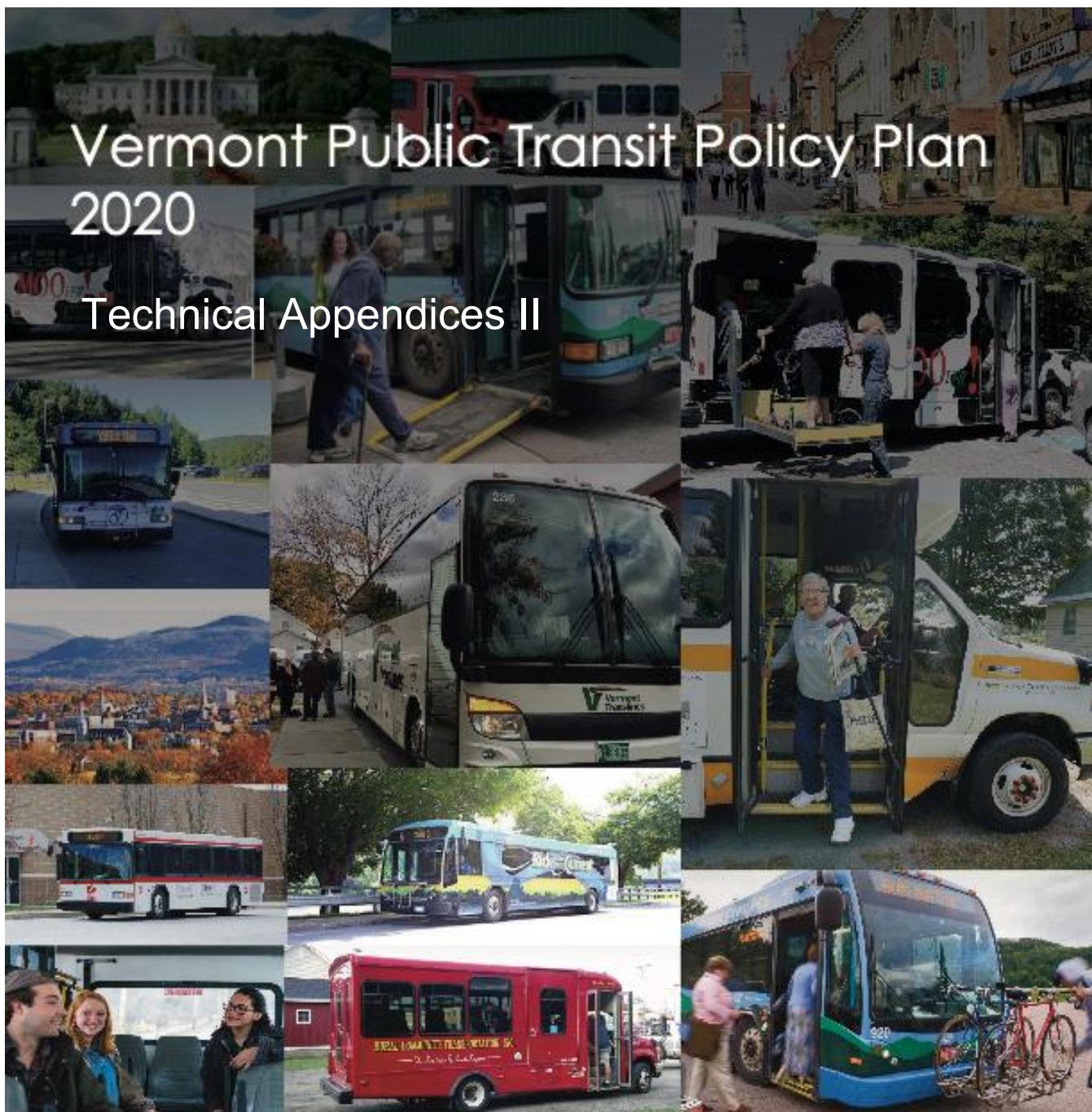


# Vermont Public Transit Policy Plan 2020

## Technical Appendices II



Vermont Agency of Transportation  
Division of Policy, Planning, and Intermodal Development

February 28, 2020

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# Appendix I – Northwest Region Analysis

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## TRANSIT SERVICE GAPS AND NEEDS

Transit service gaps and needs and estimates of the resources needed to improve transit services in the Northwest Region are discussed below. The region includes the 23 communities of Franklin and Grand Isle counties, which form the service area of the Northwest Regional Planning Commission (NRPC).

### Overview of Existing Services

#### Fixed Route Services

Fixed route bus services in the Northwest Region are provided primarily by Green Mountain Transit (GMT).

As shown in Figure 1, GMT operates one local bus route, three commuter routes, and one shopping shuttle in the Northwest Region. Service is concentrated in Franklin County; Alburgh is the only community in Grand Isle County with fixed route service (the Alburgh to Georgia Commuter).

#### *Local Service*

The **St. Albans Downtown Shuttle** provides hourly service between 5:45 a.m. and 6:45 p.m. on weekday and from 9:45 a.m. to 3:30 p.m. on Saturdays. Deviations of up to  $\frac{3}{4}$  of a mile from the route are available to all riders with 24 hours advance notice.

The **Price Chopper Shopping Shuttle** operates on Tuesdays in St. Albans City, St. Albans Town, and Swanton. Four stops are served before/after each of two drop-offs and two pickups at Price Chopper. Service is subsidized by Price Chopper and fare-free.

#### *Commuter Service*

The **Alburgh to Georgia Commuter** operates via St. Albans, Swanton, and Highgate. A southbound trip during morning peak hours and a northbound trip during afternoon peak hours is provided on weekdays.

The **Richford to St. Albans Shuttle** travels through Berkshire, Enosburgh, and Sheldon on weekdays, with one morning southbound and one afternoon northbound trip.

Unlike many commuter routes, deviations of up to  $\frac{1}{4}$  of a mile from each route are available with 24 hours' notice.

The **St. Albans LINK Express** operates from St. Albans City through Georgia to Milton, Colchester, Winooski, and downtown Burlington in Chittenden County. Two trips are provided in each direction in the morning and afternoon peak hours on weekdays.

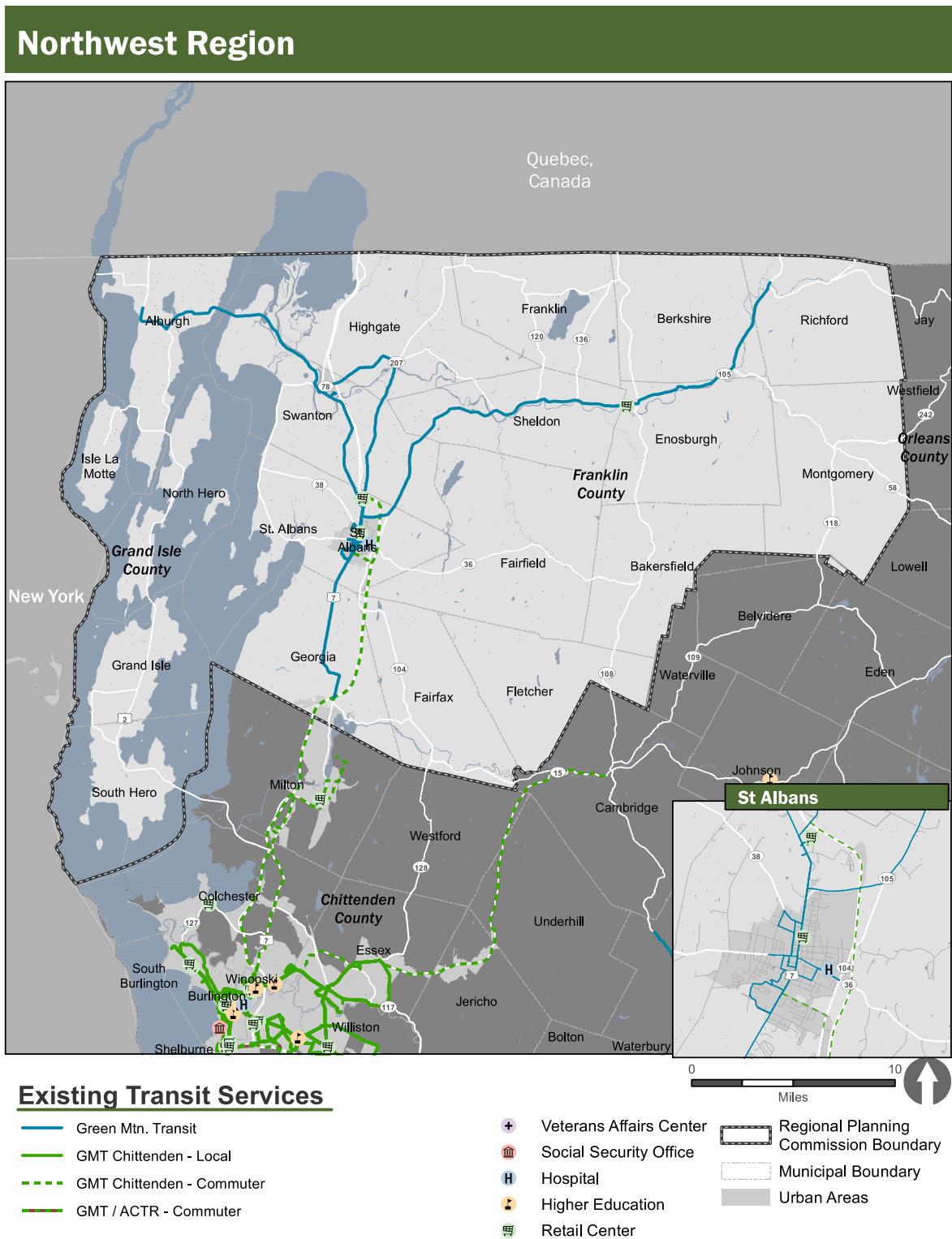
#### Dial-A-Ride and Other Services

GMT and its partners in the E&D transportation program provide demand response transportation for older adults, people with disabilities in Franklin and Grand Isle counties. Partner organizations include Care Partners, AgeWell (formerly Champlain Valley Area Agency on Aging), and Champlain Islanders Developing Essential Resources (CIDER). GMT and CIDER both provide trips using agency-owned vehicles (CIDER owns one vehicle and leases others from GMT) and employed drivers as well as volunteer drivers. Eligible trip types include critical care medical, non-emergency medical, adult day health, congregate meals, and essential shopping.





Figure 1: Transit Services in the Northwest Region



Outside of the E&D program, AgeWell's volunteers also provide rides for older adults as well as many other types of assistance. AgeWell provides services in Addison and Chittenden counties as well as in Franklin and Grand Isle counties.

Intercity connections are available through Amtrak service, which stops in St. Albans.

Several taxi companies provide service in Northwest Region communities.

## Key Destinations

Retail areas (including supermarkets), health care facilities, colleges and universities, and human service agency offices are primarily located in the following communities:

### Retail Areas

- ▶ St. Albans City
- ▶ St. Albans Town
- ▶ Enosburg Falls

### Medical Facilities

- ▶ St. Albans (including Northwestern Medical Center)
- ▶ Georgia Health Center
- ▶ Swanton Health Center
- ▶ Richford Health Center

### Human Services

- ▶ St. Albans
- ▶ Enosburgh/Enosburg Falls
- ▶ Richford
- ▶ Swanton

Some of those key destinations are shown in Figure 1 (more detail can be found on the route maps posted on the GMT website, <http://ridegmt.com/regions/franklingrand-isle-counties/>). GMT bus routes serve many local and regional destinations.

## Employment and Commuting Patterns

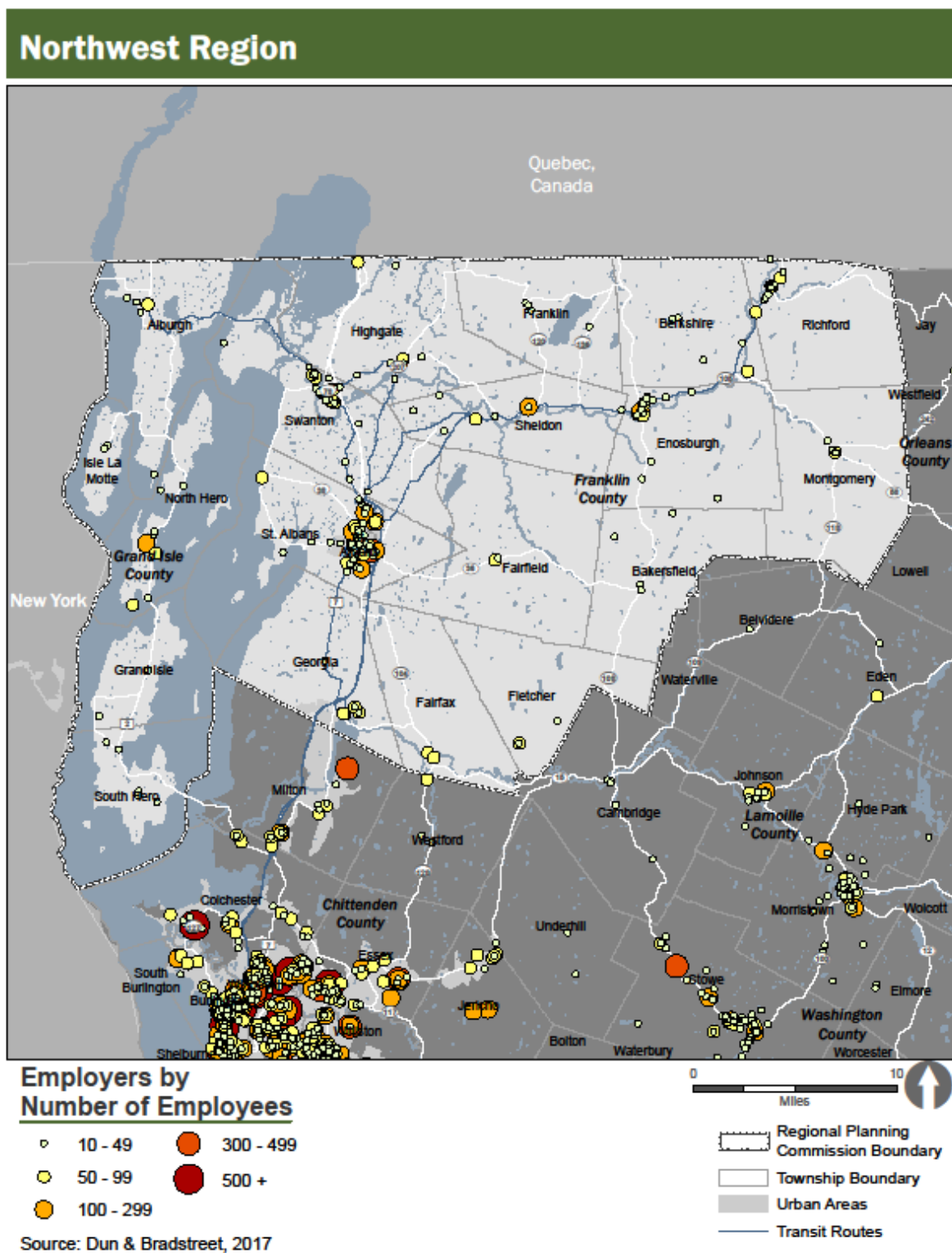
### Employers

Figure 2 shows the location of employers of various sizes in the region.

The largest employers in Franklin and Grand Isle counties employ between 100 and 299 individuals. The largest concentration of employers is found in St. Albans. The majority of the employers located in Franklin County are served by GMT commuter routes or the St. Albans Downtown Shuttle. There are several smaller employers in each community in Franklin County, with 50 or fewer employees each, that are not located near the GMT routes. Only employers located in Alburgh in Grand Isle County are served by bus routes. One employer with 100-299 employees and a number of smaller employers in the county are not located near bus routes.



Figure 2: Employers in the Northwest Region





## Commuting Patterns

Table 1 presents an overview of where residents of the Northwest Region work and where individuals who are employed in the region live.

*Table 1: Employment in the Northwest Region 2015*

Employment	Number	Percent of Total Northwest Region Employment	Percent of Total Employed Northwest Region Residents
<b>Workers in Northwest Region</b>			
Total Employees in Northwest Region	17,546	100%	
Northwest Region Employees Residing in Northwest Region	11,915	68%	
Residents of Other Areas Working in Northwest Region	5,631	32%	
Residents of Other Vermont Counties	4,688	27%	
Residents of Other States	943	5%	
<b>Residents of Northwest Region</b>			
Total Employed Northwest Region Residents	26,799		100%
Northwest Region Residents Employed in Northwest Region	11,915		44%
Northwest Region Residents Employed in Other Areas	14,884		56%
Working in Other Vermont Counties	13,961		53%
Working in Other States	923		3%

Source: U.S. Census, Longitudinal Employer-Household Dynamics, 2015

Over two-thirds of the employed individuals in the Northwest Region also live there. Of the remaining 32% of employees, 27% live in other Vermont counties, including Chittenden, Washington, Lamoille, Orleans, Rutland, Caledonia, and Addison counties. Three percent of employees live in other states, primarily New York and New Hampshire.

Of the Northwest Region residents who are employed, 44% work in the region and 56% work elsewhere. Fifty-three percent of employed residents work in other Vermont counties. The majority of those individuals work in Chittenden County. Other counties in which Northwest Region employees live include Washington, Lamoille, Windsor, Orleans, Rutland, and Addison counties. Three percent of the region's employees live in other states, primarily New York and Massachusetts.

Figure 3 shows daily commuting trips to St. Albans at the town level.

Commuters travel to St. Albans from many communities in Franklin and Grand Isle counties as well as Chittenden, Lamoille, and Washington counties. The largest numbers of trips originate in St. Albans itself and Swanton (500-2,000 daily trips each), plus Highgate, Georgia, Fairfax (Franklin County), and Burlington and Milton in Chittenden County (200-499 daily trips each). A number of towns in Northern Franklin County and several Burlington suburbs also generate a significant number of commuting trips to St. Albans each day (100-199 trips).

Figure 4 shows the daily commuting trips to the Chittenden County core communities at the town level.



Figure 3: Daily Commuters to St. Albans

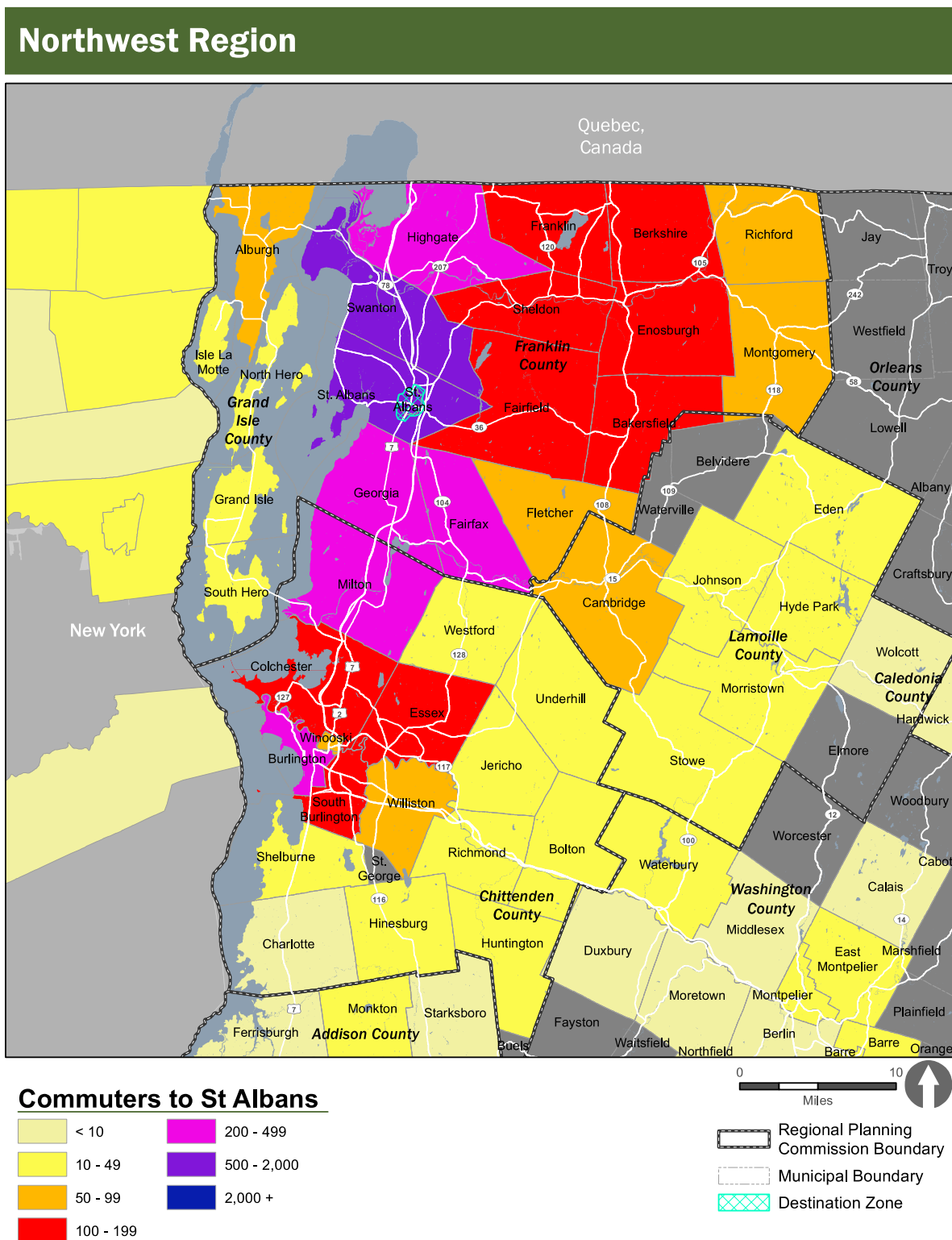
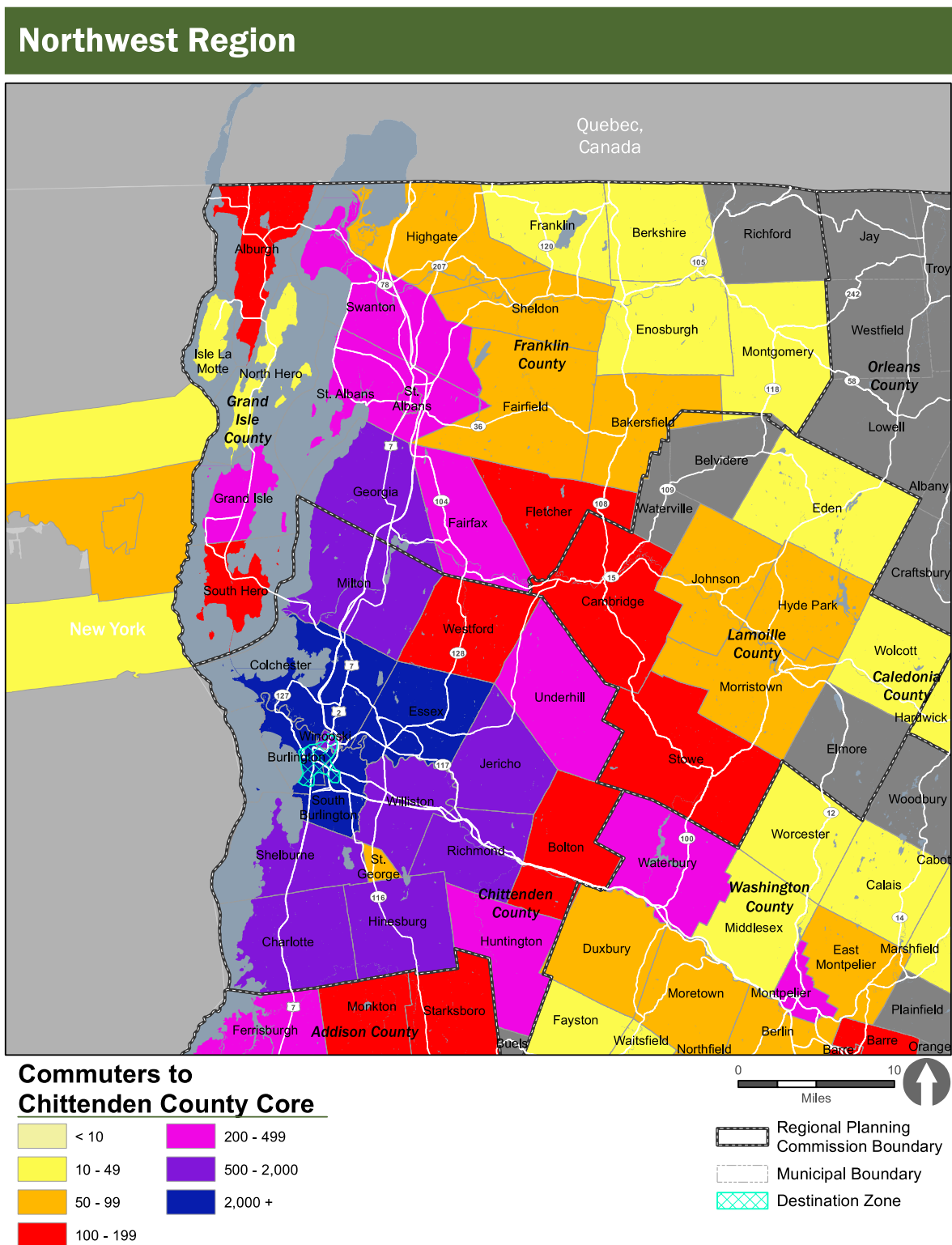


Figure 4: Daily Commuting Trips to Chittenden County Core Communities





As shown in Figure 4, many Northwest region residents commute to these Chittenden County communities. Georgia generates 500-2,000 commuting trip per day to that area; St. Albans City and Town, Swanton, and Fairfax each generate 200-499 daily trips. The Chittenden County core is a more significant work trip destination for Grand Isle County residents than St. Albans, with 100-499 trips per day to those communities from Grand Isle, South Hero, and Allburgh.

## Demographic Overview

This section presents an overview of the demographic characteristics of the Northwest Region and summarizes the location and density of the general population of the region and specific market segments that are likely to need transit service because they cannot or choose not to drive.

Table 2 provides summary demographic characteristics for the Northwest Region as of 2016, as compared to Vermont as a whole.

*Table 2: Demographic Characteristics of the Northwest Region, 2012-2016*

	<b>Northwest Region</b>	<b>Vermont</b>
Total population	55,570	626,249
Population density	78 persons per square mile	68 persons per square mile
Population age 60 and over	24%	24%
Population age 80 and over	3.5%	4.3%
Residents living below poverty line	8.5%	11.6%

Source: American Community Survey 5-year Average 2012-2016

In 2016, approximately 9% of the state's population lived in the Northwest Region. The region is more densely populated than the state as a whole, with 78 people per square mile. The percentages of adults age 60 and over is the same as the state average; the region's population includes a slightly lower percentage of individuals age 80 than the state average. While over 11% of the state's population is living in poverty, less than 9% of the Northwest Region's population lives below the poverty line.

## Population Density

Figure 5 shows the concentration of the population in Northwest Region communities. Density is a helpful characteristic to consider in the context of public transportation services because it is one measure of where service, particularly fixed route service, is likely to be needed and cost-effective.

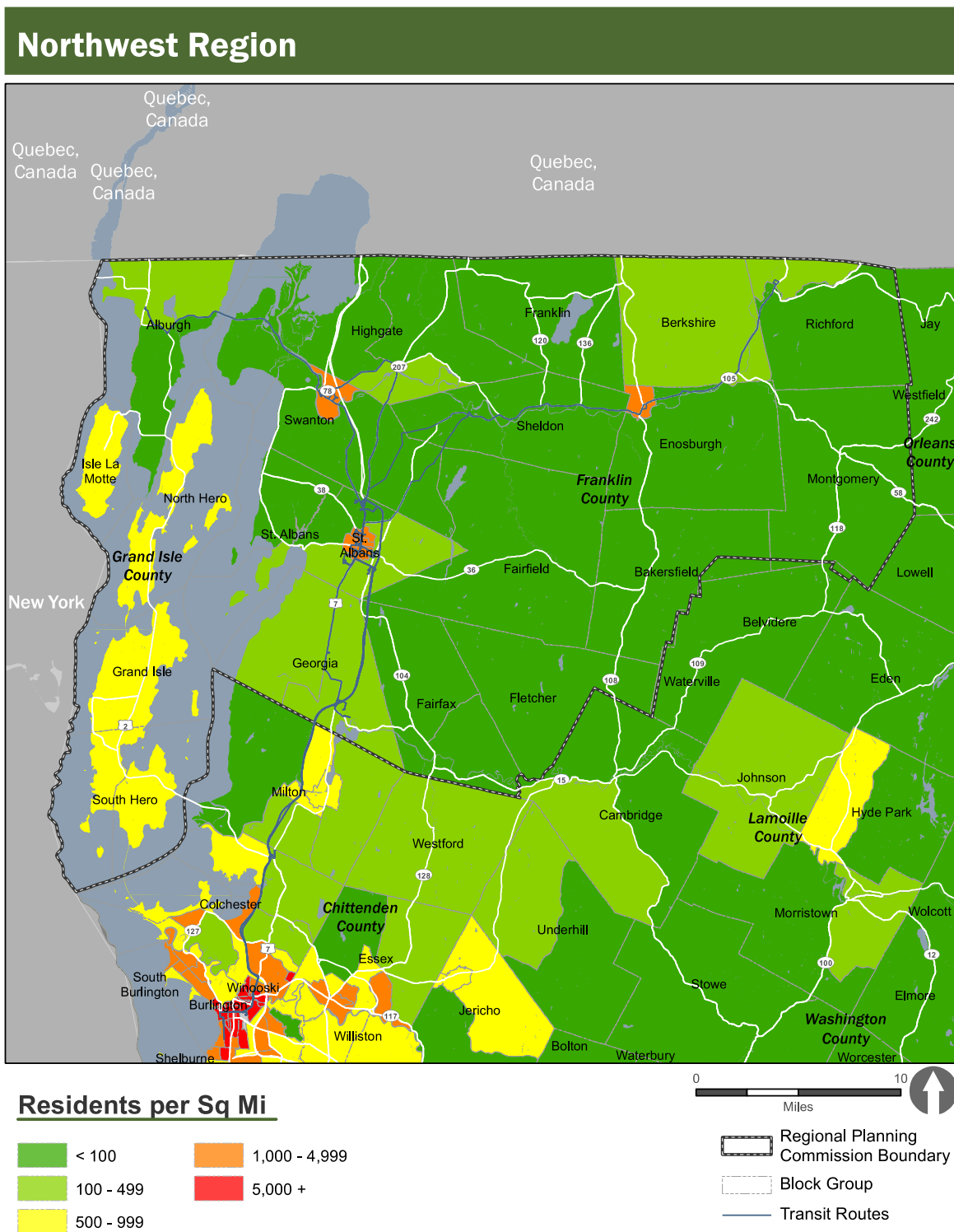
The highest concentrations of population—between 1,000 and 4,999 residents per square mile—are found in St. Albans City, Enosburg Falls, and Swanton Village. Areas of low density, with 500-999 residents per square mile, are found in some Grand Isle County communities. The rest of the region shows a population density that can be considered rural.

## Market Segments and Transit Propensity

Groups that are likely to need transit services because they do not drive, for reasons of disability, income, or choice, include older adults, people with disabilities, individuals with limited or no access to a car, and



Figure 5: Population Density in Northwest Region Communities, 2017



younger adults. Figure 6 through Figure 8 show the number and percentage (as compared to the state average) of individuals in the first three groups at the town level in Rutland County. All data was obtained from the American Community Survey (ACS) 2012-2016 Five-year Estimates.

### ***Older Adults***

Figure 6 shows the number and percentage of adults age 80 and over in 2012-2016, as compared to the statewide average, in the Upper Valley region. The focus in Figure 6 is on this older age group because younger seniors typically continue to drive and because a significant rise in this population is expected in Vermont (and nationwide) in the next 10-20 years.

The highest numbers of older seniors—approximately 250 or more—are seen in St. Albans Town and Swanton. The percentage of older seniors in those communities is 1-2 times the state average. In other communities, the percentage of older seniors is below the state average and the number of individuals per community is below 250.

### ***People with Disabilities***

Figure 7 shows the number and percentage of people with disabilities, as compared to the statewide average, in Northwest Region communities. Four types of disabilities are included: those associated with hearing, vision, cognition, and working.

The communities with the highest numbers of people with disabilities, approximately 750 each, include St. Albans City and Town, Swanton, and Fairfax. In those communities, the percentage of people with disabilities is below the state average. In other communities, numbers of people with disabilities are lower and the percentage of those individuals among the total population ranges from below to twice the state average.

### ***Auto Ownership***

The number and percentage of households in Northwest County cities and towns with limited access to an auto in 2012-2016 are shown in Figure 8. Households with one resident and no vehicle and those with two or more members but only one vehicle or no vehicle are included.

St. Albans City, St. Albans Town, and Swanton each contain approximately 500 to 1,000 households with limited auto ownership. In St. Albans City and Swanton, the percentage of such populations is 1-2 times the state average; St. Albans Town is below the state average. In the other Northwest Region communities, the numbers of households with limited access to an auto are lower. The percentage of such households in most communities is below the state average.

### ***Transit Propensity***

As noted above, older adults, people with disabilities, individuals with lower incomes, and younger adults are likely to need transit services because they cannot or do not drive. The transit propensity index mapped in Figure 9 combines information about the location and weighted size of the region's total population and of various populations that are typically dependent on transit services—youth, older adults, people with disabilities, people living in poverty, and households with one car or less.

Only St. Albans City includes areas with moderate to high levels of transit propensity. All other communities show low or low to moderate levels of transit propensity.





Figure 6: Number and Percentage of Adults Age 80 and Over in Northwest Region Communities, 2012-2016

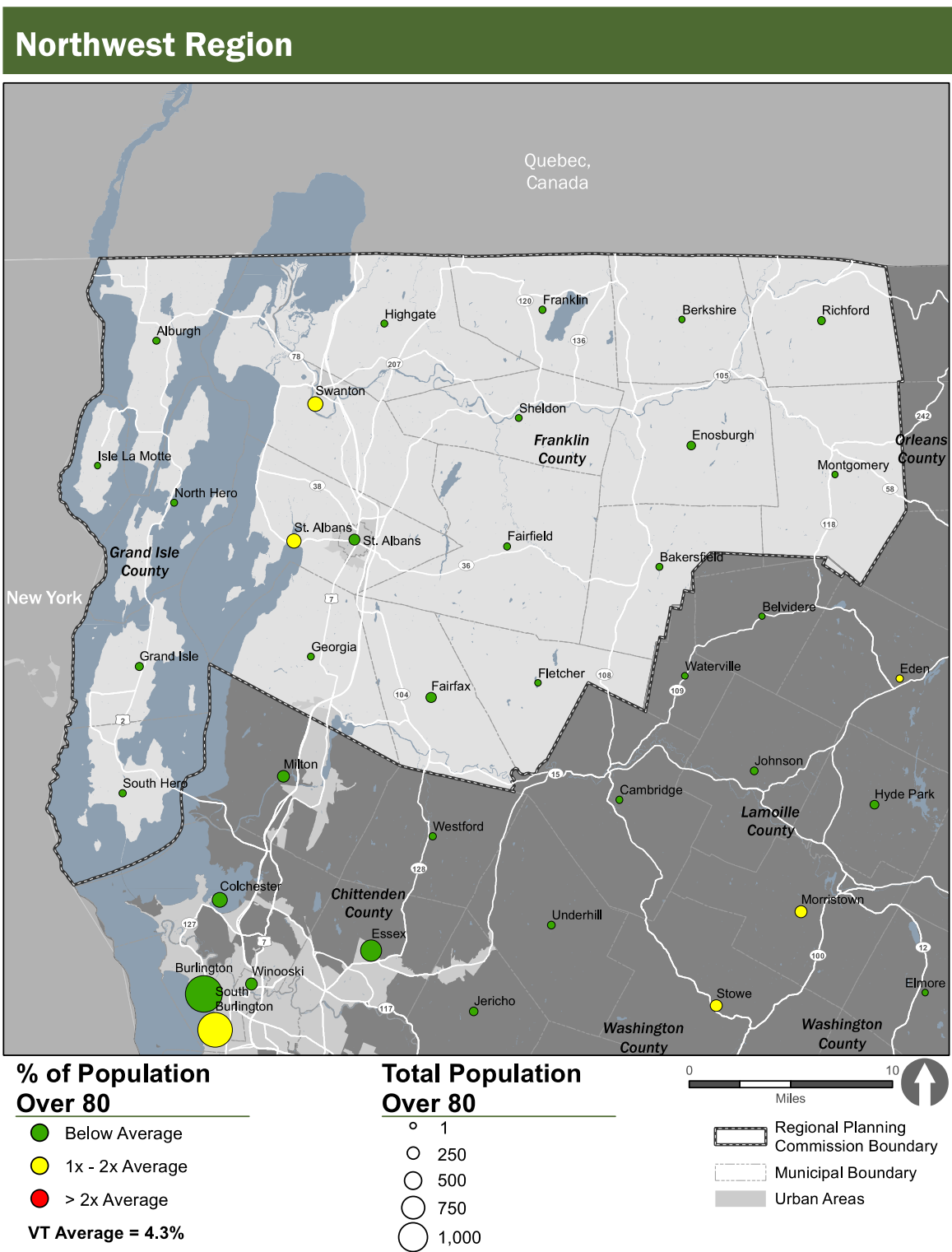


Figure 7: Number and Percentage of People with Disabilities in Northwest Region Communities, 2012-2016

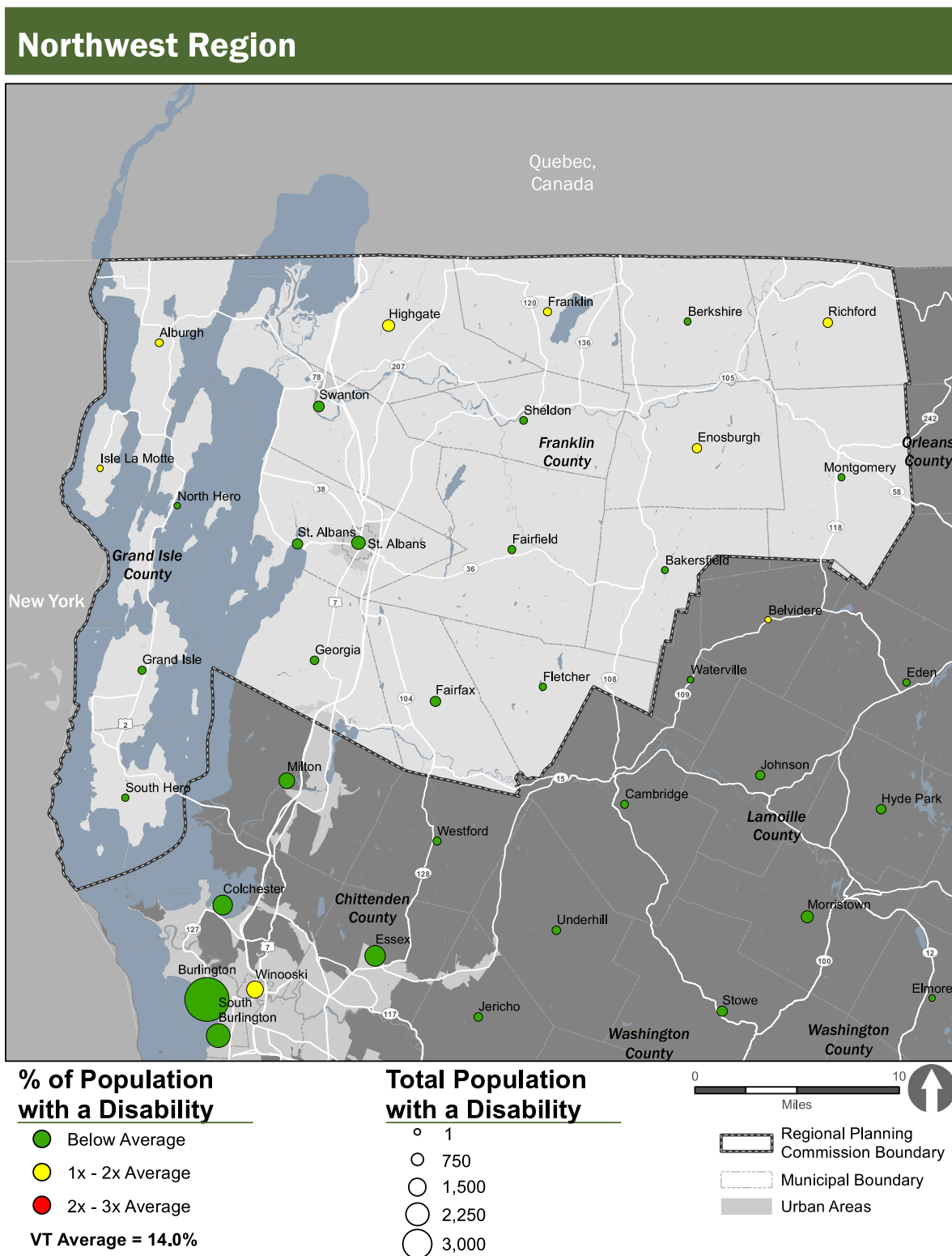


Figure 8: Number and Percentage of Households with Limited Auto Ownership in Northwest Region Communities, 2012-2016

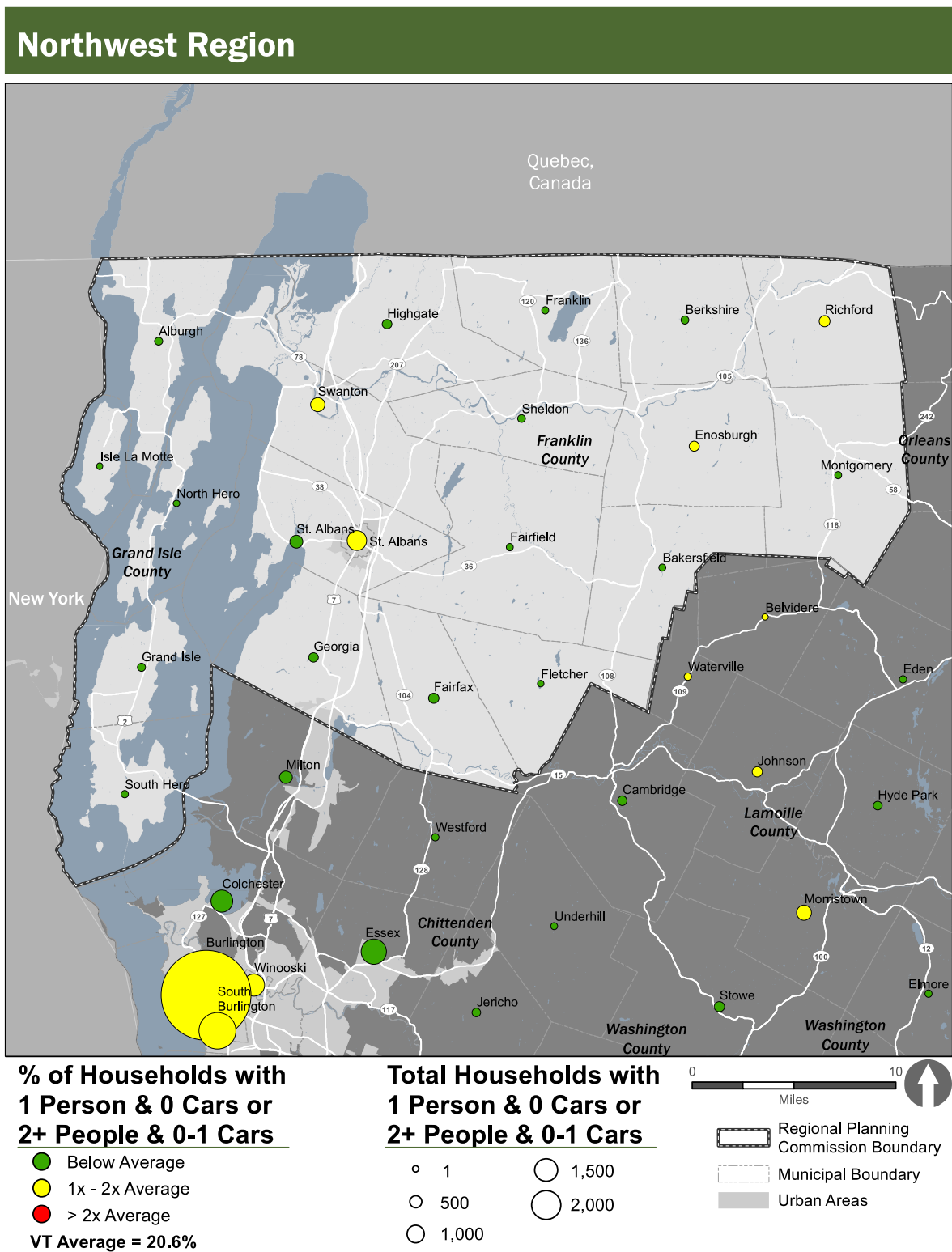
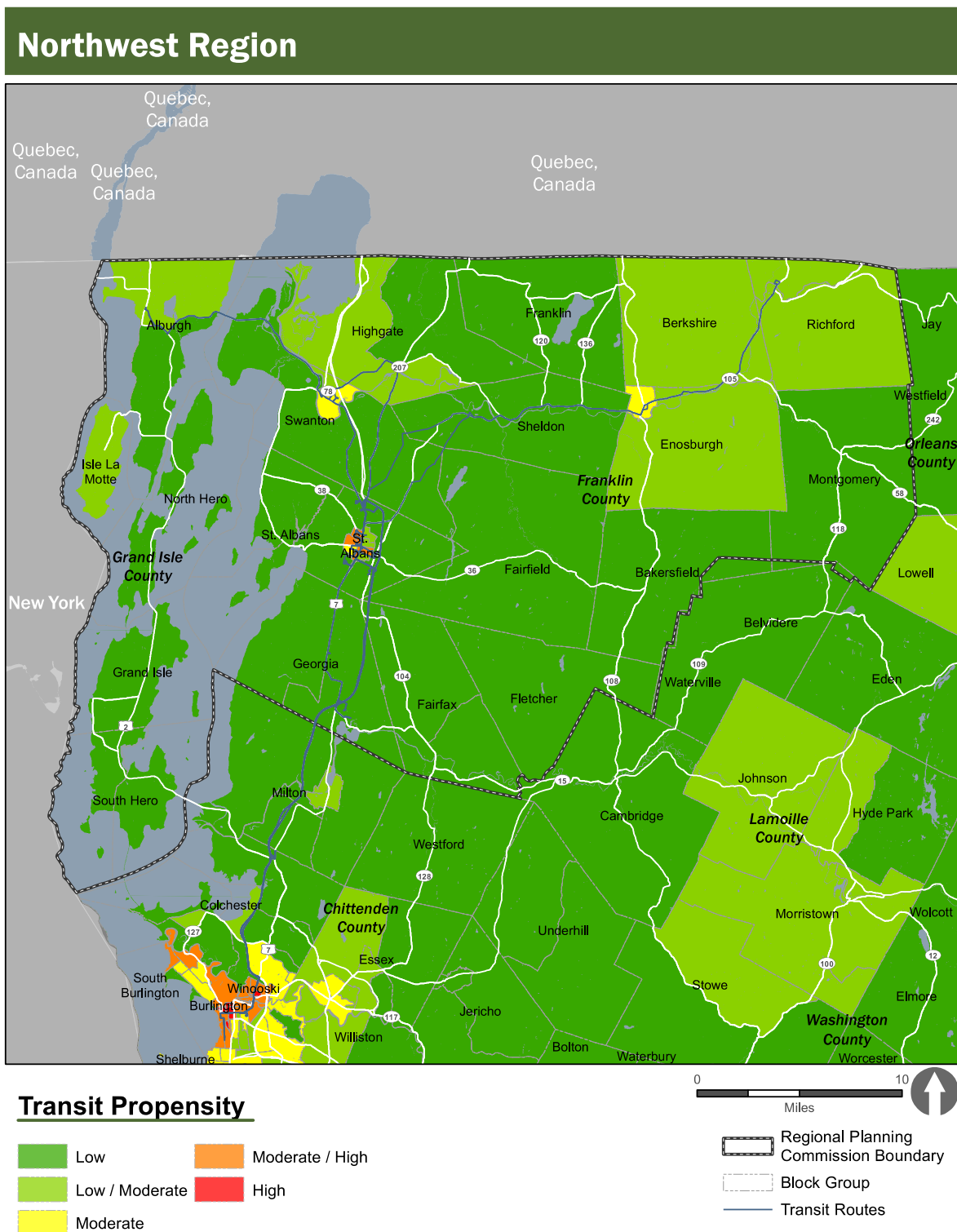


Figure 9: Transit Propensity Index, Northwest Region



## Regional Forum Comments

Stakeholders and members of the public who participated in the regional forum held at the offices of Northwestern Counseling & Support Services on October 24, 2018 made comments regarding service gaps, travel challenges, unmet transportation needs, and potential solutions, as summarized below.

### Service Gaps and Challenges

#### *Geographic Gaps*

- ▶ Travel across county lines, particularly for E&D trips

#### *Temporal Gaps*

- ▶ People can get to some locations, but not back from them, because of bus schedules
- ▶ Service for people who work in the service industry
- ▶ Shift workers
- ▶ Many residents are 12 hour commuters

#### *Trip Type Gaps*

- ▶ Lack of service to clinics (Medical Assisted Treatment – MAT—for opioid addiction) in St. Albans:
  - If someone is not qualified for Medicaid but doesn't have a car how can they get there?
  - Once they are out of treatment how do they get to appointments for their recovery program? After recovery people need transportation to jobs. Program appointments are often last minute.
  - Education is a big need
- ▶ Students can get to school by bus but then have activities and have to get a ride home
- ▶ Employment for non-traditional jobs (also a temporal gap)
- ▶ Commuter van funding
  - Difficult to get critical mass with route, timing, etc.

