of Vision 2040 (points and lines)
 - Access concerns identified in existing plans (points and lines)
- RVTPO System Management Needs ([online map](#)) shows:
 - Maintenance (System Management) concerns noted in the Long-range plan survey
 - System Management concerns identified in surveys since the adoption of Vision 2040 (points and lines)
 - System Management concerns identified in existing plans (points and lines)
 - VTrans Regional Network and Corridors of Statewide Significance Capacity needs

1. Transportation Needs Summary from Existing Plans

For the 2045 update of the constrained multimodal long-range transportation plan, staff reviewed existing plans (which included plans, studies, and stand-alone surveys) to gather information on transportation needs. Staff compiled an initial list of 76 locality comprehensive plans, neighborhood and area plans, corridor plans and studies, surveys, and modal plans. Staff selected 34 for further review (Table 1-1) using the criteria:

- Year adopted (omitting older plans),
- Plans that addressed transportation primarily (omitting plans that may briefly mention transportation), and
- Plans that included transportation issues that have not already been addressed (omitting plans whose solutions have already been implemented).

Table 1-1. Plans (including studies and surveys) reviewed for transportation needs

Plan	Locality	Year
419 Town Center Plan	Roanoke County	2019
Hollins Center Plan	Roanoke County	2021
Oak Grove Plan	Roanoke County	2021
Hollins Area Plan	Roanoke County	2008
Glenvar Community Plan	Roanoke County	2012
Roanoke County Community Strategic Plan	Roanoke County	2016
Roanoke County Comprehensive Plan	Roanoke County	2005
419 Town Center Plan	Roanoke County	2019
Explore Park Adventure Plan	Roanoke County, Bedford County	2016
Vinton Area Corridors Plan	Vinton	2010
Vinton Comprehensive Plan	Vinton	2004
Vinton Urban Development Areas	Vinton	2016
City Plan 2040	Roanoke City	2020
Senior Quality of Life Survey	Roanoke City	2018
City of Roanoke Downtown Plan	Roanoke City	2017
Downtown Intermodal Study	Roanoke City	2015
Age Friendly Community AARP Survey	Roanoke City	2019
Melrose Avenue Bus Stop Improvement	Roanoke City	2016
Exit 150 Market Study	Botetourt	2015
Botetourt Comprehensive Plan	Botetourt	2017
Gateway Crossing Area Plan	Botetourt	2016
Salem Downtown Plan	Salem	2016
Salem Comprehensive Plan	Salem	2015
Vision 2040: Roanoke Valley Transportation Plan	Regional	2017
Community Health Assessment	Regional	2018
I-81 Corridor Improvement Plan	Regional	2018
81 & 581 Auxiliary Lane Study	Regional	2016
Route 11/460 Corridor Study	Regional	2013
Route 419 Corridor Study	Regional	2010
Route 460 Operational Improvement Study	Regional	In progress
Bus Stop Accessibility Study	Regional	2013
RADAR Transit Development Plan	Regional	2018
Valley Metro Transit Development Plan	Regional	2018
Valley Metro Comprehensive Operations Analysis	Regional	2018
Regional Transit Vision Plan	Regional	2016
Coordinated Human Services Mobility Plan	Regional	2013
Roanoke Valley Greenways Plan	Regional	2018
Regional Bikeway Plan	Regional	2012
Regional Pedestrian Vision Plan	Regional	2015

Plan	Locality	Year
Traffic Congestion Management Process	Regional	2020
Roanoke Valley Regional Transportation Safety Study	Regional	2019
2019 Travel Demand Model	Regional	2021

Many plans focused on projects and the need or justification for the project was not always directly stated. In these cases, staff used their judgment to assign a need based on the type of project or local knowledge. For example, if a proposed project was pedestrian or bicycle infrastructure, staff assigned the location a Safety Need; adding lanes, staff assigned Congestion/Reliability Need; parking, land access, transit service staff assigned Access Need; traffic signal, turn lanes, or streetscape, staff assigned System Management Need.

Local Plans

Local plans cover a segment of the region and included:

- Comprehensive plans
- Neighborhood plans
- Downtown plans
- Area plans

The frequently cited desire in local plans for improvements to every mode of travel except motor vehicle highlights how well the region has done accommodating the automobile – so well, in fact, that other modes have suffered. All the plans reviewed called for improvements for walking, bicycling and transit. For walking and biking, the plans called for additional infrastructure so pedestrians and bicyclists can travel more safely and having more destinations walkable from each other. For transit, the plans identified the need for walkable environments to support transit service, additional destinations to access, and improved system operations such as increased service frequency or hours, and amenities at bus stops like shelters and benches.

Other road improvements were desired to create a more pleasant place to be, whether walking or living near the road, or to attract economic investment through improved beautification such as through streetscape and gateway projects. The impetus for these projects is not always a direct transportation need such as system upkeep and may have to do more with aspects of life other than travel affected by the road.

Local plans and studies often describe a vision or a goal rather than identifying a transportation problem. Typical aspirations are related to access, connections, economy, environment, multimodal, quality of life, reliability, safety, and traffic flow.

Corridor Plans

Some corridor plans and studies share similarities to local plans regarding multimodal accommodations but also identify traffic congestion/reliability and system management (mainly operational) needs. They recommend operational improvements such as access management

or traffic signal changes to reduce traffic congestion and improve traffic flow. Plans and studies of major corridors such as I-81, I-581, U.S. 460, and Route 419 recommend widening roads to reduce traffic congestion and mention freight movement.

Modal Plans

Several regional plans focus on modes:

- Transit, including paratransit
- Walking and bicycling

Extensive public input was solicited during the development of modal plans. The input was mapped during those planning efforts and included in the needs assessment mapping. The visions that came out of the related plans reflect aspirational multimodal networks that offer many possible solutions to meet the needs and aspirations from a planning perspective that goes beyond citizen input.

Transit needs

Transit needs are generally access or system management (maintenance and operations) needs. Few transit projects highlighted in plans address transit safety or transit congestion, although these issues may be incorporated into projects whose primary purpose is access or system management.

Examples of noted transit access needs:

- Destinations that cannot be reached by transit or paratransit, and
- Infrastructure deficiencies that prevent people (particularly people with disabilities) from getting to or using fixed-route transit.

Examples of noted transit system management (maintenance and operations) needs:

- Times when transit or paratransit can't be used because hours when transit doesn't operate,
- Infrequent service that makes using transit inconvenient or impractical
- Uncoordinated transit services for people with disabilities
- Maintaining the equipment to provide the service
- Making existing facilities and stops ADA compatible or function better

The Regional Transit Vision Plan, Valley Metro and RADAR Transit Development Plans, and Valley Metro Comprehensive Operations Analysis provide possible solutions for people who have identified access or system management needs. The Coordinated Human Services Mobility Plan and the Bus Stop Accessibility Study also provide more information and possible solutions to address the identified access needs from people with disabilities. Some needs related to transit system management as noted in the given examples are not mappable and are fully described in the individual plans.

Walking and bicycling needs

Staff categorized walking and bicycling needs as safety needs. Walking and bicycling improvements are often thought of as providing access, but a person on foot or on a bicycle can access a wide variety of terrain (if at extreme difficulty or danger). Examples of walking and bicycling safety needs:

- Travel which requires sharing space with high volumes of motor vehicle traffic,
- Travel which involves crossing roads with fast motor vehicle traffic.

People with disabilities who are walking, bicycling, or wheeling face access needs as well as safety needs. Disabilities may be mobility, visual, or cognitive. Examples of disability access needs are:

- Information access, such as being unable to see or comprehend signs,
- Terrain obstacles (such as curbs, broken sidewalk or lack of ADA-accessible infrastructure) that prohibit someone with a disability from being able to access a destination.

Citizen-identified locations obtained during the Regional Pedestrian Vision Plan and Roanoke Valley Greenways Plan processes were included as needs. The Regional Pedestrian Vision Plan, the Regional Bikeway Plan, and the Roanoke Valley Greenways Plan, and Bus Stop Accessibility Study provide recommendations suggesting possible solutions to address safety needs for walking and bicycling.

Transportation studies

Two studies focus on transportation need areas:

- Roanoke Valley Regional Transportation Safety Study
- Traffic Congestion Management Process.

Safety needs

The crash analysis identified intersections and segments that consistently had the greatest number of severe crashes (fatality or serious injury crashes) and those that had more crashes than typical for sites with similar traffic volumes and other characteristics (Potential for Safety Improvement). Those with both high numbers of severe crashes and high Potential for Safety Improvement are locations where improvements could have a pronounced effect on safety.

Traffic congestion needs

The Traffic Congestion Management Process identified Priority Corridors for Congestion Management based on real-time data gathered from mobile devices and GPS-equipped vehicles. It identified Corridors of Concern based on public input.

2. Transportation Needs Summary from RVTPO Surveys since Vision 2040

As shown in the table below, the RVTPO has held twelve public comment periods, nine with surveys, since the adoption of the last constrained long-range multimodal transportation plan for the RVTPO, Vision 2040: Roanoke Valley Transportation.

Comment period	Month public input period ended	Date adopted	# of comments
2018-2021 TIP Amendment #1	March 2018	3/22/2018	0
2018-2021 TIP Amendment #2	June 2018	6/28/2018	0
Vision 2040 Amendment 2018	June 2018	6/28/2018	1

Survey	Month survey ended	Date adopted	# of survey responses
2018-2021 TIP Amendment #3	July 2019	8/22/2019	40
Vision 2040 Amendment 2019	July 2019	8/22/2019	45
Congestion Management Process	February 2020	10/22/2020	304
STBG Round 4	March 2020	6/27/2020	18
2018-2021 TIP Amendment #4	January 2020	1/23/2020	539
Vision 2040 Amendment 2020			
Federal Certification Review	April 2020	4/15/2020 (Date held)	65
2021-2024 TIP	April 2020	6/25/2020	114
STBG Out-of-Cycle Request	June 2020	6/25/2020	168
Interstate 81 Lighting	September 2020	9/24/2020	678

Staff analyzed the responses from these surveys:

- 596 comments
- 240 comments suggested a project or identified a transportation need beyond the topic of the survey
- 284 projects suggested
- 111 transportation needs identified

For projects and comments from surveys since Vision 2040, staff realized that assigned need categories to types of projects was not always accurate based on the context of the comment and that citizens may suggest projects that aren't appropriate to the needs they are expressing. For example, most suggestions for "more lanes on I-81" were in comments expressing concerns about traffic congestion, but some were in comments expressing concerns about safety. Therefore, staff refrained from assigning need categories to project suggestions from comments but assigned need categories based key words and other information (Table 2-2). Some Need Areas were assigned based on the content of the comment even when a key word was not

present. Two staff members independently assigned Need Areas to each comment and then met to resolve differences in their assignments.

Table 2-2. Key words to identify need

Need	Key words
Safety	Wreck(s), crash(es), danger, dangerous, accident(s), fatality/ies, can't see, hit, safety, safer, safe, unsafe, death trap, killed, killing, hazard, died, emergency
Congestion/Reliability	Traffic, congestion, flow, bottleneck, peak hours, backups, backing up, reliability, grows, growth, economic development
Access	Easier, option, amenable, getting to jobs, poverty, access, availability, connect(ing), expand(ed/ing), low-income, destination
System Management (Maintenance/Operations)	Potholes, maintain, maintenance, patching, lumpy road, sign(s), signage, attractive, landscape(d), eye sore, environment, climate change, visual appeal, confused, confusion, disgusting

Safety and congestion were the most commonly cited need (Figure 2-1).

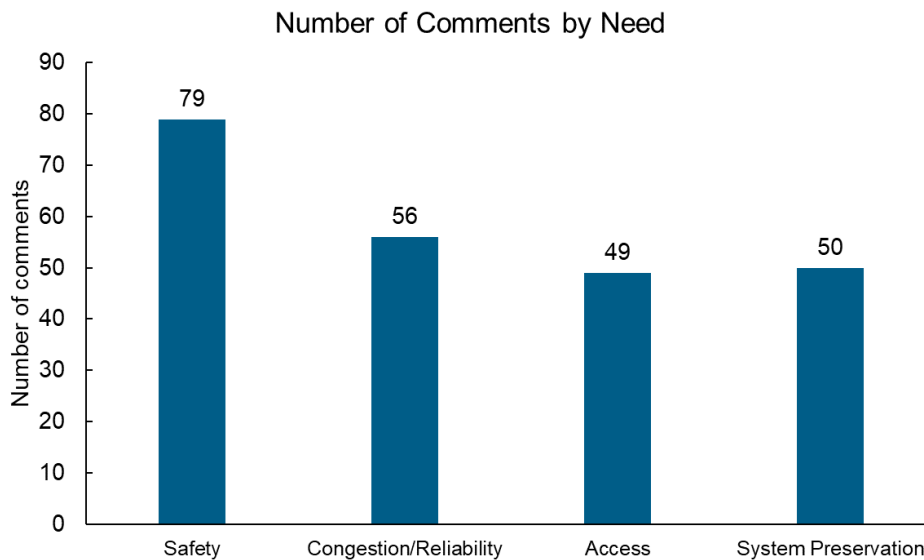


Figure 2-1. Number of comments by Need

3. Transportation Needs Summary from 2020 Citizen Survey for the 2045 Long-Range Transportation Plan

A MetroQuest survey to collect public input on the update of the RVTPO long-range transportation plan was available from October 5 to November 16, 2020. This summary focuses on the portions of the survey relevant to the needs assessment for the long-range transportation plan.

The survey was promoted through:

- Survey link on the RVARC blog (Transportation) and the RVARC Facebook page
- Emailed survey link to about 300 people who had taken an RVTPO survey, served on a committee, or participated in a workshop or meeting
- Survey link in the RVARC e-newsletter
- Facebook post on RVARC Facebook page
- Facebook post boosted to RVARC zip codes
- Facebook post boosted to RVARC zip codes that had lower responses than expected
- Five Transportation Equity Chats live-streamed to Facebook and boosted to RVTPO zip codes
- 1000 postcards with QR code and survey link distributed with 700 transportation resource pamphlets (Guide to Getting Around Roanoke Valley) to:
 - RADAR
 - Botetourt Van Service
 - Local Office on Aging
 - Virginia Career Works
 - Downtown Roanoke, Inc.
 - Participants at the Melrose Fall Festival

At the Melrose Fall Festival, an iPad was available for participants to take the survey. Otherwise, participants had to have their own computer or mobile device and internet connection.

The survey had a Welcome Screen (Figure 3-2), that provided information, and four activity screens:

- Priority Ranking (Figure 3-3) – 331 participants ranked at least one Need Area
- Budget Allocation – 441 participants allocated chips to at least one Need Area¹
- Map Markers (Figure 3-5) – 306 participants dropped 1,176 markers on a map to show transportation problems
- Wrap Up (Figure 3-13) – 290 participants answered demographic questions.

¹ Results from the Budget Allocation activity will be shared during a later phase of the long-range plan update.

486 participants completed at least one of the four activities.

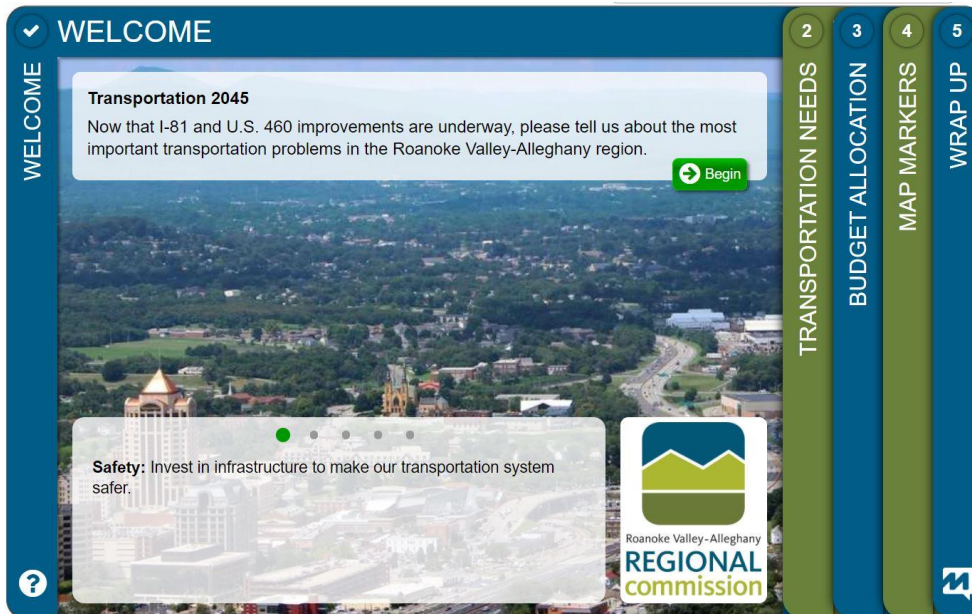


Figure 3-2. The Welcome Screen provided information about the survey.

Priority Ranking

The purpose of the Priority Ranking activity (Figure 3-3) was to assess how important each need area is to citizens.