#### *Accessibility Needs*

- ▶ In St. Albans path of travel is an issue.
- ▶ Out of “urban” areas service is provided door-to-door, so not typically an issue.

#### *Technology Challenges*

- ▶ Many people don't own smart phones (low-income), or have poor service

#### *Affordability Gaps*

- ▶ In Franklin County this is generally not a problem
- ▶ E&D funding not seen as an issue
- ▶ Other services like fixed route/deviated are costlier and thus a bigger challenge

#### *Other Gaps*

#### Information Gaps

- ▶ CIDER did focus groups and found that a lot of people lack knowledge of their services
  - People need better access to information on rules/regulations regarding services (website is not always the best)
  - There are fears about using transit service due to lack of knowledge





## Other Comments

- ▶ State funding is bringing money into towns/villages, for example as part of Downtown Designation, that could then be used to offer basic services locally so people don't have to make longer trips. There are also grants for transit amenities.
- ▶ Grand Isle volunteer service is a strength
- ▶ Funding models for microtransit service would be informative
- ▶ Look at national models for volunteer drivers
  - Recruiting and managing is an issue
  - Non-ambulatory needs impacts driver need, vehicle need, and lift needs
- ▶ With better information some existing drivers (e.g., elderly), may add transit for some trips
- ▶ Townships need to have a relationship with service providers
- ▶ Town clerks, libraries, and AARP are opportunities to increase information dissemination
- ▶ VTrans is leveraging \$200k in the FY 2020 budget to expand services.
- ▶ Private dollars can be used for local match
- ▶ Internal trips within the Northwest Region are difficult. Could TNCs fill this gap, or something similar?
  - Do we have a policy for subsidy? Are TNC's compatible with state law in this role?
  - Could TNC drivers become volunteer drivers? Need to think about insurance and background checks. We should look at national models for volunteers.
  - What about services based on a schedule (like shopper shuttles), or a zonal system (serve different section of county on different days)?
- ▶ Private dollars can be used to reimburse volunteer drivers
- ▶ Can use open seats for other trips types?
- ▶ Community Wi-Fi is part of the solution
- ▶ Scheduling software is helpful and could be expanded

## Potential Solutions

When asked to rank potential service improvements, forum participants most often chose the options listed below.

### *Information*

- ▶ One-call/one-click option for trip planning
- ▶ Centralized transportation information

### *Service Enhancements*

- ▶ Expand service areas
- ▶ Expand service hours
- ▶ Introduce more out of region transit service (tie with #2)
- ▶ Flexible voucher program
- ▶ Rider trip banks or trip accounts.

### *Accessibility Improvements*

- ▶ Sidewalks or curb cuts



- Bus shelters

## *Technology*

- Mobile information, reservations, and real-time information

When asked to indicate their interest in the options noted above by “voting” with sticky dots, forum participants ranked potential improvements as follows:

Recommendation	Votes
One-call/one-click system	6
Go! Vermont Website	5
Expand service areas	5
Expand hours	3
More eligible trip types	5
Vol. driver prog. enhancements	2
Use of available seats	4
Rider trip banks	6
Sidewalks/curb cuts	2
Bus shelters	3
Mobile information	4
AVL on buses	2
Tablets on buses	1

## Comments from the Northwest Region E&D Committee

Development of the PTPP included discussions with the stakeholder committees that provide oversight for administration of the Vermont Elders and Persons with Disabilities (E&D) Transportation Program in each of nine regions, including the Northwest Region. Members of the E&D advisory committees typically include the local public transportation provider; partner organizations—municipalities, human service agencies, and other organizations—that receive services for their clients from the provider, and sometimes also operate services for those clients directly; and the regional planning agency that serves the area.

The discussions with those committees yielded additional comments about transportation needs and potential solutions in those regions.

Services in Franklin and Grand Isle counties that are supported with E&D program funds are provided by GMT and one of its three partner organizations. They include demand response services and rides provided by volunteer drivers for older adults, people with disabilities, and individuals participating in programs and services offered by the partners. Partners include AgeWell, Care Partners, and CIDER; the latter serves Grand Isle County and operates E&D service. Eligible trip types include critical care medical, non-emergency medical, adult day health, congregate meals, and essential shopping.

Comments regarding transportation needs and service gaps include the following:

- AgeWell and Care Partners currently limit trips to six one-way trips per person per month
- Social/wellness trips are not specifically offered
- CIDER’s riders are shifting from individuals who have multiple disabilities and/or use wheelchairs to school-age children with cognitive disabilities and opioid recovery patients



- ▶ Adult day health programs are seeing decreases in participation, likely due to factors such as movement of older adults into non-subsidized senior housing where services are available or adult children caring for aging parents at home

## MetroQuest Responses

Respondents to the online MetroQuest survey conducted in September through December 2018 had the opportunity to identify a trip they would like to make using transit service but cannot due to lack of service or infrequent/inconvenient schedules. Respondents were also able to provide comments about the origin and/or destination of the trip they would like to make.

Only nine residents of the Northwest Region commented on their desired trips. Respondents identified the Burlington Airport and Rutland as destinations outside of the region to which they would like transit access. Residents of St. Albans, Enosburg Falls, and Grand Isle identified home or work (in their communities) as locations to which they would like to take transit services.

Survey respondents were also asked to choose up to three transit improvements that would make them or people they know more willing to use public transportation. Choices were:

- More service near my home
- Service to my desired destinations
- More frequent service
- Service that runs evenings and/or weekends
- Faster service
- More reliable
- Cheaper
- If I felt safer riding on it
- If I understood how it works
- Nothing, I prefer driving

Of the 34 responses to this question from the Northwest Region, 79% were in the top four categories: more service near my home (32%), more frequent service (24%) more service to my destinations (18%), and service in the evenings and/or weekends (6%).

## Summary of Transit Service Gaps and Needs

The information presented above about the Northwest Region's demographic characteristics, location of employers and key destinations, existing transit services, and comments from residents and stakeholders point to the following transit service gaps and needs for the region.

### Geographic Service Gaps

Fixed route bus service in the region includes only one local route and one shopping shuttle in addition to three commuter routes. While those routes cover areas with relatively high population and serve a number of key destinations, including many employers, and make connections to destinations outside of the region, many communities are not served. Only one community in Grand Isle County, Alburgh, receives fixed route service—as one end of a commuter route. In addition, residents who live beyond the reach of bus routes and the 1/4 - 3/4 mile deviations that are available on most routes have no transit options apart from the services for older adults and people with disabilities that are provided as part of the E&D Transportation program.

Regional forum residents also identified the ability to make trips between counties as a service gap.



## Temporal Service Gaps

GMT's local St. Albans Downtown Shuttle operates for 13 hours a day on weekdays and 5.5 hours on Saturdays, offering hourly service. That span and frequency represents a basic level of fixed route service for a small urban area.

The Price Chopper Shopping Shuttle operates only on Tuesdays.

Service on commuter routes operate during morning and afternoon peak hours only, appropriate for riders with traditional work schedules, but not useful for those with longer or more varied hours, or individuals who would like access to the regional destinations served by these routes for non-work trips or during the mid-day hours. Indeed, the timing of these commuter routes is set to meet shift times at specific large employers.

Regional forum comments about temporal gaps noted that schedules allow trips to some destinations but do not accommodate a return trip. Students who can get to school but not home following after-school activities was one specific example cited.

## Gaps for Specific Rider Groups/Trip Types

Trips for E&D transportation users are limited to six one-way trips per month by two of the three E&D partner organizations. Those limits likely leave needs for additional medical, adult day health, congregate meals, shopping, and social/wellness trips unmet.

Specific groups with travel challenges that were mentioned by regional forum participants include individuals receiving treatment for opioid addiction and employees with non-traditional work schedules, including those who work in service industries and shift workers.

## Other Gaps

### *Information*

Regional forum participants and MetroQuest responses indicated that more information or education about transportation options is needed in this region.

### *Accessibility*

Difficulties with path of travel to bus stops in St. Albans was noted in regional forum comments. Desired solutions include sidewalks, curb cuts, and bus shelters.

### *Technology*

While regional forum participants indicated that mobile apps for trip reservations and real-time vehicle location information, they also noted that cell phone use is challenging for those who cannot afford homes or do not get good service coverage where they live/work.

## Transit Market Segments

### Size of Market Segments

For the purposes of developing public transit policies that focus transit investments on the markets that will most benefit from those policies, the number of individuals in the Northwest Region in each of seven sub-markets has been estimated. Market segments are mainly related to age but are also subdivided by income. Automobile availability is treated as a secondary characteristic, related to the age and income of each particular group. The results are shown in Table 3.



Table 3: Estimated Transit Market Segments, Northwest Region 2017

Market Segment	Likely Low-Auto Access	Estimated Number in Region, 2017
Youth (under 18)	X	11,925
Young adult (18-24), employed/student	X (by choice)	3,941
Adult (25-64)		25,927
Adult (25-64), below poverty line	X	1,456
People with disabilities (under age 80)	X	5,551
Younger seniors (65-79)		5,027
Older seniors (80+)	X	1,831
<b>Total</b>		55,658

Source: U.S. Census, American Community Survey (ACS) 5-Year Estimates

Youth and young adults, adults living in poverty, people with disabilities, and older seniors—those age 80 and older—are likely to have less access to a car for personal travel than adults with higher incomes and “newer” seniors, who typically continue to drive. Young adults, for reasons having to do with a number of generational trends, may prefer not to drive or own a car. For members of the other market segments, however, lack of access to a car is likely due more to an inability to drive or afford a car than to a choice. In the Northwest Region, market segments that are likely to have limited or no access to a car make up 44% of the population.

## Impacts of Service Gaps on Market Segments

Table 4 summarizes the effect of the service gaps identified for Northwest Region communities on the various transit sub-markets in the region.

Several gaps are broad enough to affect all market segments. These include:

- ▶ **Geographic Coverage:** Rural communities lack transit options, making transportation an issue for all types of trips for those without access to a car or other means of a ride. In communities with transit service, difficulty making first/last-mile connections to bus stops or destinations further limits transit use.
- ▶ **Accessibility:** Sidewalks and paths to bus stops may not be safely accessible, especially during winter months. If fixed route service is available, it may not be usable or convenient.
- ▶ **Information:** Individuals and agency staff members may not be aware of the service options available. Service gaps and needs may be perceived rather than actual.

Other gaps are specific to certain market segments. For example:

- ▶ **All adult market segments**, who may need to travel to work or school, are affected by limited geographic coverage of fixed route services. Regional commuter routes and the shopping shuttle serve specific needs by operate limited hours.
- ▶ **People with disabilities** are affected by limitations in E&D program funding. Options for shopping, social/personal, and wellness trips may not be available.
- ▶ **Older adults, especially those over age 80**, are also affected by limits on trips provided with E&D program funding and may be unable to make all but the most critical medical or adult day service trips.
- ▶ **Individuals living in poverty** may have Medicaid transportation to eligible medical appointments but may have no other options for other types of trips.



Table 4: Gap Analysis by Transit Market Segment

Market Segment	Youth (under 18)	Young Adult (18- 24), Employed or Student	Adult (25-64)	Adult (25- 64), Below Poverty Line	People with Disabilities	Younger Seniors (65-79)	Older Seniors (80+)
<b>Likely Low Auto Access</b>	X	X (by choice)		X	X		X
<b>Geographic Gaps</b>							
Need for first/last mile options limits fixed route use	X	X	X	X	X	X	X
Residents beyond the fixed route service area and in towns without fixed route bus service have limited options; this affects a number of Northwest Region communities	X	X	X	X	X	X	X
<b>Temporal Gaps</b>							
Shopping shuttle operates only on Tuesdays				X	X	X	X
Peak-only schedules of commuter routes do not help those with non-traditional work hours		X	X	X	X	X	
<b>Trip Type Gaps</b>							
E&D funding constraints limit trips for older adults and people with disabilities					X	X	X
Social/personal trips are at lower end of E&D eligible trip priorities					X	X	X
Individuals who work non-traditional hours lack transit options		X	X	X	X	X	
Individuals receiving treatment for opioid addiction lack transit options		X	X	X	X		
<b>Accessibility Needs</b>							
More bus shelters and sidewalks/curb cuts would encourage fixed route use, especially in St. Albans	X	X	X	X	X	X	X
<b>Technology Challenges</b>							
Mobile apps for trip reservations and/or real-time vehicle location information are desirable		X	X	X	X	X	
Mobile phone use is challenging for those who cannot afford phone or have poor service coverage		X	X	X	X	X	X
<b>Information Gaps</b>							
Forum comments and survey responses indicate some lack of knowledge of available transportation options	X	X	X	X	X	X	X
<b>Affordability Issues</b>							
Not an issue for riders	X	X	X	X	X	X	X





# Appendix J – Rutland County Analysis

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## TRANSIT SERVICE GAPS AND NEEDS

Transit service gaps and needs in Rutland County are discussed below. Planning for the Rutland County region is conducted by the Rutland Regional Planning Commission (RRPC).

### Overview of Existing Services

#### Fixed Route Services

Transit service in Rutland County is provided primarily by Marble Valley Regional Transit District (MVRTD). MVRTD and Addison County Transit Resources (ACTR), a division of Tri-Valley Transit, jointly operate a shared bus route between Middlebury and Rutland along US 7. Vermont Translines operates two intercity routes, along US 7 and US 4, that connect Rutland with Burlington, Albany, and White River Junction.

As shown in Figure 1, MVRTD bus routes are concentrated in the city of Rutland and provide either local service or connections to other communities within the county: Proctor, Fair Haven (via Castleton and Poultney), Killington, Manchester (via Clarendon), and Ludlow (via Clarendon). The local routes operate Monday through Saturday, offering service every half hour between 6:30 a.m. and 6:30 p.m. on weekdays and between 8:00 a.m. and 5:30 p.m. on Saturdays. Regional routes offer 4-10 round trips Monday through Saturday or Monday through Sunday; service to Killington is more frequent.

Deviations up to  $\frac{1}{4}$ - $\frac{3}{4}$  of a mile to homes or destinations may be arranged in advance on most regional fixed routes for individuals who are unable to travel to a bus stop.

#### Dial-A-Ride and Other Services

MVRTD also operates ADA complementary paratransit service for individuals who are unable to use a bus route in Rutland City due to a disability, services for elders and people with disabilities who are clients of human service agency partners as part of the E&D program, and non-emergency medical transportation for eligible Medicaid recipients in Rutland County and southern Windsor County. Scheduled door-to-door service, known as subscription service, is available to residents of Rutland Town and Rutland City for trips that are needed at least twice a week. All these demand response services require reservations to be made at least the day before the trip.

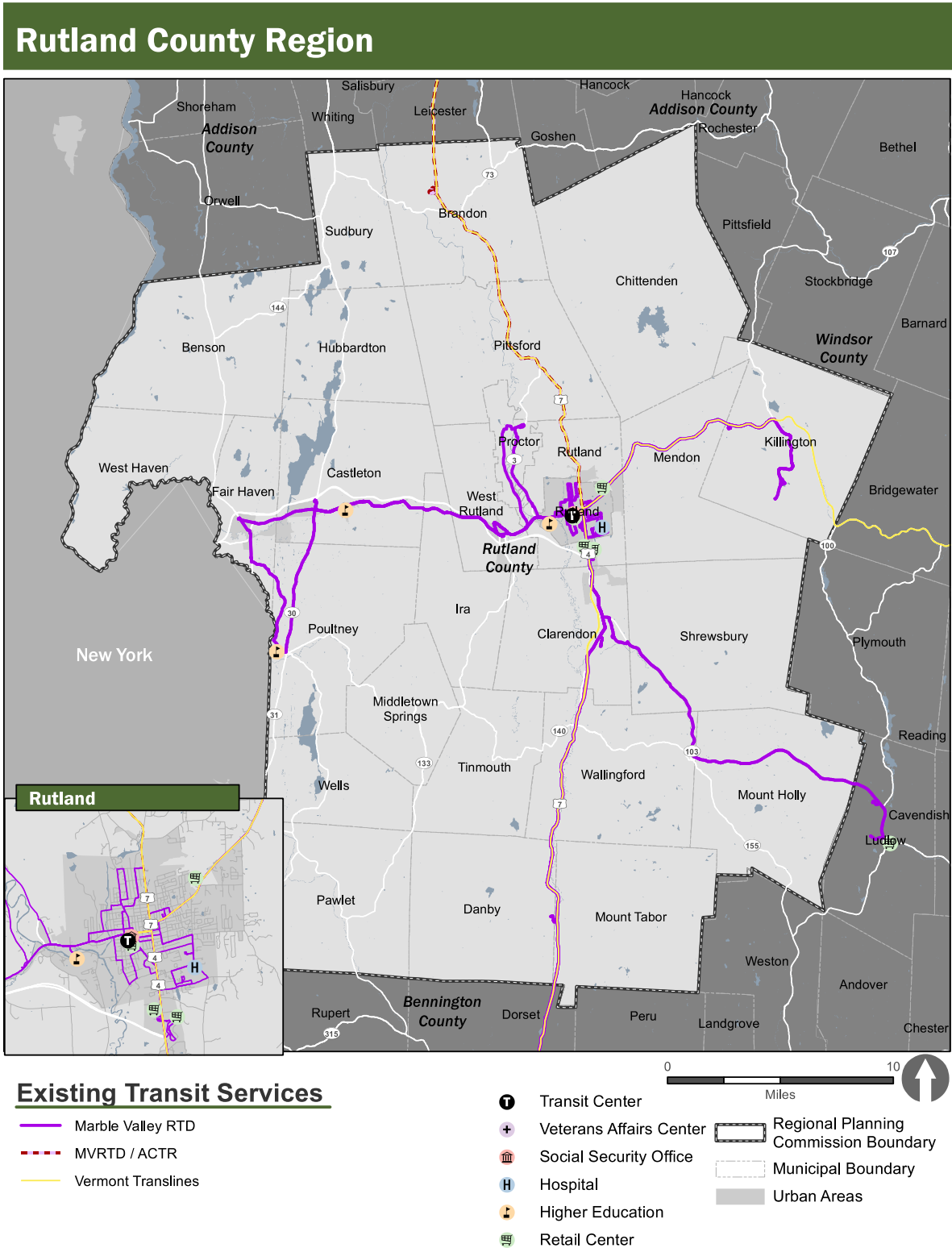
Days and hours of service for these demand response services vary. ADA paratransit service days/hours mirror those of MVRTD's Rutland City fixed bus routes. Days and hours of service for E&D clients are established by MVRTD and its partner agencies. Subscription service is provided on weekdays. Medicaid transportation may be provided at any time of day or week.

Several human service agencies provide rides with volunteer drivers, operate van, or obtain demand response service from MVRTD for their clients using funds from the E&D program and other sources. Agencies include ARC Rutland Area, Bridges & Beyond, Castleton Community Center, RSVP's One-2-One program, and Southwestern Vermont Council on Aging. Services are available to individuals age 60 and over and individuals under age 60 who have a disability. Trips to critical care treatment, non-Medicaid medical appointments, adult day services, meal sites, and essential shopping trips are priorities. Social/personal/wellness trips are provided if funding allows.

Finally, a number of taxi companies provide service in Rutland County communities.



Figure 1: Transit Services in Rutland County



## Key Destinations

Retail areas (including supermarkets), health care facilities, colleges and universities, and human service agency offices are primarily located in the following communities:

- ▶ Rutland City and Town
- ▶ Brandon
- ▶ Castleton
- ▶ Fair Haven
- ▶ Killington
- ▶ Poultney

Some of those key destinations are shown in Figure 1 (more detail can be found on the route maps posted on the MVRTD website, <https://www.thebus.com/routes/>) MVRTD bus routes serve many local and regional destinations.

## Employment and Commuting Patterns

### *Employers*

Figure 2 shows the location of employers of various sizes in the county.

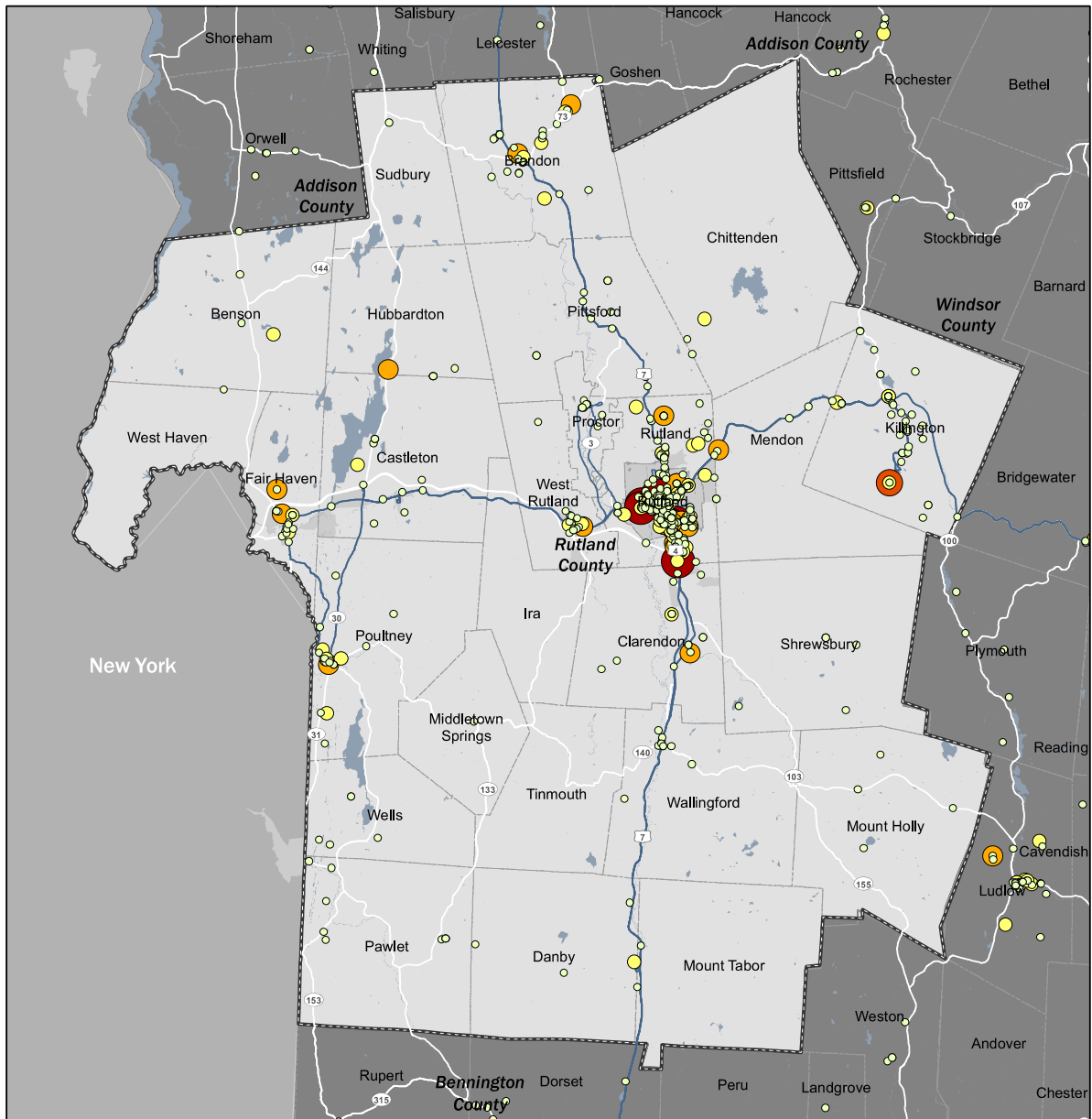
The highest concentration of employers is in the City of Rutland, where the largest employers are also located. Moderate clusters of employers are found in Killington, Poultney, Fair Haven, Castleton, and Brandon. Large employers are also located in Clarendon and Hubbardton. A few small employers, with fewer than 100 employees each, are scattered in rural towns throughout the county.

The only community that contains a large employer and is not served by MVRTD fixed route bus service is Hubbardton. In Benson, Brandon, Castleton, and Poultney, relatively large employers are not served by existing bus routes.



Figure 2: Employers in Rutland County

## Rutland County Region



### Employers by Number of Employees

- 10 - 49
- 50 - 99
- 100 - 299
- 300 - 499
- 500 +

Source: Dun & Bradstreet, 2005



- Regional Planning Commission Boundary
- Township Boundary
- Urban Areas
- Transit Routes



## Commuting Patterns

Table 1 presents an overview of where Rutland County residents work and where individuals who are employed in Rutland County live.

Table 1: Employment in Rutland County, 2015

Employment	Number	Percent of Total Rutland County Employment	Percent of Total Employed Rutland County Residents
<b>Workers in Rutland County</b>			
Total Employees in Rutland County	27,600	100%	
Rutland County Residents Employed in Rutland County	19,310	70%	
Residents of Other Areas Working in Rutland County	8,290	30%	
Residents of Other Vermont Counties	5,334	19%	
Residents of Other States	2,956	11%	
<b>Residents of Rutland County</b>			
Total Employed Rutland County Residents	29,927		100%
Rutland County Residents Employed in Rutland County	19,310		65%
Rutland County Residents Employed in Other Areas	10,617		35%
Working in Other Vermont Counties	8,350		28%
Working in Other States	2,267		8%

Source: U.S. Census, Longitudinal Employer-Household Dynamics, 2015

Most individuals employed in Rutland County also live in the county. However, Rutland County draws relatively significant numbers of employees from surrounding towns in Vermont and New York. Counties sending the highest numbers of employees to Rutland County include Addison, Windsor, Chittenden, Bennington, Windham, Orange, Washington, and Franklin counties, as well as Washington County, New York. Workers also come to Rutland County from other counties in New York, as well as from New Hampshire, Massachusetts, and other states.

Most employed Rutland County residents work in the county. The majority of those who live in the county and are employed outside of Rutland County work in other Vermont counties, primarily Chittenden, Windsor, Addison, Bennington, Washington, Windham, and Orange counties. Rutland County residents also work in New York, Massachusetts, New Hampshire, and other locations.

Figure 3 illustrates the daily commuting travel flows into Rutland City at the town level.

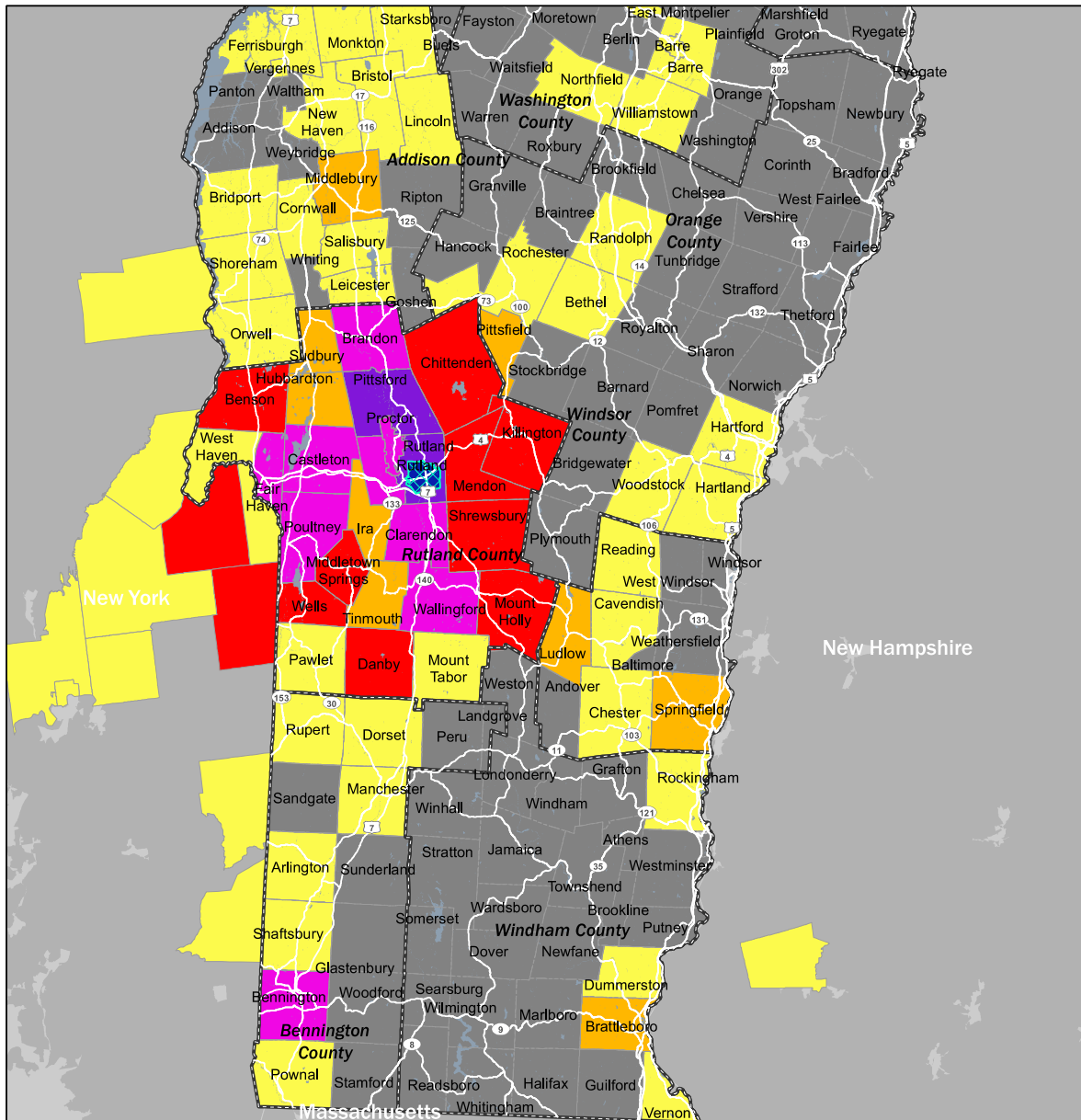
As shown in Figure 3, the highest numbers of commuters come from within the county, mostly from Rutland City and nearby towns in New York as well as Vermont. Significant numbers of commuters (60 or more per day) from more distant towns, including Bennington, Burlington, Brattleboro, and Springfield, also travel to Rutland City to work.



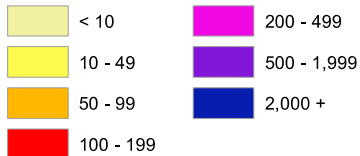


Figure 3: Daily Commuters to Rutland City

## Rutland County Region



### Commuters to Rutland



- Destination Zone
- Regional Planning Commission Boundary
- Municipal Boundary



## Demographic Overview

This section presents an overview of the demographic characteristics of Rutland County and summarizes the location and density of the general population of Rutland County and specific market segments that are likely to need transit service because they cannot or choose not to drive.

Table 2 provides summary demographic characteristics for Rutland County as of 2016, compared to Vermont as a whole.

*Table 2: Demographic Characteristics of Rutland County, 2012-2016*

	<b>Rutland County</b>	<b>Vermont</b>
Total population	59,620	626,249
Population density	66 persons per square mile	68 persons per square mile
Population age 60 and over	26.7%	24%
Population age 80 and over	4.9%	4.3%
Residents living below poverty line	12.3%	11.6%

Source: American Community Survey 5-year Average 2012-2016

Rutland County was home to 9.5% of the state's population in 2016. The county is slightly less densely populated than Vermont overall, at 66 people per square mile. It has slightly higher percentages of older adults, both those age 60 and older and 80 and older, than the state as a whole, at 27% and 5%, respectively. The percentage of the county's residents living in poverty is roughly the same as the state overall, at 12%.

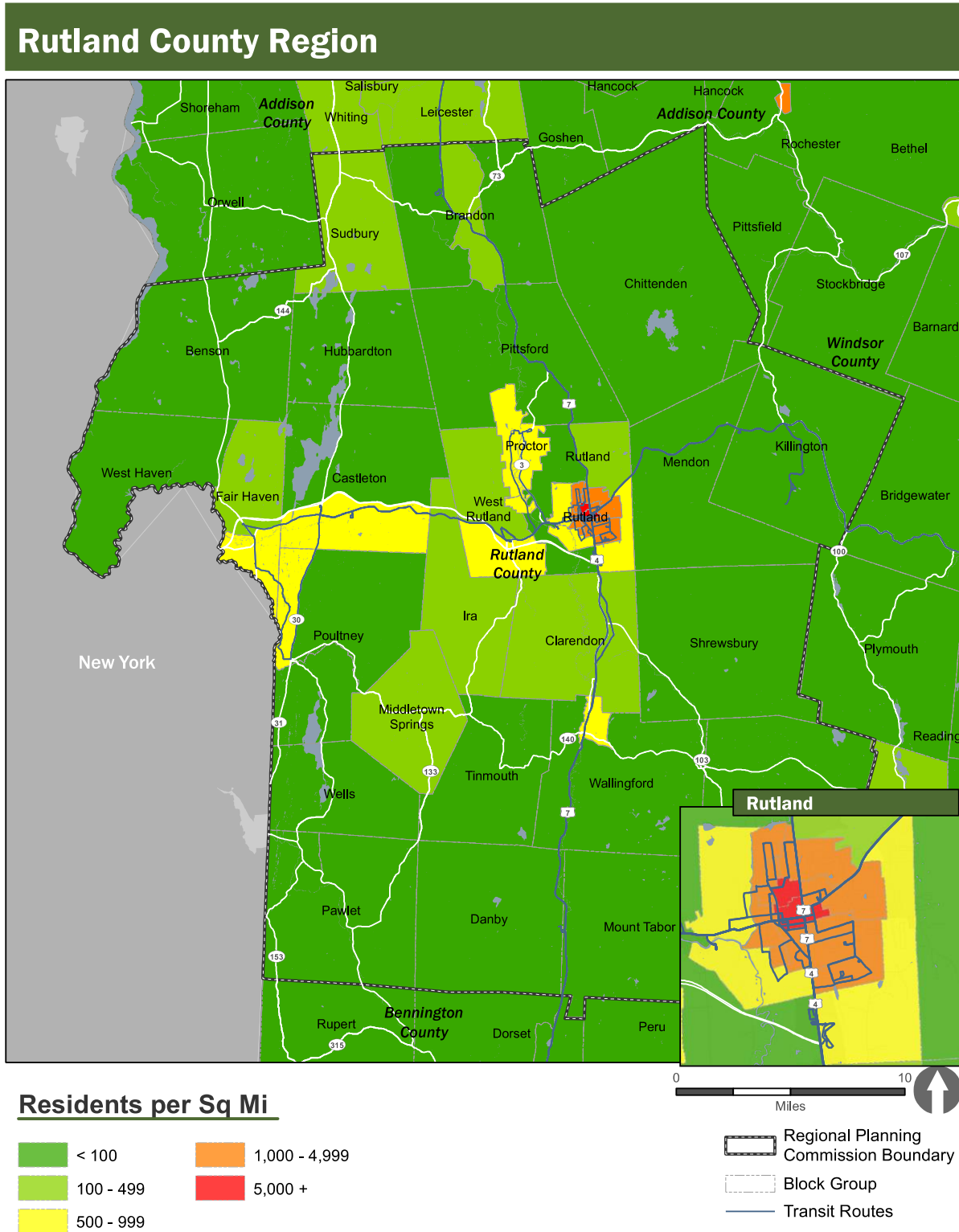
## Population Density

Figure 4 shows the concentration of the population in Rutland County. Density is a helpful characteristic to consider in the context of public transportation services because it is one measure of where service, particularly fixed route service, is likely to be needed and cost-effective.

The highest number of residents per square mile is found in Rutland City, especially in the downtown area. Moderate levels of density are in Rutland Town, West Rutland, Castleton, Wallingford, and Fair Haven. The rest of the county has a population density that can be considered rural.



Figure 4: Population Density in Rutland County, 2017



## Market Segments and Transit Propensity

Groups that are likely to need transit services because they do not drive include older adults, people with disabilities, individuals with limited or no access to a car, and younger adults. Figure 5 through Figure 7 show the number and percentage (compared to the state average) of individuals in the first three groups at the town level in Rutland County. All data was obtained from the American Community Survey (ACS) 2012-2016 Five-year Estimates.

### *Older Adults*

Figure 5 shows the number and percentage of adults age 80 and over in 2012-2016, as compared to the statewide average, in Rutland County communities. The focus in Figure 5 is on this older age group because younger seniors typically continue to drive and because a significant rise in this population is expected in Vermont (and nationwide) in the next 10-20 years.

The highest numbers of older adults live in Rutland City—between 750 and 1,000 individuals. Many of the smaller Rutland County towns have more than twice the state average of older residents in this category, although the numbers of such individuals are often low. Rutland City is both above the Vermont average and has a significant population of those 80 and older.

### *People with Disabilities*

Figure 6 shows the number and percentage of people with disabilities, compared to the statewide average, in Rutland County communities. Four types of disabilities are included: those associated with hearing, vision, cognition, and working.

The highest number of people with disabilities is found in Rutland City—approximately 2,250 individuals. Towns on the eastern edge of the county have a percentage of residents with disabilities that is lower than the state average, but most other towns are home to a higher percentage of residents with disabilities than the state as a whole.

### *Auto Ownership*

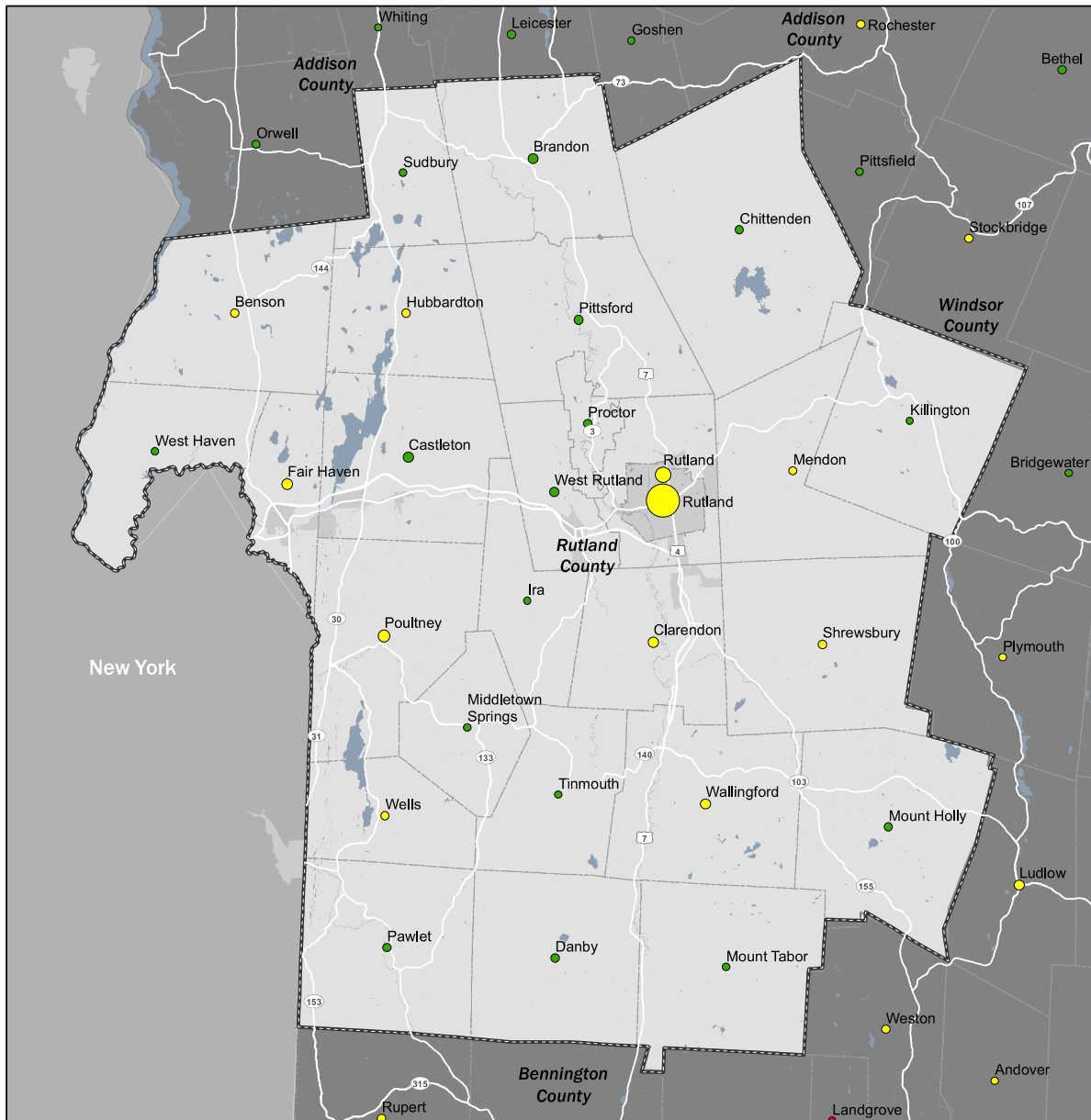
The number and percentage of households in Rutland County towns with limited access to an auto in 2012-2016 are shown in Figure 7. Households with one resident and no vehicle and those with two or more members but only one vehicle or no vehicle are included.

The largest number of households with limited auto access are located in Rutland City—about 2,000 households. Most towns are below the state average in terms of auto ownership, but there are exceptions: Benson, Fair Haven, and Poultney.



Figure 5: Number and Percentage of Adults Age 80 and Over in Rutland County Communities, 2012-2016

## Rutland County Region



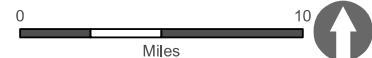
### % of Population Over 80

- Below Average
- 1x - 2x Average
- > 2x Average

VT Average = 4.3%

### Total Population Over 80

- 1
- 250
- 500
- 750
- 1,000



- Regional Planning Commission Boundary
- Municipal Boundary
- Urban Areas

Figure 6: Number and Percentage of People with Disabilities in Rutland County Communities, 2012-2016

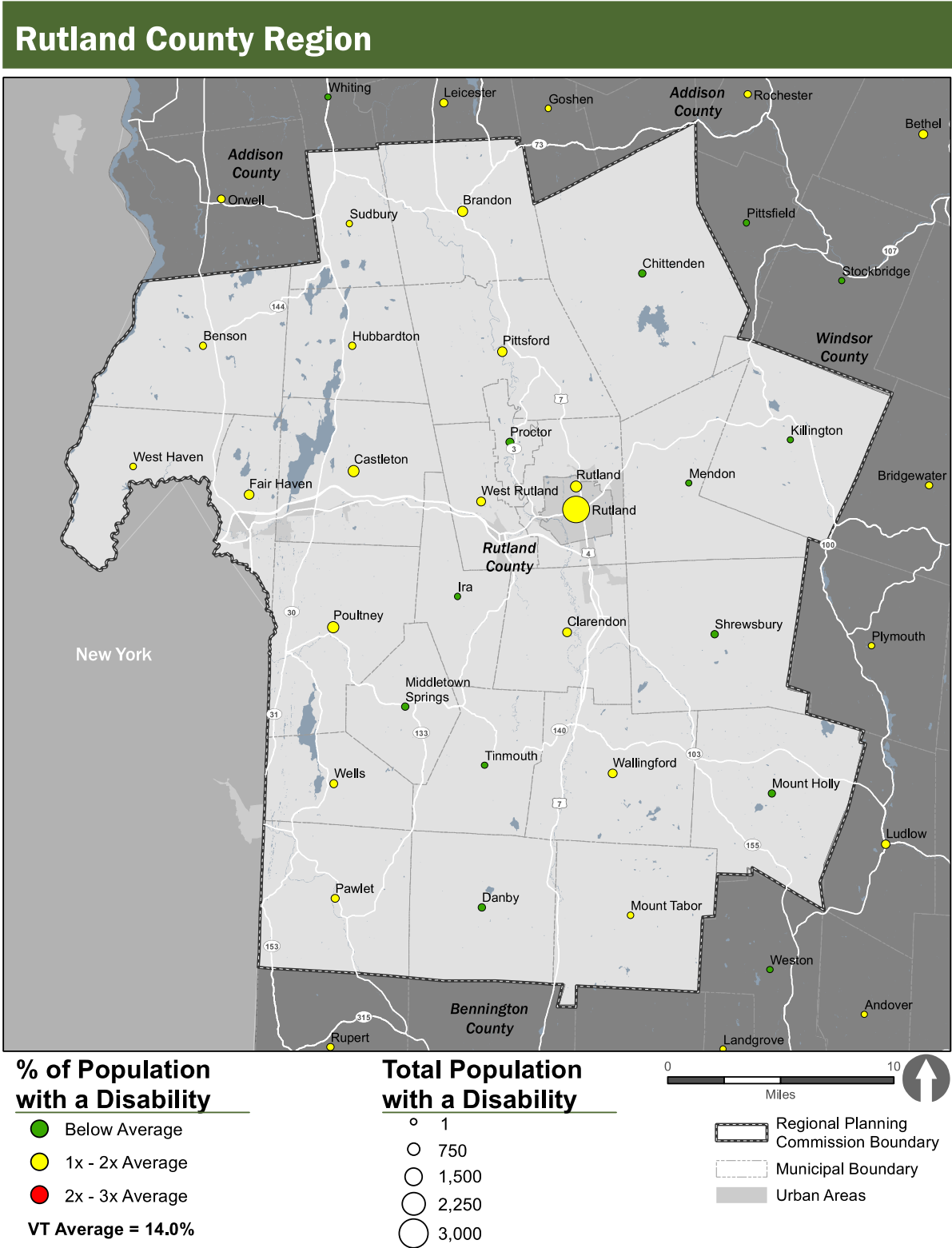
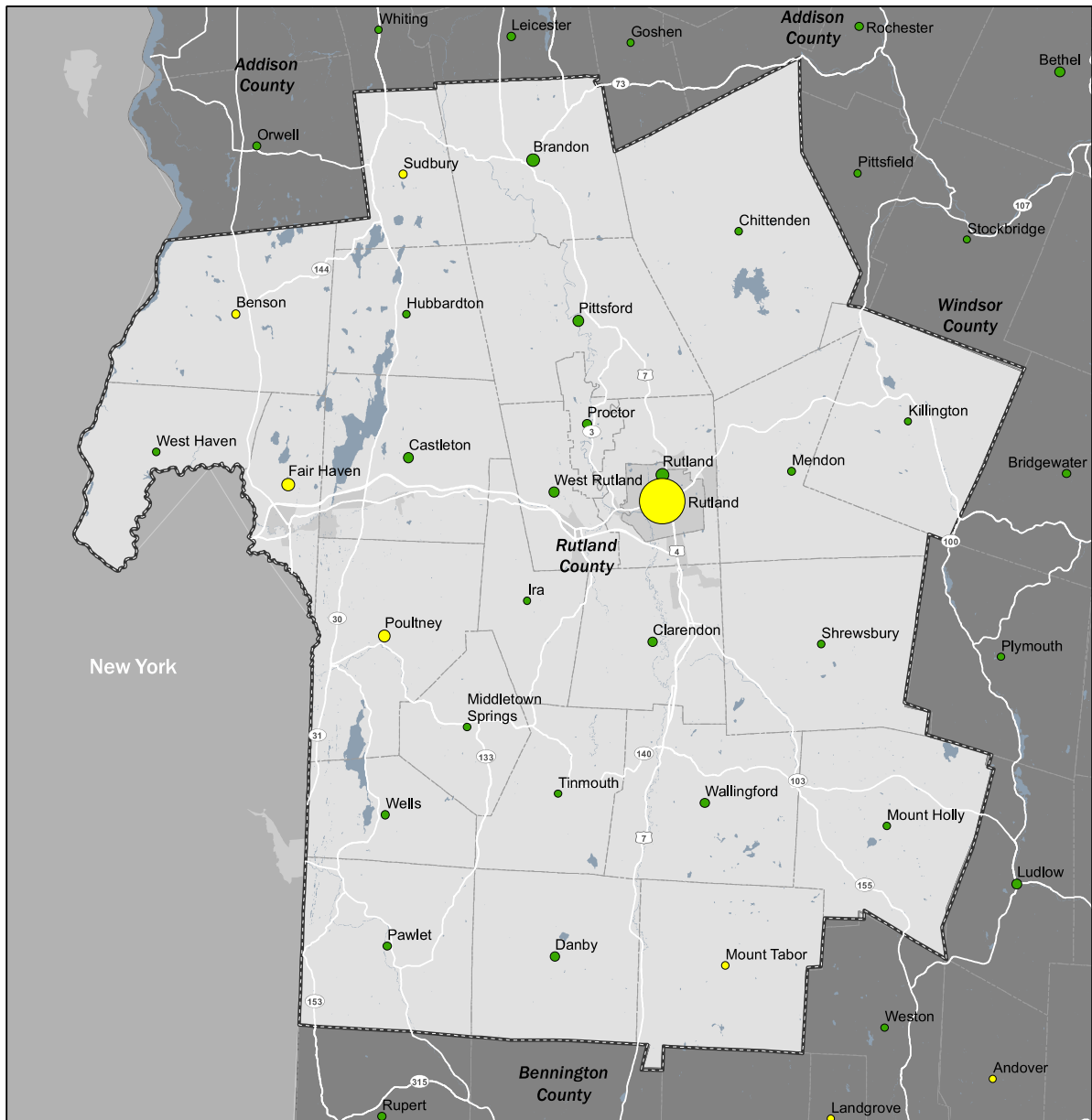




Figure 7: Number and Percentage of Households with Limited Auto Ownership in Rutland County Communities, 2012-2016

## Rutland County Region

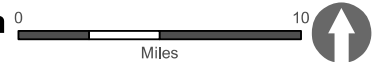


**% of Households with  
1 Person & 0 Cars or  
2+ People & 0-1 Cars**

- Below Average
  - 1x - 2x Average
  - > 2x Average
- VT Average = 20.6%

**Total Households with  
1 Person & 0 Cars or  
2+ People & 0-1 Cars**

- 1
- 500
- 1,000
- 1,500
- 2,000



- Regional Planning Commission Boundary
- Municipal Boundary
- Urban Areas



## *Transit Propensity*

As noted above, older adults, people with disabilities, individuals with lower incomes, and younger adults are likely to need transit services because they cannot or do not drive. The transit propensity index mapped in Figure 8 combines information about the location and weighted size of the county's total population and of various populations that are typically dependent on transit services—youth, older adults, people with disabilities, people living in poverty, and households with one car or less.