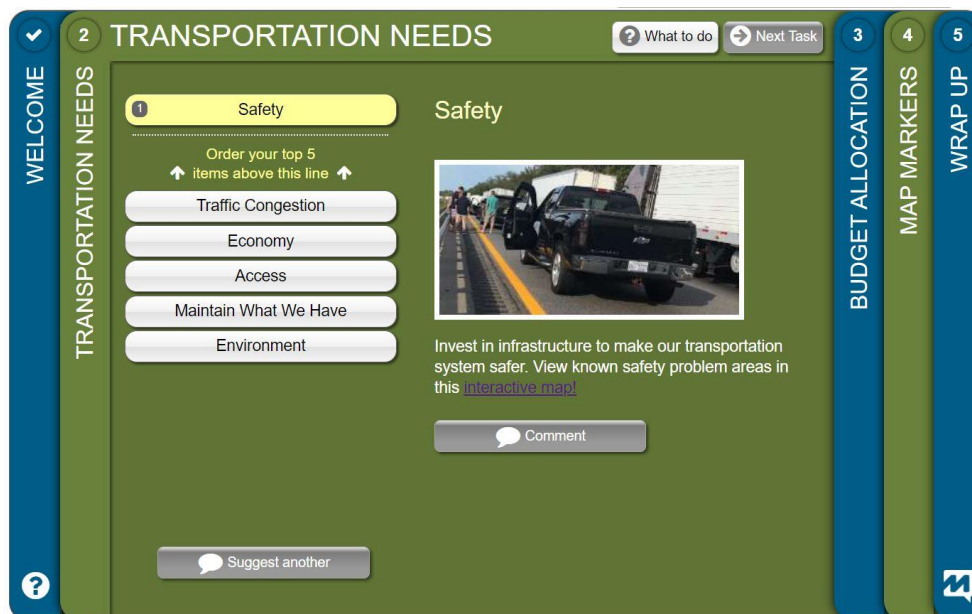


Figure 3-3. Participants dragged each Need Area above the line in order of priority.

Participants were asked to rank five of six Need Areas:

Access - Invest in infrastructure and services to improve people’s access to jobs, services, and activity centers especially when [riding the bus](#), [walking](#), or [biking](#).

Economy - Invest in infrastructure and services to improve business access to distribution hubs, their customers, and the workforce.

Environment - Invest in infrastructure that will preserve good air quality, minimize stormwater impacts, and support sustainable land development.

Maintain What We Have - From maintaining bridges, pavement, and buses to patching potholes, painting and upgrading traffic signals, invest in making sure the current infrastructure is working well.

Safety - Invest in infrastructure to make our transportation system safer. View known safety problem areas in this [interactive map](#)!

Traffic Congestion - Invest in keeping travel times reasonable and minimizing congestion. The Roanoke Valley doesn’t have much severe traffic congestion, and we want to keep it that way. View priority and other emerging congestion corridors in this [interactive map](#)!

The order of Need Areas was randomized for each participant, and 331 participants completed the ranking exercise.

Average rank was calculated by determining the number of ranks a Need Area received from all participants divided by the number of participants who ranked that particular Need Area. Safety ranked the highest (Table 3-3).

Table 3-3. Average rank of Need Areas

Need Area	Average Rank 1=most important
Safety	2.49
Traffic	2.51
Access	2.98
Environment	3.23
Maintain What We Have	3.26
Economy	3.49

The popularity of each Need Area was determined by how many participants selected it as one of the priorities (regardless of rank). Safety was selected most often (Figure 3-4).

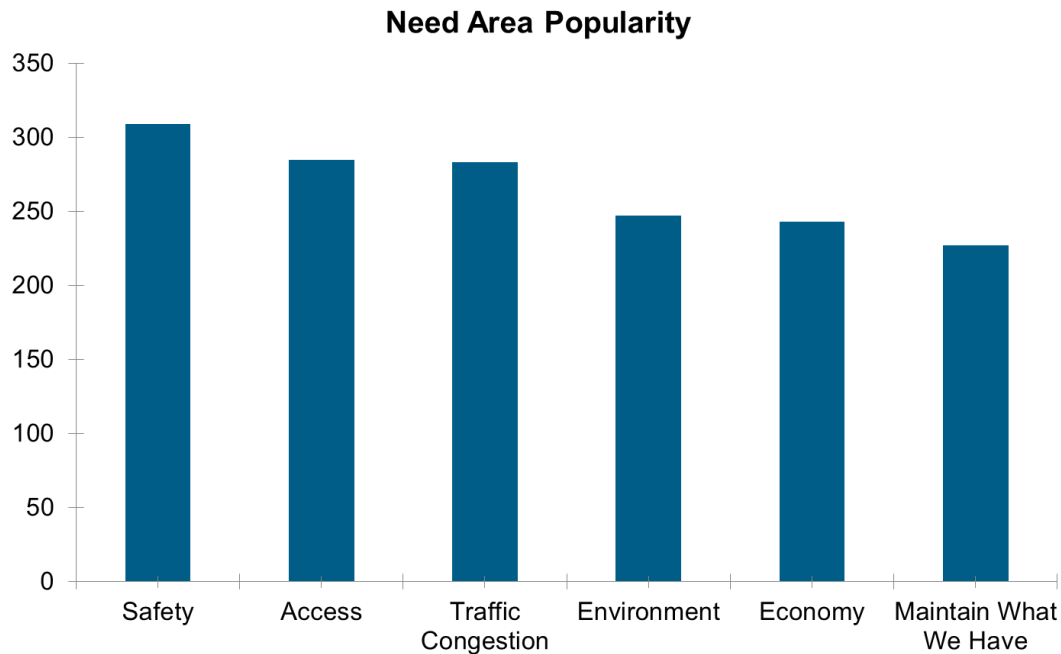


Figure 3-4. Need Area Popularity

Participants could comment on each Need Area or suggest another Need.

Safety

- Pedestrians, scooters, bicycles and motor vehicles are not working together well. A low budget pedestrian crossing safety campaign in 2020 was too minimal to be effective.
- Nothing else matters if you die or get hurt.

Access

- That all people can easily and safely access resources needed for healthy lives (food, healthcare, schools, workplaces, etc).
- Access means more than your definition implies. It is vital that people be able to go places and do things without driving, suggesting that the current transit void in the Roanoke Valley needs to be addressed.
- Low-income people need better public transportation to get to jobs.

Traffic Congestion

- I suppose eventually we'll all go to uber-type services or self-driving cars, but meanwhile I see a lot of issues with parking.
- Long distance Thru traffic and environmental pollution is causing bad air quality. Traffic congestion and people waiting in drive-in lines with their engines running is causing air pollution.
- Congestion areas match those noted for safety.

Environment

- We need to care for the wonderful world, especially here we have been given. We all benefit from a great place to live and travel.
- Environmental concerns and future needs can and should be built into current and future transportation plans
- The disruption of transportation is coming at breath taking speed and we are not ready with changing [changing] infrastructure.
- Less automobiles = less pollution. 'Real' traffic separated bike trails into business, residential and government centers.
- The convenience store on 13th St SE and Jamison always has toxic cigarette butts lying around the store which can float into the stormwater drains during a downpour. There is also rusty metal drainage near the gas pumps and drains when it is raining.

Economy

- I would include expanded public transportation to minimize traffic and cut emissions.
- We need [to] focus on area economy and how we can push that to support our people.
- The future is public transportation. Take a trip to Charlotte, NC and look at the development that followed light-rail services.
- We need to become much less car-dependent. More emphasis on pedestrian, bike and mass transit; less on roads.
- Undo the move away from rail. Connect passenger rail to Blacksburg as planned
- Enhance to bring businesses
- WRONG - A gas station is not synonymous with a vibrant economy. A multimodal transportation center that includes a one stop shop for URGENT CARE, mini mart, money exchange, ticket machines, library branch, social service office, central area for waiting area for shared AMTRAK, light rail, transit, which includes offices for Human services is economic development. If the Roanoke Valley is going to transform we can not continue to do things in the same way as we have been. VISION. Bring examples you have seen in other parts of the United States and other countries and implement them here. Elected officials should be leaders. Provide them a roadmap for future.
- Better bus routes, maybe even city-sponsored Uber?
- If we do well on the first 5 then the economy will be benefited.

Maintain What We Have

- Roanoke is perfectly situated for funneling mass transit from each of the four directions. How can we incentive this, as climate change is bearing down on our world and personal car use is a main cause? Also, there are hardly any bike lanes once one is away from the city. I live on 460 - it already has broad shoulders, why not bike lanes?
- Well, it has to happen, so why list it as something we can prioritize.

- Stop replacing old plumbing wiring underground of roads. Lay these lines a rest of heavy traffic areas where construction concerns and repairs will not impede traffic conditions on all future repairs of primary and secondary roads and streets. More money is spent on saving of roads because of underground utilities that have problems causing patchwork all over making roads bumpy and uninviting for travel reducing property and Business values.
- Too much congestion
- Overall a pretty good job in this, but there were times when maintenance might have held higher priority. I remember thinking how bad roads looked in other states, one in the North in particular where more damage from ice and snow in winter. At the same time, our roads now tend to look more like those than once was the case.

Suggest another

Most of the suggestions for additional Need Areas were modal (e.g. transit), which is relevant to solutions and will be considered after the needs assessment.

- Consideration of wildlife corridors is very important
- If you do not have a thriving community why is there a need for transportation. Job jobs and more jobs
- Social Justice

Map Markers

The purpose of the Map Markers activity was to identify transportation needs and problems. Participants could drag and drop markers for Safety, Access, Traffic, or Maintenance, answer questions, and provide more information about the problem. The 306 participants who completed this activity dropped 1,052 markers relevant to the RVTPO study area. Most participants dropped multiple markers, with a median of 3 markers per participant. One industrious participant dropped 62 markers; the next highest number was 19 markers from a single participant.

The most common marker type was traffic (Table 3-4).

After dropping a marker on the map (Figure 3-6), participants could answer a multiple-choice question about the need (Table 3-4):

- Participants identified access problems where they did not feel comfortable biking or driving is not convenient (Figure 3-7).
- Participants identified maintenance problems where pavement needs repair (Figure 3-8).
- Participants identified safety problems where they do not feel safe driving (Figure 3-9).
- Participants identified traffic problems where trips take longer at rush hour (Figure 3-10).

The region has known transit and walking access deficiencies, but these choices were not often selected (Figure 3-7). People who utilize these modes may be underrepresented in this survey. The survey was advertised generally, primarily through Facebook, and not targeted to a specific mode.

Participants provided 707 comments about the locations which can be viewed in the Map of Transportation Needs by Source.

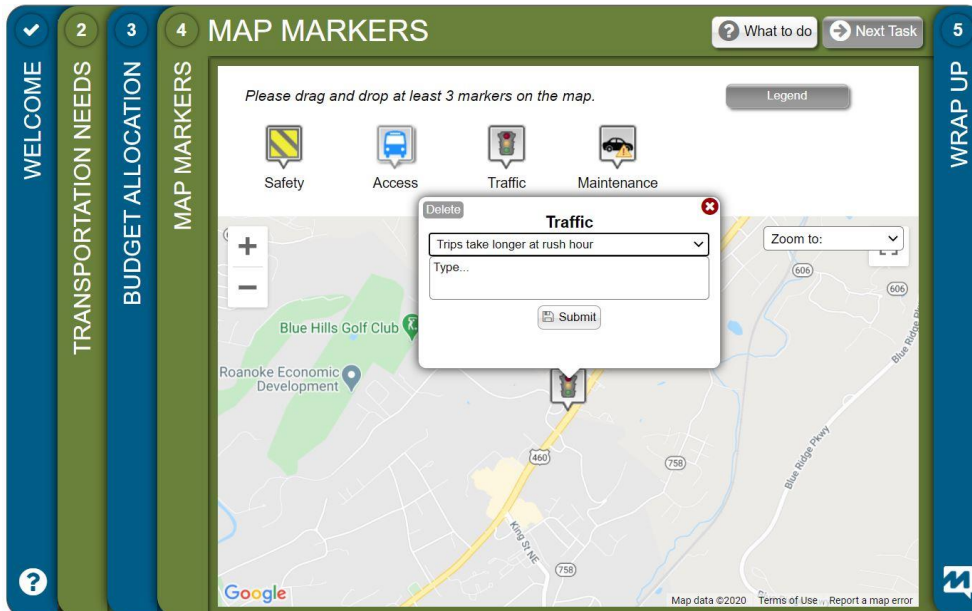


Figure 3-5. Participants dragged and dropped map markers to indicate where they experienced transportation problems.

Multiple choice options to answer these questions:

- Safety - What Safety concerns are here?
 - I do not feel safe driving here.
 - I do not feel safe walking here.
 - I do not feel safe biking here.
- Access - What is the Access problem here?
 - Driving here is not convenient.
 - No transit service.
 - Insufficient parking.
 - Do not feel comfortable walking.
 - Do not feel comfortable biking.
- Traffic – What is the congestion issue here?
 - Trips unpredictably take a long time.
 - Trips take longer at rush hour.
 - Trips always take too long or other.
- Maintenance – What is the maintenance issue here?
 - Pavement repair
 - Repainting/reflectivity
 - Traffic signal timing

For each, there was also the option to select “Other” and provide comments.