As shown in Figure 8, the highest propensity—in the Moderate and Moderate-High ranges—is found in Rutland City. A number of towns show values of transit propensity in the Low/Moderate range, shown in light green, but most communities outside of Rutland City have propensity index values in the Low range.

## **Regional Forum Comments**

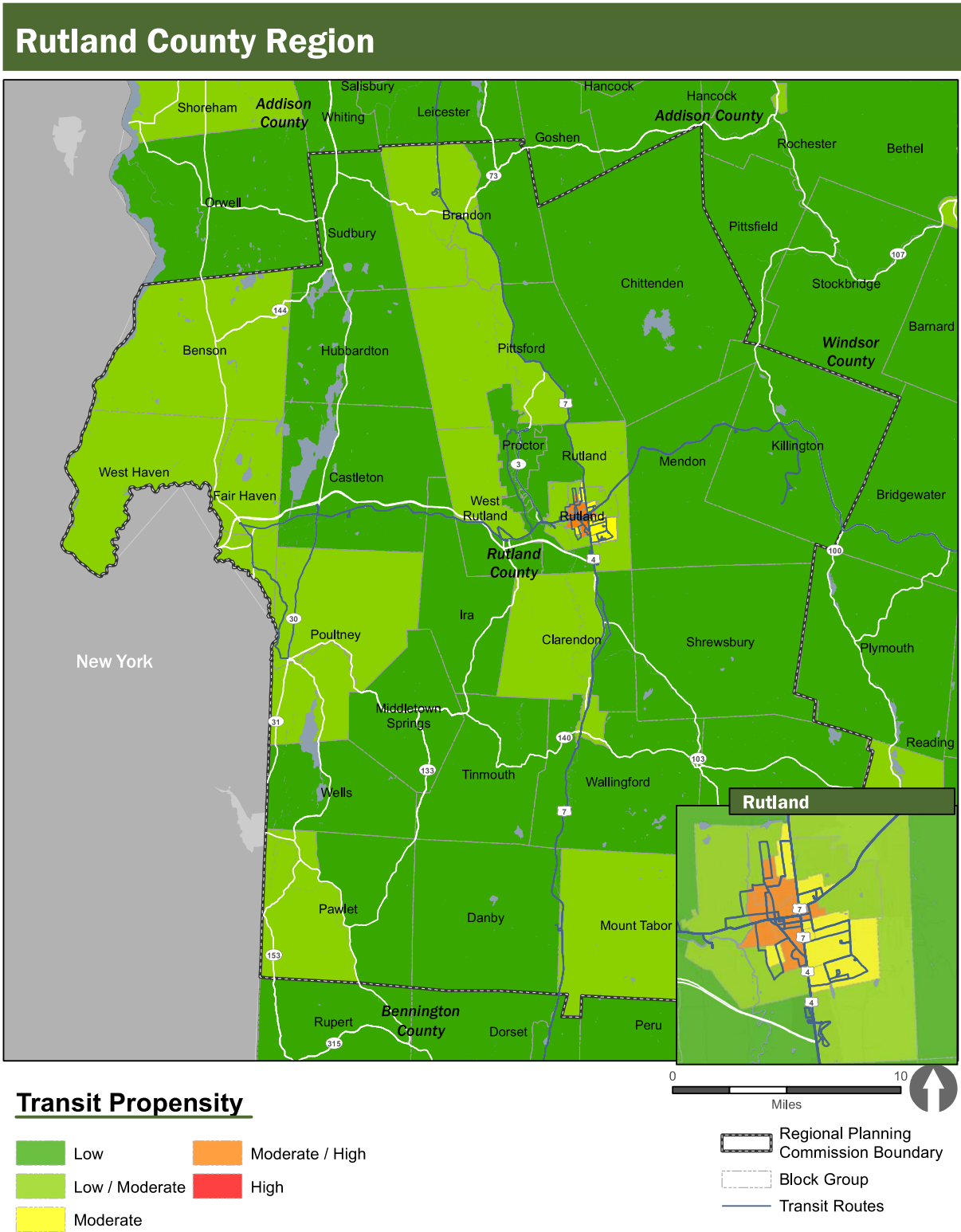
Stakeholders and members of the public who participated in the regional forum held in Rutland at the Rutland Regional Planning Commission office on December 14, 2018 made comments regarding service gaps, travel challenges, and unmet transportation needs, as summarized below.

### **Service Gaps and Challenges**

- ▶ Challenges associated with medical transportation—coordinating among transportation providers, among health care facilities, and between providers and health care facilities; transporting psychiatric patients home; transporting outpatient; definitions of “necessary service” that exclude important trips (such as addiction recovery); lack of service for East Dorset satellite office of Rutland Regional Medical Center; transportation for patients who are discharged in off hours
- ▶ City routes end service at 6:30 p.m. and do not run on Sunday. Affects Castleton University students and others who want to go downtown or attend community meetings, hospital discharges, individuals participating in opioid treatment, and those working second and third shifts.
- ▶ Challenges persist in rural areas
- ▶ Castleton University students—limited intercity bus transportation makes it difficult to get to Boston for vacations (connections to Albany and NYC are good)
- ▶ Homeless families have difficulty getting children to school/day care. Foster care children and youth also lack options.
- ▶ Connections to communities in the western section of the county could be improved
- ▶ Taxi service is not available in the evening hours and is not accessible for individuals who use wheelchairs.
- ▶ Trips that fall outside of priority categories—for example, veteran wheelchair user who wanted to visit new housing before moving and was not eligible for a ride
- ▶ Inadequate snow removal prohibits access or safe access to transit stops
- ▶ Inadequate sidewalk maintenance year-round affected wheelchair users and others, such as parents with strollers
- ▶ Residents, especially outside the City core, need education about transit benefits, costs, etc. Full value is not appreciated.



Figure 8: Transit Propensity Index, Rutland County



## Potential Solutions

When asked to rank potential service improvements, forum participants chose the following most often:

- ▶ Extend service hours
- ▶ Expand eligible trip purposes
- ▶ Add/improve sidewalks
- ▶ Offer mobile trip information, reservations, and real-time vehicle location
- ▶ Develop centralized directory of transportation services/one-call, one-click system
- ▶ Enhance volunteer driver programs
- ▶ Use of Uber/Lyft services for Medicaid recipients, transportation to the airport, events, and colleges to enhance economic development
- ▶ General outreach/education regarding transit services with testimonials from riders

## Comments from the Rutland County E&D Committee

Development of the PTPP included discussions with the stakeholder committees that provide oversight for administration of the Vermont Elders and Persons with Disabilities (E&D) Transportation Program in each of nine regions, including Rutland County. Members of the E&D advisory committees typically include the local public transportation provider; partner organizations—municipalities, human service agencies, and other organizations—that receive services for their clients from the provider, and sometimes also operate services for those clients directly; and the regional planning agency that serves the area.

The discussions with those committees yielded additional comments about transportation needs and potential solutions in those regions.

Services in Rutland County that are supported with E&D program funds are provided by MVRTD and three of the five partner organizations. They include demand response services and rides provided by volunteer drivers.

Comments regarding transportation needs and service gaps include the following:

- ▶ The Rutland County program has experienced an increase in demand for non-Medicaid medical trips, with the result that spending is ahead of projections for this point in the year. Critical care and other medical trips continue to be provided, but shopping trips have been cut back to twice a month per rider and social/personal/wellness trips have dropped lower on the list of eligible trip priorities. One partner has cut dialysis trips from 3/week/rider to 2/week.
- ▶ Clients' doctors have noted the benefits that come from attendance at the variety of exercise programs for older adults offered at the Castleton Community Center (one of the E&D partner organizations). Individuals who would benefit from those programs are often without transportation. Such trips fall into the social/wellness category and are hard to provide with limited funding. As a result, people are unable to participate in programs that not only improve the health of individuals but reduce overall health care costs in the community. (Programs include Better Balance, Bone Builders, Tai Chi, and a class for people who suffer from Parkinson's disease.)
- ▶ Staff of partner organizations as well as individuals needing transportation are sometimes unaware of the transportation resources that are available in the county.



- ▶ Partners' attempts to coordinate scheduling medical appointments and transportation with health care facilities have been unsuccessful.
- ▶ Rutland Regional Medical Center's dialysis clinic is at capacity. It may open an additional shift, but it would be during later evening hours when transportation is not in operation. Opioid treatment centers are taking a similar approach to expansion. Addition of new facilities with standard shifts would make transporting individuals to treatment more feasible.
- ▶ A centralized call center serving all demand response trips across agencies in Rutland County would help to improve coordination and efficiency.

## MetroQuest Responses

Respondents to the online MetroQuest survey conducted in September through December 2018 had the opportunity to identify a trip they would like to make using transit service but cannot due to lack of service or infrequent/inconvenient schedules. Respondents were also able to provide comments about the origin and/or destination of the trip they would like to make.

Forty-three residents of Rutland County commented on their desired trips. Several identified Boston and Albany as destinations to which they would like to travel. More often, respondents from Rutland City, Brandon, Castleton, Fair Haven, Poultney, and Proctor identified Burlington, Middlebury, Rutland, Brandon, White River Junction, and Fair Haven as locations to which they would like to take transit services.

Survey respondents were also asked to choose up to three transit improvements that would make them or people they know more willing to use public transportation. Choices were:

- More service near my home
- Service to my desired destinations
- More frequent service
- Service that runs evenings and/or weekends
- Faster service
- More reliable
- Cheaper
- If I felt safer riding on it
- If I understood how it works
- Nothing, I prefer driving

Of the 69 responses to this question from Rutland County, 77% were in the top four categories: more service near my home (16%), more service to my destinations (10%), more frequent service (20%) and service in the evenings and/or weekends (19%).

## Summary of Transit Service Gaps and Needs

The information presented above about Rutland County's demographic characteristics, location of employers and key destinations, existing transit services, and comments from residents and stakeholders point to the following transit service gaps and needs for the Rutland County region.



## Geographic Service Gaps

MVRTD fixed bus routes, and the associated ADA paratransit service and deviations that are available for people with disabilities, provide service in the communities that contain most of Rutland County's population, including concentrations of likely transit users, and key destinations. Those communities include:

- ▶ Rutland City
- ▶ Rutland Town
- ▶ Brandon
- ▶ Castleton
- ▶ Fair Haven
- ▶ Killington
- ▶ Poultney

Deviations of up to ¼ mile from fixed routes provide coverage for people with disabilities and others who need or desire a door-to-door trip.

Residents of those communities who live beyond the fixed route service area, and residents of the other towns in the county, have limited public transit service options, if any, available to them. Survey responses identified “more service near my home” and “service to my desired destinations” as transit improvements that would make the respondents more willing to use public transportation.

Relatively large employers located in Benson, Brandon, Castleton, Hubbardton, and Poultney are not located near fixed bus routes.

## Temporal Service Gaps

Twelve hours of service on weekdays and 9.5 hours of service on Saturdays is a good level of service for small urban and rural communities. Service frequency of 30 minutes between trips is also good. However, service hours do not accommodate people whose work schedules extend into the early morning or evening hours or Sundays. University students and others who would like to go downtown or attend community meetings and events in the evening are also affected.

Service hours and frequency on regional routes are more limited and may not meet the needs of all travelers—particularly those who would like to take a bus to work—but are still reasonable for that type of route.

Intercity bus service that can be used to connect to Boston is very limited—one Vermont Translines trip per day to the Upper Valley area that connects to Greyhound and Dartmouth Coach.

Hospital discharges can happen at all times of day, including hours during which transportation services are not in operation.

## Gaps for Specific Rider Groups/Trip Types

- ▶ Commuters who work 2<sup>nd</sup> or 3<sup>rd</sup> shifts or weekends
- ▶ Castleton University students—evening service in Rutland, connections to Boston





- ▶ Individuals/trips that fall outside eligibility requirements for demand response service—homeless families with children and foster care children/youth; non-recurring, non-medical/shopping/adult day trips, and social/personal/wellness trips for older adults, for example
- ▶ Additional trips for those who use E&D service for critical care medical appointments
- ▶ Coordination between health care and transportation providers for hospital discharges and transportation for specific patient groups, such as psychiatric patients and outpatients, is challenging.

## Other Gaps

Information about transit services, regarding both the availability and nature of existing services and the value of transit services to the community, appears to be incomplete among Rutland County residents and human service agency staffs.

## Transit Market Segments

### Size of Market Segments

For the purposes of developing public transit policies that focus transit investments on the markets that will most benefit from those policies, the number of individuals in Rutland County in each of seven sub-markets has been estimated. Market segments are mainly related to age but are also subdivided by income. Automobile availability is treated as a secondary characteristic, related to the age and income of each particular group. The results are shown in Table 3.

*Table 3: Estimated Transit Market Segments, Rutland County, 2017*

Market Segment	Likely Low-Auto Access	Estimated Number in Region, 2017
Youth (under 18)	X	10,329
Young adult (18-24), employed/student	X (by choice)	5,228
Adult (25-64)		24,353
Adult (25-64), below poverty line	X	2,257
People with disabilities (under age 80)	X	7,229
Younger seniors (65-79)		7,066
Older seniors (80+)	X	2,776
<b>Total</b>		59,147

Source: U.S. Census, American Community Survey (ACS) 5-Year Estimates

Youth and young adults, adults living in poverty, people with disabilities, and older seniors—those age 80 and older—are likely to have less access to a car for personal travel than adults with higher incomes and “newer” seniors, who typically continue to drive. Young adults, for reasons having to do with a number of generational trends, may prefer not to drive or own a car. For members of the other market segments, however, lack of access to a car is likely due more to an inability to drive or afford a car than to a choice. In Rutland County, market segments that are likely to have limited or no access to a car make up nearly 47% of the population.

### Impacts of Service Gaps on Market Segments

Table 4 summarizes the effect of the service gaps identified for Rutland County on the various transit sub-markets in the region.



Table 4: Gap Analysis by Transit Market Segment

Market Segment	Youth (under 18)	Young Adult (18-24), Employed or Student	Adult (25-64)	Adult (25- 64), Below Poverty Line	People with Disabilities	Younger Seniors (65-79)	Older Seniors (80+)
<b>Likely Low Auto Access</b>	X	X (by choice)		X	X		X
<b>Geographic Gaps</b>							
Residents beyond the fixed route service area and in towns without fixed route bus service have limited options	X	X	X	X	X	X	X
Rural communities lack transit options	X	X	X	X	X	X	X
Employers in some communities are not served by transit		X	X	X	X		
<b>Temporal Gaps</b>							
Fixed route and ADA paratransit services in Rutland end at 6:30 pm on weekdays and 5:30 pm on Saturdays		X	X	X	X	X	
No Sunday service is available on most routes/ADA paratransit		X	X	X	X	X	
Regional routes with deviations operate more limited hours		X	X	X	X	X	
Hospital discharges can occur when transit services are not in operation		X	X	X	X	X	X
<b>Trip Type Gaps</b>							
Children of homeless families and foster care children/youth need transit options	X						
Employers in some communities are not served by transit		X	X	X	X		
Service for some critical care medical, non-essential shopping, social/personal, and wellness trips may not be available for those outside of fixed route areas				X	X	X	X
<b>Accessibility Needs</b>							
Sidewalks and paths to bus stops may not be accessible during winter months	X	X	X	X	X	X	X
Taxi and volunteer driver services, which could provide service during non-transit hours, are not accessible					X		X
<b>Technology Challenges</b>							
Mobile apps for reservations and real-time vehicle location are desirable	X	X	X	X	X	X	X
<b>Information Gaps</b>							
Individuals may not be aware of the service options that are available to them	X	X	X	X	X	X	X
<b>Affordability Issues</b>							
Not an issue for riders in this region							



Several gaps are broad enough to affect all market segments. These include:

- ▶ **Geographic Coverage:** Rural communities lack transit options, making transportation an issue for all types of trips for those without access to a car or other means of a ride. In communities with transit service, difficulty making first/last-mile connections to bus stops or destinations further limits transit use.
- ▶ **Accessibility:** Sidewalks and paths to bus stops may not be safely accessible, especially during winter months. If fixed route service is available, it may not be usable or convenient.
- ▶ **Information:** Individuals and agency staff members may not be aware of the service options available. Service gaps and needs may be perceived rather than actual.

Other gaps are specific to certain market segments. For example:

- ▶ **All adult market segments**, who may need to travel to work or school, are affected by limited fixed route span of service. Service in Rutland City ends at 6:30 PM on weekdays and 5:30 PM on Saturdays. No service is available on Sundays on most routes. Regional routes operate more limited hours. Making work trips more difficult is the fact that not all employers are served by existing routes.
- ▶ **People with disabilities** are affected by temporal gaps in ADA paratransit service, which mirror limitations in fixed route service hours. For those traveling outside of the fixed route/ADA paratransit service area (i.e., outside of Rutland City), options for some critical care medical, non-essential shopping, social/personal, and wellness trips may not be available due to limitations in E&D program funding.
- ▶ **Older adults, especially those over age 80**, are also affected by limits on trips provided with E&D program funding and may be unable to make all but the most critical medical or adult day service trips.
- ▶ **Individuals living in poverty** may have Medicaid transportation to eligible medical appointments but may have no other options for other types of trips.



# Appendix K – Southern Windsor Analysis

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## TRANSIT SERVICE GAPS AND NEEDS

Transit service gaps and needs and estimates of the resources needed to improve transit services in the Southern Windsor region are discussed below. The region includes ten communities in Southern Windsor County, which make up the service area of the Southern Windsor County Regional Planning Commission (SWCRPC).

### Overview of Existing Services

#### Fixed Route Services

Transit service in the Southern Windsor Region is provided by The Current, an operating division of Southeast Vermont Transit (SEVT). The Current's services extend into adjacent Windham County, which is also part of SEVT's service area.

The Current operates two local bus routes, one seasonal route, and five commuter routes in Southern Windsor County. Services are shown in Figure 1.

#### *Local Bus Routes*

**The Springfield In-Town route** operates five trips between 9:00 a.m. and 4:00 p.m. on weekdays, fare-free. Service between **Springfield and Bellows Falls** (in Windham County) is available on four round trips between 7:00 a.m. and 5:30 p.m. on weekdays, free of charge.

#### *Commuter Routes*

The **Bellows Falls to Rutland (Rutland County) Connector** offers three trips on weekdays between 6:30 a.m. and 6:00 p.m., originating in Bellows Falls (Windham County) and traveling through Ludlow and Springfield, fare-free. Connections can be made twice a day to Marble Valley Regional Transit District's (MVRTD) bus service in Rutland.

Service to Dartmouth Hitchcock Medical Center (DHMC) in Lebanon, NH and Dartmouth College, in Hanover, NH from the Exit 7, 8, and 9 (I-91) Park and Rides is provided on the **DHMC Express #1 and #2 routes and the Dartmouth College Express #1 and #2 routes**. Two morning peak trips and two afternoon trips are provided on weekdays.

#### *Seasonal Route*

Fare-free seasonal service is provided on The Current's Bellows Falls to Okemo Mountain Resort in Ludlow, which operates between November and April, offering two round trips Monday through Saturday.

#### Dial-A-Ride and Other Services

The Chester-Springfield-Claremont Shopper Shuttle operates on the first and third Wednesdays of each month, providing access from those Southern Windsor County towns to Claremont, NH for shopping. Service is fare-free but requires an advance reservation.

The Current also offers advance reservation Dial-A-Ride service to eligible individuals in a number of communities in Southern Windsor and Windham counties. All ten communities in the Southern Windsor County region receive Dial-A-Ride service.

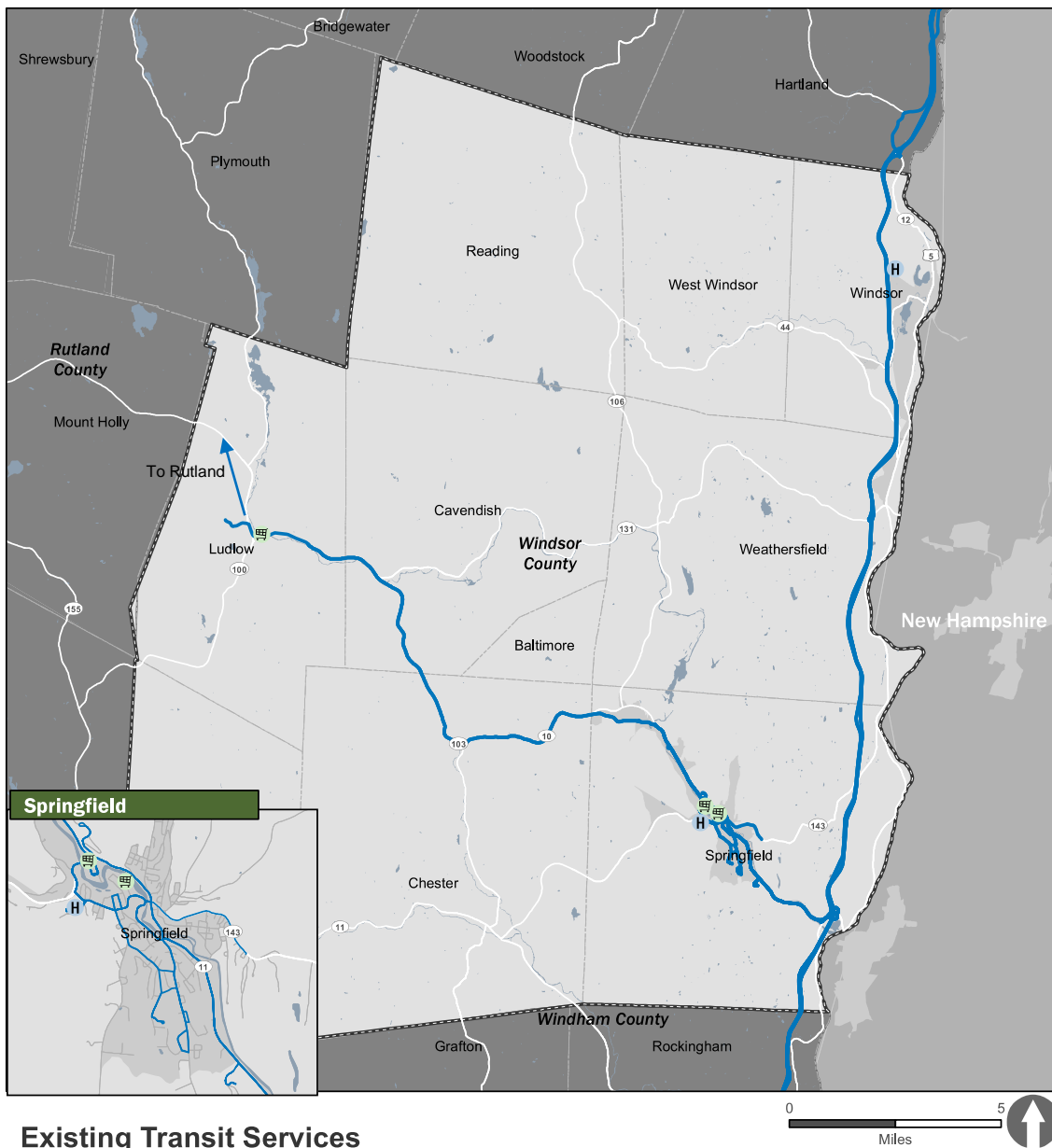
Service for older adults (age 60 and over) and people with disabilities who are clients of SEVT's partners in the E&D transportation program are provided by SEVT, using agency drivers and vehicles or volunteer





Figure 1: Transit Services in Southern Windsor County

## Southern Windsor County Region



### Existing Transit Services

— The Current

- |  |                         |  |                                       |
|--|-------------------------|--|---------------------------------------|
|  | Veterans Affairs Center |  | Regional Planning Commission Boundary |
|  | Social Security Office  |  | Municipal Boundary                    |
|  | Hospital                |  | Urban Areas                           |
|  | Higher Education        |  |                                       |
|  | Retail Center           |  |                                       |



drivers. Eligible trip types include critical care medical and adult day health, local and out-of-town medical, congregate meals, and shopping. E&D partners include Senior Solutions: The Council on Aging for Southeast Vermont, The Gathering Place, Bellows Falls Senior Center, Brattleboro Adult Day, and Springfield Adult Day.

Volunteers in Action, based in Windsor, has a roster of about 25 volunteers. Not all are available all the time; perhaps five or six drive every week, transporting four or five regular riders.

No intercity services stop in Southern Windsor County, but Amtrak and intercity bus services are located nearby.

Several taxi companies serve the area.

## Key Destinations

Retail areas (including supermarkets), health care facilities, colleges and universities, and human service agency offices are primarily located in the following communities:

### Retail Areas

- ▶ Springfield
- ▶ Ludlow

### Medical Facilities

- ▶ Springfield (Springfield Medical Care System)
- ▶ Windsor (Mt. Ascutney Hospital and Health Center)
- ▶ Ludlow

### Human Service Agencies

- ▶ Springfield
- ▶ Ludlow
- ▶ Windsor

Some of those key destinations are shown in Figure 1 (more detail can be found on the route maps posted on The Current website, <https://crtransit.org/>). The Current's bus routes serve many local and regional destinations.

## Employment and Commuting Patterns

### Employers

Figure 2 shows the location of employers of various sizes in the county.

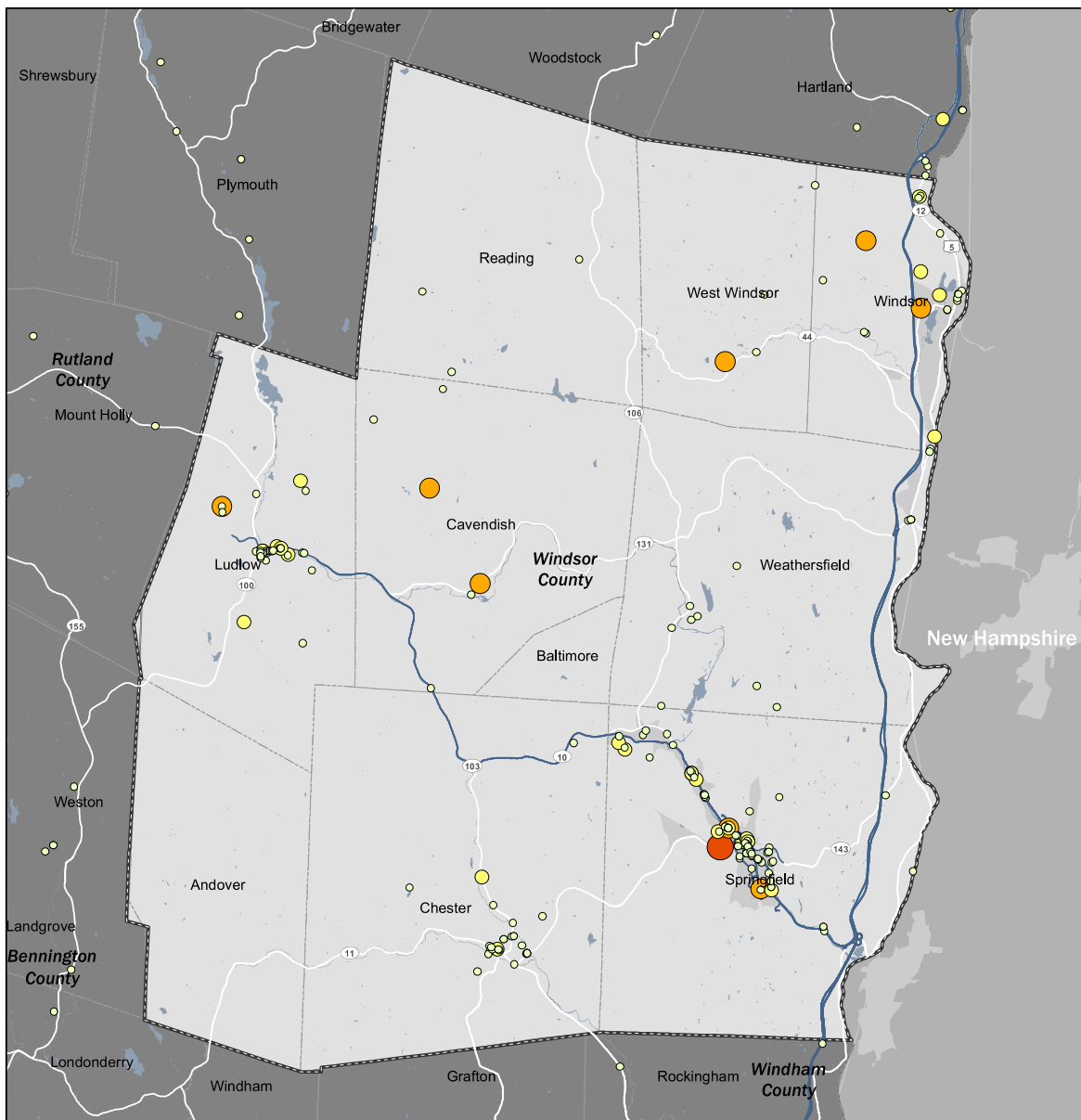
The highest concentration of employers is found in Springfield, where the region's largest employer (300-499 employees) and others are located. Several relatively large employers, with over 100 employees each, are located in Windsor, West Windsor, Cavendish, and Ludlow. Smaller employers with fewer than 100 employees are scattered throughout the region.

A number of employers are not served the region's few fixed bus routes. The larger of those employers are located in Windsor, West Windsor, Cavendish, Ludlow, and Chester.



Figure 2: Employers in Southern Windsor County

## Southern Windsor County Region



### Employers by Number of Employees

- 10 - 49
- 50 - 99
- 100 - 299
- 300 - 499
- 500 +

Source: Dun & Bradstreet, 2005

- 0 5 Miles
- Regional Planning Commission Boundary
- Township Boundary
- Urban Areas
- Transit Routes



## Commuting Patterns

Table 1 presents an overview of where residents of the Southern Windsor Region work and where individuals who are employed in the region live.

*Table 1: Employment in the Southern Windsor Region, 2015*

Employment	Number	Percent of Total Southern Windsor Region Employment	Percent of Total Employed Southern Windsor Region Residents
<b>Workers in Southern Windsor Region</b>			
Total Employees in Southern Windsor Region	9,787	100%	
Southern Windsor Region Employees Residing in Southern Windsor Region	4,945	51%	
Residents of Other Areas Working in Southern Windsor Region	4,842	49%	
Residents of Other Vermont Counties	2,897	30%	
Residents of Other States	1,945	19%	
<b>Residents of Southern Windsor Region</b>			
Total Employed Southern Windsor Region Residents	11,634		100%
Southern Windsor Region Residents Employed in Southern Windsor Region	4,945		43%
Southern Windsor Region Residents Employed in Other Areas	6,689		57%
Working in Other Vermont Counties	3,877		33%
Working in Other States	2,812		24%

Source: U.S. Census, Longitudinal Employer-Household Dynamics, 2015

Just over one half of the individuals who are employed in Southern Windsor County also live there. Of those who live elsewhere, 30% live in other Vermont counties, including Windham, Rutland, Bennington, Chittenden, Addison, and Orange counties. Nineteen percent of individuals who work in the county live in New Hampshire, primarily in Claremont, Keene, and Hanover/Lebanon.

Of the Southern Windsor County residents who are employed, 43% live in the region. Fifty-seven percent of the region's employees live in other areas: 33% in other Vermont counties, including Windham, Rutland, Chittenden, Bennington, and Washington counties. The majority of the 24% of employees who live in other states live in New Hampshire, particularly Grafton and Sullivan counties.

Figure 3 illustrates the daily commuting travel flows into Springfield at the town level. Most commuters to Springfield come from neighboring towns in both Vermont and New Hampshire. The highest number of commuting trips to Springfield (500-1,999 per day) come from within the town. Chester generates 200-499 trips per day. Rockingham; Weathersfield; Cavendish; Claremont, NH (Sullivan County); and Charlestown, NH (also in Sullivan County) send 100-199 commuters to Springfield daily.

As shown in Figure 4, Brattleboro (Windham County) is also a key destination for work trips by Windsor County residents. Over 140 Springfield residents commute to Brattleboro daily, as do dozens of people from Chester and Windsor. Finally, the Hanover/Lebanon/White River Junction is another important employment destination for Windsor County residents. As shown in Figure 5, over 200 commuters travel from Springfield and Windsor to Hanover/Lebanon, as do another 150 individuals from Weathersfield.



Figure 3: Daily Commuters to Springfield

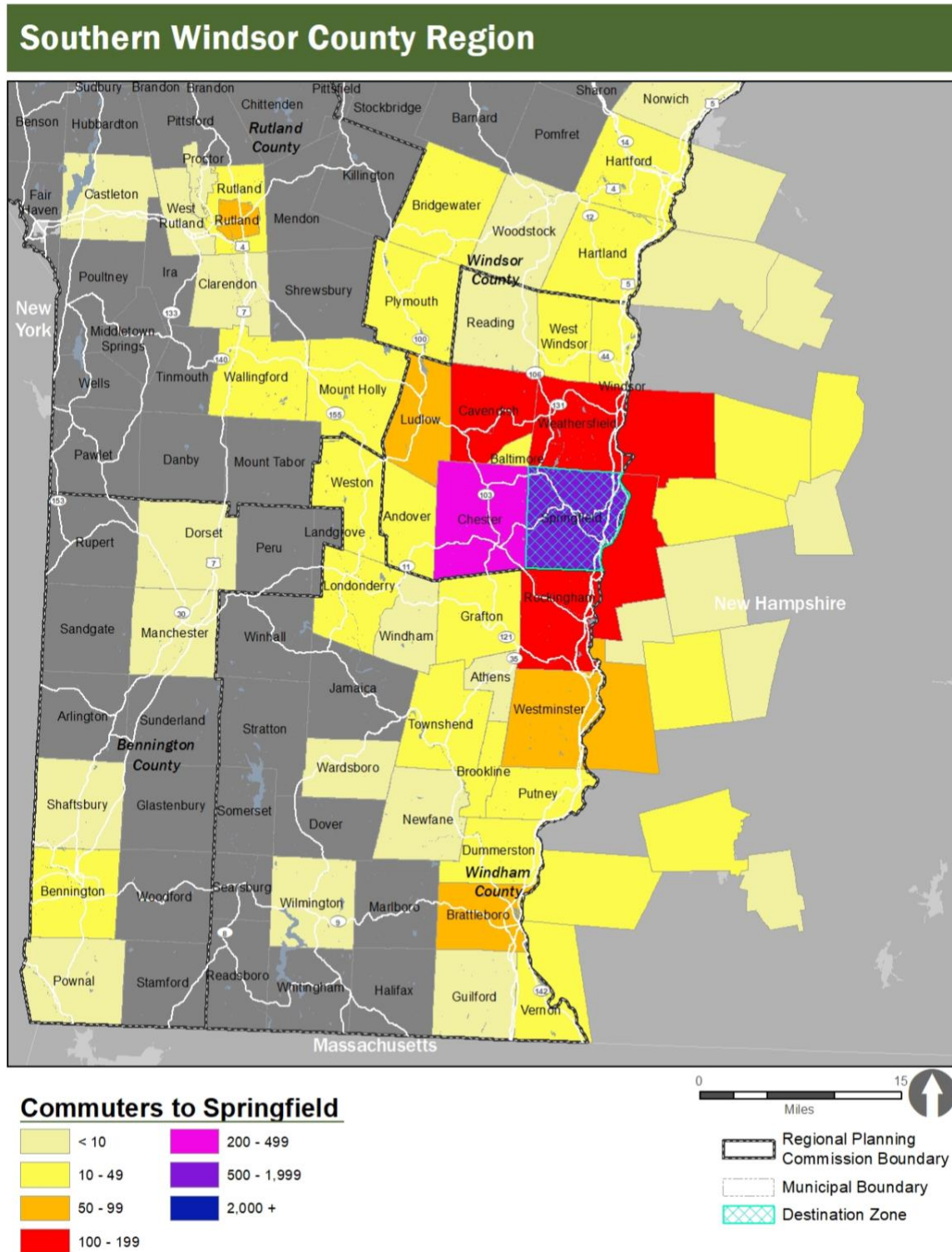


Figure 4: Daily Commuters to Brattleboro

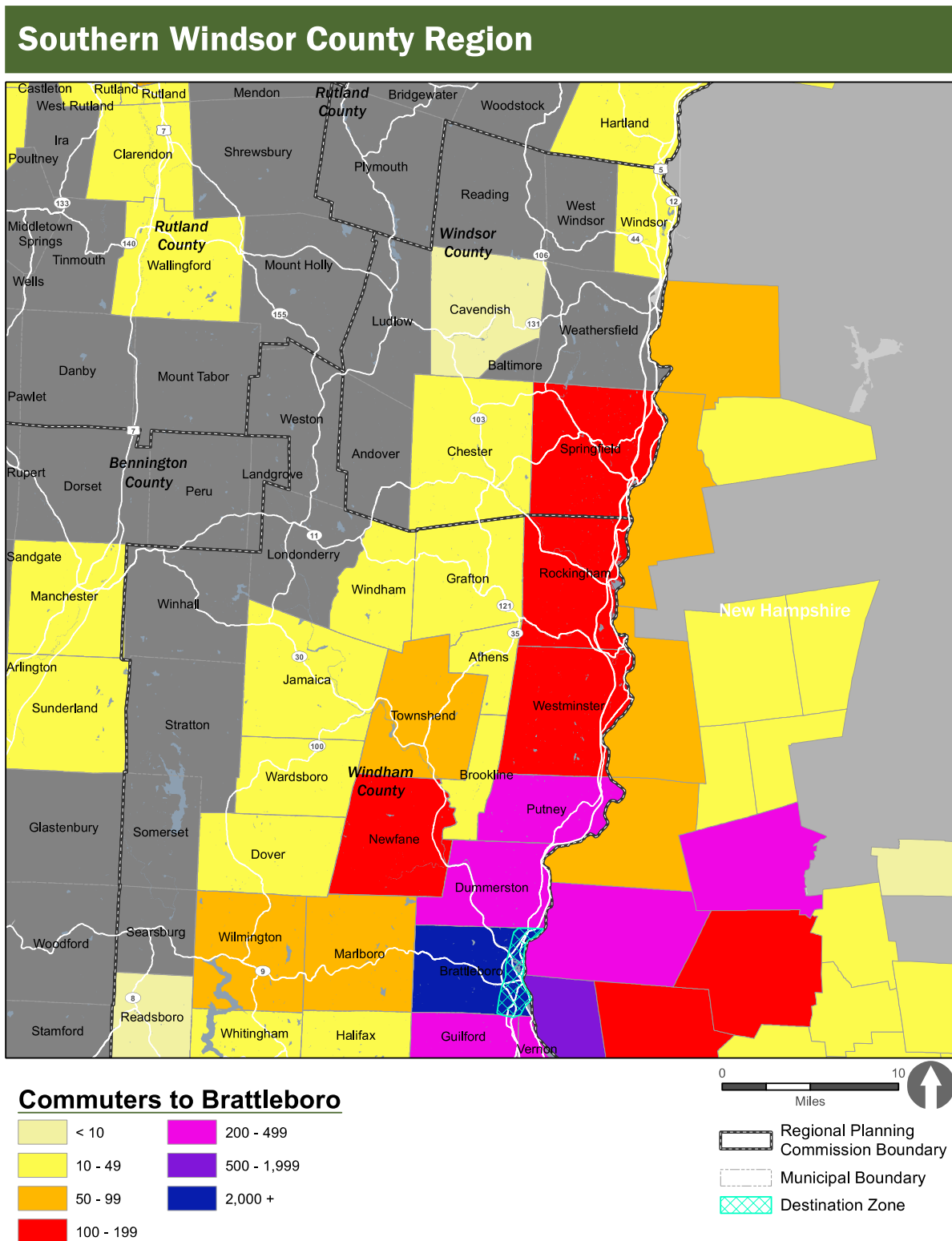
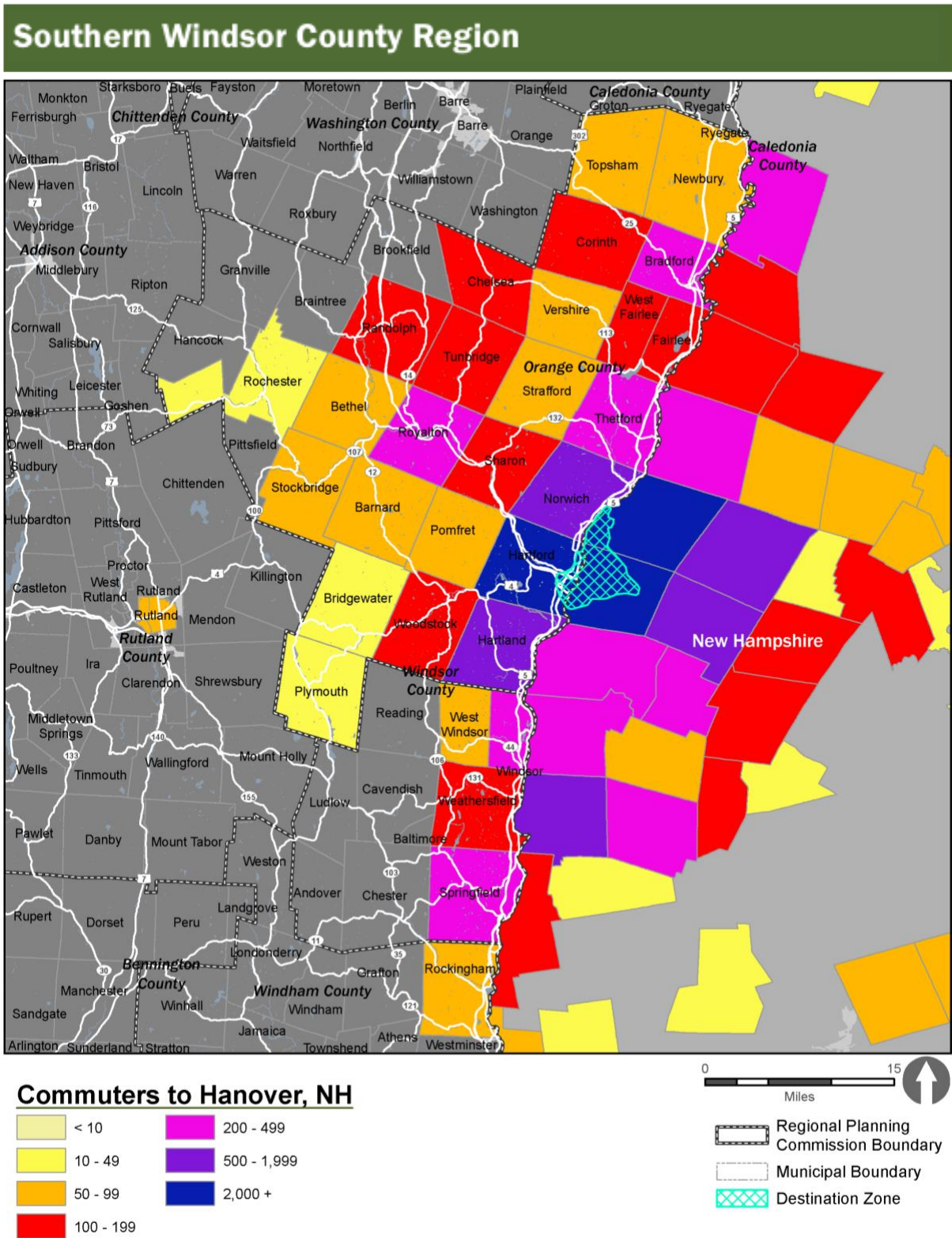




Figure 5: Daily Commuters to Hanover/Lebanon, NH





## Demographic Overview

This section presents an overview of the demographic characteristics of the Southern Windsor Region and summarizes the location and density of the general population of the county and specific market segments that are likely to need transit service because they cannot or choose not to drive.

Table 2 provides summary demographic characteristics for the Southern Windsor Region as of 2016, as compared to Vermont as a whole.

*Table 2: Demographic Characteristics of Southern Windsor County, 2012-2016*

	<b>Southern Windsor County</b>	<b>Vermont</b>
Total population	24,434	626,249
Population density	71 persons per square mile	68 persons per square mile
Population age 60 and over	29%	24%
Population age 80 and over	6.0%	4.3%
Residents living below poverty line	12.4%	11.6%

Source: American Community Survey 5-year Average 2012-2016

In 2016, just under 4% of the state's population lived in Southern Windsor County. At 71 persons per square mile, the region is slightly more densely populated than the state as a whole. The region has the highest percentages of adults age 60 and over (29%) and adults age 80 and over (6%) among the eleven PTPP regions. The percentage of residents living in poverty is slightly higher than in the state as a whole.

## Population Density

Figure 6 shows the concentration of the population in Southern Windsor Region communities. Density is a helpful characteristic to consider in the context of public transportation services because it is one measure of where service, particularly fixed route service, is likely to be needed and cost-effective.

Moderate to high levels of density—1,000 to 4,999 persons per square mile—are found in the eastern portion of Windsor and the centers of Springfield and Ludlow. The rest of Springfield and central Chester show moderate to low levels of density, 500-999 persons per square mile. The rest of the region shows levels of population density that can be considered rural.

## Market Segments and Transit Propensity

Groups that are likely to need transit services because they do not drive, for reasons of disability, income, or choice, include older adults, people with disabilities, individuals with limited or no access to a car, and younger adults. Figure 7 through Figure 9 show the number and percentage (as compared to the state average) of individuals in the first three groups at the town level in the Southern Windsor Region. All data was obtained from the American Community Survey (ACS) 2012-2016 Five-year Estimates.

### *Older Adults*

Figure 7 shows the number and percentage of adults age 80 and over in 2012-2016, as compared to the statewide average, in the Southern Windsor Region. The focus in Figure 7 is on this older age group



because younger seniors typically continue to drive and because a significant rise in this population is expected in Vermont (and nationwide) in the next 10-20 years.

The highest number of oldest adults live in Springfield, between 500 and 750 individuals. The percentage of oldest adults in Springfield is 1-2 times the state average. In other communities, the numbers of oldest adults are much lower, but the percentages in those towns is also 1-2 times the state average.

### ***People with Disabilities***

Figure 8 shows the number and percentage of people with disabilities, as compared to the statewide average, in communities in the Southern Windsor Region. Four types of disabilities are included: those associated with hearing, vision, cognition, and working.

In general, the numbers of people with disabilities in each town in the region is very small. The highest number of individuals—roughly 1,000—live in Springfield. The percentage of people with disabilities in all towns except West Windsor and Reading is above the state average.

### ***Auto Ownership***

The number and percentage of households in towns in the Southern Windsor Region with limited access to an auto in 2012-2016 are shown in Figure 9. Households with one resident and no vehicle and those with two or more members but only one vehicle or no vehicle are included.

About 1,000-1,500 households with limited auto ownership are located in Springfield. The next highest number—about 500 households—is found in Windsor. In both towns, the percentage of such households is 1-2 times the state average. In other communities, the numbers of households with limited access to a vehicle are very low, and the percentage of such households in each community is below the state average.

### ***Transit Propensity***

As noted above, older adults, people with disabilities, individuals with lower incomes, and younger adults are likely to need transit services because they cannot or do not drive. The transit propensity index mapped in Figure 10 combines information about the location and weighted size of the county's total population and of various populations that are typically dependent on transit services—youth, older adults, people with disabilities, people living in poverty, and households with one car or less.

Portions of Springfield, Windsor, Chester, and Ludlow are the only areas that show even moderate propensity for transit use. Other communities in the region show low/moderate or low levels of propensity.