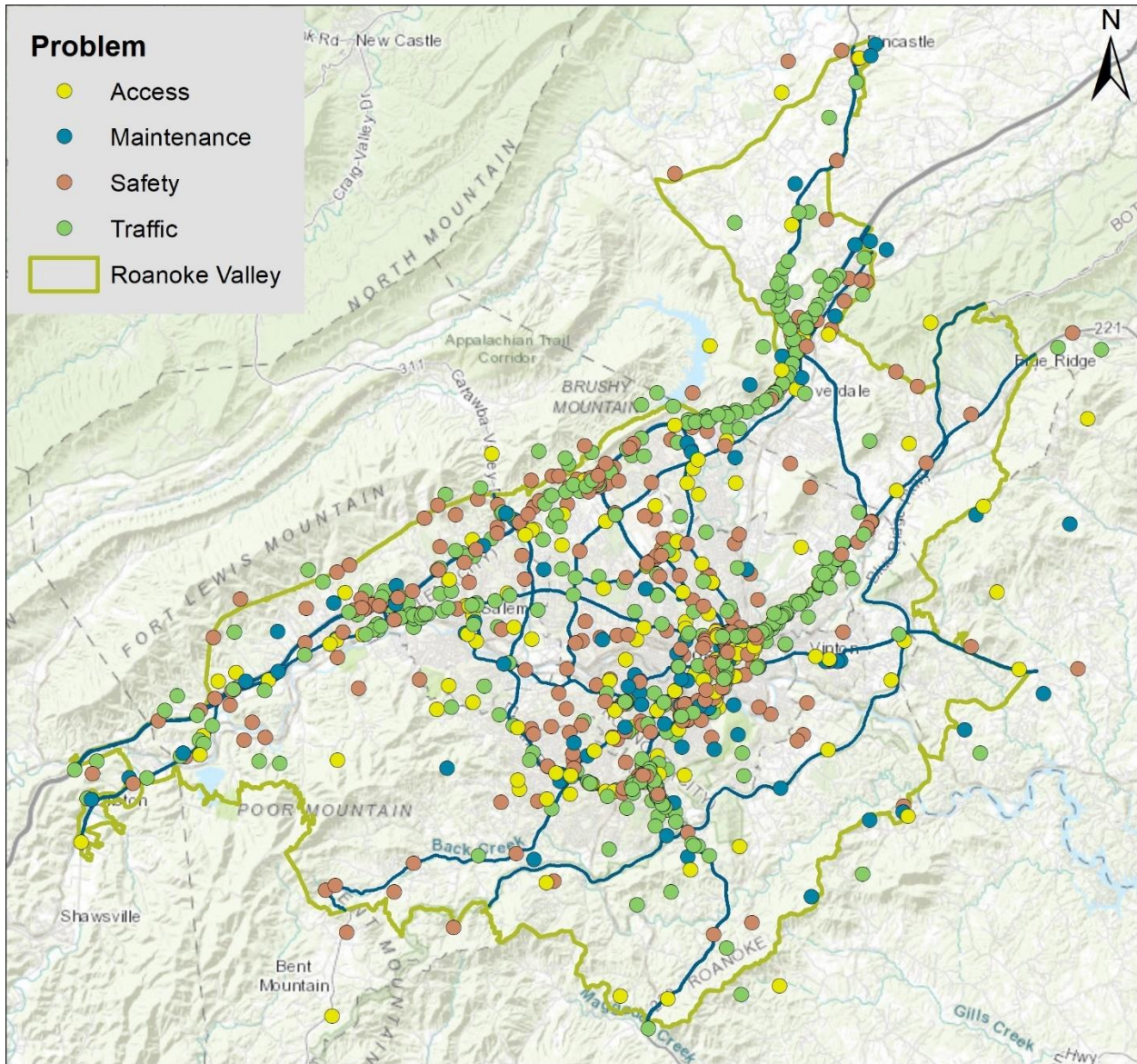


Figure 3-6. Locations of transportation problems

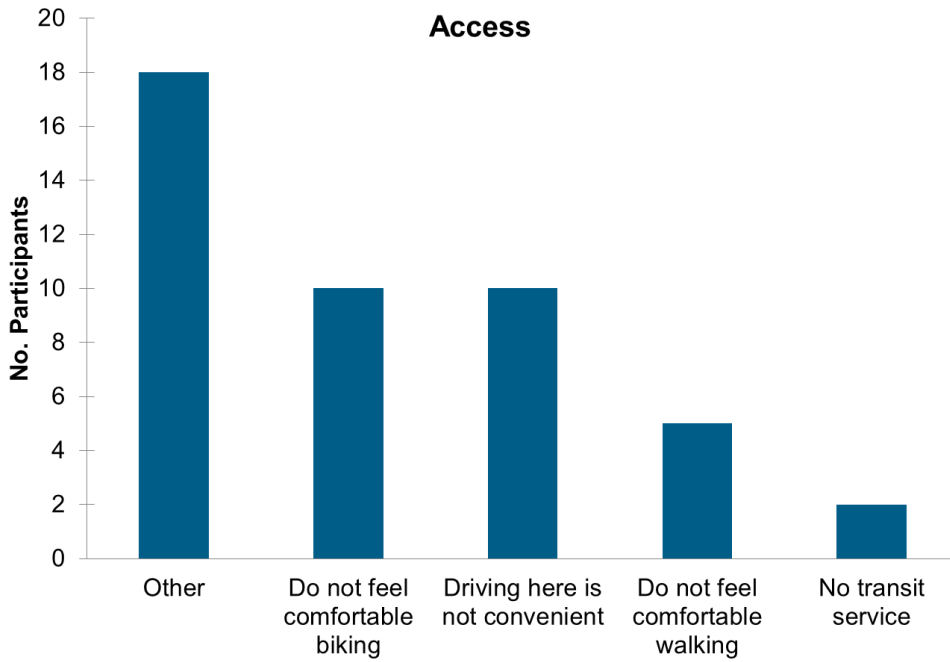


Figure 3-7. Access issues

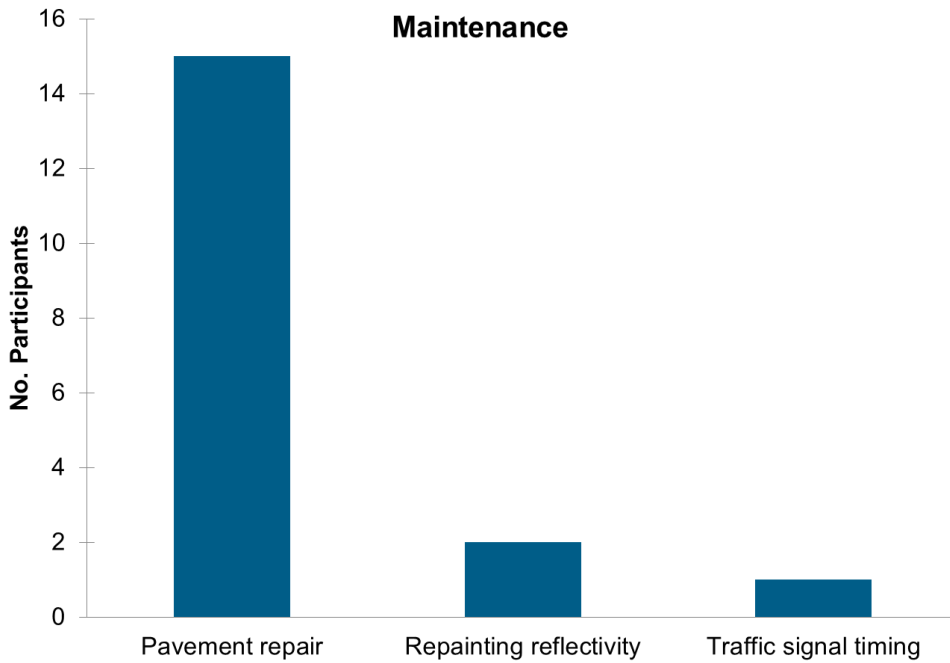


Figure 3-8. Maintenance issues

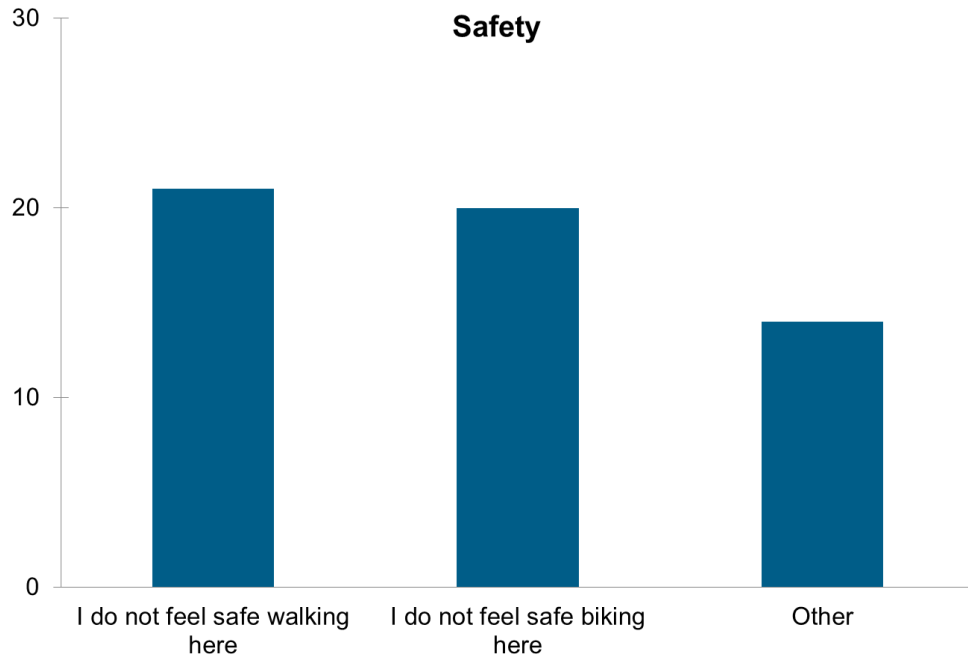


Figure 3-9. Safety issues

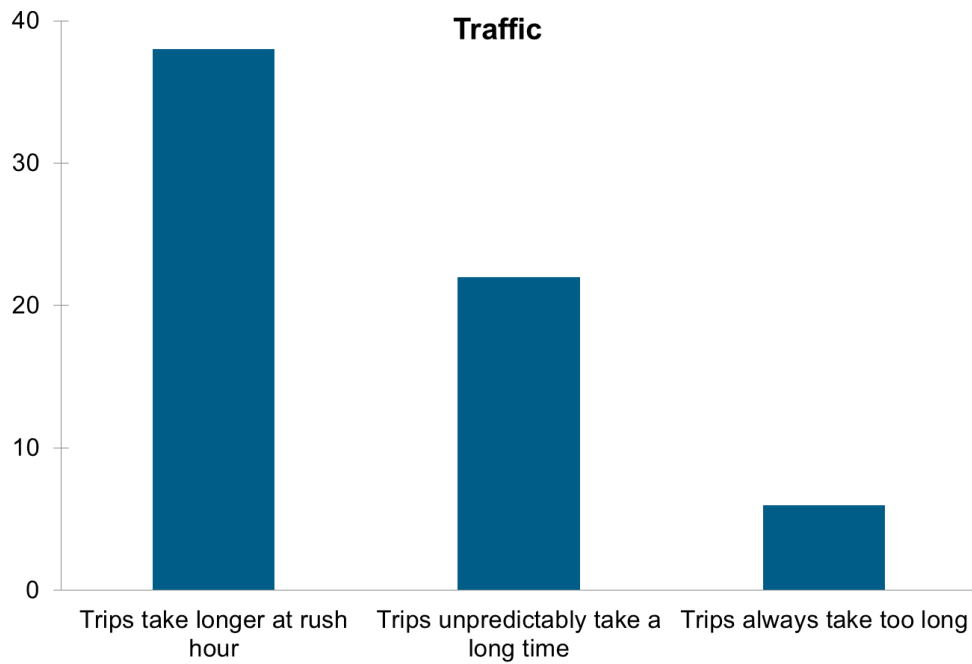


Figure 3-10. Traffic issues

Table 3-4. Map Marker exercise

Need Area	# markers	Most common response (#)
Access	181	Do not feel comfortable biking (10) Driving here is not convenient (10)
Maintenance	116	Pavement repair (15)
Safety	393	I do not feel safe driving here (43)
Traffic	486	Trips take longer at rush hour (38)

When dropping a marker, participants could provide additional comment in addition to or instead of selecting an answer to the question. These comments are provided in the tables attached at the end of this document and can be viewed in their location on the Map of Transportation Needs by Source.

Safety and traffic markers were overlaid on safety and congestion maps. Safety concerns aligned with total crashes but not with severe crashes involving a fatality or serious injury (Figure 3-11). Traffic concerns aligned somewhat with real-time congestion data derived from GPS-equipped vehicles and mobile devices (Figure 3-12).

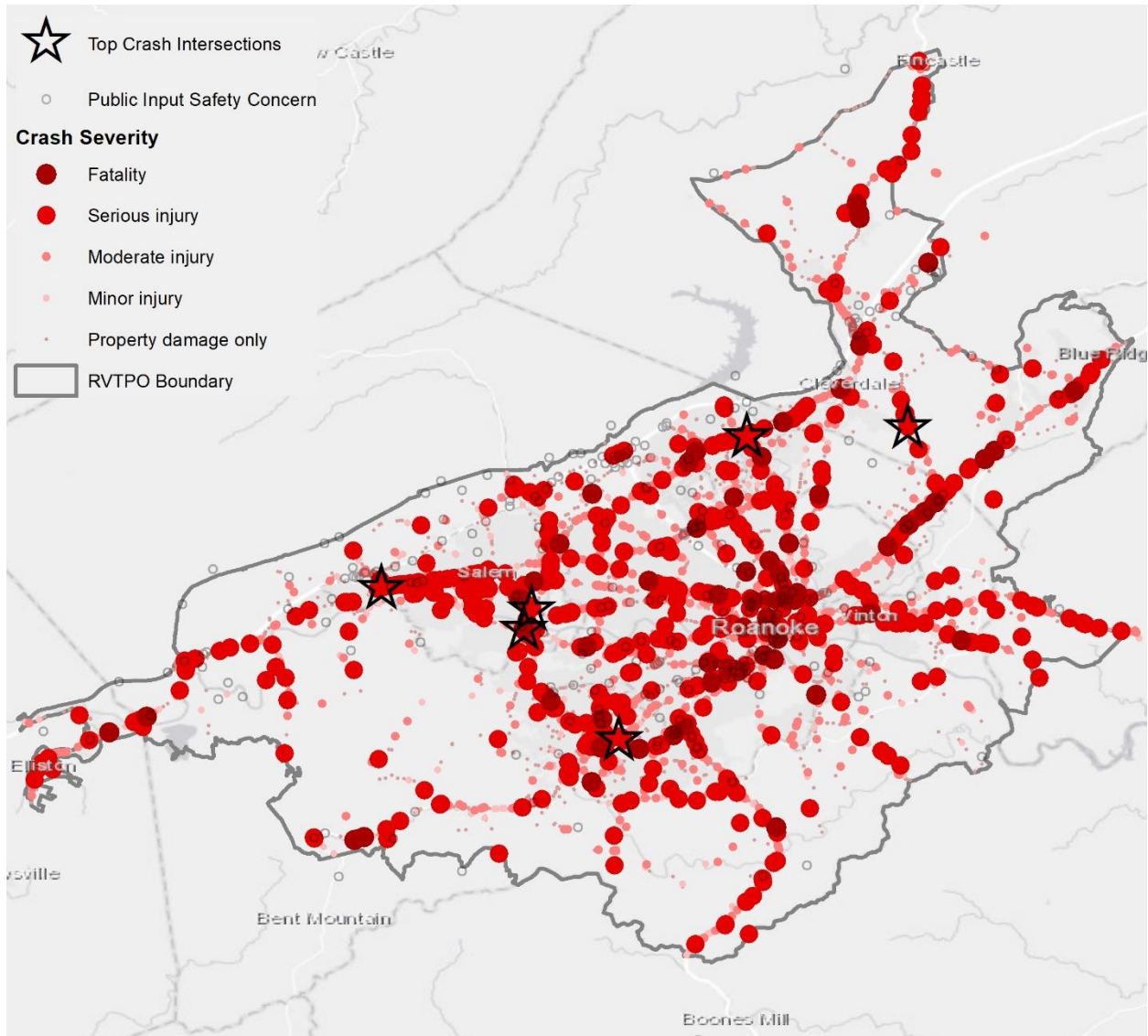


Figure 3-11. Safety concerns overlaid on crashes from July 2015 – June 2020. Top crash intersections were identified as having the most severe crashes relative to the region.

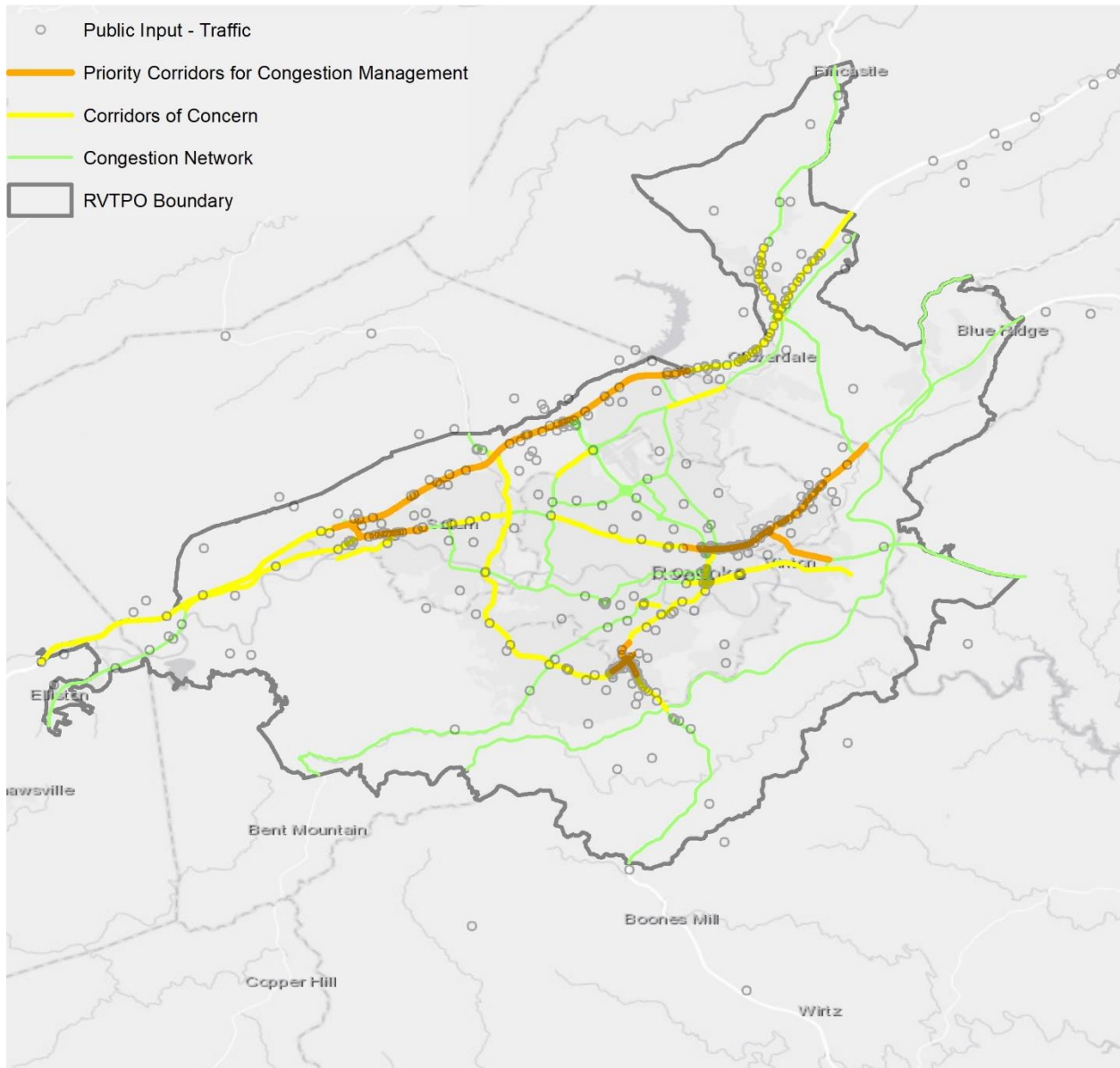
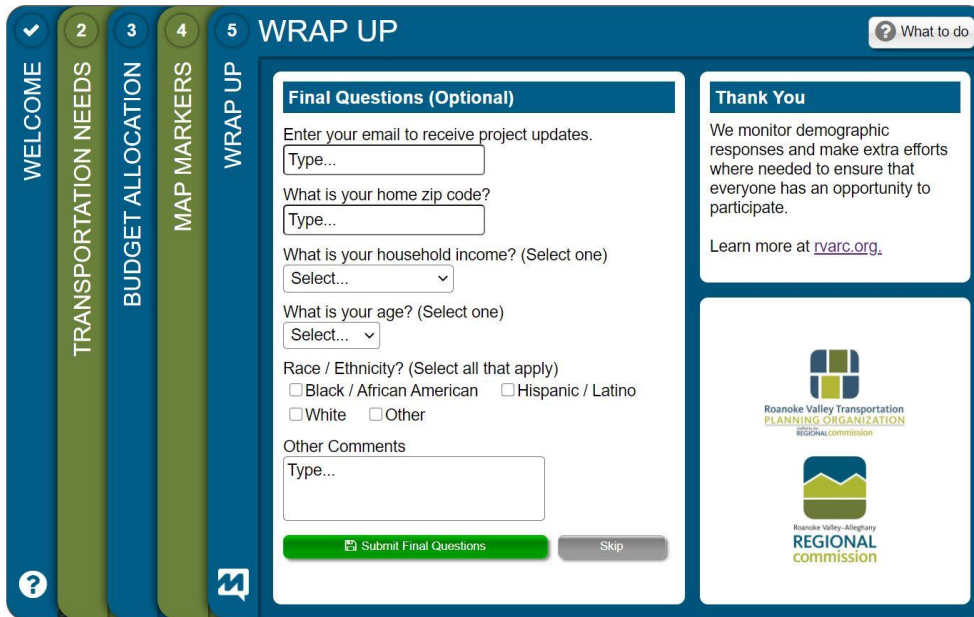


Figure 3-12. Traffic concerns overlaid on corridors for congestion management.