Figure 6: Population Density in Southern Windsor County, 2017

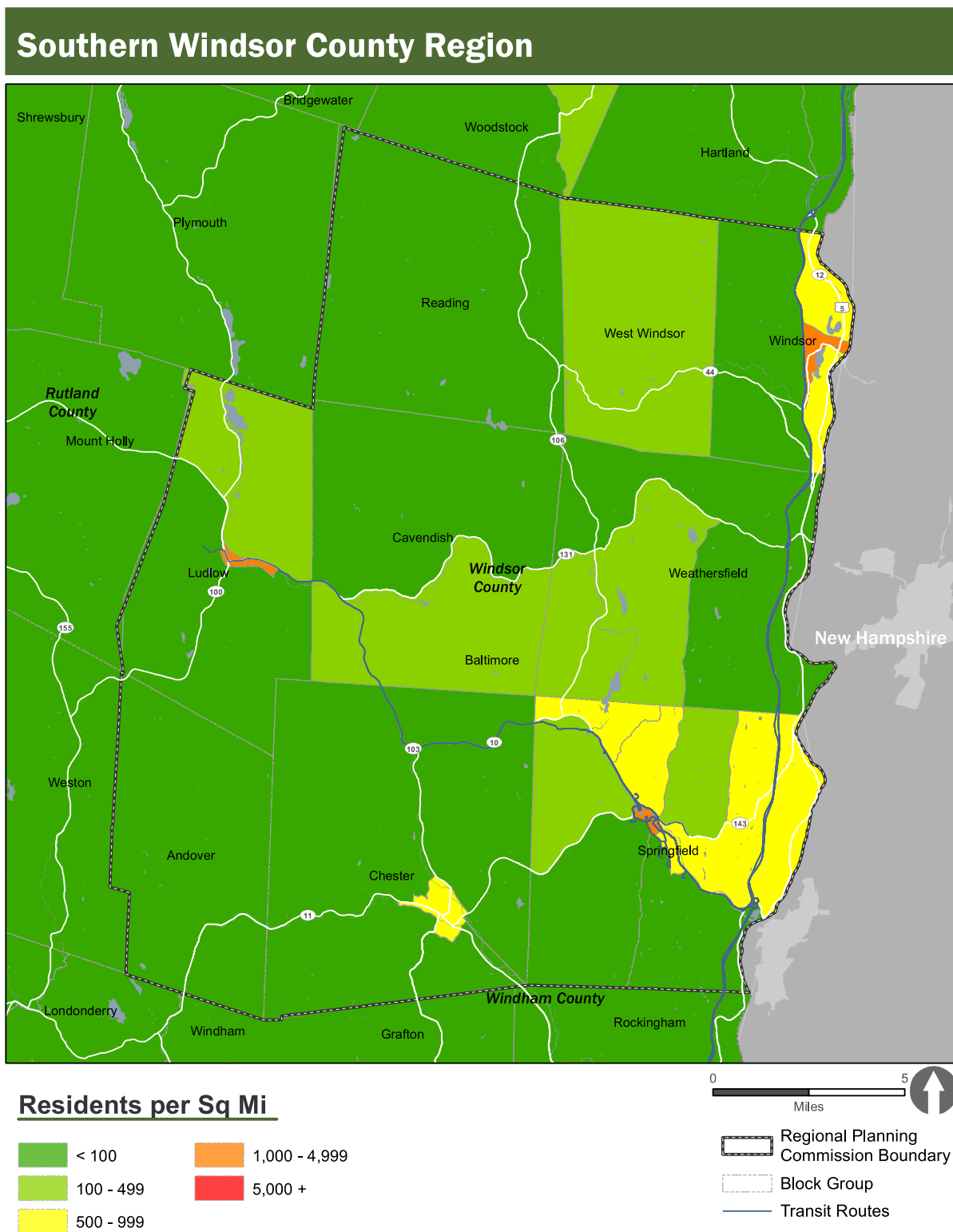
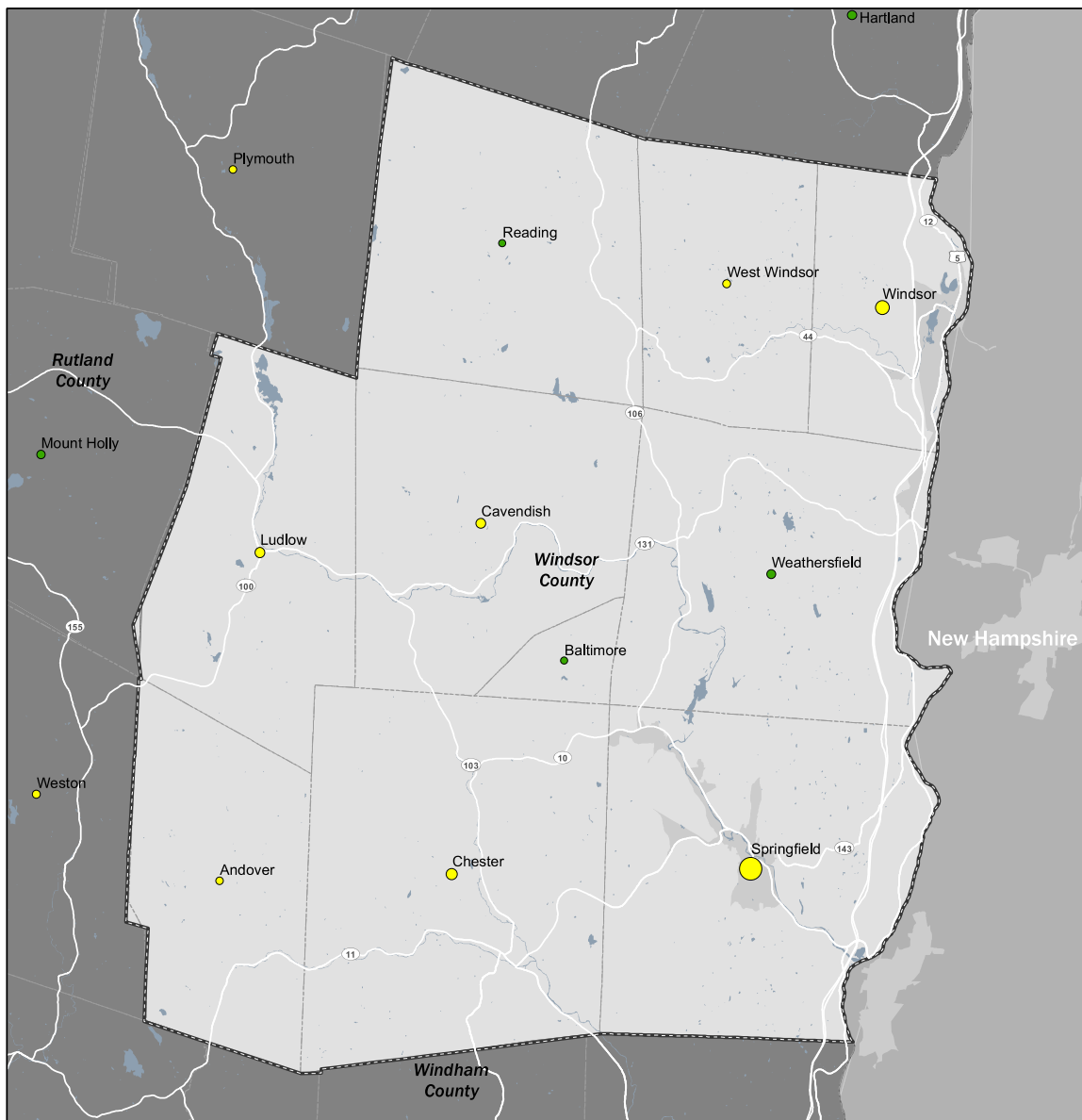


Figure 7: Number and Percentage of Adults Age 80 and Over in Southern Windsor County Communities 2012-2016

## Southern Windsor County Region



### % of Population Over 80

- Below Average
- 1x - 2x Average
- > 2x Average

VT Average = 4.3%

### Total Population Over 80

- 1
- 250
- 500
- 750
- 1,000



- Regional Planning Commission Boundary
- Municipal Boundary
- Urban Areas



Figure 8: Number and Percentage of People with Disabilities in Southern Windsor County Communities, 2012-2016

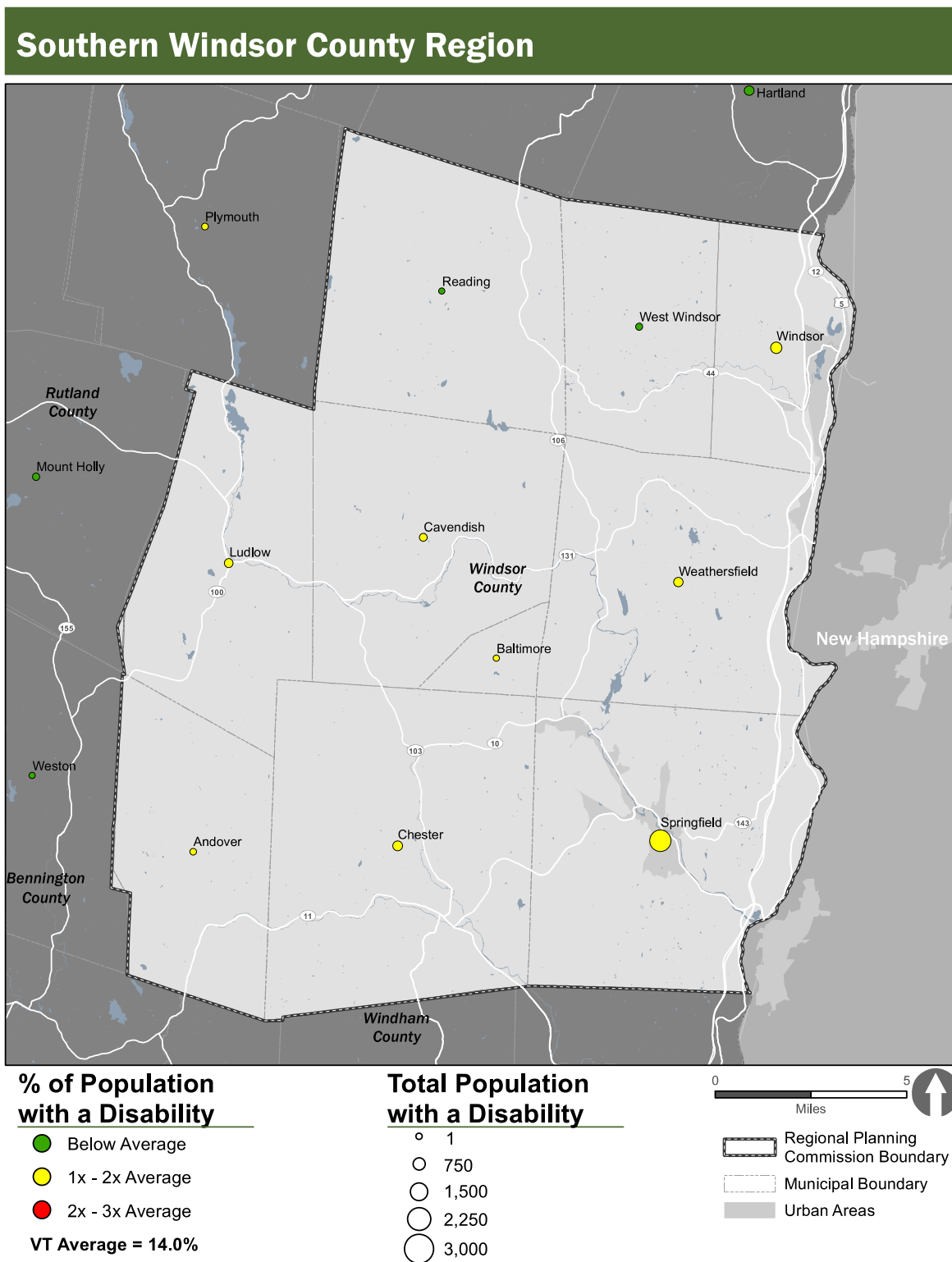


Figure 9: Number and Percentage of Households with Limited Auto Ownership in Southern Windsor County Communities, 2012-2016

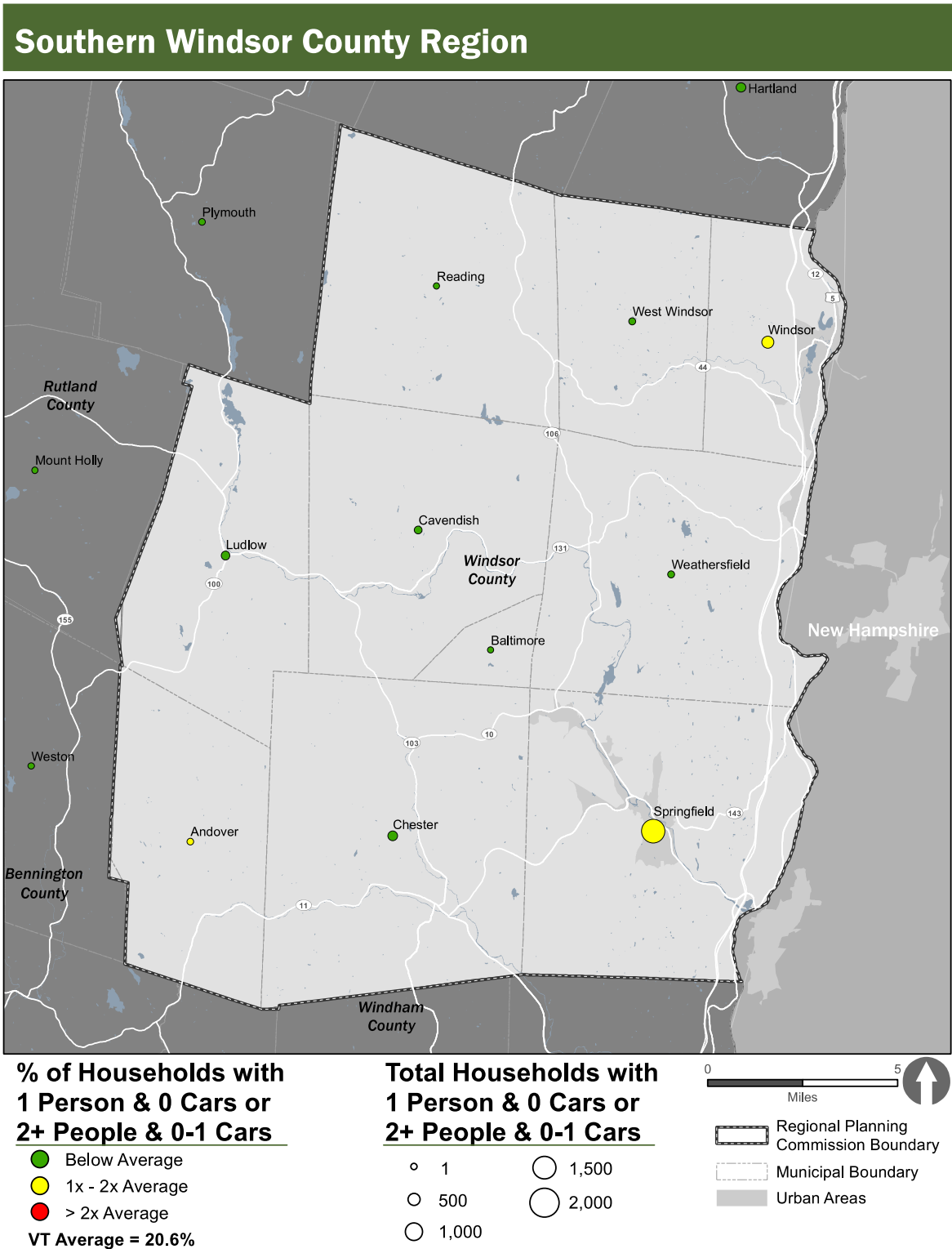
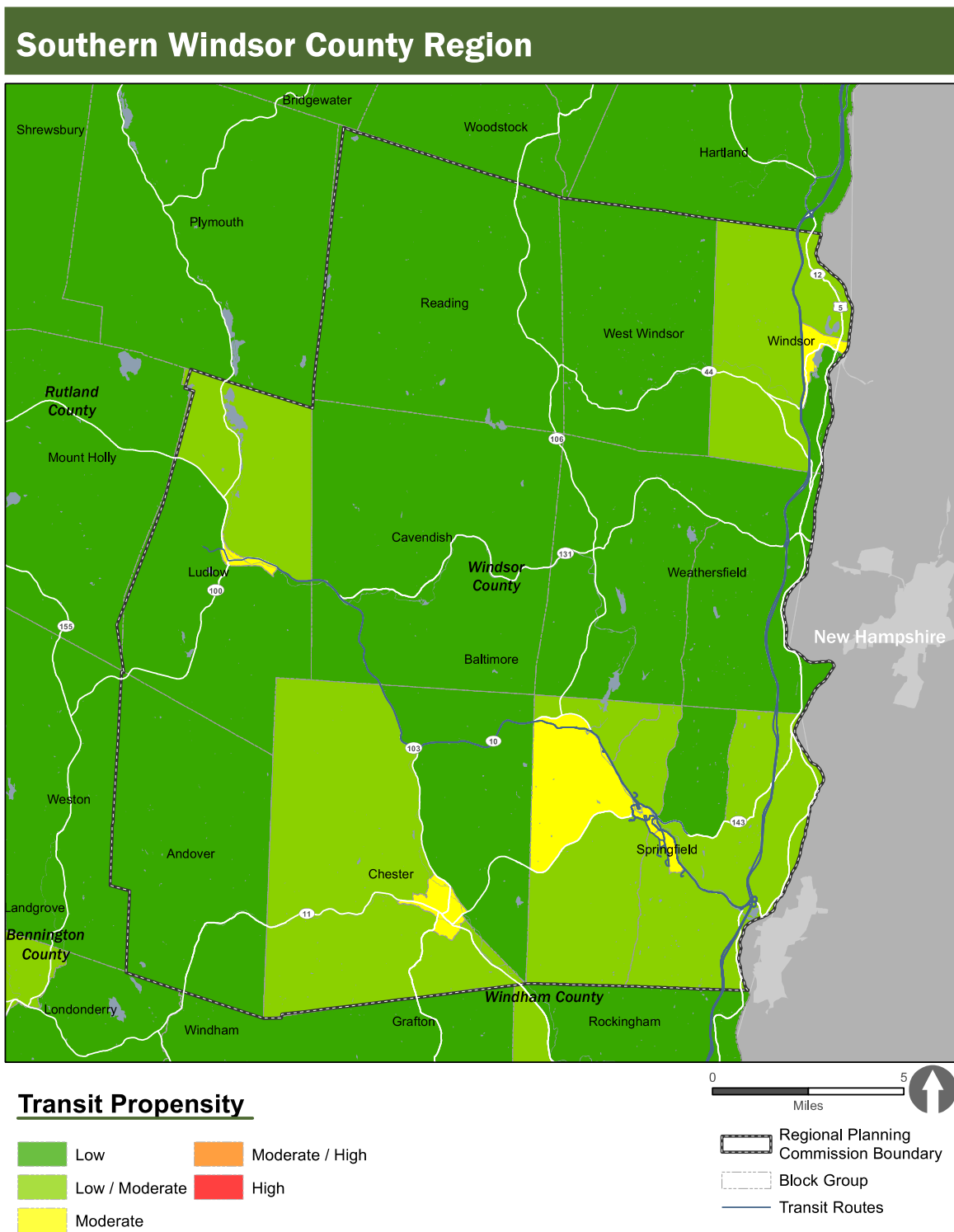


Figure 10: Transit Propensity Index in Southern Windsor County Communities





## Regional Forum Comments

Stakeholders and members of the public who participated in the regional forum held at the Windsor Town Welcome Center on November 1, 2018 made comments regarding service gaps, travel challenges, unmet transportation needs, and potential solutions, as summarized below.

### Service Gaps and Challenges

#### *Geographic Gaps*

- ▶ Windsor needs more service, both connections to the Upper Valley and across the river.
- ▶ Volunteers in Action previously tried service to these locations for a year (approximately four or five years ago) but saw limited ridership.
- ▶ Springfield-Market Basket route was also tried several years ago but was not successful in terms of ridership.

#### *Temporal Gaps*

- ▶ Extended hours for service to Springfield are important.
- ▶ Long, late, or afternoon appointments are difficult to coordinate with transit.
- ▶ Passengers find calling ahead to schedule a ride to be off-putting; prefer expectation that a bus will arrive at a certain time.
- ▶ Need for weekend service, especially from Windsor to Springfield. Weekend activities are limited because of this.
- ▶ Weekend, social, evening, late night trips are difficult, as are trips to see family in another part of the state.

#### *Trip Type Gaps*

- ▶ Connections from Windsor to hospital and grocery stores are important but lacking. Transit should support aging in place.
- ▶ Church or classes that may last for a few hours are especially difficult to serve with volunteer drivers, as agencies must find a driver for both ends of the trip.

#### *Accessibility Needs*

- ▶ Walk from Park & Ride into Town of Windsor is long, unsafe. Opportunity for branching routes that go into town?
- ▶ Assistance getting on and off vehicles with walker is needed.
- ▶ Some customers need guidance about how to navigate the system.
- ▶ Travel training can give potential passengers more familiarity with a service, may help overcome stigma of riding.

#### *Technology Challenges*

- ▶ Cell phone gaps in more rural or mountainous areas, along I-91.

#### *Affordability Gaps*

- ▶ There is some willingness to pay a fare to support services that are currently low cost or free (though the ability to donate is noted)



## *Other Gaps*

### **Information**

- ▶ Agencies and drivers should communicate to passengers in a way that is trauma-informed and aware of needs for those who may have physical or mental disabilities. Some driver training or other means of consistency needed.
- ▶ Participants encourage distributing Go Vermont information at libraries, especially since computer terminals there can be used to access the service.
- ▶ Survey of RSVP volunteers found that most individuals are getting their information from churches, weekly town papers, and flyers at stores; social media and TV are far less common sources of information.
- ▶ Information is needed for communicating how transit is used (re: town meetings). Towns support services that help people, so long as need can be demonstrated.
- ▶ Providing information to case managers is a successful means of communicating to customers, especially around service changes and disruptions.
- ▶ Email newsletters are useful but should also post printed copies in public places like libraries. Windsor town manager has an update distributed by both means.
- ▶ Sense of independence is important to people – if someone can drive, they don't want to use the bus. The perception of those who ride the bus is that they are poor.

## **Other Comments**

- ▶ Volunteers in Action has not been able to fill a van for shopping trips when attempted previously. Instead, it appears that informal neighbor-to-neighbor relationships fill this gap. The group discussed whether this hybrid approach of state and local government services, non-profits, and neighborly assistance will still work as demographics change.
- ▶ Volunteer drivers are in their 60s, 70s, and even their 80s. Younger volunteers may be more difficult to recruit because of the other opportunities they have for use of their time. Agencies need to communicate the value of this community service.

## **Potential Solutions**

When asked to rank potential service improvements, forum participants most often chose the options listed below.

### *Information*

- ▶ Go Vermont Information
- ▶ Online Reservations

### *Service Enhancements*

- ▶ Expand service areas
- ▶ More trip types
- ▶ Volunteer program enhancements
- ▶ Voucher program

### *Accessibility Improvements*

- ▶ Accessible signals & signs



- ▶ Sidewalks, curb cuts (tie for #2)
- ▶ Shelters at bus stops (tie for #2)

### *Technology*

- ▶ Mobile apps
- ▶ Scheduling and dispatching software

Recommendation	Votes
Expand Service Areas	8
Volunteer program enhancements	6
Voucher program	3
Online Reservations	2
Shelters at stops	2
Accessible signals and signs	1
Sidewalks, curb cuts	1
More trip types	1
Mobile apps	1
Go! Vermont Info	0
Scheduling / dispatching	0

### Comments from the Southeast Vermont E&D Committee

Development of the PTPP included discussions with the stakeholder committees that provide oversight for administration of the Vermont Elders and Persons with Disabilities (E&D) Transportation Program in each of nine regions, including Southeast Vermont, which includes the Windham County and Southern Windsor County regions. Members of the E&D advisory committees typically include the local public transportation provider; partner organizations—municipalities, human service agencies, and other organizations—that receive services for their clients from the provider, and sometimes also operate services for those clients directly; and the regional planning agency that serves the area.

The discussions with those committees yielded additional comments about transportation needs and potential solutions in those regions.

Services in the Windham County region that are supported with E&D program funds are provided by both divisions of SEVT. They include demand response services and rides provided by volunteer drivers for older adults (age 60 and over), people with disabilities, and individuals participating in programs and services offered by the partners. Eligible trip types include critical care medical and adult day health, local and out-of-town medical, congregate meals, and shopping. E&D partners include Senior Solutions: The Council on Aging for Southeast Vermont, The Gathering Place, Bellows Falls Senior Center, Brattleboro Adult Day, and Springfield Adult Day.

Comments regarding transportation needs and service gaps include the following:

- ▶ Critical care medical trips are limited to two trips for dialysis and three trips for cancer treatment per rider per week



- ▶ Recent cuts to shopping trips have also been made to help partners manage their E&D budgets and maintain adult day trips. Establishing medical trip limits in communities that do not currently have them is being considered.
- ▶ No other “quality of life” trips are possible due to funding constraints
- ▶ Potential new partner organizations approach the committee, but withdraw when they find there is no funding for new services
- ▶ A portion of funding that could be used for discretionary purposes, such as “other” projects or to fund services for new partners, would be helpful

## MetroQuest Responses

Respondents to the online MetroQuest survey conducted in September through December 2018 had the opportunity to identify a trip they would like to make using transit service but cannot due to lack of service or infrequent/inconvenient schedules. Respondents were also able to provide comments about the origin and/or destination of the trip they would like to make.

Only six residents of the Southern Windsor County region commented on their desired trips. Respondents from Windsor and Reading identified Windsor, the Upper Valley, Hartland, Montpelier, and Burlington as locations to which they would like to take transit services.

Survey respondents were also asked to choose up to three transit improvements that would make them or people they know more willing to use public transportation. Choices were:

- More service near my home
- Service to my desired destinations
- More frequent service
- Service that runs evenings and/or weekends
- Faster service
- More reliable
- Cheaper
- If I felt safer riding on it
- If I understood how it works
- Nothing, I prefer driving
- Other

Of the four responses to this question from the Southern Windsor County region, 75% were in the top three categories: more service near my home (25%), service in the evenings and/or weekends (25%) and more service to my destinations (25%).

## Summary of Transit Service Gaps and Needs

The information presented above about the Southern Windsor Region’s demographic characteristics, location of employers and key destinations, existing transit services, and comments from residents and stakeholders point to the following transit service gaps and needs for the region.

### Geographic Service Gaps

The Current’s fixed route service in the region consists of a commuter route that connects Springfield (continuing from Bellows Falls in Windham County) and Ludlow, local service within Springfield and between Springfield and Bellows Falls, and four commuter routes that operate along I-91 to the



Hanover/Lebanon, NH area. Those routes serve a number of employers and other key destinations and the population centers of Springfield, Ludlow, and Windsor. However, many communities are without transit options other than those provided for older adults and people with disabilities by Dial-A-Ride and E&D transportation services.

Communities without transit options include all of Reading, West Windsor, Baltimore, and Andover, and large parts of Cavendish, Weathersfield, and Chester.

In addition, residents of the fixed-route communities who live too far away from those routes to make use of them also have limited options.

### **Temporal Service Gaps**

The two fixed routes that provide local service in the region (Springfield In-Town and Bellows Falls to Springfield) operate approximately business hours on weekdays only. A limited number of round trips is provided on each route. This is a very basic span and frequency of service for small urban/rural communities. The Chester-Springfield-Claremont Shopper service addresses the need for a specific type of trip, but also operates limited hours, on two Wednesdays per month.

The commuter routes operated by the Current offers limited morning and afternoon peak hour trips, which is appropriate for that type of service. However, such schedules lessen the usefulness for potential riders who would like to travel between the served origins and destinations during the mid-day hours or to reach jobs with non-traditional hours.

The seasonal route between Bellows Falls and Ludlow operated by both the Current offers frequent service during extended days and hours but does not operate between April and November. Residents of the communities in which those routes operate, and businesses along those routes that are open year-round have no transit options during half of the year.

Regional forum participants noted the need for options for evening, late night, and weekend trips.

### **Gaps for Specific Rider Groups/Trip Types**

- ▶ Critical care medical trips are limited to two trips for dialysis and three trips for cancer treatment per rider per week. No other “quality of life” trips are possible due to funding constraints.

Comments from regional forum participants and the Southeast Vermont E&D committee identified the following gaps for specific types of riders and trips:

- ▶ Rides to church, classes, or other events that require a volunteer driver to wait for the passenger or two volunteer drivers to be identified are difficult to provide.
- ▶ Options for shopping or medical trips between Windsor and the Upper Valley are needed.
- ▶ Trips to other parts of the state to visit family are difficult.

### **Other Gaps**

- ▶ Regional forum participants noted that cell phone service can be spotty in rural or mountainous areas and along I-91.



## Transit Market Segments

### Size of Market Segments

For the purposes of developing public transit policies that focus transit investments on the markets that will most benefit from those policies, the number of individuals in the Southern Windsor Region in each of seven sub-markets has been estimated. Market segments are mainly related to age but are also subdivided by income. Automobile availability is treated as a secondary characteristic, related to the age and income of each particular group. The results are shown in Table 3.

Table 3: Estimated Transit Market Segments, Southern Windsor Region, 2017

Market Segment	Likely Low-Auto Access	Estimated Number in Region, 2017
Youth (under 18)	X	4,072
Young adult (18-24), employed/student	X (by choice)	1,188
Adult (25-64)		9,772
Adult (25-64), below poverty line	X	1,073
People with disabilities (under age 80)	X	3,373
Younger seniors (65-79)		2,923
Older seniors (80+)	X	1,434
<b>Total</b>		23,835

Source: U.S. Census, American Community Survey (ACS) 5-Year Estimates

Youth and young adults, adults living in poverty, people with disabilities, and older seniors—those age 80 and older—are likely to have less access to a car for personal travel than adults with higher incomes and “newer” seniors, who typically continue to drive. Young adults, for reasons having to do with a number of generational trends, may prefer not to drive or own a car. For members of the other market segments, however, lack of access to a car is likely due more to an inability to drive or afford a car than to a choice. In the Southern Windsor Region, market segments that are likely to have limited or no access to a car make up nearly 47% of the population.

### Impacts of Service Gaps on Market Segments

Table 4 summarizes the effect of the service gaps identified for the Southern Windsor Region on the various transit sub-markets in the region.

Several gaps are broad enough to affect all market segments. These include:

- ▶ **Geographic Coverage:** Rural communities lack transit options, making transportation an issue for all types of trips for those without access to a car or other means of a ride. In communities with transit service, difficulty making first/last-mile connections to bus stops or destinations further limits transit use.
- ▶ **Accessibility:** Sidewalks and paths to bus stops may not be safely accessible, especially during winter months. If fixed route service is available, it may not be usable or convenient.
- ▶ **Information:** Individuals and agency staff members may not be aware of the service options available. Service gaps and needs may be perceived rather than actual.

Other gaps are specific to certain market segments. For example:

- ▶ **All adult market segments**, who may need to travel to work or school, are affected by limited fixed route span of service. The Current’s local services operate from 7:00 a.m. to 5:30 p.m. and from 9:00



a.m. to 4:00 p.m. on weekdays. Regional commuter routes operate more limited hours. Making work trips more difficult is the fact that not all employers are served by existing routes.

- ▶ **People with disabilities** are affected by limitations in E&D program funding. Options for shopping, social/personal, and wellness trips may not be available.
- ▶ **Older adults, especially those over age 80**, are also affected by limits on trips provided with E&D program funding and may be unable to make all but the most critical medical or adult day service trips.
- ▶ **Individuals living in poverty** may have Medicaid transportation to eligible medical appointments but may have no other options for other types of trips.





Table 4: Gap Analysis by Transit Market Segment

Market Segment	Youth (under 18)	Young Adult (18- 24), Employed or Student	Adult (25-64)	Adult (25- 64), Below Poverty Line	People with Disabilities	Younger Seniors (65-79)	Older Seniors (80+)
<b>Likely Low Auto Access</b>	X	X (by choice)		X	X		X
<b>Geographic Gaps</b>							
Need for first/last mile options limits fixed route use	X	X	X	X	X	X	X
Residents beyond the fixed route service area and in towns without fixed route bus service have limited options	X	X	X	X	X	X	X
Moderate to large employers are not served by bus routes in Windsor, West Windsor, Cavendish, Ludlow, and Chester		X	X	X	X		
<b>Temporal Gaps</b>							
Local fixed routes operate limited spans of service and with limited frequency		X	X	X	X	X	
Peak-only schedules of commuter routes do not help those with non-traditional work hours		X	X	X	X	X	
Seasonal routes limit service to residential areas and businesses that are open year-round		X	X	X	X	X	
<b>Trip Type Gaps</b>							
Social/recreational/wellness trips are at lower end of E&D eligible trip priorities					X	X	X
E&D funding constraints limit trips for older adults and people with disabilities					X	X	X
<b>Accessibility Needs</b>							
More bus shelters and sidewalks/curb cuts would encourage fixed route use	X	X	X	X	X	X	X
<b>Technology Challenges</b>							
Mobile apps for reservations and real-time vehicle location are desirable	X	X	X	X	X	X	X
<b>Information Gaps</b>							
Forum comments and survey responses indicate some lack of knowledge of available transportation options	X	X	X	X	X	X	X
<b>Affordability Issues</b>							
Not an issue for riders	X	X	X	X	X	X	X



# Appendix L – Upper Valley Analysis

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## TRANSIT SERVICE GAPS AND NEEDS

Transit service gaps and needs in the Upper Valley region, consisting of Orange County and Northern Windsor County communities included in the Two Rivers Ottauquechee Regional Commission (TRORC) service area, are discussed below.

### Overview of Existing Services

#### Fixed Route Services

As shown in Figure 1, three of Vermont's transit providers operate service in the Upper Valley region. In addition, intercity bus service is operated by Vermont Translines and Greyhound, and a significant number of Vermonters use Dartmouth Coach, based in Lebanon, NH, to reach Boston and Logan Airport.

#### *Advance Transit*

Advance Transit, based in Wilder, VT, operates on both sides of the Connecticut River, serving the towns of Hartford (which includes White River Junction) and Norwich in Vermont, and Lebanon, Hanover, Canaan and Enfield in New Hampshire. Four of its fixed routes serve the Vermont side of the river, all of which connect to hubs either in West Lebanon (Kilton Library) or in Hanover (Hanover Inn). These routes all operate fare free and run Monday through Friday.

The Orange Route serves White River Junction and the Veterans Administration Hospital before connecting to West Lebanon and then to Hanover via NH Route 10. The entire Orange Route runs once per hour, but during peak periods, a second bus serves White River Junction on the half-hour. This second bus was added in August 2019.

The Green Route serves Hartford Village and the US 5 corridor, connecting West Lebanon to Hanover on the Vermont side of the river. Service on this route was doubled in 2015 from once per hour to twice per hour, leading to a near doubling of ridership.

The Brown Route serves the village of Norwich, operating roughly every 40 minutes. In New Hampshire, after serving the hub at Hanover Inn, the route continues north through the Dartmouth Campus, terminating at Kendal at Hanover.

The Yellow Route began service in August 2019 and operates once per hour in peak periods. It serves the Upper Valley Aquatic Center and housing developments on Bugbee Road, connecting them to West Lebanon.

#### *Stagecoach (Tri-Valley Transit)*

Stagecoach Transportation Services, a division of Tri-Valley Transit, operates local shuttles within and between its more densely populated communities; commuter routes that connect to White River Junction (VT) and Hanover and Lebanon (NH); and routes that operate on limited schedules for local trips in less populated towns.

The Randolph Area Circulator includes an Orange-Green Loop that operates from roughly 9:00 a.m. to 4:00 p.m. on weekdays, providing 4-6 round trips a day. A Bethel extension serves each stop in that community once or twice a day. Deviations of up to  $\frac{3}{4}$  of a mile may be requested for door-to-door service.

The Bradford Area Circulator includes a Bradford—Newbury Loop that runs from 8:30 a.m. to 3:30 p.m. on weekdays, providing four trips per day. The Bradford—Newbury—Woodsville Loop, which also serves



Wells River, operates 4 trips per weekday between 9:00 and 4:30 p.m. Both Bradford Area Circulator routes are fare-free and accept requests for deviations up to three miles.

Commuter routes include the 89er South between Randolph and White River Junction/Lebanon/Hanover, the 89er North between Randolph and Montpelier/Berlin, and the River Route along I-91 to White River Junction/Lebanon/Hanover. All three routes operate on weekdays; no deviations are available. Each route provides 2-3 trips in the morning and in the afternoon; the River Route also provides two mid-day trips. The 89er North runs one trip in the morning and in the afternoon to Barre; the 89er South runs one trip in each time period to South Rochester and to South Chelsea. The River Route offers connections to Advance Transit's services in the Upper Valley.

### ***The Current (Southeast Vermont Transit)***

The Current division of Southeast Vermont Transit operates several commuter routes from Bellows Falls to White River Junction/Lebanon/Hanover that travel along I-91 through Upper Valley communities. Routes 71, 72, 73, and 74 make stops at the park and ride lot at Exit 9 in Hartland. Routes 73 and 74 serve the Veterans Administration Hospital in White River Junction as well as other destinations.

Fixed routes that operate on limited schedules are available in a number of Upper Valley communities:

- ▶ The Berlin Shopper operates between Randolph and Berlin one Friday a month, offering one round trip with a two-hour stop in Berlin. The 2<sup>nd</sup> Friday shopper runs between Hancock, Rochester, Randolph, and West Lebanon one Friday a month, offering one round trips with a three-hour stop in West Lebanon. Both monthly shoppers accept requests for deviations up to  $\frac{3}{4}$  of a mile.
- ▶ The Royalton Route operates one round trip on Tuesday and Thursday, connecting Randolph, Bethel, and Royalton.
- ▶ The Chelsea Route offers three round trips each Monday, and Friday between Randolph, Bethel, Royalton, Tunbridge, and Chelsea.
- ▶ The Hancock Route operates one round trip that connects Randolph, Bethel, Stockbridge, Rochester, and Hancock with one round trip every Monday, Wednesday, and Friday.
- ▶ The Woodstock Route offers two round trips between Randolph and Bethel, Barnard, Woodstock, Bridgewater, and Quechee on the 1<sup>st</sup> and 3<sup>rd</sup> Wednesdays of each month.
  - The Royalton, Chelsea, Hancock, and Woodstock routes are all fare-free, and accept requests for deviations up to  $\frac{3}{4}$  of a mile.

Many of the Stagecoach local circulators, monthly shoppers, and part-time routes offer fare-free service or fare-free zones.

### **Dial-A-Ride and Other Services**

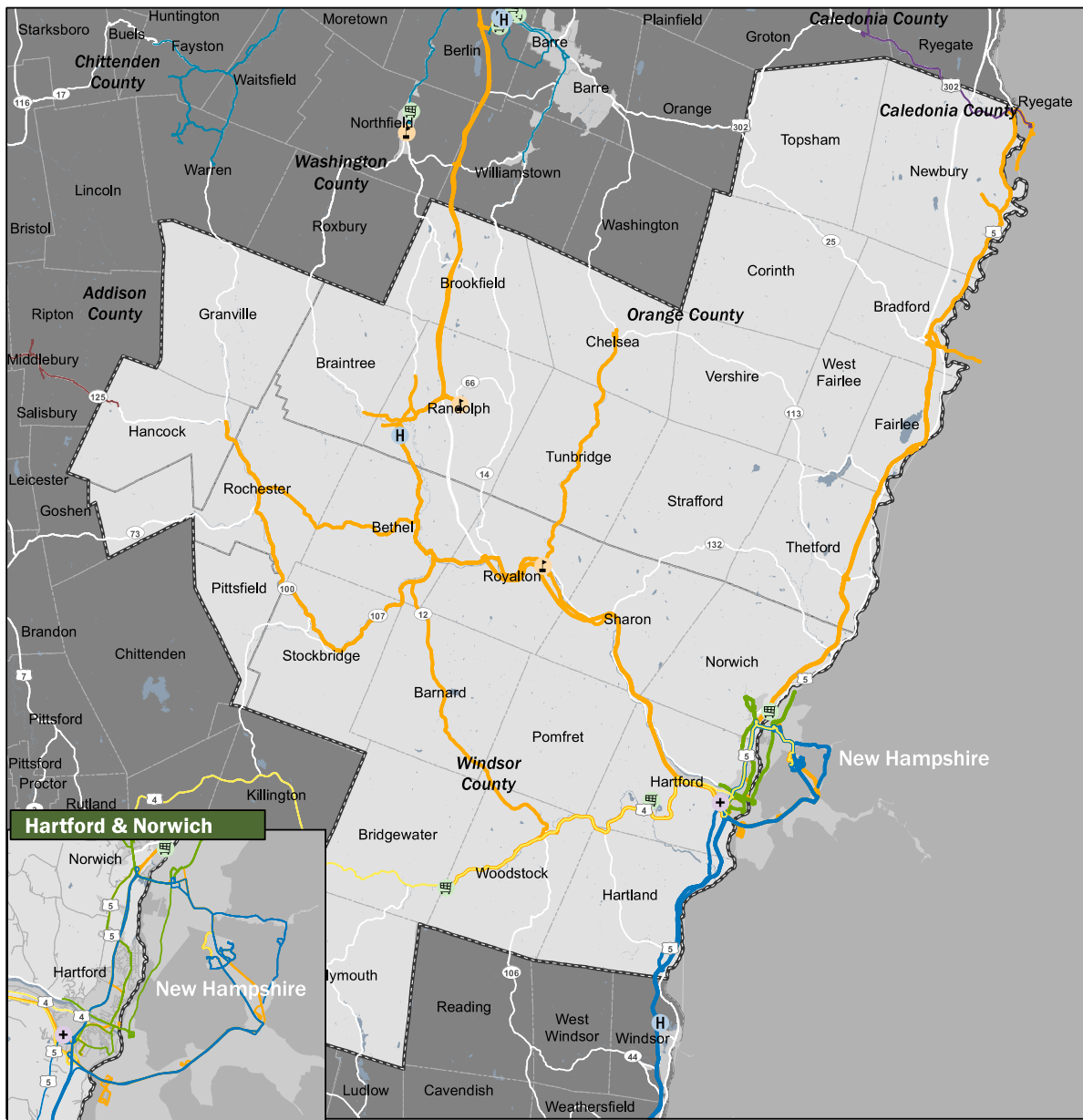
Stagecoach's Dial-A-Ride service offers rides to Upper Valley region residents who are age 60 and older and/or have a disability and eligible clients of a number of human service agencies and programs, including Medicaid, Ticket to Ride, and senior meals programs.

Service for residents of the region who meet age and/or eligibility criteria is supported by Stagecoach's partners in the Vermont Elders and Persons with Disabilities (E&D) program, including Central Vermont Council on Aging (CVCOA), Upper Valley Services, Thompson Senior Center, Senior Solutions, Clara Martin Center, Gifford Adult Day, Springfield Adult Day, Oxbow Senior Independence Program and Bugbee Senior Center, and Scotland House Adult Day. E&D trips are generally provided by Stagecoach volunteer drivers or partners using vehicles leased to them by Tri-Valley Transit.



Figure 1: Transit Services in the Upper Valley Region

## Upper Valley Region



### Existing Transit Services

- The Current
- Stagecoach
- Advance Transit
- Rural Community Transp.
- ACTR
- Vermont Translines
- Green Mtn. Transit

- + Veterans Affairs
- H Social Security Office
- H Hospital
- H Higher Education
- H Retail Center



- Regional Planning Commission Boundary
- Municipal Boundary
- Urban



Other human service agencies, such as Volunteers in Action, the VA Medical Center in White River Junction, and the Vermont Association for the Blind and Visually impaired also provide transportation for eligible individuals. Advance Transit operates ADA complementary paratransit, called Access AT, in its fixed route service area.

Private providers serving the Upper Valley region include Vermont Translines (service from Rutland), Greyhound (stop in White River Junction), Amtrak (stops in Randolph and White River Junction), numerous taxi companies, and providers based in New Hampshire.

## Key Destinations

Retail areas (including supermarkets), health care facilities, colleges and universities, and human service agency offices are primarily located in the following communities:

- ▶ Hanover/Lebanon, NH
- ▶ Hartford
- ▶ Norwich
- ▶ Randolph
- ▶ White River Junction
- ▶ Woodstock

Some of those key destinations are shown in Figure 1 (more detail can be found on the route maps posted on the Stagecoach website, <https://stagecoach-rides.org/>). Stagecoach bus routes serve many local and regional destinations.

## Employment and Commuting Patterns

### Employers

Figure 2 shows the location of employers of various sizes in the region.

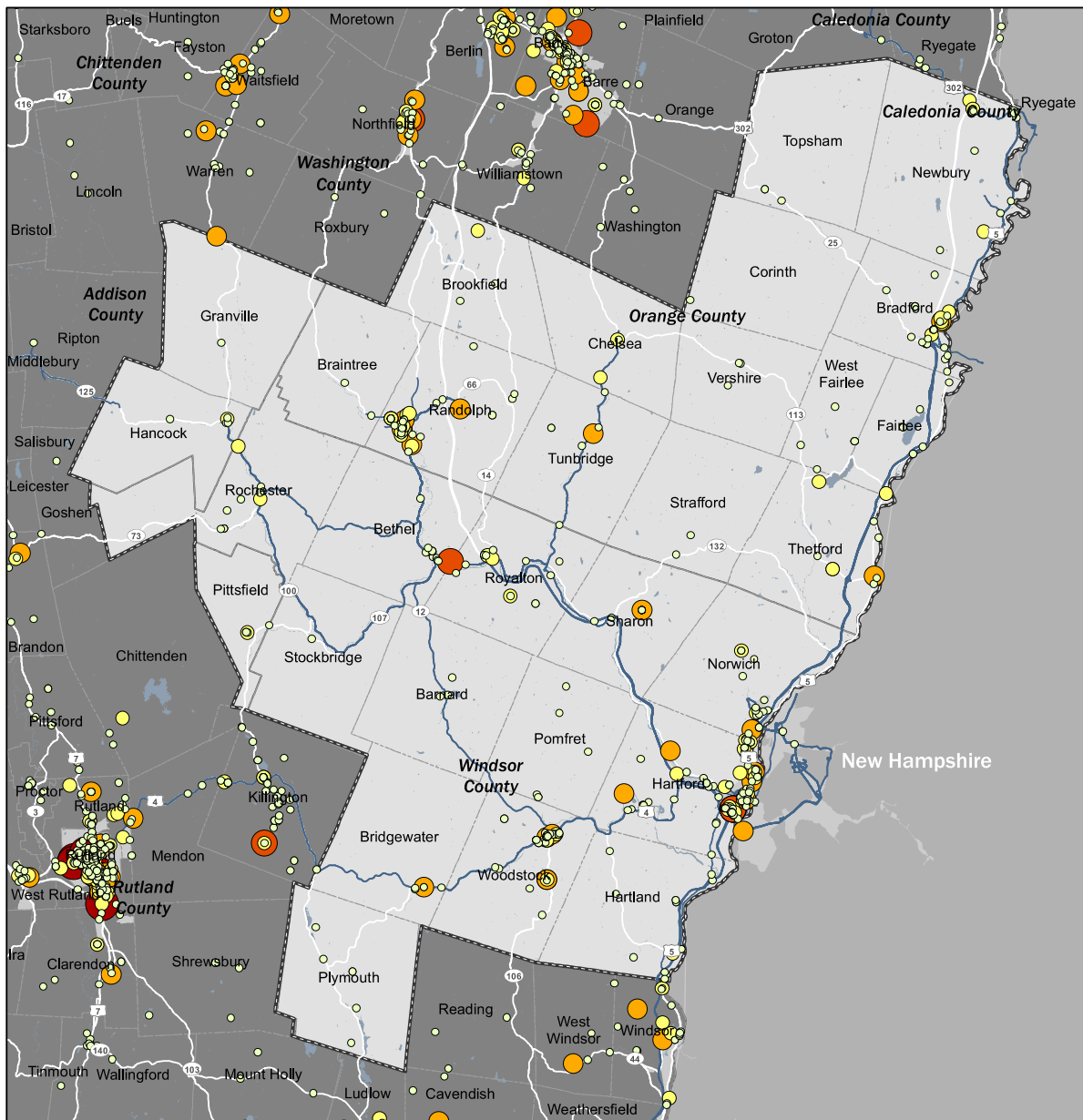
Larger employers—those with 100 or more employees—are located throughout the region along major roadways (I-89, I-91, US 4, VT 12) and the New Hampshire border. Smaller employers, with fewer than 100 employees, are located in the same areas and scattered throughout the region.

Most large employers and many smaller ones appear to be served by Stagecoach bus routes or those operated by neighboring transit systems. There are very small employers not located on bus routes throughout most of the communities in the region.



Figure 2: Employers in the Upper Valley Region

## Upper Valley Region



### Employers by Number of Employees

- 10 - 49
- 50 - 99
- 100 - 299
- 300 - 499
- 500 +

Source: Dun & Bradstreet, 2005



- Regional Planning Commission Boundary
- Township Boundary
- Urban Areas
- Transit Routes





## Commuting Patterns

Table 1 presents an overview of where residents of the Upper Valley region work and where individuals who are employed in the Upper Valley region live.

*Table 1: Employment in Upper Valley Region, 2015*

Employment	Number	Percent of Total Upper Valley Region Employment	Percent of Total Employed Upper Valley Region Residents
<b>Workers in Upper Valley Region</b>			
Total Employees in Upper Valley Region	25,476	100%	
Upper Valley Region Residents Employed in Upper Valley Region	11,114	44%	
Residents of Other Areas Working in Upper Valley Region	14,362	56%	
Residents of Other Vermont Counties	10,159	40%	
Residents of Other States	4,203	16%	
<b>Residents of Upper Valley Region</b>			
Total Employed Upper Valley Region Residents	25,108		100%
Upper Valley Region Residents Employed in Upper Valley Region	11,114		44%
Upper Valley Region Residents Employed in Other Areas	13,994		56%
Working in Other Vermont Counties	4,940		20%
Working in Other States	9,054		36%

Source: U.S. Census, Longitudinal Employer-Household Dynamics, 2015

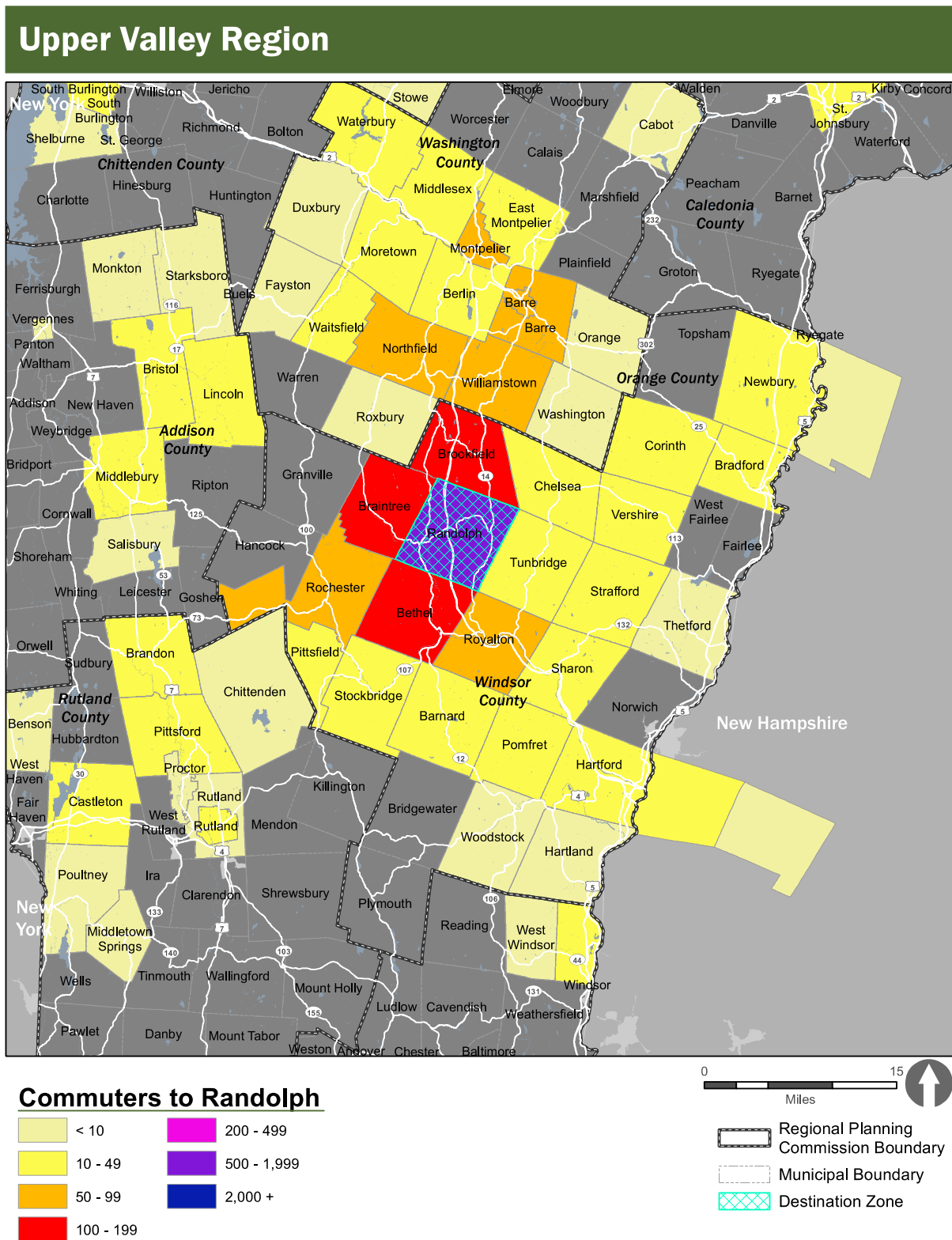
Slightly fewer than half (44%) of individuals who are employed in the Upper Valley region also live there. Of the employees who live outside of the Upper Valley, 40% live in other Vermont counties, including Chittenden, Washington, Rutland, Caledonia, Addison, and Franklin counties. Sixteen percent of Upper Valley employees live in other states, primarily New Hampshire, but also New York, Massachusetts, and others.

The split between Upper Valley residents who are also employed in Upper Valley communities is similar: 44% of residents work in the Upper Valley and 56% work in other Vermont counties or in other states. Residents who are employed in Vermont but outside of the Upper Valley work mostly in Washington, Rutland, Chittenden, and Addison counties. Those who are employed in other states work mainly in New Hampshire, New York, and Massachusetts.

Figure 3 illustrates the daily commuting travel flows into Randolph at the town level.



Figure 3: Daily Commuters to Randolph



Most commuters to Randolph come from within Randolph or from the contiguous towns of Brookfield, Braintree, and Bethel. The access provided by I-89 brings in moderate numbers of commuters from Montpelier, Barre, and Northfield. Commuters also travel to Randolph from many other towns, but in smaller numbers.

Figure 4 shows daily commuting trips to the and Hanover/Lebanon NH/White River Junction area at the town level. That area is an important employment destination for Upper Valley residents. More than 50 commuters per day, indicated by orange, red, pink, purple, and blue shading in Figure 4, travel to the Hanover/Lebanon/White River Junction area from most Orange County communities and a number of Windsor County communities.

## Demographic Overview

This section presents an overview of the demographic characteristics of the Upper Valley region and summarizes the location and density of the general population of the county and specific market segments that are likely to need transit service because they cannot or choose not to drive.

Table 2 provides summary demographic characteristics for the Upper Valley region as of 2016, as compared to Vermont as a whole.

*Table 2: Demographic Characteristics of the Upper Valley Region, 2012-2016*

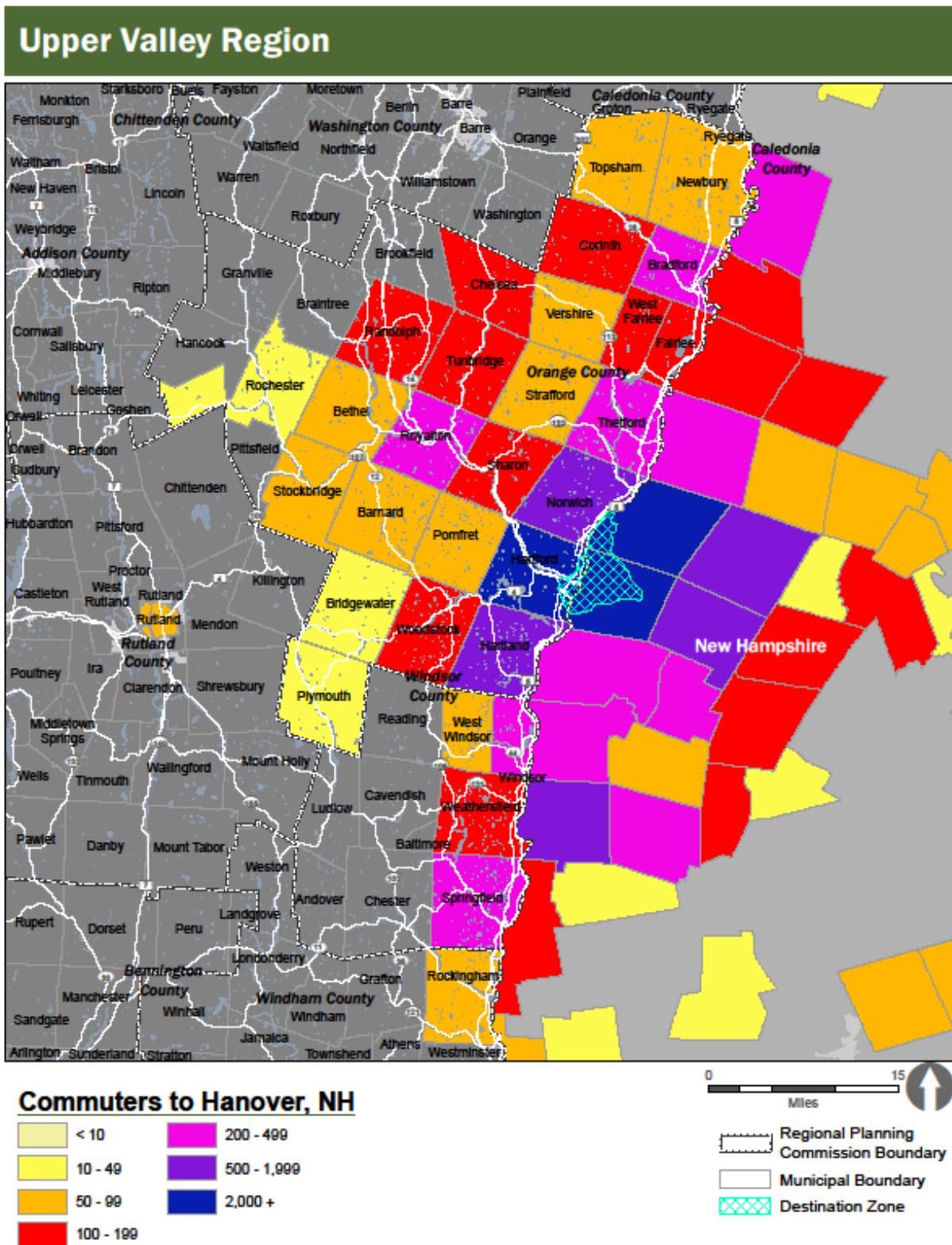
	Upper Valley Region	Vermont
Total population	55,999	626,249
Population density	43 persons per square mile	68 persons per square mile
Population age 60 and over	28%	24%
Population age 80 and over	3.9%	4.3%
Residents living below poverty line	10.2%	11.6%

Source: American Community Survey 5-year Average 2012-2016

Residents of Upper Valley communities totaled 55,299 in 2016, making up 9% of the state's population. The region overall is much less dense than the state as a whole, at 43 people per square mile. It contains a slightly higher percentage of population age 60 and over than the state (28%) and roughly the same percentage of population age 80 and over (4%). Ten percent of Upper Valley residents live in poverty, lower than the state's 12% and the third lowest percentage among the state's 11 regions.



Figure 4: Daily Commuting Trips to Hanover and White River Junction, VT and Lebanon, NH



## Population Density

Figure 5 shows the concentration of the population in Upper Valley communities. Density is a helpful characteristic to consider in the context of public transportation services because it is one measure of where service, particularly fixed route service, is likely to be needed and cost-effective.

Most of the communities in the region are populated at levels that are considered rural—500 or fewer people per square mile. Areas of low to moderate density are found in Randolph and Hartford. Areas of moderate to high density are found in Rochester and the Wilder, VT/White River Junction area.

## Market Segments and Transit Propensity

Groups that are likely to need transit services because they do not drive, for reasons of disability, income, or choice, include older adults, people with disabilities, individuals with limited or no access to a car, and younger adults. Figure 6 through Figure 8 show the number and percentage (as compared to the state average) of individuals in the first three groups at the town level in the Upper Valley. All data was obtained from the American Community Survey (ACS) 2012-2016 Five-year Estimates.

### **Older Adults**

Figure 6 shows the number and percentage of adults age 80 and over in 2012-2016, as compared to the statewide average, in the Upper Valley region. The focus in Figure 6 is on this older age group because younger seniors typically continue to drive and because a significant rise in this population is expected in Vermont (and nationwide) in the next 10-20 years. Concentrations of older seniors are found in Hartford and Randolph, where percentages of adults over age 80 are 1-2 times the state average. Very small numbers of the oldest adults live in other Upper Valley communities.

### **People with Disabilities**

Figure 7 shows the number and percentage of people with disabilities, as compared to the statewide average, in Upper Valley communities. Four types of disabilities are included: those associated with hearing, vision, cognition, and working. As with older adults, the highest numbers of people with disabilities live in Hartford and Randolph, plus Bradford. In those communities, the percentage of people with disabilities is 1-2 times the state average.

### **Auto Ownership**

The number and percentage of households in Upper Valley towns with limited access to an auto in 2012-2016 are shown in Figure 8. Households with one resident and no vehicle and those with two or more members but only one vehicle or no vehicle are included. Again, Hartford, Randolph, and Bradford contain the highest number of households with limited auto access, and percentages of limited auto access households that are 1-2 times the state average. All other communities contain percentages of such households that are below the state average.

### **Transit Propensity**

As noted above, older adults, people with disabilities, individuals with lower incomes, and younger adults are likely to need transit services because they cannot or do not drive. The transit propensity index mapped in Figure 9 combines information about the location and weighted size of the county's total population and of various populations that are typically dependent on transit services—youth, older adults, people with disabilities, people living in poverty, and households with one car or less.

As shown in Figure 9, the only areas of even moderate transit propensity are found in Randolph and Hartford. Other communities show a level of transit propensity that is low or low-moderate.





Figure 5: Population Density in Upper Valley Communities, 2017

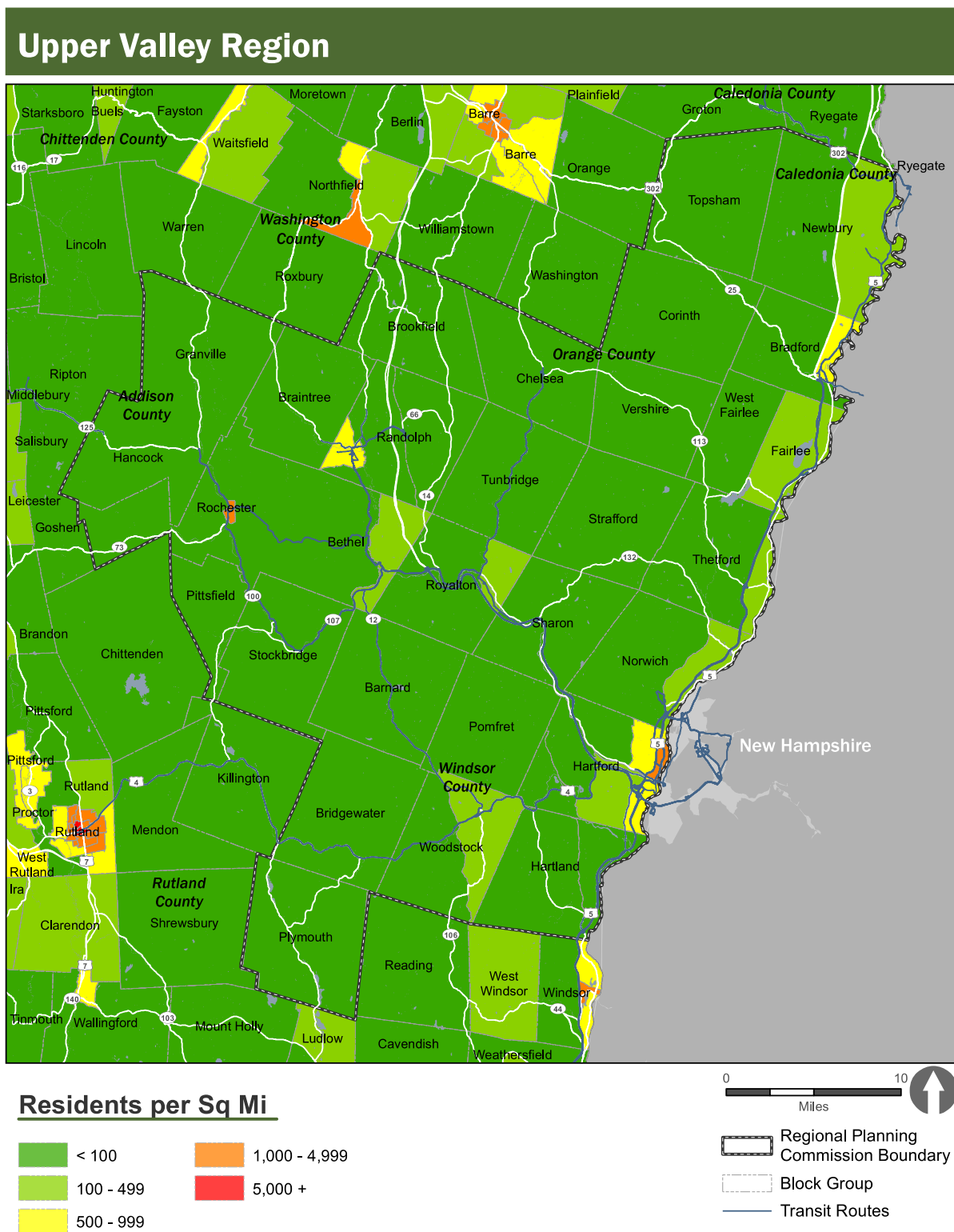
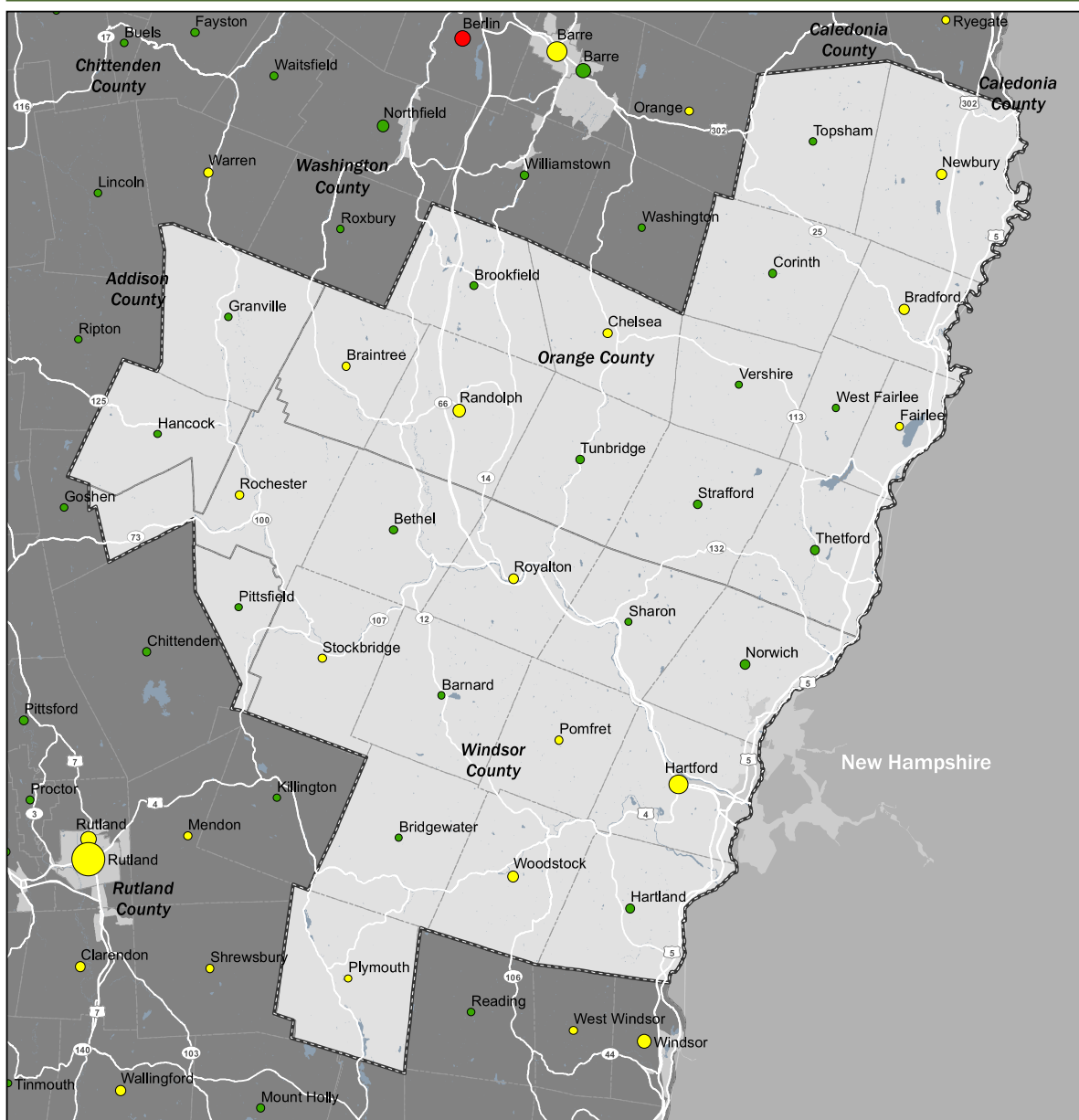


Figure 6: Number and Percentage of Adults Age 80 and Over in Upper Valley Communities, 2012-2016

## Upper Valley Region



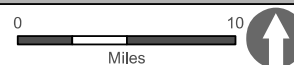
### % of Population Over 80

- Below Average
- 1x - 2x Average
- > 2x Average

VT Average = 4.3%

### Total Population Over 80

- 1
- 250
- 500
- 750
- 1,000



- Regional Planning Commission Boundary
- Municipal Boundary
- Urban Areas





Figure 7: Number and Percentage of People with Disabilities in Upper Valley Communities, 2012-2016

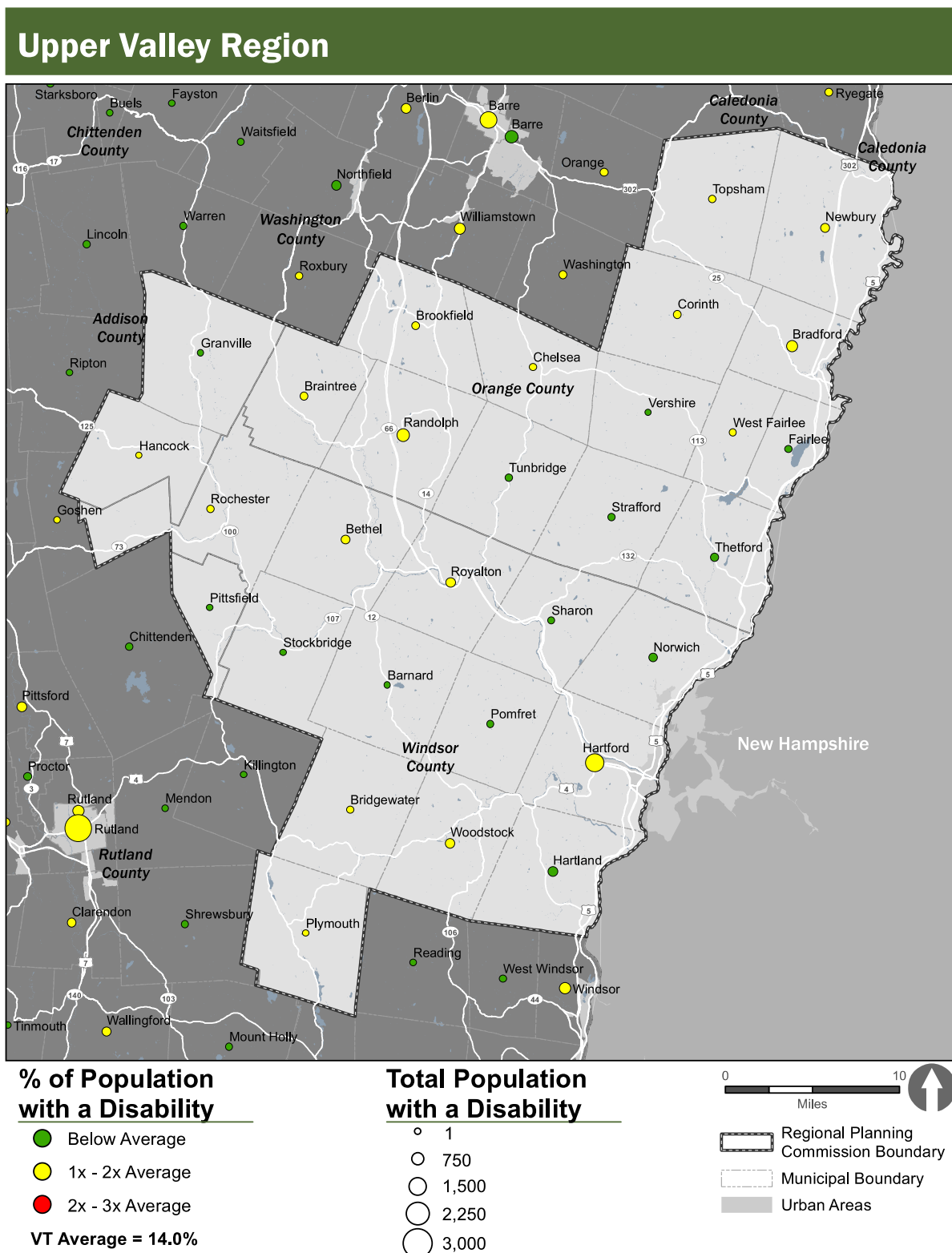


Figure 8: Number and Percentage of Households with Limited Auto Ownership in Upper Valley Communities, 2012-2016

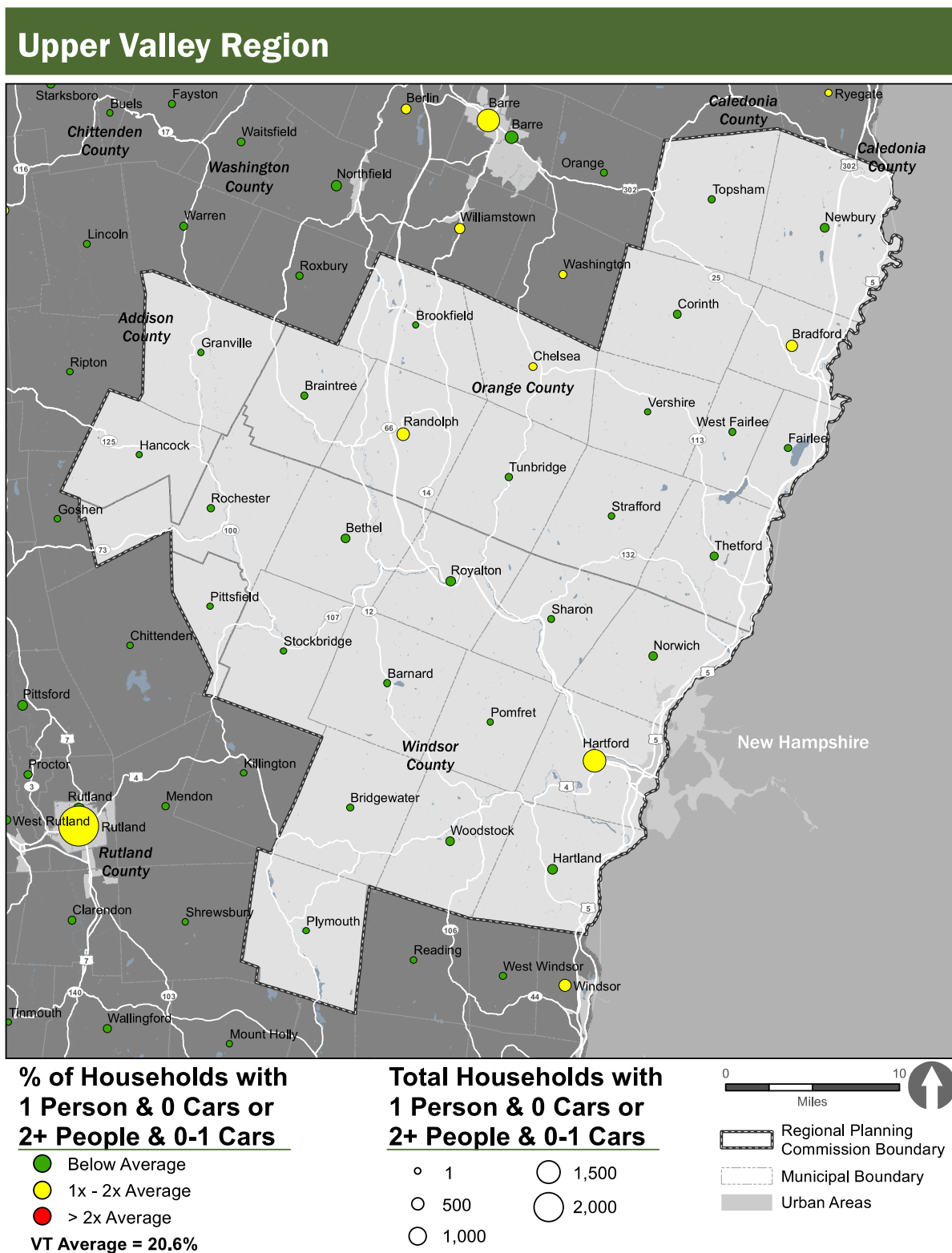
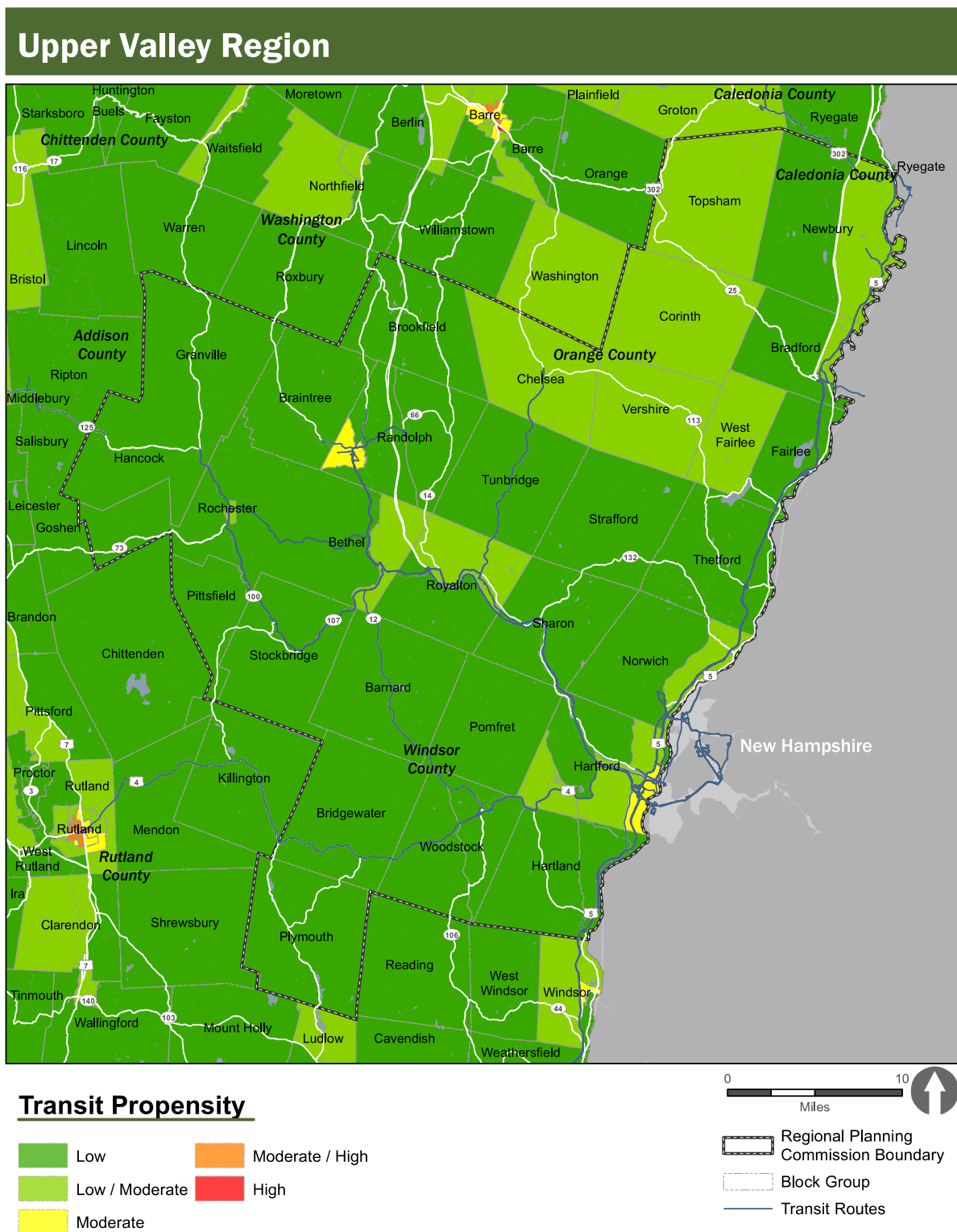


Figure 9: Transit Propensity Index, Upper Valley Region



## Regional Forum Comments

Stakeholders and members of the public who participated in the regional forum held in Randolph on October 30, 2018 made comments regarding service gaps, travel challenges, unmet transportation needs, and potential solutions, as summarized below.

### Service Gaps and Challenges

#### *Geographic Gaps*

- ▶ Some seniors say it is hard to get public transportation from Braintree and Brookfield – there is currently only one bus stop on the edge of Braintree. Some seniors are not able to reach the senior center until 11AM or later.
  - Stagecoach pointed out that there is not enough density to serve those areas efficiently with transit. Its new service model has allowed more members of the public to be served by transit, and for demand-response to provide other alternatives.
- ▶ There is currently no bus service in the town of Royalton. A law school is there, and some of the students come with families who may not have a driver's license.
- ▶ There is a desire for a commuter route on Route 4 to the Upper Valley, but there may not be enough density to support a route. While there is an existing intercity route, it is not a top performer. Route 4 is at the boundaries of several transit agencies, so it is unclear who would cover that area.

#### *Temporal Gaps*

- ▶ Most commuter routes end service by 6:30 p.m., so it is hard to accommodate third shift transportation needs. Transit dependent jobs concentrate in the restaurant industry, which operates into late hours.
- ▶ The frequency and span of service to Montpelier is not enough to accommodate some workers, especially at the end of the day.

#### *Trip Type Gaps*

- ▶ Recreational trips are the least served, as medical and shopping trips must come first.

#### *Accessibility Needs*

- ▶ For Advance Transit (which serves Hartford, Hanover, Norwich, White River Junction and Wilder in addition to New Hampshire communities), winter maintenance is an accessibility issue. The driver is forced to remove snow from stops because the town resources are tied up clearing other spaces.

#### *Technology Challenges*

- ▶ Especially for seniors, technology requirements can be a barrier to using public transportation services. Some people rely on the library for computer and internet access.
- ▶ Participants were not familiar with Vermont 211 as a resource to get information on transit and human services transportation.

#### *Affordability Gaps*

- ▶ Obtaining local funding to match federal and state funds is a challenge for transportation providers.

#### *Other Gaps*

- ▶ Volunteer drivers are important to the delivery of public transportation services in the region. More drivers are needed.

### Other Comments

- ▶ High schoolers are a specific market for transit services. Those without car access can't reach some destinations.
- ▶ Older adults over a certain age still drive because they don't have other options.



## Potential Solutions

When asked to rank potential service improvements, forum participants most often chose the options listed below.

### *Information*

- ▶ Centralized transportation information
- ▶ Trip planning assistance

### *Service Enhancements*

- ▶ Expand service hours
- ▶ Expand service areas
- ▶ Volunteer driver recruiting and training
- ▶ Travel training

### *Accessibility Improvements*

- ▶ Bus shelters
- ▶ Sidewalks or curb cuts

### *Technology*

- ▶ Automatic vehicle location systems
- ▶ Mobile information, reservations, and real-time information

## Comments from the Upper Valley E&D Committee

Development of the PTPP included discussions with the stakeholder committees that provide oversight for administration of the Vermont Elders and Persons with Disabilities (E&D) Transportation Program in each of nine regions, including the Upper Valley. Members of the E&D advisory committees typically include the local public transportation provider; partner organizations—municipalities, human service agencies, and other organizations—that receive services for their clients from the provider, and sometimes also operate services for those clients directly; and the regional planning agency that serves the area.

The discussions with those committees yielded additional comments about transportation needs and potential solutions in those regions.

Service for residents of the region who meet age and/or eligibility criteria are provided by Stagecoach and Stagecoach's partners in the E&D program, including Central Vermont Council on Aging (CVCOA), Upper Valley Services, Thompson Senior Center, Senior Solutions, Clara Martin Center, Gifford Adult Day, Springfield Adult Day, Oxbow Senior Independence Program and Bugbee Senior Center, and Scotland House Adult Day. E&D trips are generally provided by Stagecoach volunteer drivers or partners using vehicles leased to them by Tri-Valley Transit.

Comments regarding transportation needs and service gaps include the following:

- ▶ Volunteer drivers help to deliver many E&D rides in the Upper Valley region and keep the cost per trip low. Stagecoach currently has 20-25 volunteer drivers and needs 35-40. A fulltime volunteer ride coordinator position is being established to focus on recruitment and retention.
- ▶ Unmet needs are not fully known; the committee would like to focus more on this topic in the future.
- ▶ Critical care medical trips to dialysis and cancer treatments, have been trending downward.



- ▶ Social/personal/wellness trips, although lowest priority among eligible trip types, are generally provided, helped in part by the Ticket to Ride program, which provides fare-free transportation for a variety of trip purposes to eligible adults over age 60 and people with disabilities.
- ▶ A waiting list for the Ticket to Ride program was established in 2018 as a way to balance demand and available funding.
- ▶ The committee currently has a request for service from a new potential partner and is in need of guidance regarding policy issues and resources for dealing with such a request.

## MetroQuest Responses

Respondents to the online MetroQuest survey conducted in September through December 2018 had the opportunity to identify a trip they would like to make using transit service but cannot due to lack of service or infrequent/inconvenient schedules. Respondents were also able to provide comments about the origin and/or destination of the trip they would like to make.

A summary of desired trip origin/destination pairs is provided elsewhere in the PTPP. Ninety-five residents of the Upper Valley region commented on their desired trips. Hartland; Hanover/Lebanon, NH; White River Junction; and Burlington were mentioned multiple times by residents of Hartland, Newbury, Norwich, Sharon, South Royalton, and Woodstock. Other desired locations included Barre, Brattleboro, Montpelier, I-91 P&R lots, and connections to service provided by Advance Transit, Dartmouth Coach, and Amtrak. Several respondents from most communities indicated interest in transit access to locations within their communities.

Survey respondents were also asked to choose up to three transit improvements that would make them or people they know more willing to use public transportation. Choices were:

- More service near my home
- Service to my desired destinations
- More frequent service
- Service that runs evenings and/or weekends
- Faster service
- More reliable
- Cheaper
- If I felt safer riding on it
- If I understood how it works
- Nothing, I prefer driving
- Other

Of the 160 responses to this question from the Upper Valley region, 91% were in the top four categories: more service near my home (45%), more service to my destinations (39%), service in the evenings and/or weekends (31%) and more frequent service (30%).

## Summary of Transit Service Gaps and Needs

The information presented above about the Upper Valley region's demographic characteristics, location of employers and key destinations, existing transit services, and comments from residents and stakeholders point to the following transit service gaps and needs for the region.





## Geographic Service Gaps

Stagecoach fixed bus routes, and the deviations that are available for people with disabilities and others on the local routes, provide service in the communities that contain most of the Upper Valley population as well as a number of less densely populated towns. Most of the areas in which concentrations of likely transit users are located, and many key destinations, are served.

Communities in which fixed route services operate include the following:

- |               |                |
|---------------|----------------|
| ■ Randolph    | ■ Hancock      |
| ■ Bethel      | ■ Rochester    |
| ■ Bradford    | ■ West Lebanon |
| ■ Newbury     | ■ Royalton     |
| ■ Wells River | ■ Chelsea      |
| ■ Woodsville  | ■ Stockbridge  |

Commuter services provide access to White River Junction, Lebanon and Hanover, NH, and Montpelier.

Residents of those communities who live beyond the reach of fixed route services, including their deviation zones, and residents of the other towns in the Upper Valley region, have limited public transit service options, if any, available to them.

Relatively large employers located in Sharon and Thetford are not located near fixed bus routes.

## Temporal Service Gaps

Stagecoach local fixed routes operate roughly seven hours each weekday, beginning around 8:30 or 9:00 a.m. and ending around 3:30 or 4:00 p.m. That span of service is likely more convenient for those making trips for shopping, appointments, and errands than for commuting.

Fixed route service to less populated communities, such as Hancock, Rochester, Berlin, Bethel, Royalton, Tunbridge, Stockbridge, Bridgewater, and Quechee, operate on limited schedules, providing service from on designated days from once a month to three days a week to accommodate primarily trips for shopping, local appointments, and errands.

Commuter routes serve important employment destinations, but limit service to 2-3 trips during morning peak hours and 2-3 trips during afternoon peak hours. Such schedules are not useful for those who commute to jobs that have non-traditional hours. For examples, jobs at Dartmouth-Hitchcock Medical Center 2<sup>nd</sup> and 3 shifts.

No services are available on weekends, limiting use of transit services for access to jobs as well as social/recreational, shopping, and medical trips.

## Gaps for Specific Rider Groups/Trip Types

Stagecoach's Dial-A-Ride program provides a source of transportation for Upper Valley residents who are age 60 or older, have a disability, or are clients of one of a number of human service programs.

The E&D program transports individuals for a variety of eligible trip purposes, with critical care medical trips being the highest priority. Currently, trips for those needing kidney dialysis—a treatment that is





typically administered three times a week—are capped at 10 round trips per person month. Trips for those needing cancer treatment are capped at 13 round trips per person per month.

The Ticket to Ride program subsidizes trips for eligible individuals for any trip purpose, but funding constraints have caused spending caps for riders. A monthly funding cap, decreasing over time, is set for individuals, households with multiple riders, and individuals who use wheelchairs. In addition, the Ticket to Ride program uses a waiting list to manage demand (although at present, no individuals needing critical care transportation are on the waiting list).

While E&D partners report that trips at the lower end of the priority scale are generally served, regional forum comments indicated that it is difficult to make social/recreational trips.

## Transit Market Segments

### Size of Market Segments

For the purposes of developing public transit policies that focus transit investments on the markets that will most benefit from those policies, the number of individuals in the Upper Valley region in each of seven sub-markets has been estimated. Market segments are mainly related to age but are also subdivided by income. Automobile availability is treated as a secondary characteristic, related to the age and income of each particular group. The results are shown in Table 3.

*Table 3: Estimated Transit Market Segments, Upper Valley Region, 2017*

Market Segment	Likely Low-Auto Access	Estimated Number in Region, 2017
Youth (under 18)	X	9,856
Young adult (18-24), employed/student	X (by choice)	3,733
Adult (25-64)		23,805
Adult (25-64), below poverty line	X	1,982
People with disabilities (under age 80)	X	6,811
Younger seniors (65-79)		6,649
Older seniors (80+)	X	2,185
<b>Total</b>		55,021

Source: U.S. Census, American Community Survey (ACS) 5-Year Estimates

Youth and young adults, adults living in poverty, people with disabilities, and older seniors—those age 80 and older—are likely to have less access to a car for personal travel than adults with higher incomes and “newer” seniors, who typically continue to drive. Young adults, for reasons having to do with a number of generational trends, may prefer not to drive or own a car. For members of the other market segments, however, lack of access to a car is likely due more to an inability to drive or afford a car than to a choice. In the Upper Valley region, market segments that are likely to have limited or no access to a car make up 45% of the population.

### Impacts of Service Gaps on Market Segments

Table 4 summarizes the effect of the service gaps identified for Upper Valley communities on the various transit sub-markets in the region.

Many gaps are broad enough to affect all market segments. These include travel challenges or needs related to:



- ▶ Geographic coverage
- ▶ Accessibility, which can include access to bus stops for all potential riders, not just those with disabilities
- ▶ Information about transit options
- ▶ Technology to make use of transit service more convenient

Other gaps are applicable to all but the youngest and oldest market segments because they deal with access to jobs or other types of trips those segments are not likely to make.

Finally, some gaps are specific to certain market segments. For example, only older adults and people with disabilities are affected by funding constraints in the E&D transportation program that can limit numbers or trip types.



Table 4: Gap Analysis by Transit Market Segment

Market Segment	Youth (under 18)	Young Adult (18- 24), Employed or Student	Adult (25-64)	Adult (25- 64), Below Poverty Line	People with Disabilities	Younger Seniors (65-79)	Older Seniors (80+)
<b>Likely Low Auto Access</b>	X	X (by choice)		X	X		X
<b>Geographic Gaps</b>							
Need for first/last mile options limits fixed route use	X	X	X	X	X	X	X
Towns without fixed route bus service have limited options	X	X	X	X	X	X	X
<b>Temporal Gaps</b>							
Limited hours of fixed route service (business hours or shorter) are not conducive to work trips		X	X	X	X	X	
Very limited schedules of monthly shoppers/part-time routes limit access to shopping, local medical appointments, errands				X	X	X	X
Peak-only schedules of commuter routes do not help those with non-traditional work hours		X	X	X	X	X	
No weekend service limits all trip types	X	X	X	X	X	X	X
<b>Trip Type Gaps</b>							
Social/recreational/wellness trips are at lower end of E&D eligible trip priorities					X	X	X
E&D funding constraints limit trips for older adults and people with disabilities					X	X	X
<b>Accessibility Needs</b>							
Insufficient snow removal at bus stops limits fixed route access	X	X	X	X	X	X	X
<b>Technology Challenges</b>							
Lack of computers and internet access at home is a barrier for some						X	X
<b>Information Gaps</b>							
Forum comments and survey responses indicate some lack of knowledge of available transportation options	X	X	X	X	X	X	X
<b>Affordability Issues</b>							
Not an issue for riders							



# Appendix M – Southeast Region Analysis

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## TRANSIT SERVICE GAPS AND NEEDS

Transit service gaps and needs and estimates of the resources needed to improve transit services in the Windham County region are discussed below. The region includes 27 towns in Windham County, one town in Windsor County, three towns in Bennington County, and one unincorporated community (Somerset). Planning for the region is conducted by the Windham Regional Commission (WRC).

### Overview of Existing Services

#### Fixed Route Services

Local, commuter, and seasonal fixed route services in the Windham County region are provided by the two divisions of Southeast Vermont Transit (SEVT), The Current and MOOver. Windham County routes are shown in Figure 1. Most of these services are fare free, with the exception of the commuter routes to Hanover and Lebanon, the Bellows Falls to Brattleboro Commuter and the local routes within Brattleboro.

#### *Local Bus Routes*

The MOOver, based in Wilmington, operates five year-round local and commuter routes in Windham County. Service on the Wilmington to West Dover route operates hourly service from 7:00 a.m. to 5:00 p.m., Monday through Friday. Serving Mount Snow in West Dover, additional service on Fridays and Saturdays is provided to the resort during the spring, summer, and fall months and on weekends and holidays during the winter months. A route with limited stops operates in West Dover on school days.

Deviations of up to  $\frac{1}{4}$  of a mile are available on the MOOver routes with 24 hours advance notice.

The Current, based in Rockingham, operates five local routes that run along the edge of southern Windsor and Windham counties.

The Red, White, and Blue Lines offer service in Brattleboro every hour or two hours from 6:00 or 7:00 a.m. until 4:30 or 5:00 p.m. Monday through Saturday (the White Line covers Blue Line stops on Saturdays).

The Bellows Falls In-Town route (Town of Rockingham) operates four loops per day on weekday mornings, fare-free. Service between Bellows Falls and Springfield (in Windsor County) is available on four round trips between 7:00 a.m. and 5:30 p.m. on weekdays, free of charge.

#### *Commuter Routes*

The Current operates several commuter routes in the region.

The Bellows Falls to Rutland (Rutland County) Connector offers three trips on weekdays between 6:30 a.m. and 6:00 p.m., traveling through Ludlow and Springfield (both in Windsor County), fare-free. Connections can be made twice a day to Marble Valley Regional Transit District's (MVRTD) bus service in Rutland.

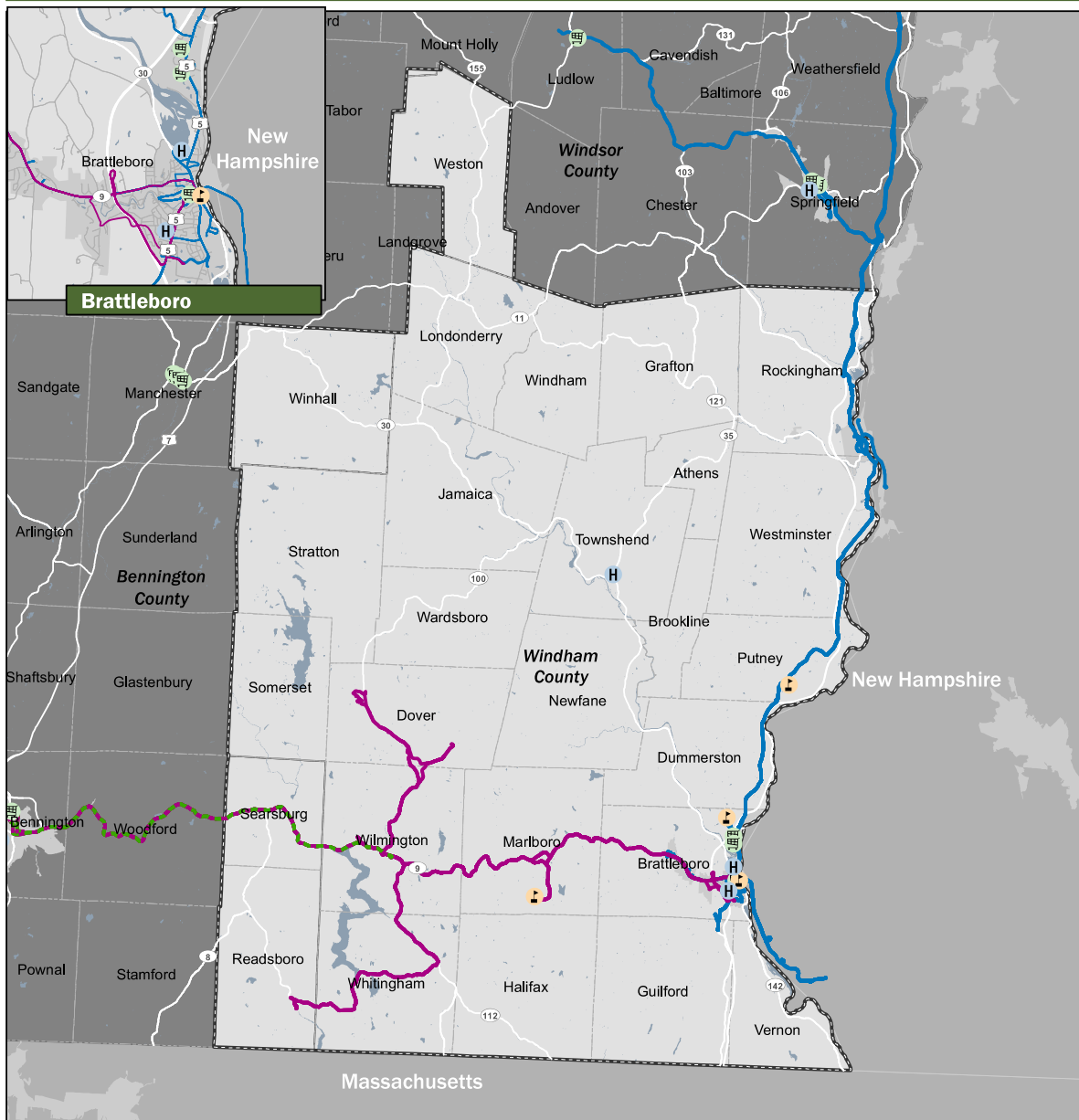
The Bellows Falls to Brattleboro Commuter operates four round trips on weekdays between 6:00 a.m. and 6:00 p.m.

Service to Dartmouth Hitchcock Medical Center (DHMC) in Lebanon, NH and Dartmouth College, in Hanover, NH from the Exit 6 Park and Ride (I-91) is provided on two DHMC Express routes and two Dartmouth College Express routes. A total of four northbound morning and three southbound afternoon express trips are operated among the four routes.