Wrap Up

The purpose of the Wrap Up screen was to collect demographic information on zip code, income, age, and race/ethnicity to determine if the participants' demographic characteristics are similar to those of the region. Participants could provide their email in order to receive project updates and could provide any additional comments.

Demographic information was provided by 60% of participants. In previous surveys, 80% or more of participants provided this information. The lower response is due to a known issue with the format of MetroQuest surveys which will be addressed in the next version of MetroQuest.



The screenshot shows a web-based survey interface. On the left is a vertical navigation menu with five items: WELCOME, TRANSPORTATION NEEDS, BUDGET ALLOCATION, MAP MARKERS, and WRAP UP. The 'WRAP UP' item is highlighted. The main content area is titled 'WRAP UP' and contains two columns. The left column is titled 'Final Questions (Optional)' and includes:

- A text input field for an email address with the prompt 'Enter your email to receive project updates.' and a 'Type...' placeholder.
- A text input field for a home zip code with the prompt 'What is your home zip code?' and a 'Type...' placeholder.
- A dropdown menu for household income with the prompt 'What is your household income? (Select one)' and a 'Select...' placeholder.
- A dropdown menu for age with the prompt 'What is your age? (Select one)' and a 'Select...' placeholder.
- Radio button options for race/ethnicity: 'Black / African American', 'Hispanic / Latino', 'White', and 'Other'. The prompt is 'Race / Ethnicity? (Select all that apply)'.
- A text input field for 'Other Comments' with a 'Type...' placeholder.
- Two buttons at the bottom: a green 'Submit Final Questions' button and a grey 'Skip' button.

 The right column is titled 'Thank You' and contains:

- A paragraph: 'We monitor demographic responses and make extra efforts where needed to ensure that everyone has an opportunity to participate.'
- A link: 'Learn more at rvarc.org.'
- Two logos at the bottom: the 'Roanoke Valley Transportation PLANNING ORGANIZATION' logo and the 'Roanoke Valley Allegheny REGIONAL commission' logo.

 A 'What to do?' help icon is in the top right corner of the survey area.

Figure 3-13. Participants answered demographic questions in the Wrap Up screen

Zip code was provided by 290 participants or 60% of participants. This information was used during the survey period to adjust advertising to reach zip codes that were under-responding relative to their proportion of the regional population. More responses came from the more populous southern zip codes (Figure 3-14). With this strategy, all zip codes were within 5% of their population proportion and all but two zip codes were within 3% (Table 3-5). Therefore, the geographic distribution of survey participants is similar to the population of the region.

Zip code (Number of responses)

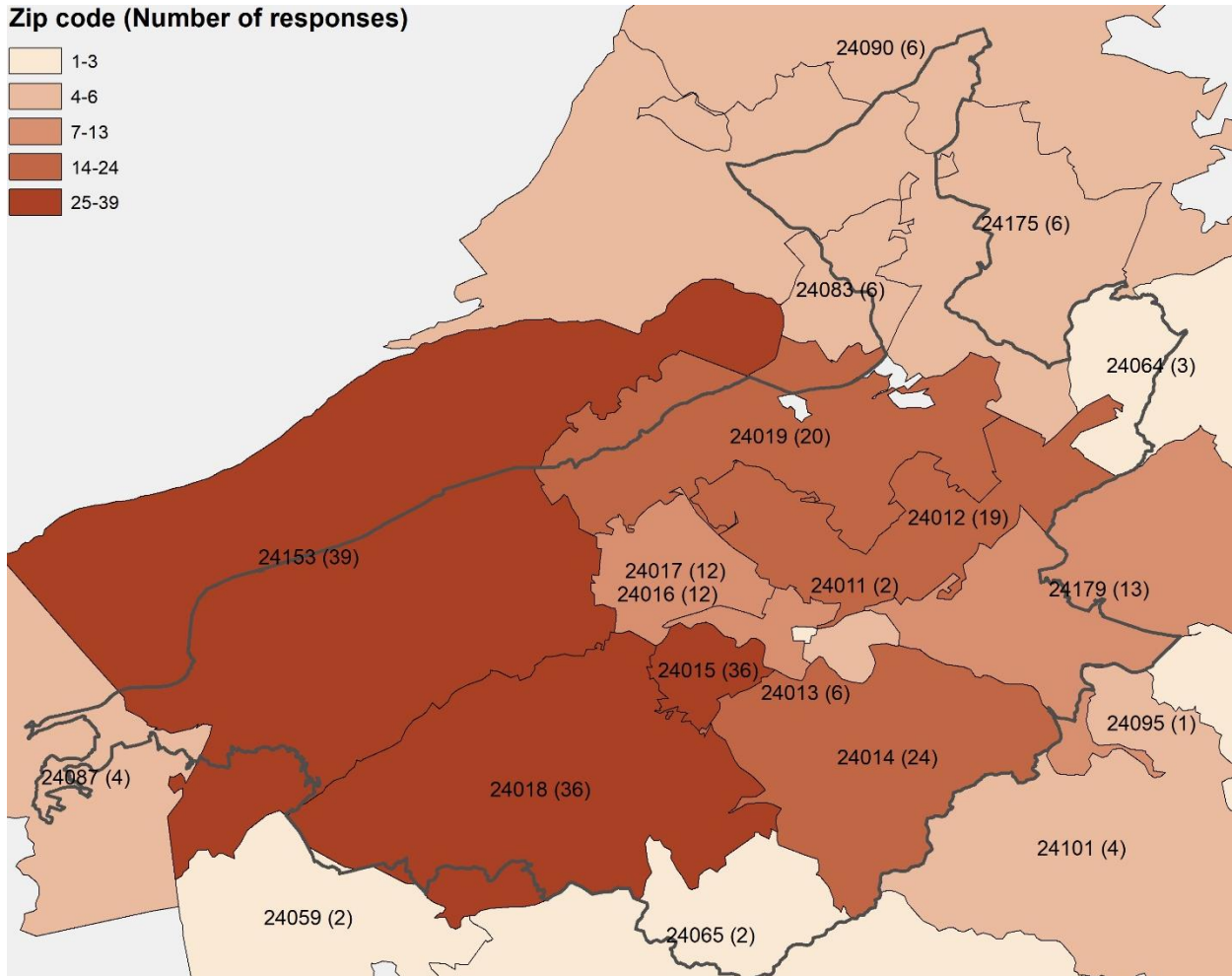
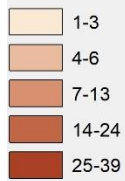


Figure 3-14. Zip code responses

Table 3-5. Zip code responses compared to population

Zip code	% population	% response	Difference
24012	11%	7%	4% under
24013	3%	2%	1% under
24014	7%	9%	2% over
24015	6%	13%	7% over
24016	3%	4%	1% under
24017	9%	4%	5% under
24018	14%	13%	1% under
24019	10%	7%	3% under
24153	14%	14%	0% under
24175	3%	2%	1% under
24179	7%	5%	2% under

Household income was provided by 260 or 53% of participants (Table 3-6). Low-income households cannot be selectively targeted through Facebook advertising. Five percent of

participants have a household income of less than \$20,000, and the RVTPO region has a poverty rate of 12%. It is likely that people in poverty are under-represented in this survey.

Table 3-6. Annual household income of survey participants

Annual household income	% response
Less than \$20,000	5%
\$20,000 to \$44,999	16%
\$45,000 to \$139,999	60%
\$140,000 or more	19%

Age was provided by 269 or 55% of participants (Table 3-7). Age categories from 25 to 64 years old are represented at the same proportion or above as the population. People 65 years of age or older and 18 to 24 years old are underrepresented relative to the proportion of the population.