Figure 1: Transit Services in the Windham County Region

## Southeast Region



### Existing Transit Services

- MOOver
- The Current
- GMX / MOOver

- + Veterans Affairs Center
- SS Social Security Office
- H Hospital
- 🎓 Higher Education
- 🛒 Retail Center
- Regional Planning Commission Boundary
- Municipal Boundary
- Urban Areas



The MOOver operates commuter routes that offer 1-2 trips in the morning and afternoon peak hours on weekdays between Wilmington and Readsboro, Brattleboro, and Bennington (Bennington County). Green Mountain Community Network (GMCN) operates the afternoon trips on the Wilmington to Bennington commuter route.

### ***Seasonal Routes***

The MOOver operates eight seasonal routes serving Mount Snow and other resorts from late November through late June. Service generally operates every 30 minutes from 7:00 a.m. to 5:00 p.m., seven days a week and on holidays.

Seasonal service is provided on The Current's Bellows Falls to Okemo Mountain Resort in Ludlow, which operates between November and April, offering two round trips Monday through Saturday.

### **Dial-A-Ride and Other Services**

Service for people with disabilities and other riders on MOOver routes is provided through deviations of up to  $\frac{1}{4}$  of a mile, which must be requested 24 hours in advance. ADA complementary paratransit service is provided for eligible individuals with disabilities within a  $\frac{3}{4}$  mile corridor around The Current fixed routes.

The Current also offers advance reservation Dial-A-Ride service to eligible individuals in a number of communities in Southern Windsor and Windham counties. Windham County communities that receive Dial-A-Ride service include:

- Athens
- Bellows Falls
- Brattleboro
- Brookline
- Dummerston
- Grafton
- Guilford
- Jamaica
- Londonderry
- Marlboro
- Newfane
- Putney
- Rockingham
- Saxtons River (Town of Rockingham)
- Stratton
- Townshend
- Vernon
- Westminster
- Windham

Service for older adults (age 60 and over) and people with disabilities who are clients of SEVT's partners in the E&D transportation program are provided by SEVT, using agency drivers and vehicles or volunteer drivers. Eligible trip types include critical care medical and adult day health, local and out-of-town medical, congregate meals, and shopping. E&D partners include Senior Solutions, the Council on Aging for Southeast Vermont, and Bellows Falls Senior Center.





## Other Services

Amtrak and Greyhound stops in Brattleboro and Bellows Falls provide access to intercity destinations.

Several taxi companies also serve the Windham County region.

## Key Destinations

Retail areas (including supermarkets), health care facilities, colleges and universities, and human service agency offices are primarily located in the following communities:

### Retail Areas

- ▶ Brattleboro
- ▶ Hinsdale (NH)

### Medical Facilities

- ▶ Brattleboro Memorial Hospital
- ▶ Grace Cottage (Townshend)
- ▶ Wilmington
- ▶ Bellows Falls

### Human Service Agencies

- ▶ Bellows Falls
- ▶ Brattleboro
- ▶ Westminster
- ▶ Townshend
- ▶ Halifax

Some of those key destinations are shown in Table 1 (more detail can be found on the route maps posted on the Current and MOOver websites, <https://crtransit.org/bus-schedules/> and <http://www.moover.com/>. Current and MOOver bus routes serve many local and regional destinations.

## Employment and Commuting Patterns

### Employers

Figure 2 shows the location of employers of various sizes in the region.

The highest concentrations of employers are found in Brattleboro and the Bellows Falls area (Town of Rockingham), along I-91. A few large employers, with 100 or more employees, are located in Townshend and Putney. Smaller employers, with fewer than 100 employees, are scattered throughout the region.

A number of employers, including some with 100-299 employees, are not located close to bus routes.



## Commuting Patterns

Table 1 presents an overview of where Windham County region residents work and where individuals who are employed in the region live.

Table 1: *Employment in the Windham County Region, 2015*

Employment	Number	Percent of Total Windham County Region Employment	Percent of Total Employed Windham County Region Residents
<b>Workers in Windham County Region</b>			
Total Employees in Windham County Region	23,166	100%	
Windham County Region Employees Residing in Windham County Region	12,777	55%	
Residents of Other Areas Working in Windham County Region	10,389	45%	
Residents of Other Vermont Counties	3,607	16%	
Residents of Other States	6,782	29%	
<b>Residents of Windham County Region</b>			
Total Employed Windham County Region Residents	20,433		100%
Windham County Region Residents Employed in Windham County Region	12,777		63%
Windham County Region Residents Employed in Other Areas	7,656		37%
Working in Other Vermont Counties	3,911		19%
Working in Other States	3,745		18%

Source: U.S. Census, Longitudinal Employer-Household Dynamics, 2015

Slightly more than half of the individuals who are employed in the Windham County region also live there. Of the remaining 45% of employees, 16% live in other Vermont counties, including Rutland, Chittenden, and Orange counties. However, higher numbers of Windham County region employees who live outside of the region live in Cheshire and Sullivan Counties, NH, and Franklin and Hampshire counties, MA. Twenty-nine percent of Windham County region employees live in other states, primarily New Hampshire, Massachusetts, and New York.

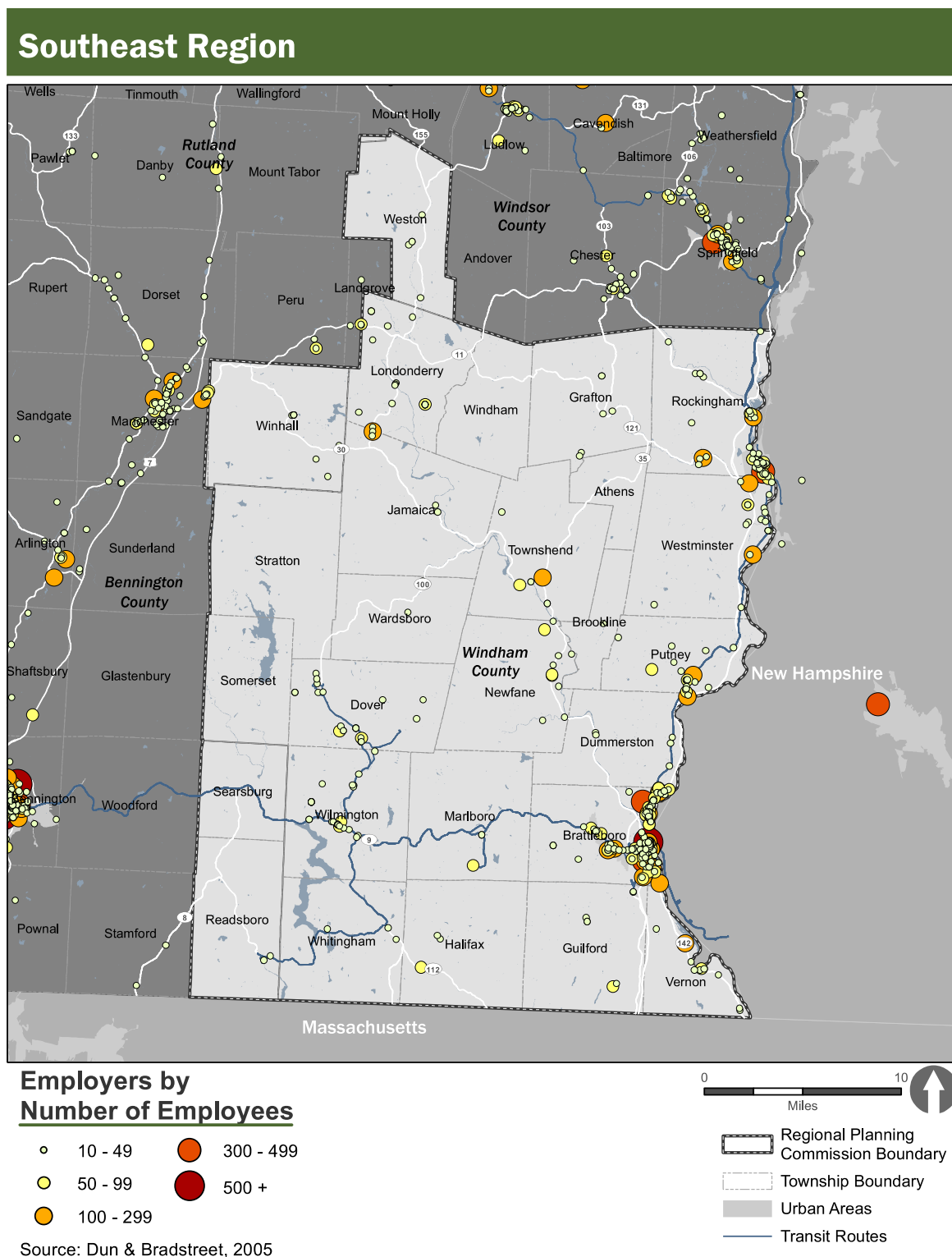
Of the Windham County region residents who are employed, 63% work in the region and 37% work elsewhere. Nineteen percent of residents work in other Vermont counties, including Chittenden, Rutland, and Washington counties. Higher numbers of residents work in Cheshire, Hillsborough, and Sullivan counties, NH and Franklin County, MA. Residents of the region who work in other states are employed mainly in New Hampshire, Massachusetts, and New York.

Figure 3 shows illustrates the daily commuting travel flows into Brattleboro at the town level.

Brattleboro draws significant numbers of commuters from within and from surrounding towns in Windham County and New Hampshire, each generating between 200 and 2,000 daily trips. Access to I-91 allows easy commutes from communities as far as Springfield in southern Windsor County. The VT 30 corridor also contributes significant numbers of daily commute trips to Brattleboro.



Figure 2: Employers in the Windham County Region



## Demographic Overview

This section presents an overview of the demographic characteristics of the Windham County region and summarizes the location and density of the general population of the county and specific market segments that are likely to need transit service because they cannot or choose not to drive.

Table 2 provides summary demographic characteristics for the region as of 2016, as compared to Vermont as a whole.

*Table 2: Demographic Characteristics of the Windham County Region, 2012-2016*

	<b>Windham County Region</b>	<b>Vermont</b>
Total population	45,709	626,249
Population density	50 persons per square mile	68 persons per square mile
Population age 60 and over	29%	24%
Population age 80 and over	4.9%	4.3%
Residents living below poverty line	14%	11.6%

Source: American Community Survey 5-year Average 2012-2016

Just over 7% of the state's population lived in the Windham County region in 2016. The region is slightly less densely populated than the state as a whole, with 50 persons per square mile. Individuals age 60 and over and age 80 and over make up higher percentages of the region's population than the state average—29% and nearly 5%, respectively. The percentage of the region's residents who are living in poverty is the highest among the state's 11 regions, at 14%, as compared to 11.6% for the state as a whole.

## Population Density

Figure 4 shows the concentration of the population in Windham County communities. Density is a helpful characteristic to consider in the context of public transportation services because it is one measure of where service, particularly fixed route service, is likely to be needed and cost-effective.

Moderate to high levels of density, with 1,000-4,999 persons per square mile, are found in Bellows Falls and Brattleboro's downtown area. Moderate to low density—500-999 persons per square mile—are located in Putney, Brattleboro, and the US 5 corridor around Bellows Falls. The rest of the region exhibits a level of density that can be considered rural, with 499 or fewer persons per square mile.

## Market Segments and Transit Propensity

Groups that are likely to need transit services because they do not drive, for reasons of disability, income, or choice, include older adults, people with disabilities, individuals with limited or no access to a car, and younger adults. Figure 5 through Figure 7 show the number and percentage (as compared to the state average) of individuals in the first three groups at the town level in Rutland County. All data was obtained from the American Community Survey (ACS) 2012-2016 Five-year Estimates.



Figure 3: Daily Commuters to Brattleboro

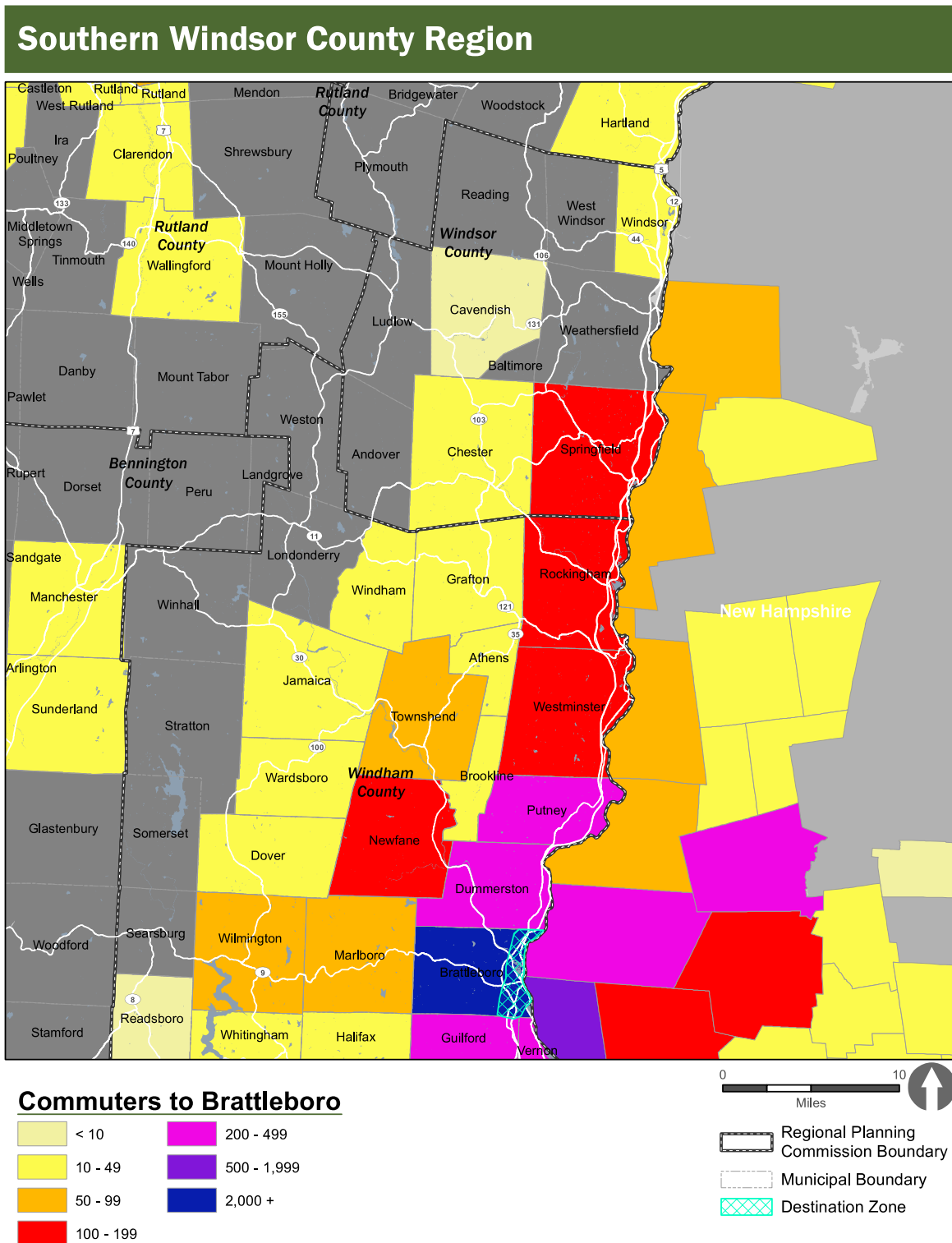
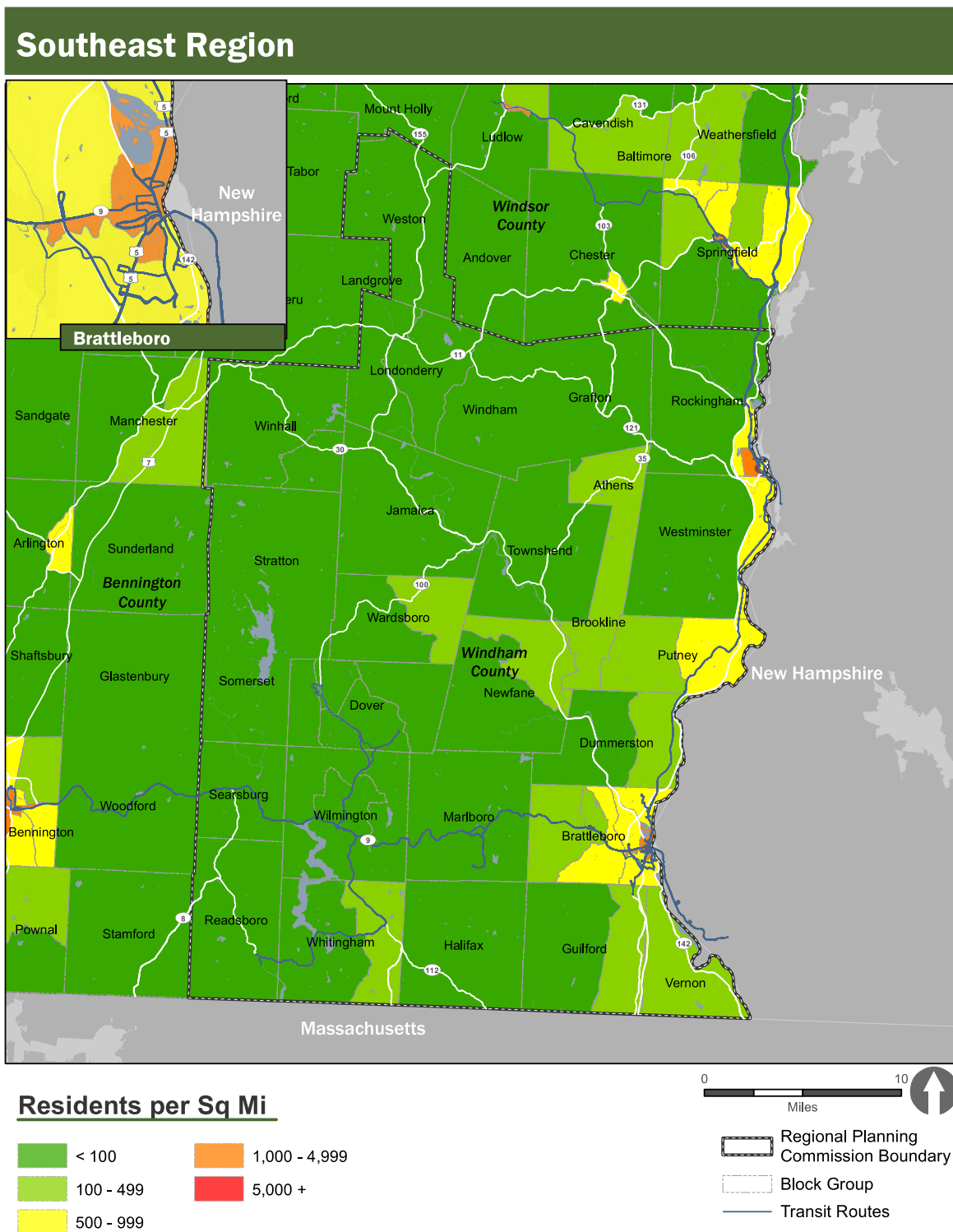


Figure 4: Population Density in Windham Region Communities 2017



### ***Older Adults***

Figure 5 shows the number and percentage of adults age 80 and over in 2012-2016, as compared to the statewide average, in the Windham County region. The focus in Figure 5 is on this older age group because younger seniors typically continue to drive and because a significant rise in this population is expected in Vermont (and nationwide) in the next 10-20 years.

Most towns in the region include a higher percentage of older seniors than the statewide average. The largest number of older seniors—approximately 500 individuals—lives in Brattleboro. The second largest number, approximately 250 individuals, lives in Rockingham.

### ***People with Disabilities***

Figure 6 shows the number and percentage of people with disabilities, as compared to the statewide average, in the Windham County region's communities. Four types of disabilities are included: those associated with hearing, vision, cognition, and working.

At 2-3 times the state average, Athens and Searsburg have the highest percentages of people with disabilities among their populations. The highest numbers of individuals, however, live in Brattleboro and Rockingham—more than 1,500 and about 750 individuals, respectively.

### ***Auto Ownership***

The number and percentage of households in towns in the Windham County region with limited access to an auto in 2012-2016 are shown in Figure 7. Households with one resident and no vehicle and those with two or more members but only one vehicle or no vehicle are included.

The highest numbers of such households are located in Brattleboro and Rockingham; approximately 2,000 and 1,500 or fewer households in each town, respectively. In those communities, the percentage of households with limited auto access is 1-2 times the state average. In about half of the other towns in the region, the percentage of such households is the same, but the numbers of households are much smaller. In the remaining communities, the numbers of households with limited auto access are small and percentages are below the state average.

### ***Transit Propensity***

As noted above, older adults, people with disabilities, individuals with lower incomes, and younger adults are likely to need transit services because they cannot or do not drive. The transit propensity index mapped in Figure 8 combines information about the location and weighted size of the county's total population and of various populations that are typically dependent on transit services—youth, older adults, people with disabilities, people living in poverty, and households with one car or less.

Sections of Brattleboro show the High levels of propensity. Moderate levels of propensity are found in Bellows Falls, Dover, and other sections of Brattleboro.





Figure 5: Number and Percentage of Adults Age 80 and Over in Windham County Region Communities, 2012-2016

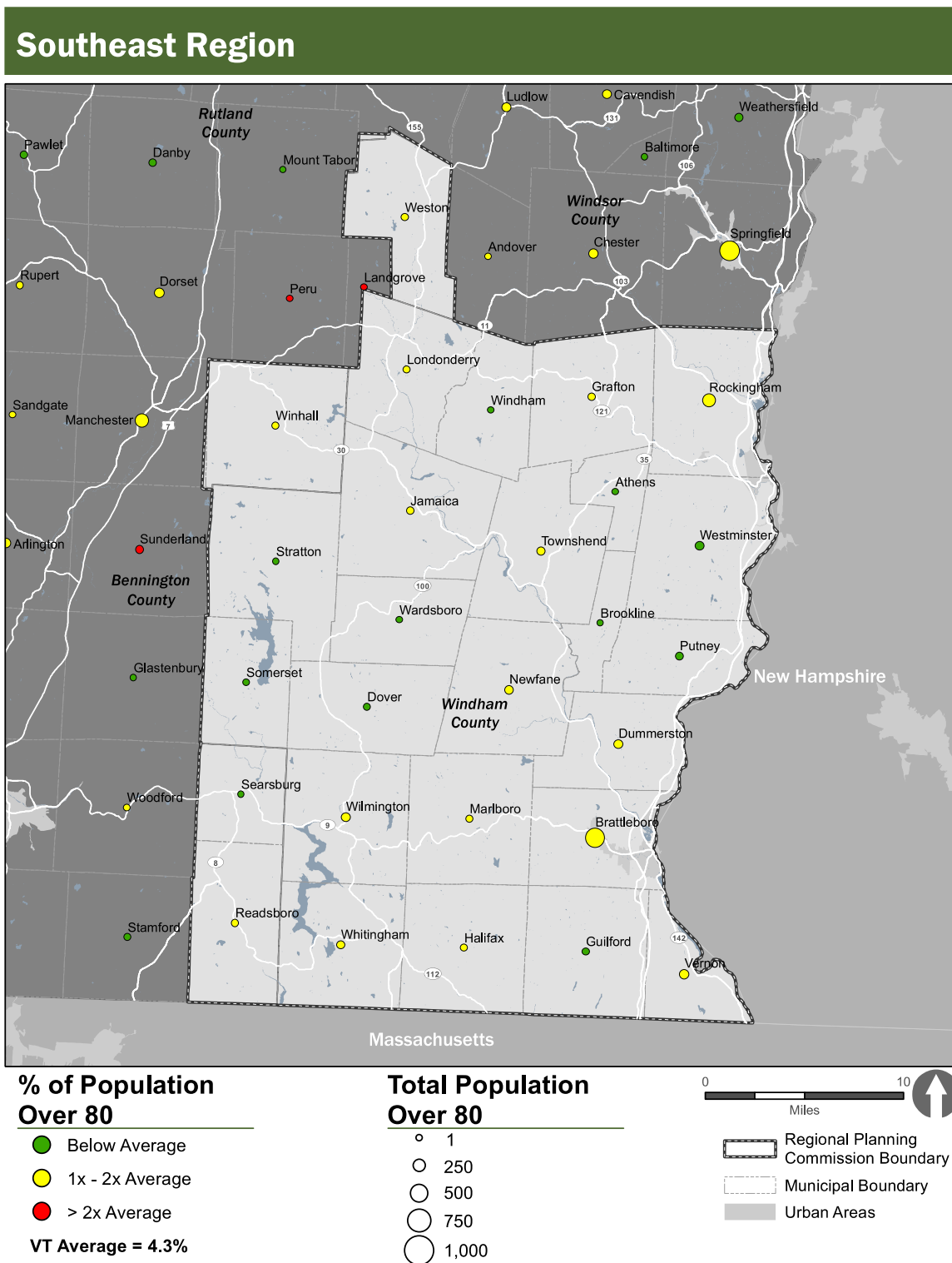
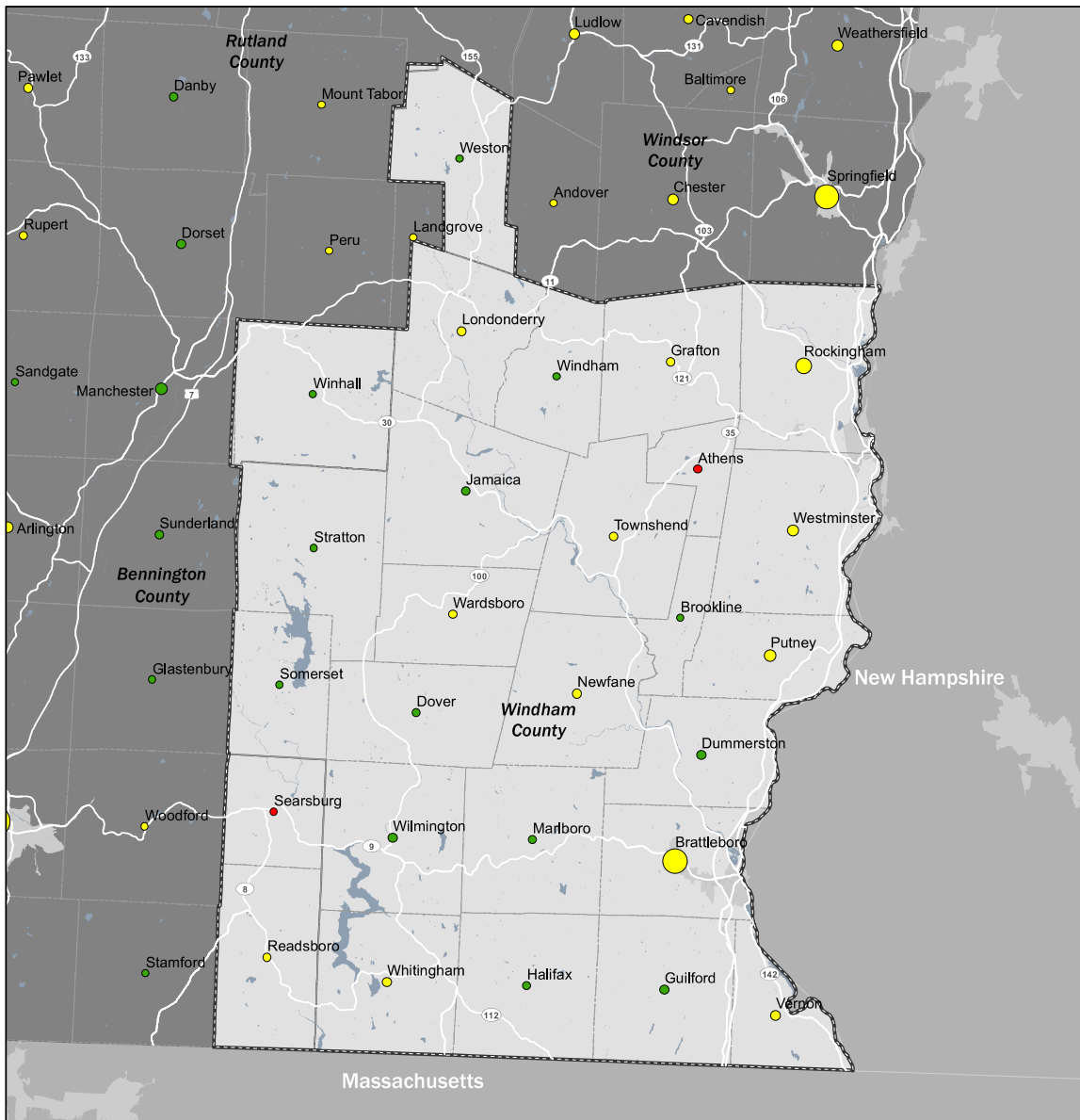


Figure 6: Number and Percentage of People with Disabilities in Windham Region Communities, 2012-2016

## Southeast Region



### % of Population with a Disability

- Below Average
- 1x - 2x Average
- 2x - 3x Average

VT Average = 14.0%

### Total Population with a Disability

- 1
- 750
- 1,500
- 2,250
- 3,000



- Regional Planning Commission Boundary
- Municipal Boundary
- Urban Areas



Figure 7: Number and Percentage of Households with Limited Auto Ownership in Windham County Region Communities, 2012-2016

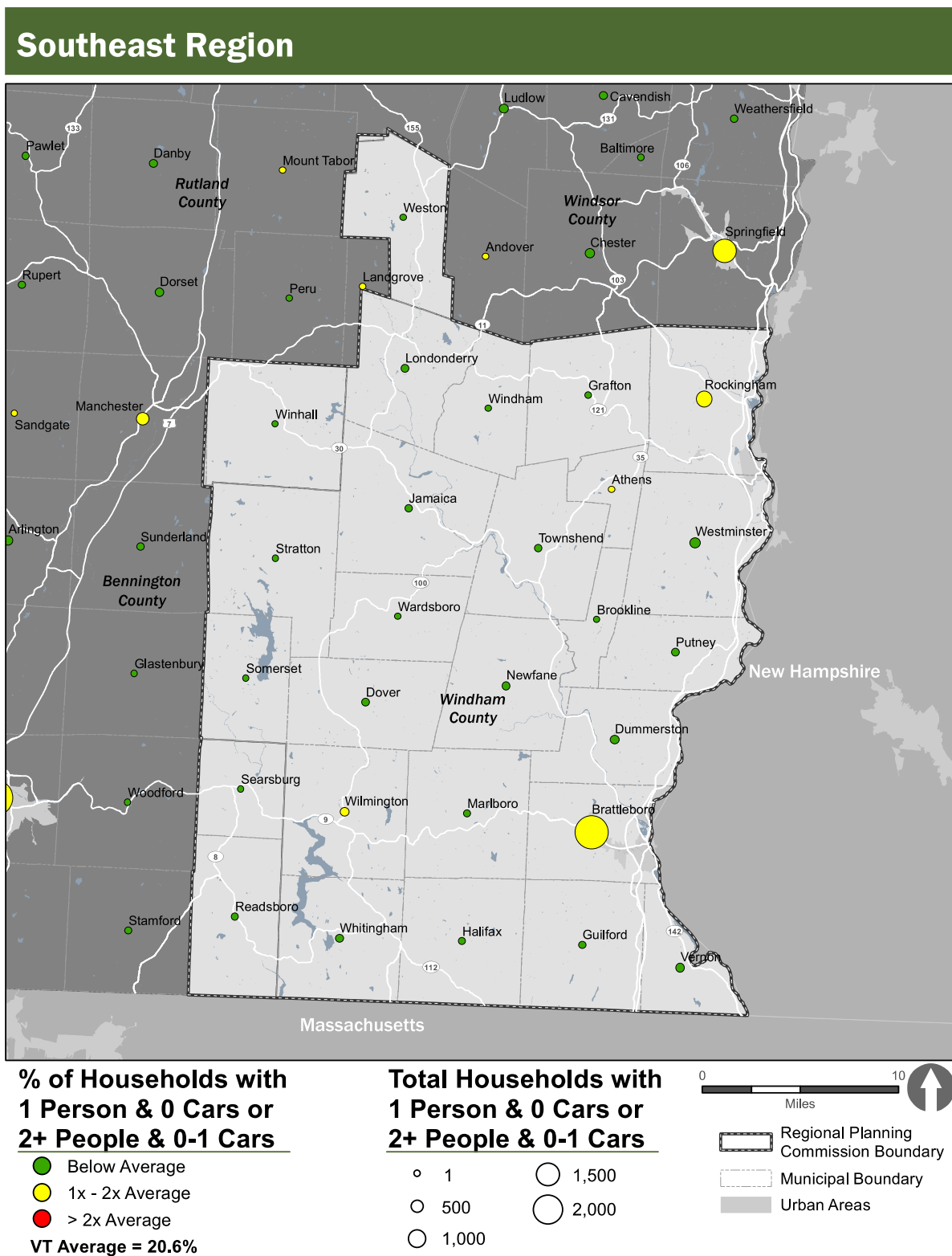
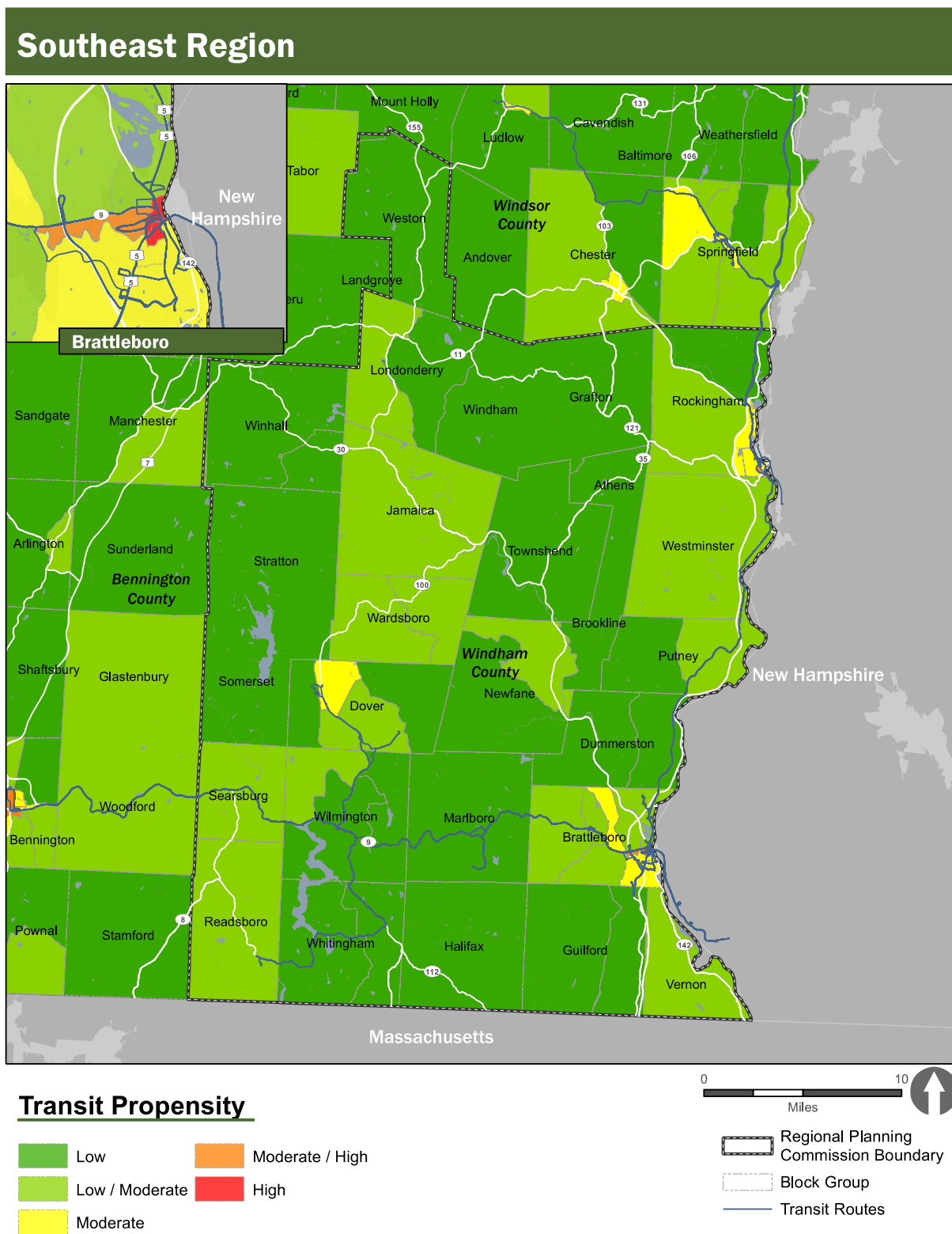


Figure 8: Transit Propensity Index, Windham County Region



## Regional Forum Comments

Stakeholders and members of the public who participated in the regional forum held at The Current's offices in Rockingham on November 1, 2018 made comments regarding service gaps, travel challenges, unmet transportation needs, and potential solutions, as summarized below.

### Service Gaps and Challenges

#### *Geographic Gaps*

- ▶ Transportation to the HUB (opioid treatment center) in Brattleboro is important.
- ▶ Despite Windsor's location, it can be difficult to travel to White River Junction. Individuals who leave work at 1 a.m. will not have transit back (also a temporal service gap). Others find getting to a Park & Ride lot alone difficult.

#### *Temporal Gaps*

- ▶ Customers increasingly looking for 'day-of' reservations and trip planning, which can be harder to accommodate.
- ▶ Evenings and weekends are about equal in importance.

#### *Trip Type Gaps*

- ▶ Individuals on parole and probation may have to travel to several meetings a week to fulfill parole requirements, which can be difficult to attend when transit services are focused on peak hours and daytime travel.
- ▶ Mostly medical trips are served, with other trip types a challenge.
- ▶ Transportation is a big barrier for low-income, low-vehicle availability individuals who need to get children to day care, Springfield, or Windsor. Individuals who work in human services will work not just out of Springfield, but in smaller 'outpost' towns like Windsor. Because of transportation gaps, some caseworkers are traveling to clients' homes, but doing so poses a risk.

#### *Accessibility Needs*

- ▶ Traveling in Brattleboro before plowing has taken place can be tough. In more remote areas, it can be difficult for drivers to get from the street to the door.
- ▶ Individuals have difficulty accessing bus on Brattleboro's main street, given lack of loading zone for bus.

#### *Technology Challenges*

- ▶ Individuals 55 and older are more likely to turn to news media than social media for updates.

#### *Information Gaps*

- ▶ More education is needed on what is available and how to use transit (information gap).
- ▶ The Current's 15 volunteer drivers have magnetic placards on their cars that identify them as volunteer drivers—this draws more attention to the program. Volunteer drivers were also given cards to distribute with more information on the service.

#### *Affordability Gaps*

- ▶ Volunteer mileage reimbursement (at approximately \$0.55 a mile) can become expensive over long distances.
- ▶ Collecting signatures for town funding measures is difficult, as is communicating the size of the need; only few people in a community may rely on a service, but they may be using the services on a daily basis.



### ***Other Gaps***

- ▶ Uber operates in Brattleboro, but with only perhaps two drivers. Older adults have reported that taxi service is available to some degree, and some will not hesitate to spend on a taxi instead of scheduling transit service.
- ▶ Need for transit is not temporary among caseworker's clients: individuals do not simply get a job and then soon after buy a car. Usually, these individuals need to obtain a license, and if they have DUI offenses, obtaining a license can be difficult. The Good News Garage provides some vehicles, but on a limited basis.

### **Potential Solutions**

When asked to rank potential service improvements, forum participants most often chose the options listed below.

#### ***Information***

- ▶ Go Vermont online trip assistance
- ▶ Trip planning assistance

#### ***Service Enhancements***

- ▶ Expand hours
- ▶ Expand service area (especially Upper Valley)

#### ***Accessibility Improvements***

- ▶ Sidewalks
- ▶ Accessible signals & signs
- ▶ Shelters

#### ***Technology***

- ▶ Mobile app (especially for mapping of vehicles)
- ▶ Devices for volunteers

### **Comments from the Southeast Vermont E&D Committee**

Development of the PTPP included discussions with the stakeholder committees that provide oversight for administration of the Vermont Elders and Persons with Disabilities (E&D) Transportation Program in each of nine regions, including Southeast Vermont, which includes the Windham County and Southern Windsor County regions. Members of the E&D advisory committees typically include the local public transportation provider; partner organizations—municipalities, human service agencies, and other organizations—that receive services for their clients from the provider, and sometimes also operate services for those clients directly; and the regional planning agency that serves the area.

The discussions with those committees yielded additional comments about transportation needs and potential solutions in those regions.

Services in the Windham County region that are supported with E&D program funds are provided by both divisions of SEVT. They include demand response services and rides provided by volunteer drivers for older adults (age 60 and over), people with disabilities, and individuals participating in programs and services offered by the partners. Eligible trip types include critical care medical and adult day health, local and out-of-town medical, congregate meals, and shopping. E&D partners include Senior Solutions: The Council on



Aging for Southeast Vermont, The Gathering Place, Bellows Falls Senior Center, Brattleboro Adult Day, and Springfield Adult Day.

## MetroQuest Responses

Respondents to the online MetroQuest survey conducted in September through December 2018 had the opportunity to identify a trip they would like to make using transit service but cannot due to lack of service or infrequent/inconvenient schedules. Respondents were also able to provide comments about the origin and/or destination of the trip they would like to make. Two hundred forty-five residents of the Windham County region commented on their desired trips.

Residents of all communities often indicated a desire for transit services near their homes or other local destinations and access to jobs, shopping, and activities in nearby larger towns such as Bellows Falls, Londonderry, Manchester, Putney, Brattleboro, and Springfield (Windsor County). Residents of smaller towns without transit options noted that any service near their homes would be welcome. Out of area destinations that were frequently mentioned included Burlington, Rutland, Montpelier, Hanover, NH, and Keene, NH. Several identified other locations out of state to which they would like to travel, including Albany, Boston, and Montreal.

Survey respondents were also asked to choose up to three transit improvements that would make them or people they know more willing to use public transportation. Choices were:

- More service near my home
- Service to my desired destinations
- More frequent service
- Service that runs evenings and/or weekends
- Faster service
- More reliable
- Cheaper
- If I felt safer riding on it
- If I understood how it works
- Nothing, I prefer driving

Of the 421 responses to this question from the Windham County region, 78% were in the top four categories: more service near my home (24%), more frequent service (20%), more service to my destinations (19%), and service in the evenings and/or weekends (15%).

## Summary of Transit Service Gaps and Needs

The information presented above about the Windham County region's demographic characteristics, location of employers and key destinations, existing transit services, and comments from residents and stakeholders point to the following transit service gaps and needs for the region.

### Geographic Service Gaps

SEVT's Current and MOOver divisions provide service that is concentrated along the I-91 corridor on the eastern edge of Windham County and across the southern section of the county between Brattleboro and Wilmington from east to west and between Dover and Whitingham from north to south. While many population centers and destinations such as employers, medical facilities, schools, and human service agencies are served by those bus routes, many communities in the region have no transit options apart from the demand response services that are available to older adults, people with disabilities, and clients of E&D partner organizations. Those communities include:





- Weston
- Winhall
- Londonderry
- Windham
- Athens
- Townshend
- Jamaica

- Stratton
- Wardsboro
- Newfane
- Brookline
- Somerset
- Halifax
- Guilford

In addition, residents of the fixed-route communities who live too far away from those routes to make use of them also have limited options. This is particularly true for residents of the towns along the I-91 corridor; the Current routes run along I-91 and not throughout those towns.

MetroQuest responses from residents of this region and regional forum comments highlighted these geographic service gaps.

## Temporal Service Gaps

The Current and MOOver local bus routes operate Monday through Friday or Monday through Saturday and offer hourly service, which is a basic level of service for small urban and rural communities.

The commuter routes operated by both divisions operate limited morning and afternoon peak hour trips, which is appropriate for that type of service. However, such schedules lessen the usefulness for potential riders who would like to travel between the served origins and destinations during the mid-day hours or to reach jobs with non-traditional hours. Some MetroQuest respondents noted this need.

The seasonal routes operated by both the Current and MOOver offer frequent service during extended days and hours, but do not operate between April and November. Residents of the communities in which those routes operate, and businesses along those routes that are open year-round have no transit options during half of the year.

## Gaps for Specific Rider Groups/Trip Types

Comments from regional forum participants and the Southeast Region E&D committee identified the following gaps for specific types of riders and trips:

- ▶ The E&D transportation program, generally open to individuals age 60 and older, those with disabilities, and individuals who are clients of partner human service agencies provides mostly medical trips
- ▶ E&D critical care medical trips are limited to two trips for dialysis and three trips for cancer treatment per rider per week
- ▶ Recent cuts to shopping trips have also been made to help partners manage their E&D budgets and maintain adult day trips. Establishing medical trip limits in communities that do not currently have them is being considered.
- ▶ No other “quality of life” trips can be provided through the E&D program due to funding constraints
- ▶ Individuals on parole and probation may have to travel to several meetings a week to fulfill parole requirements, which can be difficult to attend when transit services are focused on peak hours and daytime travel.
- ▶ Transportation is a big barrier for low-income, low-vehicle availability individuals who need to get children to day care, Springfield, or Windsor. Individuals who work in human services will work not just



out of Springfield, but in smaller ‘outpost’ towns like Windsor. Because of transportation gaps, some caseworkers are traveling to clients’ homes, but doing so poses a risk.

## Other Gaps

Regional forum participants and MetroQuest responses indicated that more information or education about transportation options is needed in this region. Comments also noted the need for sheltered, accessible bus stops, especially in bad weather.

## Transit Market Segments

### Size of Market Segments

For the purposes of developing public transit policies that focus transit investments on the markets that will most benefit from those policies, the number of individuals in the Windham County region in each of seven sub-markets has been estimated. Market segments are mainly related to age but are also subdivided by income. Automobile availability is treated as a secondary characteristic, related to the age and income of each particular group. The results are shown in Table 3.

*Table 3: Estimated Transit Market Segments, Windham County Region, 2017*

Market Segment	Likely Low-Auto Access	Estimated Number in Region, 2017
Youth (under 18)	X	7,580
Young adult (18-24), employed/student	X (by choice)	3,149
Adult (25-64)		18,476
Adult (25-64), below poverty line	X	2,185
People with disabilities (under age 80)	X	5,978
Younger seniors (65-79)		5,662
Older seniors (80+)	X	2,226
<b>Total</b>		45,256

Source: U.S. Census, American Community Survey (ACS) 5-Year Estimates

Youth and young adults, adults living in poverty, people with disabilities, and older seniors—those age 80 and older—are likely to have less access to a car for personal travel than adults with higher incomes and “newer” seniors, who typically continue to drive. Young adults, for reasons having to do with a number of generational trends, may prefer not to drive or own a car. For members of the other market segments, however, lack of access to a car is likely due more to an inability to drive or afford a car than to a choice. In the Windham County region, market segments that are likely to have limited or no access to a car make up 47% of the population.

### Impacts of Service Gaps on Market Segments

Table 4 summarizes the effect of the service gaps identified for the Windham County region on the various transit sub-markets in the region.

Several gaps are broad enough to affect all market segments. These include:

- ▶ **Geographic Coverage:** Rural communities lack transit options, making transportation an issue for all types of trips for those without access to a car or other means of a ride. In communities with transit service, difficulty making first/last-mile connections to bus stops or destinations further limits transit use.



- ▶ **Accessibility:** Sidewalks and paths to bus stops may not be safely accessible, especially during winter months. If fixed route service is available, it may not be usable or convenient.
- ▶ **Information:** Individuals and agency staff members may not be aware of the service options available. Service gaps and needs may be perceived rather than actual.

Other gaps are specific to certain market segments. For example:

- ▶ **All adult market segments**, who may need to travel to work or school, are affected by limited fixed route span of service. The Current and MOOver local services operate from roughly 6:00 or 7:00 a.m. to 5:00 or 6:00 p.m. on weekdays. Some routes operate on Saturdays. Regional commuter routes operate more limited hours. Making work trips more difficult is the fact that not all employers are served by existing routes.
- ▶ **People with disabilities** are affected by limitations in E&D program funding. Options for shopping, social/personal, and wellness trips may not be available.
- ▶ **Older adults, especially those over age 80**, are also affected by limits on trips provided with E&D program funding and may be unable to make all but the most critical medical or adult day service trips.
- ▶ **Individuals living in poverty** may have Medicaid transportation to eligible medical appointments but may have no other options for other types of trips.



Table 4: Gap Analysis by Transit Market Segment

Market Segment	Youth (under 18)	Young Adult (18- 24), Employed or Student	Adult (25-64)	Adult (25- 64), Below Poverty Line	People with Disabilities	Younger Seniors (65-79)	Older Seniors (80+)
<b>Likely Low Auto Access</b>	X	X (by choice)		X	X		X
<b>Geographic Gaps</b>							
Need for first/last mile options limits fixed route use	X	X	X	X	X	X	X
Residents beyond the fixed route service area and in towns without fixed route bus service have limited options. This affects many Windham County region towns.	X	X	X	X	X	X	X
Moderate to large employers are not served by bus routes in a number of communities		X	X	X	X		
<b>Temporal Gaps</b>							
Peak-only schedules of commuter routes do not help those with non-traditional work hours		X	X	X	X	X	
Year-round employers and residents of communities along the seasonal MOOver routes are not served by transit from April until late November (also a geographic gap)		X	X	X	X	X	
<b>Trip Type Gaps</b>							
Quality of life trips are at lower end of E&D eligible trip priorities and are challenging to provide					X	X	X
E&D funding constraints limit trips for older adults and people with disabilities					X	X	XX
<b>Accessibility Needs</b>							
More bus shelters would encourage fixed route use	X	X	X	X	X	X	X
<b>Technology Challenges</b>							
Mobile apps, especially real-time vehicle location, and devices for volunteer drivers are desirable	X	X	X	X	X	X	X
<b>Information Gaps</b>							
Forum comments and survey responses indicate some lack of knowledge of available transportation options	X	X	X	X	X	X	X
<b>Affordability Issues</b>							
Not an issue for riders	X	X	X	X	X	X	X



# Appendix N – Resources and Scenarios

## RESOURCES TO MEET NEEDS

Earlier sections of this chapter identified a range of needs that are not adequately met by existing public transit service in Vermont. The next logical step is to estimate how much it would cost to address all of those needs so that policy-makers and decision-makers can make informed choices about future investments in service, technology, vehicles, facilities and other infrastructure.

By its very nature, such an estimate would be a very rough approximation since it is impossible to quantify precisely all of the travel demand of Vermont residents—not to mention the added demand of visitors to the state—and determine how much of it would be served by transit routes and demand response vehicles. To produce a reasonable, if very rough, estimate, available data was compiled and processed with a series of assumptions described below, to yield estimates of the number of annual transit trips to meet the “basic” needs of Vermonter and the number to provide a “full” level of mobility to Vermonters. In both cases, it is assumed that automobile ownership would remain at its current level and that people who drive themselves or family members to accomplish their daily needs would continue to do so. The potential for public transit to carry more people who currently drive is considered in the section on scenarios below.

### Data Sources and Assumptions

Two primary data sources were used for this analysis: the American Community Survey (ACS) of the US Census Bureau and the 2017 National Household Travel Survey (NHTS). The ACS provided estimates of the number of Vermonters in seven demographic categories (see below) divided into Urban and Rural areas. For the purpose of this analysis, Urban was defined as Chittenden County which contains the only urbanized area in Vermont, and Rural was defined as all of the rest of Vermont.<sup>1</sup>

Several tabulations from the ACS were used to estimate the number of people by age group, by disability status, and by income. These include S0101 for the counts by age group, B18101 for disability status by age group, B17001 for poverty status by age, and C18130 for disability status by poverty status by age. These tables were cross-referenced to produce the urban and rural estimates by demographic category shown below and used extensively in the Needs Assessment, described above.

The NHTS was used to estimate daily trip rates by demographic category. A trip is defined as travel between two activities and is not necessarily based at the person’s home. Separate sets of trips rates were developed for the Urban (Chittenden County) and Rural areas. These are all based on travel diaries filled out by a sample of Vermonters during the 2017 NHTS. The Urban trip rates vary from 2.15 for people over the age of 80 to 4.09 for non-disabled people above the poverty line age 25-64. The Rural rates are generally lower than the Urban rates by about 0.2 trips. The national average daily trip rate from the NHTS across all of the demographic categories was 2.95 person trips per day. The Vermont average is slightly higher at 3.26 trips.

The “full” level of mobility was based on these daily trip rates, thereby assuming that the portion of the population that was assumed to need transit service (i.e. not be able to drive themselves) would be taking all

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<sup>1</sup> It is recognized that portions of Chittenden County are rural, and portions of the rest of the state qualify as urban clusters or micropolitan areas, but given the large amount of uncertainty associated with the rest of the analysis, it made no sense to rework the numbers based on these distinctions.



of their trips via public transit. An adjustment was made (described in more detail below) to subtract out non-motorized trips (mostly walking and bicycling).

The “basic” level of mobility was assumed to consist of 12 round-trips per month (24 one-way trips), or about 3 round-trips per week. This figure seems to be a reasonable estimate of the minimum number of trips needed for basic subsistence and is consistent with a similar analysis done as part of the 2012 PTPP.

For each of the seven demographic categories, two factors needed to be assumed:

- Non-auto factor – this is the percentage of people in the category who cannot drive or are unlikely to have access to an automobile
- Independent trip factor – this the percentage of people in the category who would be likely to making trips on their own, independent from an adult (parent) or caretaker

The factors assumed by demographic category, split by urban/rural are as follows:

Population Segment	Non-Auto factor		Independent Trip factor	
	Urban	Rural	Urban	Rural
Non-Disabled, Under 18	90%	90%	10%	5%
Non-Disabled, 18-24	40%	20%	90%	90%
Non-Disabled, 25-64, Above Poverty	10%	4%	100%	100%
Non-Disabled, 25-64, Below Poverty	30%	20%	100%	100%
Non-Disabled, 65-79	15%	7%	90%	90%
Disabled, Under 80	60%	60%	75%	75%
All 80+	60%	30%	65%	65%

It can be seen that the Rural non-auto factors are lower than the Urban ones for many categories, reflecting that urban residents have more transportation options available and generally shorter trips. The independent trip factors are the same for Urban and Rural residents by category, except for youth, for whom it is assumed that urban youth have more access to public transit and can walk to more places than rural youth. The vast majority of non-disabled people between 18 and 79 are assumed to make independent trips, with small percentages of the youngest and oldest of these assumed to depend on assistance.

When the non-auto factor is multiplied by the number of people in each category, the product is about 197,000, which is similar to the figure obtained by summing all of the people who live in zero-vehicle households plus all of the people who live in single-vehicle households (less the number of households to account for the drivers) and so forth.

## Full Level of Mobility

The total population and daily trip rates by demographic category are shown below:

Population Segment	Population		Daily Trip Rate	
	Urban	Rural	Urban	Rural
Non-Disabled, Under 18	27,894	84,836	2.93	2.70
Non-Disabled, 18-24	25,068	37,389	3.27	3.10
Non-Disabled, 25-64, Above Poverty	70,456	194,523	4.09	3.76
Non-Disabled, 25-64, Below Poverty	4,007	17,030	2.81	2.59



Non-Disabled, 65-79	12,364	51,766	3.39	3.18
Disabled, Under 80	15,341	56,640	2.75	2.55
All 80+	6,047	20,337	2.15	2.01

If these figures are multiplied through and summed, the total number of annual person trips in Vermont comes out to a figure over 741 million. Of those, just under 600 million are assumed to be independent person trips (or could be). Among independent trips, about 92 million would be taken by people without easy access to automobiles (applying the non-auto factor). This then is the maximum potential market for public transit trips.

Many of those 92 million trips are completed by non-motorized means, including walking and cycling. Someone who is running errands in a city may drive into the city and park, but then go to four different shops, or the bank and post office, walking in between each of those stops. In total, that would count as five trips for NHTS purposes: (1) home to stop #1, (2) stop #1 to stop #2, (3) stop #2 to stop #3, (4) stop #3 to stop #4, (5) stop #4 to home. However three of those five trips would be non-motorized.

To estimate the number of non-motorized trips, two other data sources are employed. The ACS publishes figures on mode of transportation use for commuting. In Chittenden County 9.7% of commuters either walk or bike to work. In the rest of Vermont, the figure is 5.1%. Multiplying those percentages by the number of commuters in each region (also derived from the ACS) and multiplying by the typical number of worktrips per year (245 days times two trips each day) results in just under 10 million commuting trips by walking and biking.<sup>2</sup>

The second data source was a study done by the Victoria Transport Planning Institute (based in Vancouver, BC). This study, *Evaluating Active Transport Benefits and Costs*<sup>3</sup>, cites an earlier study from 2008 which estimated that for every commuting trip made by walking or biking, there are 10 other such trips made for utilitarian purposes (such as shopping) and 9 other such trips made for recreation. Thus commuting trips represent only 5% of total walking/biking trips made. In a Vermont context, an adjustment was made to these rates to reflect the harsh weather conditions for part of the year; while people may continue to walk to work even in winter, they are much less likely to make recreational trips or shopping trips on foot or by bike. Thus it was assumed that in Chittenden County, about half as many non-motorized utilitarian trips would be made and in the rest of Vermont, only 40% as many trips would be made. Trips for recreation purposes were assumed to happen at only 20-25% the rate cited in the study.

Multiplying all of these factors through results in about 35.5 million utilitarian trips and 24.7 million recreational trips made by walking or biking. Adding these to the commuting trips results in a total of 69.8 million annual non-motorized trips in Vermont. Subtracting these from the 92 million trips cited above as the maximum potential market gives us a total of 22 million trips that could be served by public transit. In FY2018, about 4.3 million transit trips were provided<sup>4</sup>, meaning that **17.7 million additional transit trips would be carried to meet the “full” needs of Vermonters who don’t have easy access to automobiles.** This figure can be considered the upper bound of “needs” for the near term. It does not

<sup>2</sup> Note that the ACS is conducted continually through the year and these figures reflect a five year average. Thus, even though it might be obvious that fewer walking and biking commutes happen in the winter than in the summer, the overall percentages already reflect this seasonal variation.

<sup>3</sup> <https://www.vtpi.org/nmt-tdm.pdf>

<sup>4</sup> The statewide reported total for FY2018 was 4,742,202, but that includes 452,000 trips on tourism services—bus routes serving Sugarbush, Killington and Mt. Snow during the ski season. For the purpose of this analysis, we are focusing on Vermont residents and the services that meet their daily travel needs.





include riders who might be drawn to public transit for convenience, environmental concerns or cost savings and thus give up driving for some of their travel.

At the end of the 10-year timeframe, it can be assumed that the needs would be greater because of the aging of the population. A few simple assumptions were added to model to predict the impact of the forecast 60% increase in people over the age of 80 referred to earlier in this report. It was assumed that the overall population would remain the same, but that the over 80 cohort would grow by 60%, the number of people with disabilities under 80 would grow by 10%<sup>5</sup>, the number of people 65-79 would remain the same<sup>6</sup>, and that all of the other categories would shrink proportionally so that the bottom line is unchanged. The result of this change in the composition of the Vermont population is that the number of additional transit trips needed rises from 17.7 million to 21.2 million, an increase of 3.5 million trips, or almost as much as the total number of transit trips carried in FY2018.

## Basic Level of Mobility

As stated earlier, the “basic” level of mobility was defined as 12 round-trips per month (essentially 3 per week), and this rate was applied across the board to all demographic categories. This trip rate is roughly one quarter of the average trip rate from the NHTS. Applying that trip rate to the full population yields an annual number of “basic” trips of 180 million (compared to the 741 million for “full” mobility).

Applying the non-auto and independent trip factors to this total results in an estimate of about 24.5 million trips that could be served by public transit. As before, we need to subtract trips that are likely to be accomplished by non-motorized means. Using the walk/bike commuting factor and an expansion factor to take account of other utilitarian trips, 13.8 million non-motorized trips were estimated. Subtracting these and the current 4.3 million transit trips from the 24.5 million left a total of **6.5 million additional transit trips would be carried to meet the “basic” needs of Vermonters who don’t have easy access to automobiles.**

At the end of the 10-year timeframe, using the same assumptions as above, the number of additional transit trips needed rises from 6.5 million to 7.9 million, and increase of 1.4 million trips.

## Costs

In order to calculate the costs of carrying all of those additional transit trips, it is necessary to split the totals into urban and rural figures, because the operating subsidy per trip is very different for the two environments. It is assumed that the FY2018 net cost per trip (gross operating cost less fare revenue) for urban and rural trips remains the same for the millions of additional trips that would be added to the system. The FY2018 net costs (operating subsidies) are as follows:

- Urban operating subsidy: \$4.64 per trip

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<sup>5</sup> As medical technology improves, people with disabilities tend to live longer, resulting in an expansion of this population over time. According to the 2017 Disability Statistics Annual Report ([https://disabilitycompendium.org/sites/default/files/user-uploads/2017\\_AnnualReport\\_2017\\_FINAL.pdf](https://disabilitycompendium.org/sites/default/files/user-uploads/2017_AnnualReport_2017_FINAL.pdf)) the number of people with disabilities in the US increased from 11.9% in 2010 to 12.8% in 2016. That represents a 7.5% increase in 6 years, but includes people over 80. There are no official forecasts for the coming decade, but it seems reasonable that a 10% increase over ten years, excluding people over 80, is well within the realm of possibility.

<sup>6</sup> People 65 years of age in 2029 represent the tail end of the Baby Boom generation, thus the overall size of the cohort should remain relatively stable.



- Rural operating subsidy: \$10.11 per trip

These costs exclude routes in the Intercity and Tourism categories as defined in the VTrans Route Performance Report. Many of the people riding routes in those categories are not Vermont residents, and they are very different from the rest of the public transit services operated in Vermont. Volunteer driver trips are also excluded from this analysis because the Route Performance Report only tracked the administrative cost of those trips, rather than the full cost. The great majority of trips are still included, with a total of 2.3 million Urban trips and 1.5 million Rural trips.<sup>7</sup>

It is also important to note that this financial analysis applies to the unmet needs based on the current population, rather than the 10-year forecast. It is likely that costs will have changed substantially in 10 years, so applying the current net subsidy per passenger to 2029 estimates makes the figures even more speculative.

Among the 17.7 million additional trips estimated for the “full” level of mobility, 4.2 million apply to the Urban area and 13.5 million apply to the Rural area. Multiplying those figures by the respective operating subsidies per trip produces a cost estimate to serve those new trips of \$19.6 million for the Urban area and \$136.2 million for the Rural area, resulting in a statewide total of \$156 million. Urban spending would nearly triple from its currently level of \$10.5 million, but Rural spending would increase by a factor of 10, from its current level of about \$15.5 million.<sup>8</sup>

For the “basic” level, among the 6.5 million new trips, 730,000 would occur in the Urban area and 5.7 million in the Rural area. Multiplying those figures by the respective operating subsidies per trip produces a cost estimate to serve those new trips of \$3.4 million for the Urban area and \$60 million for the Rural area, resulting in a statewide total of \$63.4 million. These figures are summarized in the table below.

Statistics Excluding Intercity, Tourism and Volunteer Driver Trips	Urban	Rural	Statewide
FY2018 Riders	2.3 million	1.5 million	3.8 million
FY2018 Net cost per rider	\$4.64	\$10.11	
FY2018 Total subsidy	\$10.5 million	\$15.5 million	\$26 million
“Full” additional riders	4.2 million	13.5 million	17.7 million
“Full” additional net cost	\$19.6 million	\$136.2 million	\$156 million
“Basic” additional riders	0.7 million	5.7 million	6.5 million
“Basic additional net cost	\$3.4 million	\$60.0 million	\$63.4 million

<sup>7</sup> The difference between the 3.8 million trips combined and the 4.3 million transit trips referred to earlier is primarily the volunteer driver trips (458,000 in FY2018).

<sup>8</sup>As with the ridership figures, these cost figures exclude intercity, tourism and volunteer driver services.



## FUTURE SCENARIOS AND RIDERSHIP

It is unlikely that conditions will remain the same as they are today for the next ten years. The environment in which public transit operates and the costs it faces are very likely to change. This section examines three possible scenarios that would affect ridership and costs in various ways, thus having a significant impact on the cost efficiency of the transit system and the resources necessary to operate it.

It is important to note that none of the scenarios envisage significant changes in housing or in other land use/development patterns. Even if there were a consensus now that development patterns need to change and a strong impetus to invest, the results of this change would only begin to take effect toward the end of the ten-year timeframe of the PTPP. A more appropriate timeframe for land use changes is 20 or even 30 years.

It is also important to note that this analysis mainly concerns the existing ridership base and people on the margins who may become transit riders or stop riding based on external factors. It is separate from the prior analysis looking at the needs of the whole population of Vermont.

### Scenario 1 – High Fuel Prices

In 2019, retail gasoline prices (adjusted for inflation) are low by historical standards. They are slightly higher than 2016, but otherwise they are lower than they have been since 2006. They are moderately higher than they were between 1986 and 2006, but substantially lower than they were in the 1979-1983 period.<sup>9</sup> In those periods of suddenly high prices (1979-80 and 2012-14) many people made different choices about the vehicles they purchased and the modes of transportation they used. Carpooling and public transit ridership grew significantly when prices spiked, and then slowly subsided as people “got used to” the higher prices, and as prices themselves started to fall.<sup>10</sup>

In this scenario, it is assumed that gas prices double sometime within the ten-year timeframe. That would mean a retail price above \$5.50 per gallon based on prevailing prices in 2019. Such an increase, especially if it happened in a short time, would cause substantial shifts in mode choice. It is assumed that drastic changes in fuel prices would affect the mode choice of people in the 18-24 and 25-64 age groups most significantly. It was reasoned that other groups have more constrained choices about transportation options (people over 80 or people with disabilities) or have a reduced amount of travel (fewer commuters) which would make fuel prices less important to them (people in the 65-79 age group).

For the purpose of this analysis, a cross-price elasticity of +0.12 was used, based on research contained in a Victoria Transport Policy Institute study.<sup>11</sup> A range of elasticities could apply, and most of the research on this topic was based on large cities with rail systems, but this figure seems reasonable. It means that for a 10% increase in fuel prices, roughly a 1.1% increase in transit ridership would be expected.<sup>12</sup> Elasticities are generally less appropriate for use in the context of large and sudden changes, such as the doubling of fuel prices discussed here. A study of large cities in 2008 suggested that the impact of \$6 per gallon gas would increase ridership on urban rail systems in nine large US cities by between 17% and 55%. (VTPI p. 17.)

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<sup>9</sup> <https://www.eia.gov/outlooks/steo/realprices/>

<sup>10</sup> <http://chicagopolicyreview.org/2013/10/17/rising-fuel-costs-drive-up-carpooling-rates/> and <https://pdfs.semanticscholar.org/c735/72e50808b6dc6cb4d32f7a1f33b4644d7a43.pdf>

<sup>11</sup> <https://www.vtppi.org/tranelas.pdf>

<sup>12</sup> Elasticities are applied in a non-linear equation so that it is not a straight relationship of 10% translating to a 1.2% increase.



Overall, the +0.12 elasticity will produce relatively conservative estimates for the impact of a drastic change in fuel prices, at least for the short term.

### **Urban Service**

In Fiscal Year 2018, about 2.3 million passenger trips were carried on urban and express commuter routes in Vermont. Applying the +0.12 elasticity to a doubling of fuel prices translates into an 8% gain in ridership, or about 190,000 trips. It is likely that the impact of higher gas prices would be seen more strongly on the express commuter trips. An elasticity of +0.3 applied to those trips results in a 22% rise in ridership, or about 50,000 new trips over and above the 223,000 carried in FY2018. Adding those trips to the total increases the overall ridership gain to about 10%, about 220,000 riders.

Comparing that estimated ridership increase, which is modest in the context of a doubling of fuel prices, to the number of trips generated by people in the 18-24 and 25-64 age group who live in Chittenden County, indicates that 220,000 riders is only about 1% of the annual non-auto trips made by people in those groups. After discounting 60% of the 18-24 year-olds, 90% of the 25-64 year-olds above the poverty line and 70% of the 25-64 year-olds below the poverty line, there are still about 22.5 million annual trips made by this group. This figure suggests that the switch to transit may be significantly higher than 220,000.

Another point of reference is the overall transit mode share in Chittenden County. Using Census data, the Chittenden County regional model, CCTA/GMT ridership data and traffic counts on regional highways, CCTA/GMT has tracked the transit mode share for the core of Chittenden County for many years. The transit mode share for work trips is approximately 3% and the mode share for all types of trips is approximately 2%.<sup>13</sup> The last time there was a significant spike in gasoline prices, from 2006 to 2008, there was a jump in transit mode share of about 0.7% for worktrips and 0.4% for all types of trips. The nominal price increase at that time, was “only” about 25%. With a 100% increase in fuel prices, it would not be unreasonable to expect a 1.5% increase in worktrip mode share and a 1% increase overall. That would translate into roughly 1.1 million new transit trips.

Urban bus routes and commuter express routes operated by GMT and other providers in Vermont could easily accommodate a 10% increase in ridership without having to operate additional buses. However, a 50% increase in ridership would lead to overcrowding in peak periods and would require additional service. Not every route would need extra service and some degree of crowding may be acceptable. Thus, it is assumed that service would need to expand by 10% to avoid severe overcrowding. Of course, a doubling in fuel prices would also affect the operating costs of transit providers, but fuel currently accounts for only about 8% of the operating budget of GMT, so a doubling of fuel prices would increase their bottom line expense by about that same 8%.

Even with the increased costs, the additional riders would cause the net cost per passenger to drop. At the lower end of the range (10% increase), it would drop from \$4.64 to \$4.59 and at the higher end, it would drop from \$4.64 to \$3.47. Total gross operating cost for the current amount of service would be \$13.8 million and for the increased level of service, \$15.2 million.

### **Rural Service**

The ridership response in rural areas is likelier to be more limited than in the urban area because bus service is generally less available. As in the urban area, rural commuter routes would be more likely to see a significant ridership gain than other rural and small town local services, since they tend to travel longer

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<sup>13</sup> Figures drawn from internal memos prepared by Steadman Hill Consulting for CCTA/GMT.



distances and thus would afford their riders more substantial savings on fuel.<sup>14</sup> Using the same lower-bound elasticities for local and commuter routes, respectively, yields an overall ridership gain of 154,000.

Comparing that estimated ridership increase to the number of trips generated by people in the 18-24 and 25-64 age group who live outside of Chittenden County, indicates that 150,000 riders is only about 0.7% of the annual non-auto trips made by people in those groups. After discounting 60% of the 18-24 year-olds, 90% of the 25-64 year-olds above the poverty line and 70% of the 25-64 year-olds below the poverty line, there are still about 21.5 million annual trips made by this group. In the urban area, the tiny percentage suggested that the switch to transit may be much larger, but in the rural area, the fact is that the great majority of residents do not have access to a bus route and so could not switch even if they wanted to. The upper bound is therefore likely to be much lower than the figure in the urban area. Rather than a figure 5 times higher than the lower bound, the upper bound in the rural area is likely to be no more than twice the lower bound, or about 300,000 riders.

With these more moderate ridership increases of 11% at the lower bound and 22% at the upper bound, capacity is not an issue for rural services. Thus, the only cost increase faced by the transit providers would be the more expensive fuel. The portion of the operating budget attributable to fuel is somewhat higher in rural areas because the overall operations are smaller. A 10% rate is a reasonable estimate based on the budget of Advance Transit. Using that rate, the net cost per passenger for rural services (excluding demand response) would drop from \$8.84 to \$8.74 with the lower-bound estimate, and to \$7.95 with the upper bound estimate. Total gross operating cost for these rural services would be \$14 million.

## Scenario 2 – Low Fuel Prices

While fuel prices are relatively low now, they could go even lower. As fuel prices have dropped over the past five years, transit agencies nationally have seen their ridership decrease.<sup>15</sup> As most of the research points out, fuel prices are not the only factor affecting transit ridership, but there is an undeniable correlation between the drop in fuel prices since 2014 and the decline in transit ridership. If fuel prices were to go even lower, dropping by 30% to under \$2 per gallon, what would be the impact on transit?

It is already the case that the majority of riders on bus routes in Vermont are there because they did not have a car available for that trip. Passenger survey data is not available for the entire state, but surveys taken in 2017 in the GMT and Advance Transit service areas show that 79% of GMT-Urban, 84% of GMT-Rural and 69% of Advance Transit (Vermont routes only) did not have a car available for the trip on which they were surveyed.<sup>16</sup> Furthermore, the percentage of transit-dependent riders rose in all surveys by 10 to 15 percentage points from the prior survey (taken in 2014 or 2015), indicating that many of the non-transit-dependent riders who had used the bus when gasoline prices were higher were no longer riding by 2017. Express commuter routes operated by CCTA/GMT have much lower percentages of transit-dependent riders, but even these routes have fewer choice riders than before. In 2014, only 32% of riders on LINK Express and Commuter routes operated by CCTA did not have a car available for their trip. By 2017, that figure had jumped to 43%, and it is likely even higher in 2019.

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<sup>14</sup> Demand-response service is excluded from this analysis because it is assumed that there are virtually no choice riders on demand-response service.

<sup>15</sup> <https://www.govtech.com/fs/transportation/2018-Was-the-Year-of-the-Car-and-Transit-Ridership-Felt-It.html> and <https://fas.org/sgp/crs/misc/R45144.pdf>

<sup>16</sup> All survey data statistics from memos and reports prepared by Steadman Hill Consulting for GMT and AT.





The fact that people who could have driven make up only 15-30% of riders on transit systems in Vermont suggests that the impact of a drop in fuel prices would be limited to that range. Indeed, it is very unlikely that all of these riders would stop riding the bus since gasoline price is only one cost factor that they face, and because many of them use the bus for other reasons, such as environmental concerns, avoiding traffic and parking hassles, and using the commuting time productively.

Employing the same elasticities used in the prior section (+0.12 for local routes and +0.3 for commuter routes) translates into a 4% ridership loss for local routes and a 9% loss for commuter routes if gasoline prices should drop 30% to \$2 per gallon.

### ***Urban Service***

Applying those elasticities to the FY2018 ridership for urban local routes and express commuter routes results in a 76,000 trip loss for the former and 20,000 trip loss for the latter, summing to 96,000 lost trips overall. These losses would raise the net cost per passenger of the remaining trips.

The operating cost of the transit providers would drop moderately as a result of the cheaper fuel. Multiplying the 30% drop in prices by the 8% portion of the budget represented by fuel yields a 2.4% savings in the total operating budget.

The combination of the loss in ridership and the lower operating expenses yields a net cost per rider of \$4.75, about 11 cents higher than the FY2018 baseline. The gross operating cost would drop to \$12.5 million.

### ***Rural Service***

Applying those elasticities to the FY2018 ridership for rural local and commuter routes results in a 42,000 trip loss for the former and 25,000 trip loss for the latter, summing to 67,000 lost trips overall. These losses would raise the net cost per passenger of the remaining trips.

The operating cost of the transit providers would drop moderately as a result of the cheaper fuel. Multiplying the 30% drop in prices by the 10% portion of the budget represented by fuel yields a 3% savings in the total operating budget.

The combination of the loss in ridership and the lower operating expenses yields a net cost per rider of \$9.02, about 18 cents higher than the FY2018 baseline. The gross operating cost would drop to \$11.9 million.

## **Scenario 3 – Changed Technological Landscape**

While technological advances have been affecting people's lives and livelihoods for decades, the impacts on public transportation have accelerated quickly in the last five years. For instance, real-time passenger information systems have been around since the early 2000s, but those early systems were expensive and required significant investments to get the information on vehicle locations and arrivals into the hands of passengers. With the widespread availability of smartphones in the past few years, however, the cost to provide real-time information has dropped precipitously and transit agencies no longer need to install video screens and message boards at stops to tell passengers when the next bus will arrive.

Better information is not the only major change brought about by technology. Automakers and technology companies are working hard to implement autonomous vehicle technology, and eventually this technology will find its way into buses and other transit vehicles. In addition, companies such as Uber and Via have been working on algorithms to create shared-ride trips in real time. The old model of having to call 24 or 48



hours in advance to request a trip is giving way to the new model of using a smartphone to request a trip 15 minutes hence and then the database engine creating driver manifests in real time that maximize the efficiency of fulfilling all outstanding trip requests. The drivers receive those manifests via tablets in their vehicles, and these are updated constantly.

There is no way to forecast precisely how these technological advances, and others that have not even been thought of yet, will affect public transit over the coming decade. Fully autonomous vehicles are still several years off, and they are most likely to be available in urban areas well before than can navigate the dirt roads that are prevalent in most rural areas. An optimistic forecast would say that by 2029, 10% of bus service in the urban portion of Vermont would be operated by autonomous vehicles. While there would be expenses associated with their implementation, the autonomous buses would allow for a reduction in the labor cost of bus operators. Since bus operator labor accounts for about 50% of the total operating budget of GMT, this technological change would result in a 5% reduction in operating costs. The net cost per rider would drop from \$4.64 to \$4.36.

A larger impact could be seen on the demand side, where widespread and accurate real-time information and a much more convenient way of requesting demand-response rides could make service more attractive and efficient. To date, there has not been a large amount of research on the effects of real-time information on ridership, especially outside of large metropolitan areas. A study in New York found that the availability of real-time information increased ridership by about 2%.<sup>17</sup> One could theorize that real-time information could have a larger impact in small urban and rural areas where service is more sparse and fewer people are aware of the service.<sup>18</sup> If it were possible to make people more aware of the existing service, and if people knew exactly where the bus was and when it was going to arrive, it is possible that more people would choose to use it. Thus, for the purpose of this study, it is assumed that real-time information applied to every route in Vermont would lead to an increase in ridership of 5%. In the urban area, the net cost per rider would drop from \$4.64 to \$4.37. In the rural area it would drop from \$8.84 to \$8.42. The combined impacts of autonomous vehicles and better information in the urban area would reduce the net cost per passenger to \$4.10.

A wholly new way of requesting and scheduling rides could transform demand-response services in Vermont. The impacts are most likely to be felt in small towns and moderate density areas where there would be enough demand to lead to more efficient use of demand-response vehicles. The productivity of these services is currently low, with a statewide average of 2.4 boardings per vehicle hour (a person boarding every 23 minutes on average). Making ride scheduling easier would both increase demand for the service (more people would find it convenient) and increase efficiency (more riders could be grouped together on the same trips). If members of the general public began to use demand-response service for local trips, perhaps in a microtransit model such as that proposed for Montpelier, productivity could rise substantially. For the purpose of this study, it is assumed that overall demand response productivity rises by 50%, excluding the Northeast Kingdom, the most rural portion of Vermont where the vast majority of trips are carried in volunteer driver vehicles. It is further assumed that half of the productivity increase is due to more demand and half is due to more efficient scheduling (thereby reducing revenue hours operated). The result of these assumptions is that productivity would rise to 3.6 boardings per vehicle hour and the cost per trip

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<sup>17</sup> <https://www.sciencedirect.com/science/article/pii/S0968090X15000297>

<sup>18</sup> Most bus routes in New York are very frequent so that it does not matter when a passenger arrives at the bus stop. For a bus that runs once or twice per hour, having precise information about the arrival time could make a big difference in whether people would be willing to ride, since the penalty for missing the bus is a much longer wait.





would drop from \$21 to about \$14. Gross operating costs (excluding volunteer driver trips and Medicaid trips) would drop from about \$3 million to about \$2.5 million.

## Summary

The impacts on net cost per rider and gross operating cost for each scenario are summarized in the table below. High fuel prices have the greatest potential impact on cost effectiveness, but technology could have a very significant impact on demand response transportation.

Scenario	Urban	Rural
Baseline net cost per rider	\$4.64	\$8.84
Baseline gross operating cost	\$12.8 million	\$12.7 million
1 – High fuel prices net cost per rider	\$3.47 to \$4.59	\$7.95 to \$8.74
1 – High fuel prices gross operating cost	\$13.8 to \$15.2 m	\$14 million
2 – Low fuel prices net cost per rider	\$4.75	\$9.02
2 – Low fuel prices gross operating cost	\$12.5 million	\$12.3 million
3 – Technology net cost per rider	\$4.10	\$8.42
3 – Technology gross operating cost	\$12.2 million	\$12.7 million



# Appendix O – Draft Workplan for Elders and Persons with Disabilities Transportation Program Committees (E&D Committees)

This draft template is intended to assist the nine regional E&D committees with development of annual workplans that include some standard elements for more statewide consistency, but also allow for local flexibility in the operational procedures and agendas of each committee.

## I. Committee Background

- a. Brief overview of committee’s purpose and scope: mission/vision, communities served, types of partner organizations, transportation services provided, leadership

## II. Partner Organizations

- a. List of current partner organizations: Regional Planning Commission(s) (RPC), transportation provider(s), human service organizations, municipalities

## III. Roles and Responsibilities

- a. Committee leadership: meeting facilitation, communication with partners
- b. Meeting logistics: setting schedules and locations, development of agenda, preparation of meeting notes, meeting announcement/warning, publishing meeting notes
- c. Meeting participation: expectations for participation by partner organizations, interested parties, general public, and current riders in scheduled committee meetings
- d. Periodic reporting to partners on ridership, budget status, and other topics
- e. Assist transit provides with preparation of grant applications for submission to the Agency of Transportation (AOT)
- f. Allocation of funds among partner organizations
- g. Development of contracts, MOUs, or other agreements with partner organizations
- h. Transportation service delivery, including coordination with other transportation programs, such as Medicaid

## IV. Meeting Schedule

- a. Planned schedule of committee meetings: minimum of four meetings per year

## V. Annual Agenda: Description of and anticipated schedule for ongoing activities that the committee will pursue during the coming year



- a. Assistance with transit provider's preparation of grant application to AOT
  - b. Allocation of funds to partner organizations
  - c. Adjustment to allocations among partners throughout or toward the end of the year
  - d. Adjustments to priorities among eligible trip types (critical care medical, non-emergency medical, adult day health, congregate meals, shopping, social/personal/wellness, other) and adjustments to trip limits, if applicable
  - e. Description of and schedule for reporting to partner organizations
  - f. Description of plan for communicating with partner organizations
  - g. Annual performance monitoring (additional details below)
- VI. Annual Performance: Description of goals and objectives and other activities that the committee will pursue during the year to address local E&D transportation issues and needs.
- a. Required items
    - i. Develop mission and vision statement
    - ii. Develop annual goals/objectives and other activities that will be implemented to achieve them, and anticipated schedule for activities
    - iii. Work with RPC(s) to distribute customer satisfaction survey to current riders of E&D services in FFY20, following model of Chittenden County E&D committee and United Way of Northwest Vermont. Conduct survey update annually thereafter using a smaller sample of riders.
    - iv. Assessment of unmet need among E&D target populations in the region following methodology developed by VTrans and E&D committees
    - v. Develop and implement procedures for monitoring how needs are being addressed, and needs that are currently unmet
    - vi. Prepare 1-2-page overview of regional E&D program for use in new partner (Southeast Vermont committee example)
    - vii. Create 1-2 page Rider's Guide, and a longer one as necessary/ time allows, for riders to understand who to call, what to expect, etc.
    - viii. Work with AOT to prepare short video documentation of E&D riders' stories.
    - ix. Participate in biennial statewide E&D meeting
  - b. Optional items: examples of activities that could address local issues or move local goals/objectives forward are listed below. Other activities may be planned and implemented by individual E&D committees.



- i. Plan and implement events, activities to increase awareness of transportation options other than E&D services in the region. Examples include talks at senior centers, attendance at a caregivers training, talks at high school with classroom of people with disabilities, and participation in events sponsored by partners and other local organizations for older adults and people with disabilities to share transportation information.
- ii. Implement travel training for E&D riders to encourage use of fixed route services where appropriate. The Bennington E&D committee program or resources available from the Kennedy Center in Connecticut or the National Aging and Disability Transportation Center could provide program models and best practices.
- iii. Involve partner organizations in recruitment of volunteer drivers

## VII. Annual Reporting

- i. Description of measures that the committee will use, in addition to currently required statistics that are identified in annual grant agreements between transit providers and AOT (unduplicated riders, unduplicated riders traveling to dialysis appointments, one-way trips by service category and mode, and unit costs) to track progress toward accomplishment of committee's agenda items and achievement of its stated goals and objectives for the year.
- ii. Work with RPC(s) to report measures to AOT, following procedures and schedules that will be developed by AOT

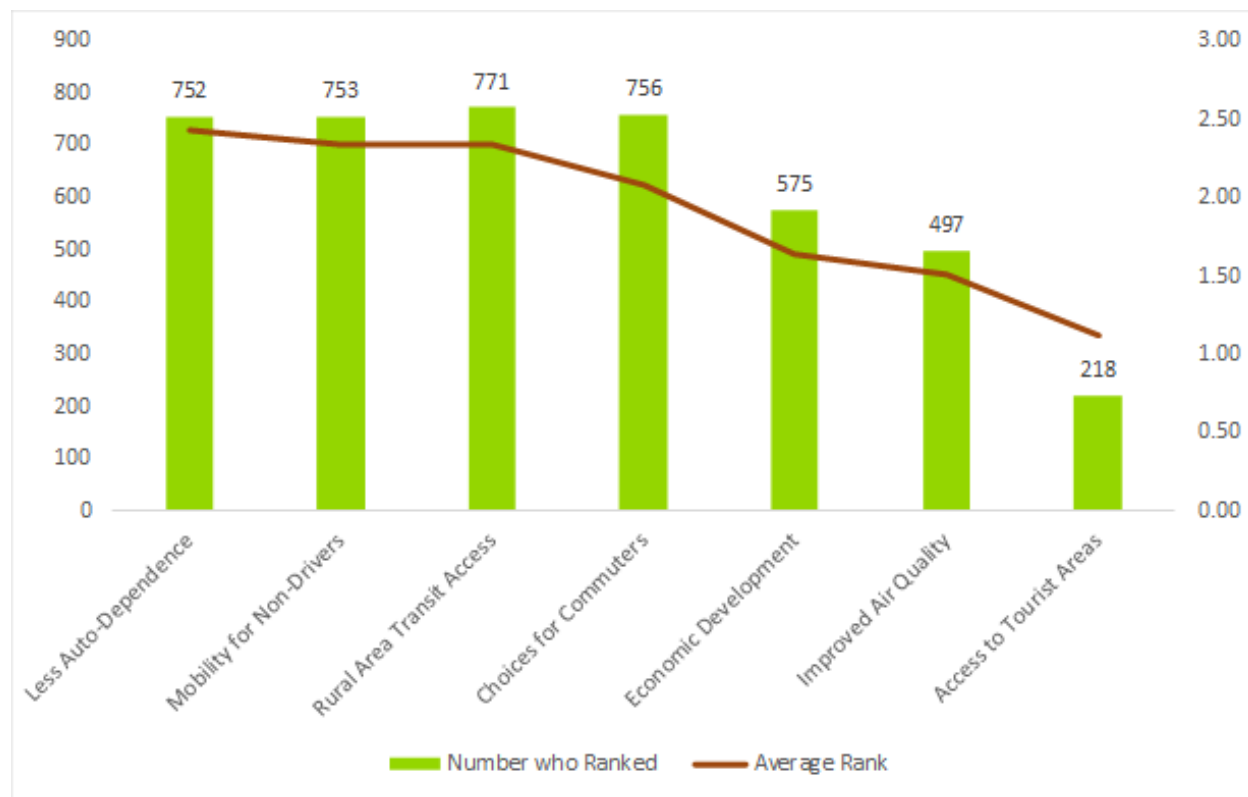


## APPENDIX P - METROQUEST RESULTS ROUND 1

### Transit Priorities

- Four of the seven listed priorities (less auto-dependence, mobility for non-drivers, rural area transit access, and choices for commuters) were roughly tied for the greatest number of people who ranked them. Each was ranked by more than 60% of survey respondents.
- Of these four, less auto-dependence had the lowest average ranking (lower is better, indicating a higher ranking), meaning it was ranked closest to the top of the most lists, with an average ranking of 2.58. The next two, mobility for non-drivers and rural area transit access, were tied with an average ranking of 2.67, followed by choices for commuters at 2.92.
- These results suggest that respondents want to be able to reduce or eliminate their auto usage, not just for commute trips, and that mobility for non-drivers and for those in rural areas are nearly equally important.
- Access to tourist areas was by far the least important priority of the seven offered, ranked by less than 20% of survey takers with an average ranking of 3.88.

Figure 1 | Transit Priority Ranking

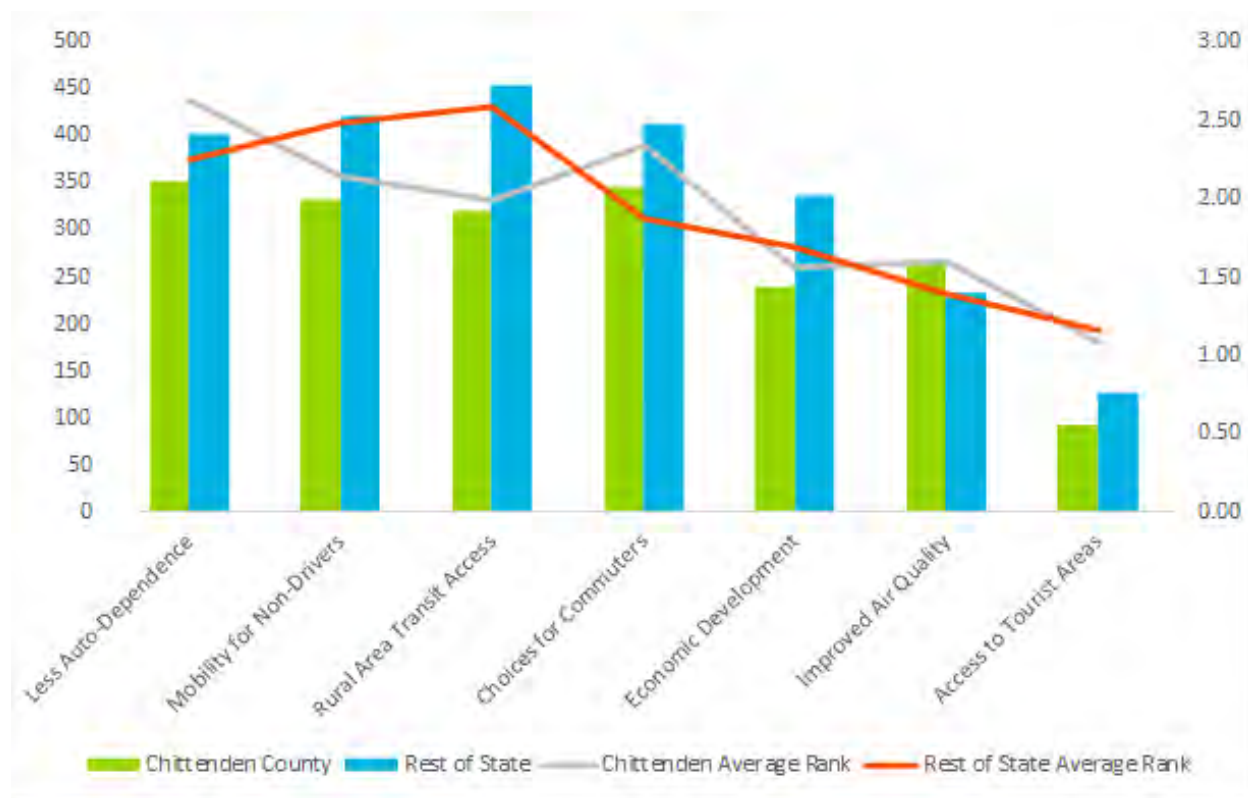


## Breakdown by Location

Of the 1202 respondents, 527 (44%) provided a home zip code in Chittenden County, which, according to 2017 American Community Survey data, is home to only 26% of Vermont residents. To better understand the needs and experiences of all Vermonters, this analysis breaks down some responses between Chittenden County residents and residents of other counties.

- Chittenden County residents included most priorities in their lists at a similar rate to residents of the rest of the state. The exceptions include Improved Air Quality, which was listed by 50% of Chittenden County residents and 35% of other Vermont residents, and Less Auto Dependence, which was listed by 67% of Chittenden County residents and 59% of other Vermont residents.
- Chittenden County residents had notably different priority rankings than other Vermont residents: They placed a higher priority on Less Auto-Dependence (average ranking 2.38, as opposed to 2.76 for other Vermont residents), Choices for Commuters (average ranking 2.67, versus 3.13 for the rest of the state, and Improved Air Quality (3.40 for Chittenden residents, 3.61 for other Vermont residents). They placed a lower priority on Mobility for Non-Drivers (2.86 for Chittenden residents, 2.52 for other Vermonters) and Rural Area Transit Access (3.02 for Chittenden residents, 2.42 for other Vermonters).
- Chittenden County residents have similar priorities to other state residents, though they are somewhat less interested in rural area access and mobility for non-drivers, and somewhat more concerned with having transit options for their commute.

Figure 2 | Transit Priority Ranking Breakdown by Location



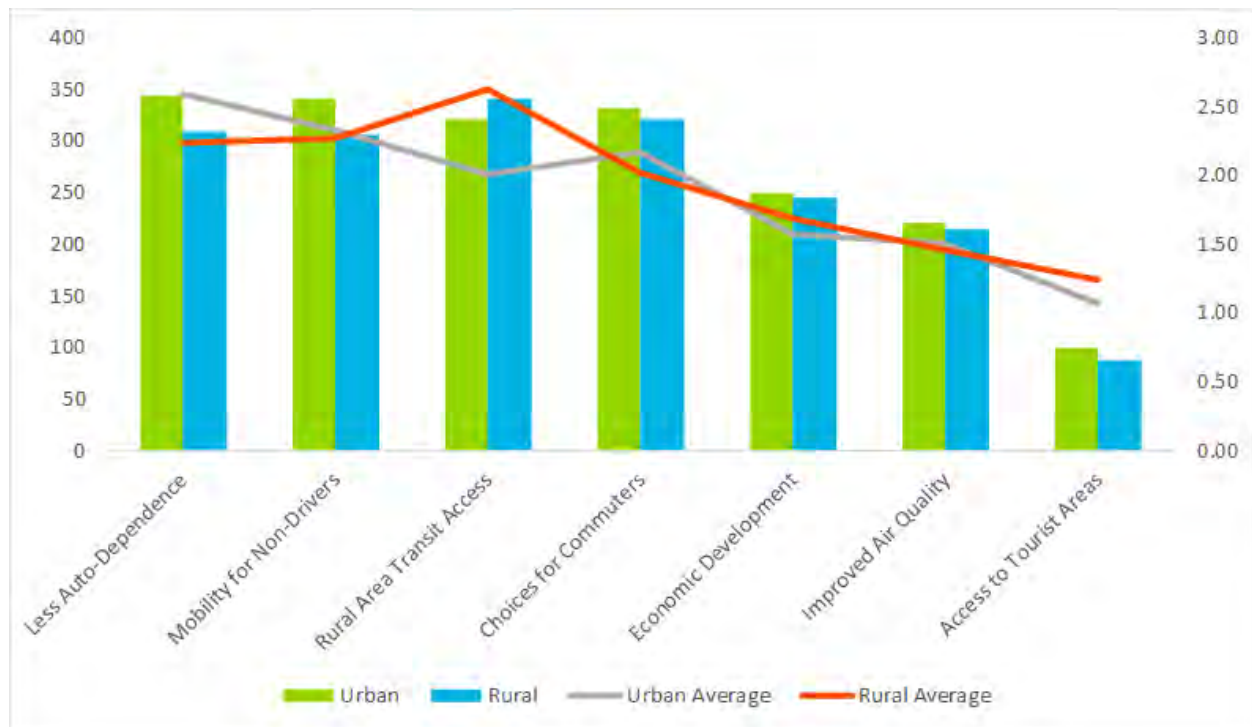
## Urban-Rural Breakdown

In addition to separating out Chittenden County residents from other residents, this analysis also breaks down survey respondents for certain questions by urban dwellers versus rural dwellers. Urban dwellers included residents who reported a home zip code in one of the following communities:

- Burlington
  - South Burlington
  - Winooski
  - Essex Junction
  - Montpelier
  - Barre City
  - Rutland City
  - White River Junction
  - Brattleboro
  - Bennington
  - Middlebury
  - St. Albans City
  - St. Johnsbury
  - Lyndonville
  - Morrisville
- Out of 1202 survey respondents, 522 (43%) reported a zip code in one of these communities. 490 respondents (41%) provided a zip code located elsewhere in Vermont and were classified as rural residents. Given that the core communities of Chittenden County that generated the largest number of responses are also in the list of urban communities, there is a large degree of overlap between Chittenden County responses and urban responses. The remaining 190 respondents either did not provide a zip code, provided an invalid zip code, or provided a zip code located outside of the state of Vermont, and were not included in this analysis. Nearly identical percentages of urban and rural residents included each priority in their rankings. The sole exception to this was rural area transit access, which was ranked by 70% of rural respondents and 61% of urban respondents.
  - The average ranking was also similar for most of the listed priorities. The notable exceptions to this included Less Auto-Dependence, which was given an average rank of 2.41 by urban respondents and 2.77 for rural respondents, and Rural Area Transit Access, which had an average rank of 2.99 among urban respondents and 2.38 among rural respondents.
  - These results suggest that transit priorities are similar for urban-dwelling and rural-dwelling Vermonters: while rural Vermonters are more likely to be concerned with rural area transit access, this was also a priority for a majority of urban Vermonters as well.



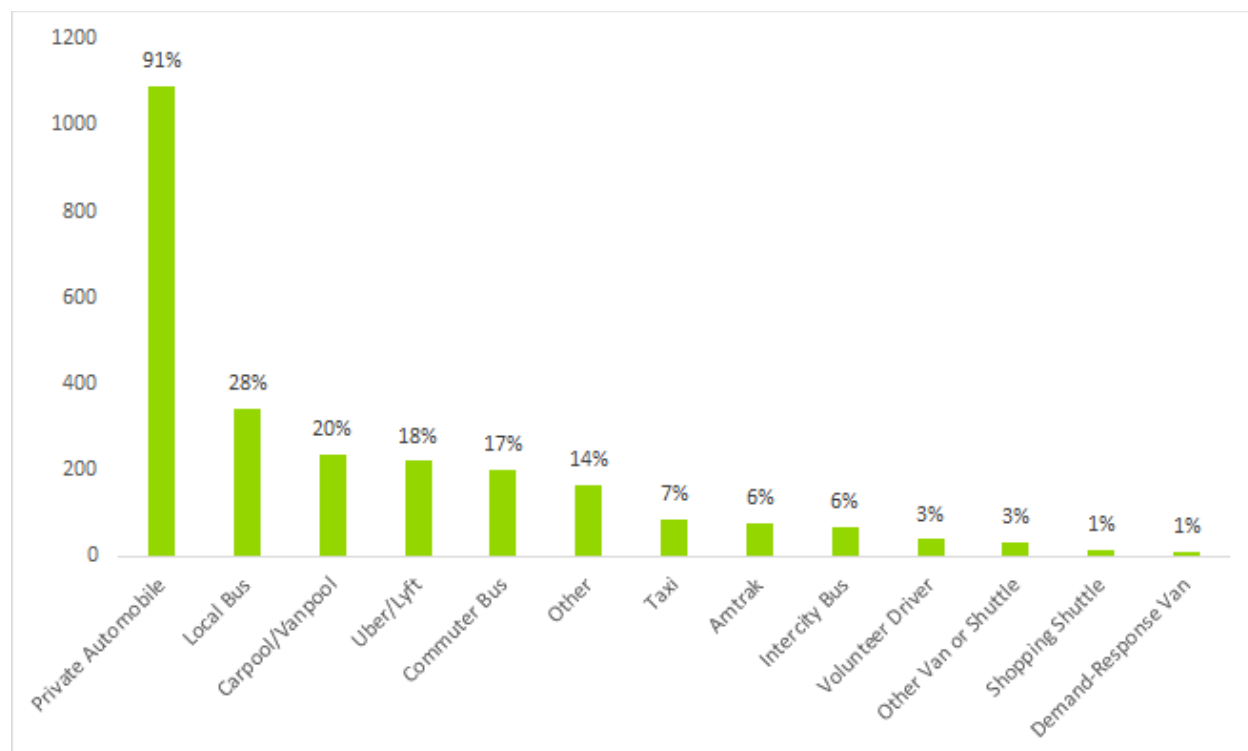
Figure 3 | Transit Priority Ranking Urban-Rural Breakdown



## Modes Used

- Most survey respondents (91%) reported using a private automobile in the past month. No other mode was used by more than 28% of respondents.
- Among survey takers, local buses were, by far, the most popular form of public transit, used by 28% of respondents in the prior month. 17% used commuter buses, while 6% reported using each of intercity buses and Amtrak. To a large extent, these figures reflect the high degree of participation by Chittenden County residents.
- Carpools and Vanpools were the most common form of shared rides, with 20% reporting having used one in the prior month, with Uber, Lyft, and similar services being used by 18%. 7% reported using traditional taxi services, while other forms of shared rides, including volunteer driver services, shopping shuttles, and all other forms of van or shuttle services, each moved 3% of survey takers or fewer.
- 14% of respondents reported using a service not listed. (The survey did not include an opportunity to specify other responses.)