Table 3-7. Age of survey participants

Age	% population	% response	Difference from population
18 to 24 years	10%	6%	4% under
25 to 34 years	15%	15%	Same as population
35 to 44 years	14%	22%	8% over
45 to 54 years	16%	20%	4% over
55 to 64 years	17%	19%	1% over
65 years and over	28%	18%	10% under

Race/ethnicity was provided by 271 or 56% of participants (Table 3-8). Black or African American and Hispanic or Latino are underrepresented relative to the proportion of the population. With 13 survey participants identifying as Black or African American and 6 as Hispanic or Latino, the survey set two records for 2018-2020 RVTPO surveys that collected race/ethnicity. RVTPO staff continue to pursue strategies to improve the number of survey participants who identify as Black, including the Transportation Equity Chats used to promote this survey, asking people who identify as Black to join the email list to be notified of surveys, and selecting locations or events in Black neighborhoods for pop-up booths. This is the first RVTPO survey that found underrepresentation of people who identify as Hispanic.

Table 3-8. Race/ethnicity of participants

Race/ethnicity	% population	% response	Difference from population
White	78%	86.2%	8.2% over
Black or African American	14%	4.7%	9.3% under
Hispanic or Latino	4%	2.2%	1.8% under
Other	4%	6.9%	2.9% over

Participants had a final opportunity for additional comments. There were 46 comments, of which 33 were on the topic of transportation, 6 comments on the survey itself, and 7 other comments.

Transportation (33 comments):

- SE Roanoke and Vinton need better access as routes in and out are limited and all are highly congested.
- Please look for creative solutions to improving what we have - stop paving green areas and adding lanes.
- Need more rural bike lanes in Roanoke valley
- I hope we can think big to redefine transportation in our area with the long term health of the planet as our main consideration. And getting us out of our cars and onto bikes or public transit will improve human health as well.
- A light rail system between the NRV and the Tech/Carilion complex using the former Virginian Railway mainline needs serious feasibility analysis to determine financial, environmental, and operational parameters.
- please expand airport flights
- Add proper lanes and noise barriers to i81 throughout Salem. Project as being developed is skimpy and will not solve congestion or safety probs.
- Please put Americold and Pheasant Ridge on the Bus Route
- You have to focus on transportation and housing needs, for people with disabilities.
- Your rural focus here is the perfect opportunity to visit seriously the light rail connection between Roanoke and the NRV, Neither MPO will do this on its own because of higher priority SmartScale projects, so it requires vision to look beyond the city and beyond our current needs.
- Hardy Rd in Bedford and Vinton needs the lines painted bad. If it drizzled or is foggy you can't see the lines on the rds. Very poor maintenance. And all the signals on Hardy Rd. in Vinton keep calling to side streets when no one is there.
- We have lived here 45 years with no complaints until these issues
- Motels on Peters Creek have become mission rooms for various types of people. Thus creating foot traffic along the side of Peters Creek from 581 to Cove Road. No sidewalk or crosswalk. Dangerous to them and Northside High School kids going to the store and cross-country runners.
- I-77, build it *Staff comment: I-73?*
- Need many more police every single day on I81&581 until they can get widened
- Lived here most of my life and I just want to see people getting the most out our public transportation and roadways. Also, why the heck do we only have bike lanes in upper-middle class or upper class roads? Poor people need to be able to get around as well.
- Please invest in making our communities environmentally friendly by putting in sidewalks so people can walk safely, especially in the county. My neighborhood is not too far from stores and I would like to walk to destinations or even walk my dog but I can't because walking isn't safe in main roads like Electric Road or Buck Mountain Road, etc.
- Greater focus on mass transit and novel solutions is needed, as opposed to widening highways and more traffic lights.
- I would like to comment on the traffic congestion issue. Have you ever tried to travel 11/460 through Salem or Riverside Drive when there has been an incident on 81 from, say Dixie Caverns to exit 141?
- I would like to comment on the traffic congestion issue. Have you ever tried to travel 11/460 through Salem or Riverside Drive when there has been an incident on 81 from, say Dixie Caverns to exit 141? Come to Salem sometime on a Friday afternoon or when there is an incident on 81!



- We need to get the middle class, professionals, school kids and mom and pop onto the bus and train services. Failure to build the Wendell 2015 Transportation Center at Amtrak will be a 50 year mistake.
- Also can we do something about the very dangerous exit/entrance at Hershberger / mall exit? The very quick on/off where people getting off of 581 South to go to Valley View, coupled with the on ramp from Hershberger is very hazardous
- Generally, traffic is not bad in Roanoke. Would like to see a lot more public and green transportation alternatives. Huge fan of Ride Solutions!
- Rural areas need access as not everyone owns cars or has neighbors or family that can help.
- In our region there are areas where access prevents industry. We have enough difficulty with that in the Roanoke Valley and need to take action to make our valley sought as an employment environment. Areas like Craig and Alleghany and other nearby communities are impacted greatly by the lack of suitable roadways. This limits industry likely to be available to the next generation except work that can be accomplished anywhere. In our current environment we might want to focus on what will bring opportunities to our communities to work from home and necessary training and support including in transportation for those options.
- We want to walk everywhere!
- Like anything will ever be done except in 20-50 years or whenever yall get around to it. I feel like since I'm a citizen of Virginia, that people's taxes aren't being used effectively which totally sucks! As much money as we pay out yearly, I feel that the government, VDOT etc needs to do a better job at fixing things. Its a shame that I can travel to another state and those roads are in better shape then here! Roanoke area and Salem areas roads are horrible!
- Bikes > cars
- I'm still waiting for my sidewalk to be repaired
- I was hoping this was about 460 East. There are many problems, and the most recently added one is Kroger traffic light that defies any logic when it comes to synchronization. You get a red at the CVS and then another read 5 seconds later at the Kroger. Who even comes up with that?
- I would love to see more use of permeable paving, and lighting that minimizes light pollution. Darksky.org has information on the latter. I believe permeable paving helps minimize flooding, as it increases the surface area available for water to soak into the ground. I moved up here a couple years ago, and am still learning the area. I do love the lack of congestion!
- The bus should run on Sundays
- I am used to driving in urban areas like Chicago, so my issue is that most folks haven't acclimated to dodging large trucks. The plethora of SUVs makes it difficult for smaller vehicles to see, hence traffic gets miserable. The lack of public transportation regionally also contributes to the problem.

Survey (6 comments)

- The budget allocation game only let me total \$87, and it would not let me move some of the coins. *Staff comment: This happened during survey development and was discovered too late to correct.*

- RAIL Solution is a 501(c)(3) advocacy group promoting the energy, economic, and environmental benefits of rail. We do not have a home zip code, an age, or an ethnicity.
- Mixed, but mostly white. *Staff comment: This seems to be a response to the race/ethnicity question.*
- That question is irrelevant
- Race and income have no part in this survey.
- Native American *Staff comment: This seems to be a response to the race/ethnicity question.*

Other (7 comments)

- Thank you
- thanks
- good luck
- traffic aint easy - keep at it!
- appreciate you asking for input!
- Thanks.
- Thanks for your hard work in making the region better!

4. Travel Demand Model

In 2021, the Virginia Department of Transportation created a travel demand model (base year 2019) for the RVTPO area. Roads with a 2019 Volume/Capacity ratio greater than one were included as traffic congestion needs.

5. VTrans statewide approved needs from January 2020

The VA Office of Intermodal Planning and Investment completed the statewide mid-term needs assessment in January 2020 when the Commonwealth Transportation Board adopted the needs. These are the identified transportation needs for the next 7-10 years and are used in three ways:

- To screen the eligibility of projects for SMART SCALE funds
- To receive priority consideration for Revenue Sharing funds
- To inform VDOT/DRPT project planning and development activities

VTrans needs reflect problems or intent (aspirations) and were identified by category via data analysis or by stakeholder input according to three networks: Corridors of Statewide Significance (CoSS), Regional Networks (RN), and Urban Development Areas (UDAs) and Industrial and Economic Development Sites (IEDAs) or Safety needs on any roadway.

6. Consolidated Needs Assessment

In creating as comprehensive as possible an inventory of transportation needs expressed in the sources examined, staff endeavored to include any transportation need without judgment. The result was comprehensive but also overwhelming with over 700 lines and almost 2,000 points.

Many individual lines or points were substantially the same. For example, concerns about the left-merge at the Interstate 81 Exit 143 (I-581) appeared more than twenty times across the various sources. Some locations appeared more than once with different needs or concerns. To

make it easier to understand the overall picture of transportation needs, staff consolidated these duplicates geographically, retaining as much information as possible about the needs. Individual comments were summarized as needs or projects. Information from points was added to lines or new lines were created with the same information when the information seemed relevant to a segment.