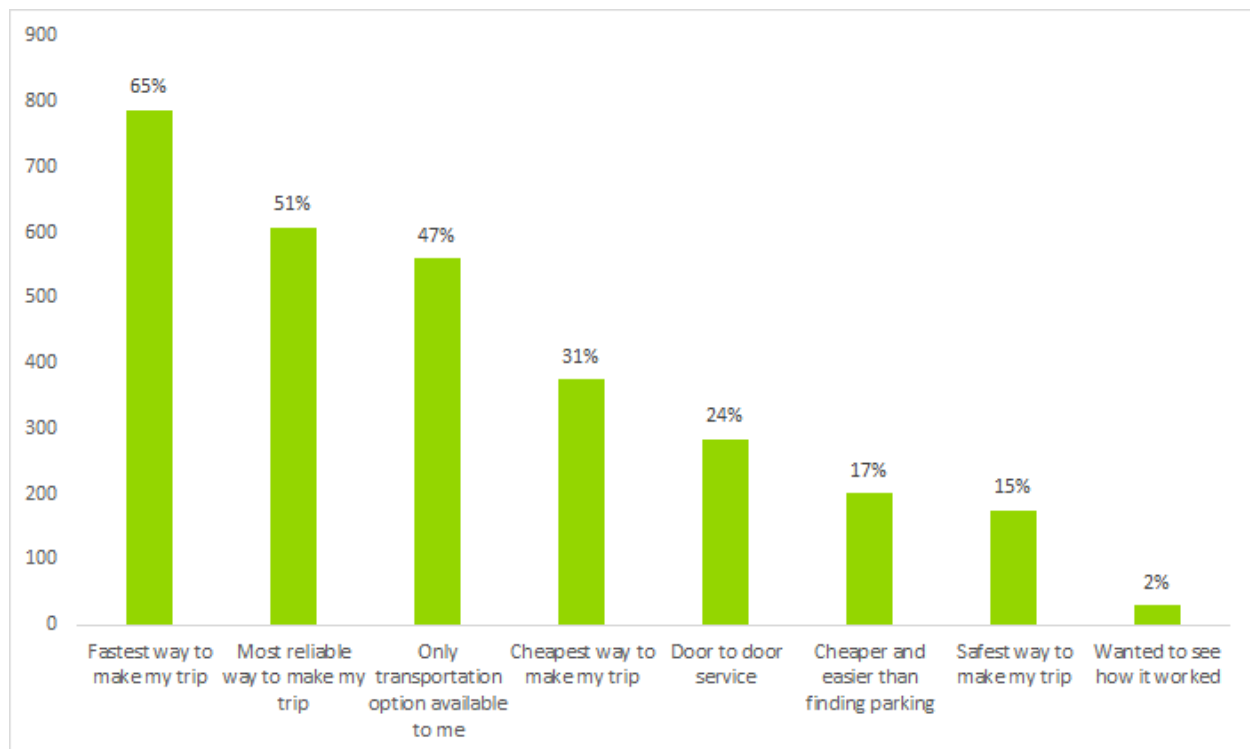
Figure 4 | Modes Used in Prior Month



## Reasons Mode Used

- 65% of survey takers reported that they chose their option because it was the fastest way to get where they wanted to go.
- Other common choices from survey respondents included taking the mode they did because it was the most reliable option (51%) and the only option available to them (47%).
- Fewer respondents suggested being motivated by cost, safety, or a desire for door to door service, suggesting that these are less important to them when making their mode choice decision.
- The results indicate that travel time and reliability are the two primary drivers for mode choice, but also that a lack of modal options is a major consideration. Cost and directness/ease of use also plays a meaningful role in mode choice.

Figure 5 | Reasons for Choosing Mode

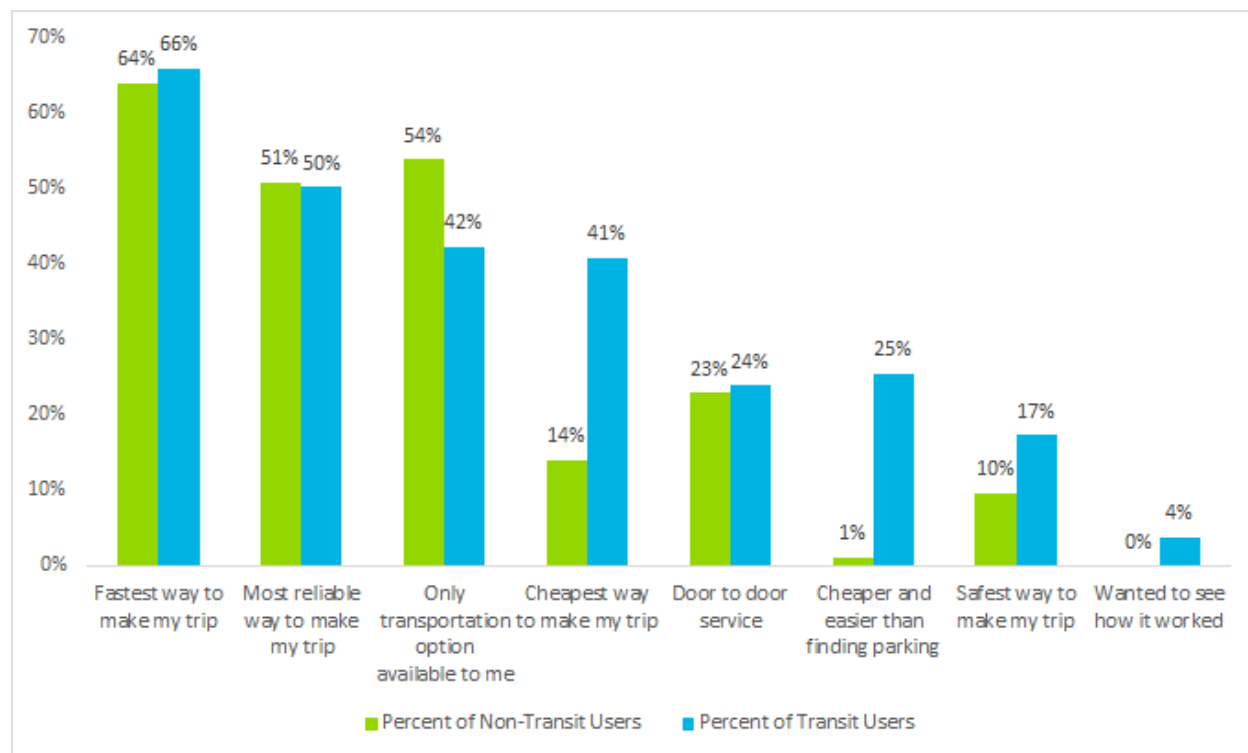


## Breakdown by Mode Used

769 of the 1202 survey respondents (64%) reported using a mode other than a private automobile in the previous month. To better understand motivations for using public transit, the responses for this question were broken down by whether or not respondents used a mode other than private auto.

- The two most common responses were chosen by nearly identical percentages of transit-users and non-transit users: 66% of transit users and 64% of all respondents reported that the mode they used was the fastest one for their trip, and 50% of transit users and 51% of non-users reported that the mode they used was the most reliable way to make their trip.
- Transit users were somewhat less likely to report that the mode they chose was the only option available to them (42% of transit users, versus 54% of non-users)
- Transit users were more likely to report that their option was the cheapest way to make their trip (41% versus 14% of non-transit users), and that their mode was cheaper and easier than finding parking (25% of transit users, versus 1% of non-users).
- These results suggest that both transit and non-transit users prioritize speed and reliability when making their mode choice decisions, and that non-transit users are more likely to see themselves as having no other options, while transit users tend to be more cost-conscious.

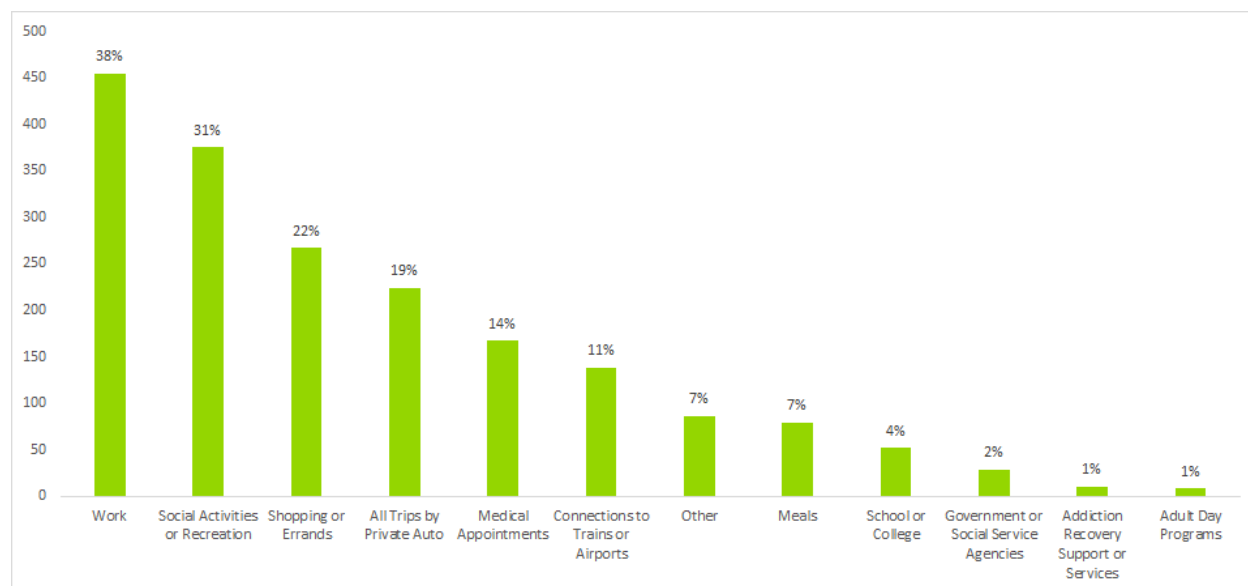
Figure 6 | Mode Choice Reasons Breakdown by Mode Choice



## Purposes of Transit Trips

- Among users of various transit modes, the most common trip purpose was to get to work (38% of respondents), followed by social activities or recreation (31%) and shopping or errands (22%).
- Nearly one in five respondents (19%) reported taking all trips by private automobile.
- 7% of respondents used modes other than private autos for trip purposes not listed here. Respondents were asked to specify if they chose other: the most common responses provided there included volunteering, getting to or from a location where their car was being serviced, going to bars, and walking or biking for recreation or exercise.
- These results indicate that Vermont transit users are most likely to be riding to get to work, but that social activities and shopping trips also make up a substantial portion of transit trips.

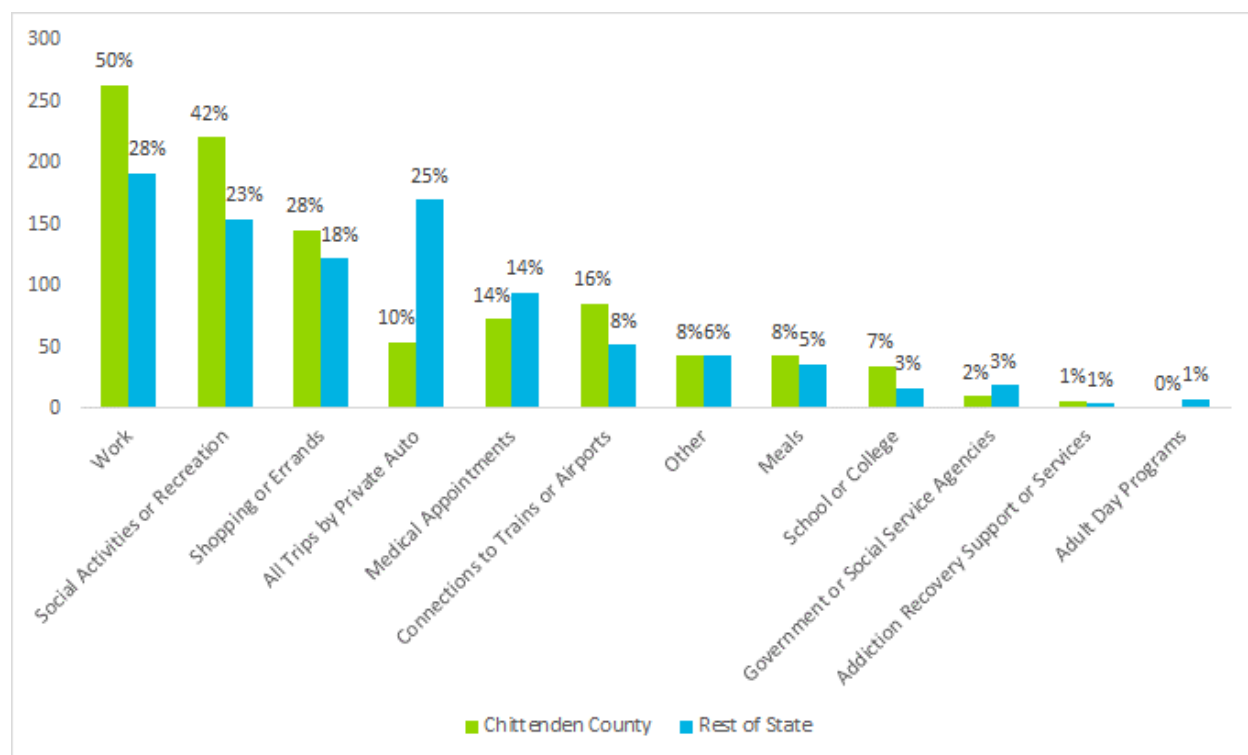
Figure 7 | Trip Purposes



### Purpose Breakdown by Location

- Chittenden County residents used transit for different purposes than Vermont residents as a whole. Half of respondents from Chittenden County used transit to get to work, as compared to 28% of other Vermont residents, and 42% of Chittenden County respondents used transit for social activities or recreation, while just 23% of other Vermonters did. Chittenden and non-Chittenden riders used transit for medical appointments at about the same rate.
- Chittenden County respondents reported making all trips by private auto at less than half the rate of other respondents: 10% of Chittenden responses reported making all trips by private auto, while 25% of other Vermonters did did.
- Chittenden County respondents were equally or more likely to use transit than residents of other areas for every trip purpose listed except for trips to government or social service agencies and adult day programs, both of which were by less than 5% of all respondents.

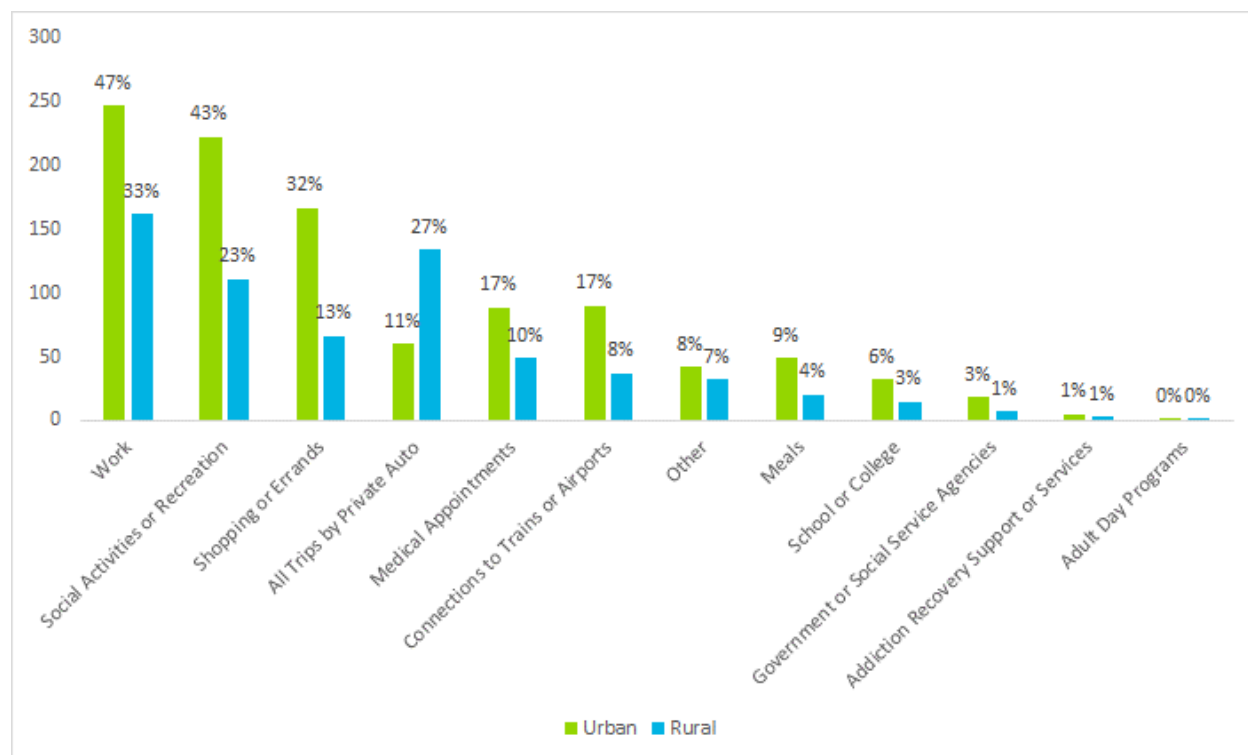
Figure 8 | Trip Purposes Breakdown by Location



### Urban-Rural Purpose Breakdown

- There were many more urban transit users than rural ones, and these users checked off more types of trip purposes. As a result, urban residents were more likely than rural residents to use transit for every purpose provided, both in absolute numbers and in percentage.
- The greatest differences between urban and rural transit users can be seen in the social activities/recreation purposes and the shopping/errands purpose. The higher level of bus service available in urban areas makes these types of trips more convenient and possible compared to rural areas. Trips to medical appointments are more evenly balanced between urban and rural transit users.
- Rural residents were more than twice as likely than urban residents to report taking all of their trips by private car (27% of rural residents, as opposed to 11% of urban residents), but a substantial majority of both rural and urban dwellers reported using transit for at least one trip.

Figure 9 | Trip Purposes Urban-Rural Breakdown

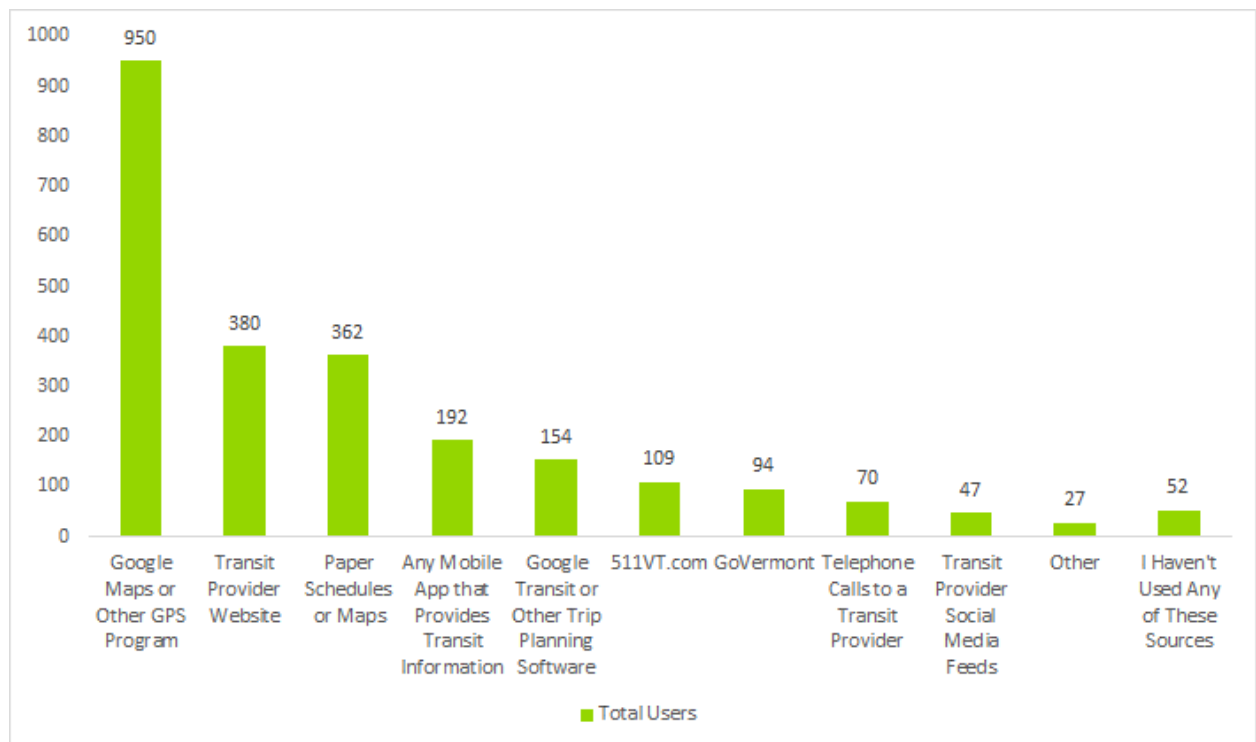




## Information Sources

- Google Maps was by far the most commonly used source of information about transportation, cited by more than twice as many survey respondents as any other source of information.
- The other two most commonly used sources of information about transit included transit provider websites and paper schedules or maps.
- Respondents recorded similar levels of satisfaction with all sources of information, with users of every source ranking their helpfulness between 49% and 65%.

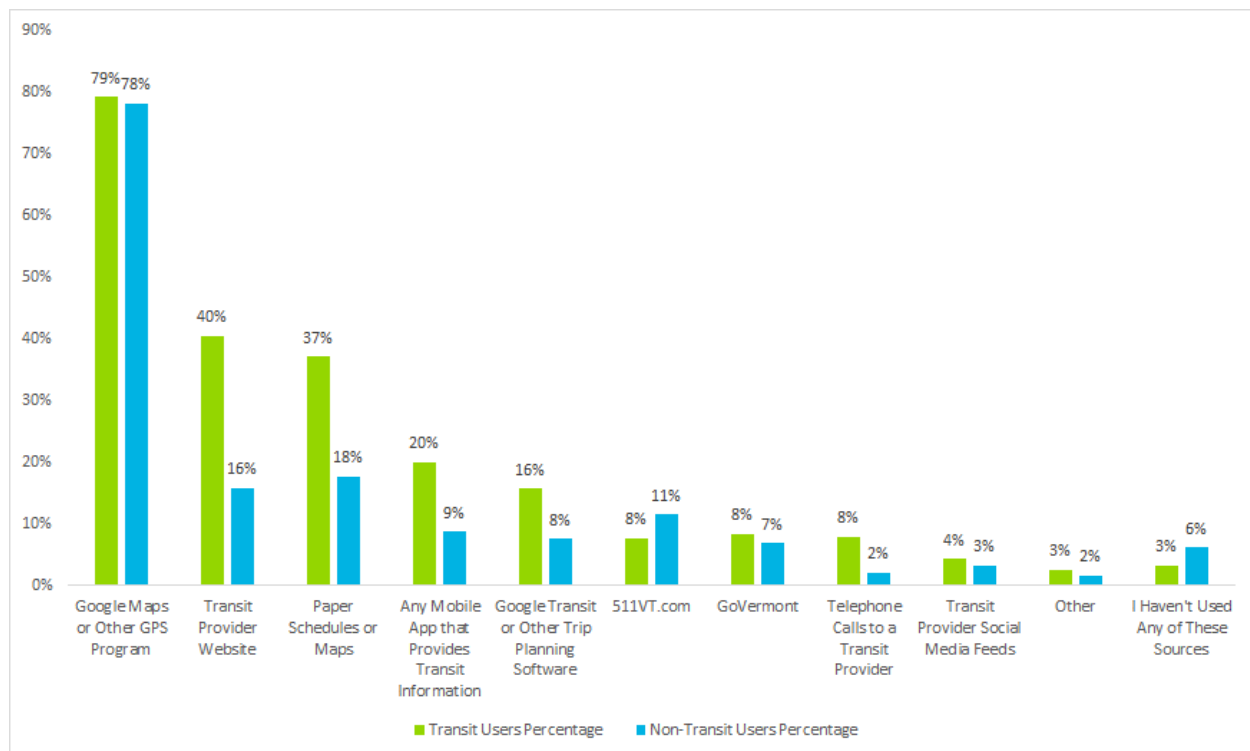
Figure 10 | Information Sources



## Breakdown by Mode Choice

- Transit users and non-transit users were equally likely to report using Google Maps or a similar GPS program to get travel information (79% of transit users and 78% of non-transit users).
- Transit users were significantly more likely to report using information sources published by transit providers, including transit provider websites (40% vs. 16%), paper schedules or maps (37% vs. 18%), and telephone calls to a transit provider (8% versus 2%). The sole exception was transit provider social media feeds, which were used by very few respondents. Transit users were also more likely to use trip planning tools such as Google Transit: these sources were used by 16% of transit users and 8% of non-transit users.
- Non-transit users were more likely to report using 511VT.com (11% of non-transit users, as opposed to 8% of transit users), and also to report having used none of the listed sources of information (6% of non-transit users, versus 3% of transit users).

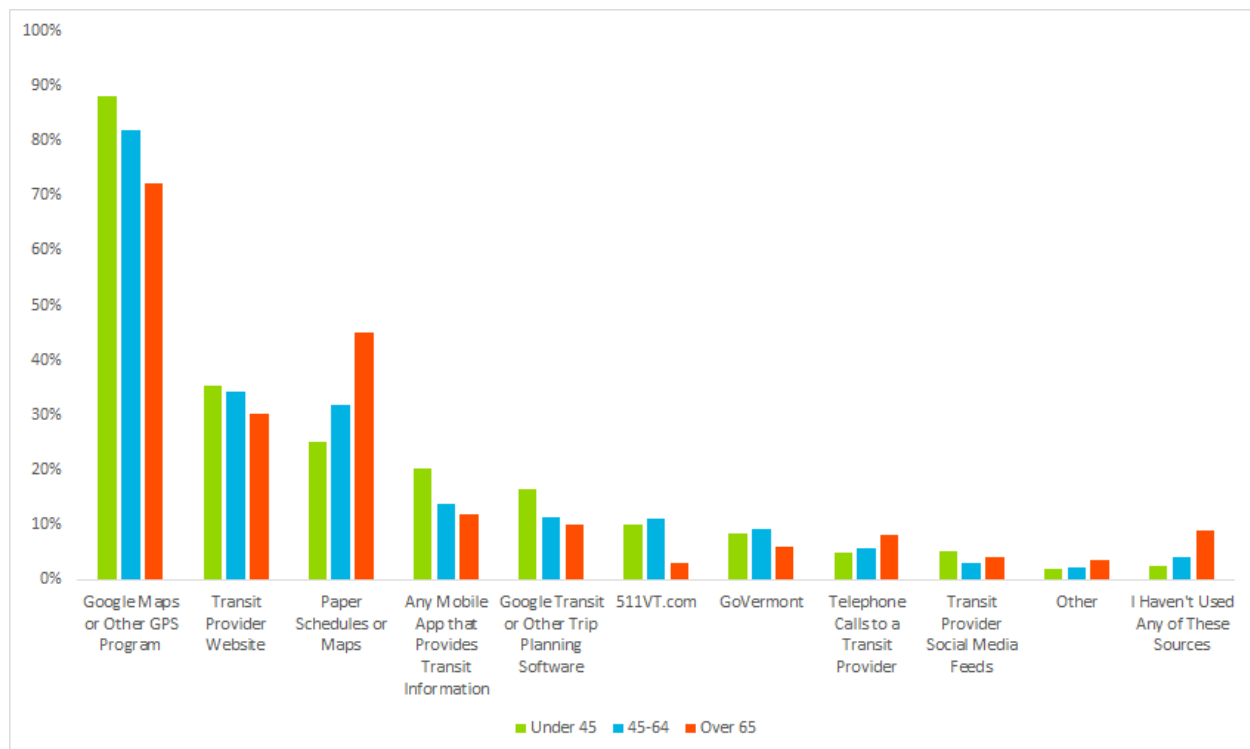
Figure 11 | Information Sources Breakdown by Mode Choice



## Breakdown by Age

- Respondents under the age of 45 (38% of all respondents<sup>1</sup>) were most likely to use Google Maps or a similar GPS program (88% reported using this source of information, as compared to 82% of respondents between 45 and 64, and 72% of respondents over the age of 65), as well as mobile apps (20% of respondents, versus 14% of respondents between the ages of 45 and 64 and 12% of respondents over the age of 65) and Google Transit or other trip planning software (17% of under 45s, compared to 11% of respondents between 45 and 65 and 10% of respondents over the age of 65).
- Respondents between the ages of 45 and 65 (35% of survey respondents) were most likely to use both 511VT.com (11% of respondents in this age range, compared to 10% of under 45s and 3% of over 65s) and GoVermont (9% of respondents in this age range, compared to 8% of under 45s and 6% of over 65s).
- Respondents over the age of 65 (14% of all respondents) were most likely to use paper schedules or maps (45% of over 65s, compared to 32% of 45-64 respondents and 25% of under 45s), as well as telephone calls to a transit provider (8% of over 65s, compared to 6% of 45-64 respondents and 5% of under 45s). They were also most likely to report having used non of the provided sources of information.

Figure 12 | Information Sources Breakdown by Age

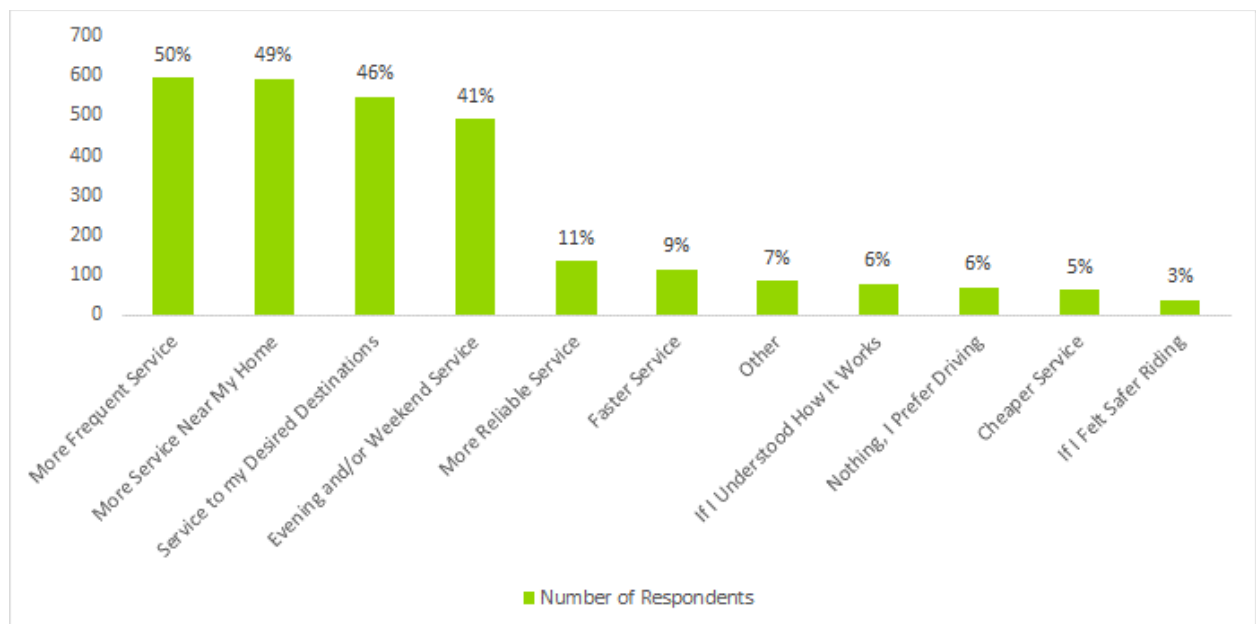


<sup>1</sup> 13% of survey respondents did not provide an age

## Improvements to Transit

- The most popular desired improvements to transit included more frequent service (50% of respondents), service closer to homes (49%) and desired destinations (46%), and evening and weekend service (41%).
  - The responses all indicate a desire for transit that is more convenient (frequency, proximity, and span of service)
- No other proposed improvement received more than 11% of respondents' votes.
- Only 6% of survey respondents responded that none of the improvements would encourage them to drive less, suggesting that providing more and higher quality transit service would draw additional users.
- Respondents who chose “other” were provided a text box to add their own suggested improvements. The most common “other” responses included early morning service, more and bigger park and rides, and an app to provide real-time bus arrival information.

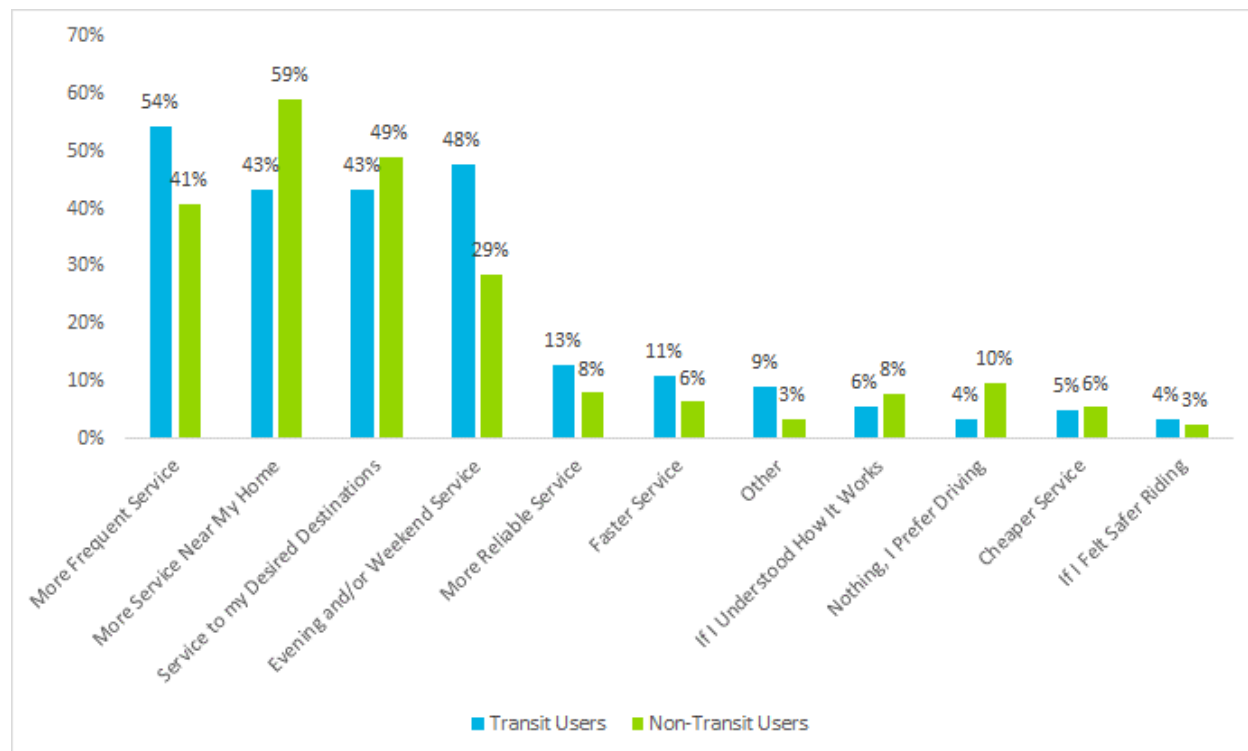
Figure 13 | Desired Improvements to Transit



### Breakdown by Transit Use

- Respondents who reported using no modes other than private automobile were most likely to express a desire for more service near their homes (59% of respondents) and service to their desired destinations (49%). This suggests that a key barrier for many respondents who only drive is a lack of service where they need it.
- Respondents who already use some type of transit were most likely to express a desire for more frequent service and more evening and/or weekend service, suggesting that many existing transit users would use transit more often if it had greater frequency or a longer span of service.
- In spite of travel time and reliability ranking first and second as the most important reasons for choosing their mode of travel (see Figures 5 and 6), these two items rank much lower than the frequency, coverage and span elements in this question. This suggests that existing transit services that the respondents use are already satisfactory in terms of travel time and reliability, and so improvements in those factors would not alter their travel choices. Rather, people are looking for more service when and where it is not already offered as the most significant inducement to use transit more often.

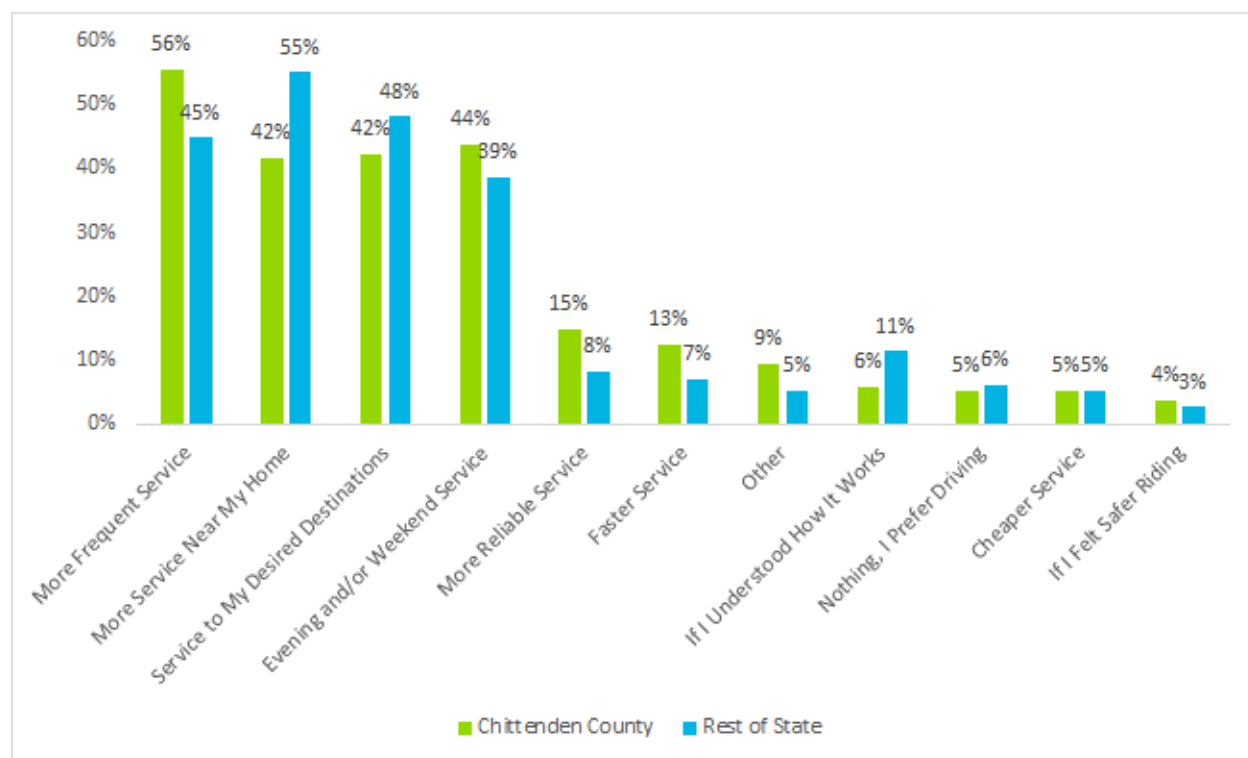
Figure 14 | Desired Improvements to Transit Breakdown by Mode Choice



### Breakdown by Location

- There are small but notable differences between the desired transit improvements preferred by Chittenden County residents versus residents of other counties in Vermont
- Chittenden County residents were somewhat more likely to want more frequent service (56% chose this, as opposed to 45% of respondents from elsewhere), and also slightly more likely to want evening or weekend service (44% of Chittenden responses versus 39% of other responses), more reliable service (15% of Chittenden responses versus 8% of responses from elsewhere), and faster service (13% of Chittenden responses versus 7% of all responses).
- Residents outside of Chittenden County were somewhat more likely to report a preference for more service near their homes (55% of non-Chittenden responses, as opposed to 42% of Chittenden responses), and service to desired destinations (48% of non-Chittenden responses, as opposed to 42% of Chittenden responses).
- Thus, the main issue outside of Chittenden County is service coverage, while within Chittenden County, coverage is less of an issue, but people would like the level of service to be higher.

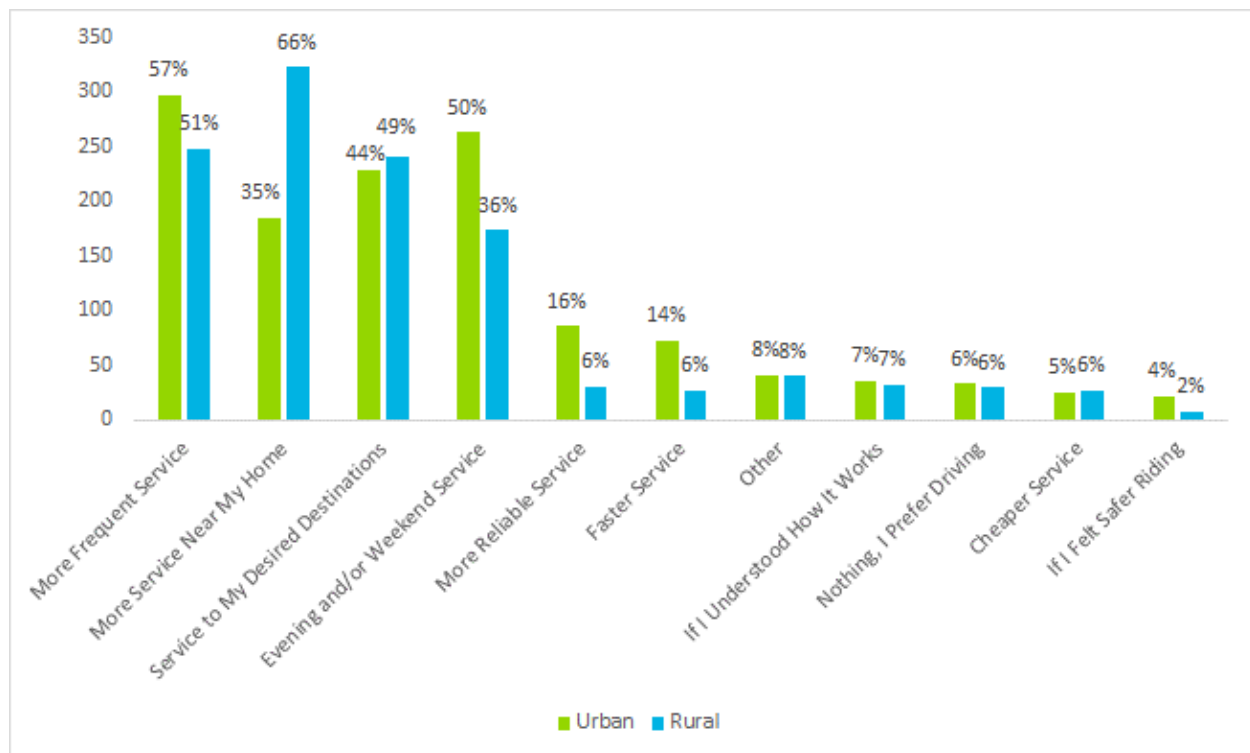
Figure 15 | Desired Transit Improvements Breakdown by Location



## Urban-Rural Breakdown

- There are small but notable differences between the desired transit improvements preferred by urban and rural Vermonters. These are similar to the Chittenden/non-Chittenden differences, but more pronounced.
- Rural Vermonters were far more likely than urban residents to want more service near their home (66% of rural residents, as opposed to 35% of urban residents) and somewhat more likely to want more service to their desired destinations (49% of rural residents versus 44% of urban residents). This suggests that rural residents see a need for greater transit coverage in their community, while urban residents recognize that they already have some service coverage.
- Urban Vermonters were more likely to want more frequent service (57% of urban Vermonters versus 51% of rural Vermonters), and significantly more likely to want more evening and/or weekend service (50% of urban residents, as opposed to 36% of rural residents) and more reliable service (16% of urban residents versus 6% of rural residents).
- Rural residents are most concerned with having any service at all, while urban residents are more concerned with upgrading the service they already have.

Figure 16 | Desired Transit Improvements Urban-Rural Breakdown



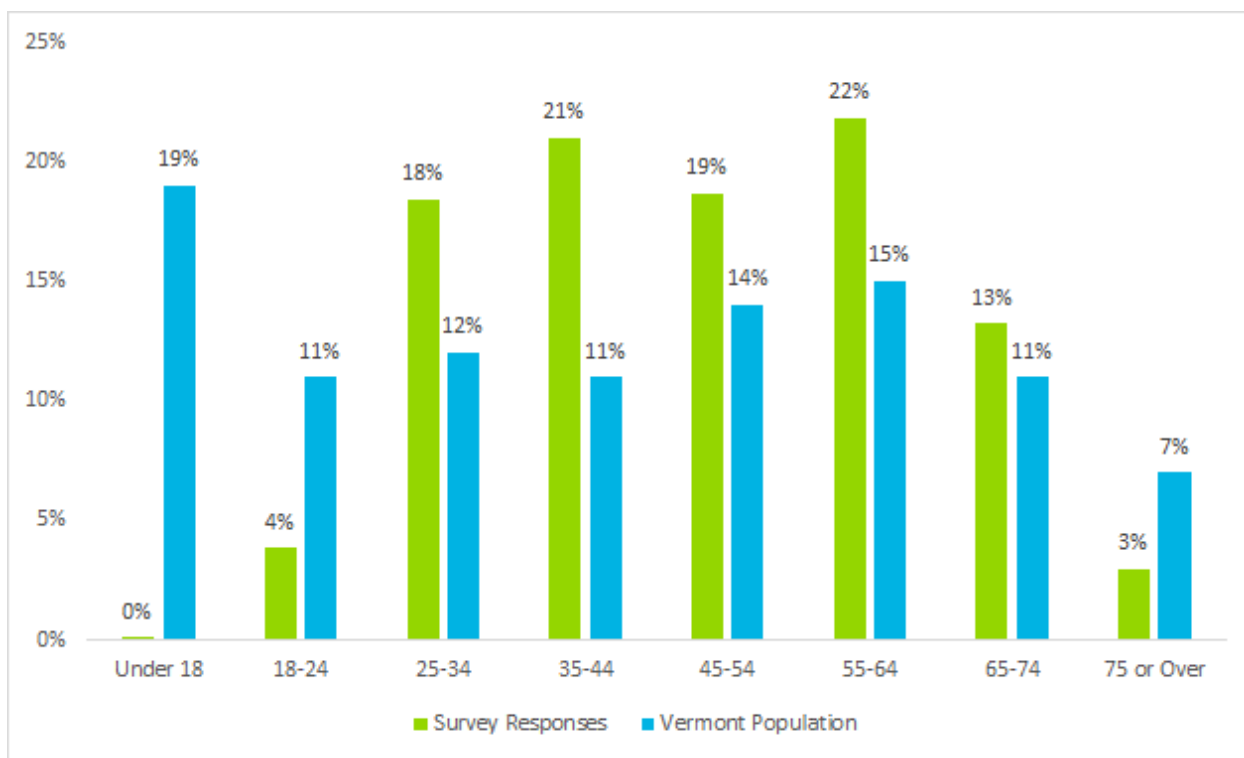


## Survey Demographics

### Age

- The survey was not very representative of the age distribution in Vermont, with the middle of the age spectrum overrepresented in the survey, and the outer ends of the spectrum underrepresented. Children under 18 were not allowed to participate in the survey, and it is understood that people over 75 would be less likely to participate in an online survey. (Paper forms were made available to some organizations, but none of these were filled out in the end.)
- Most seniors who completed the survey were under 75, as only 3% of survey takers were 75 or older, while 13% of survey takers were between the ages of 65 and 74. Per the 2017 ACS, 18% of Vermont residents are over the age of 65, while 7% are over 75.
- Very few young people participated in the survey: Only 4% of respondents were under the age of 25. Per the 2017 ACS, 19% of Vermont residents are under the age of 18, and 30% are under the age of 25. This was likely a result of the lack of awareness of the survey, rather than a reluctance to participate in an online activity.

Figure 17 | Age of Survey Respondents



## Location

- Besides the overrepresentation of Chittenden County residents (discussed earlier), Windham County was the only other county whose residents were overrepresented in the survey sample, making up 13% of respondents and 7% of the state's population. 16% of survey respondents did not provide a location, or provided a location outside the state of Vermont. All other counties were either proportionately represented or under-represented in the survey sample. Most notably underrepresented counties included Rutland County (2% of survey takers, 10% of Vermont's population) and Franklin County (1% of survey respondents, 8% of all Vermonters.)
- At least one resident of 136 different Vermont towns completed the survey. The top ten towns by responses are shown in Figure 19

Figure 18 | Location of Survey Respondents by County

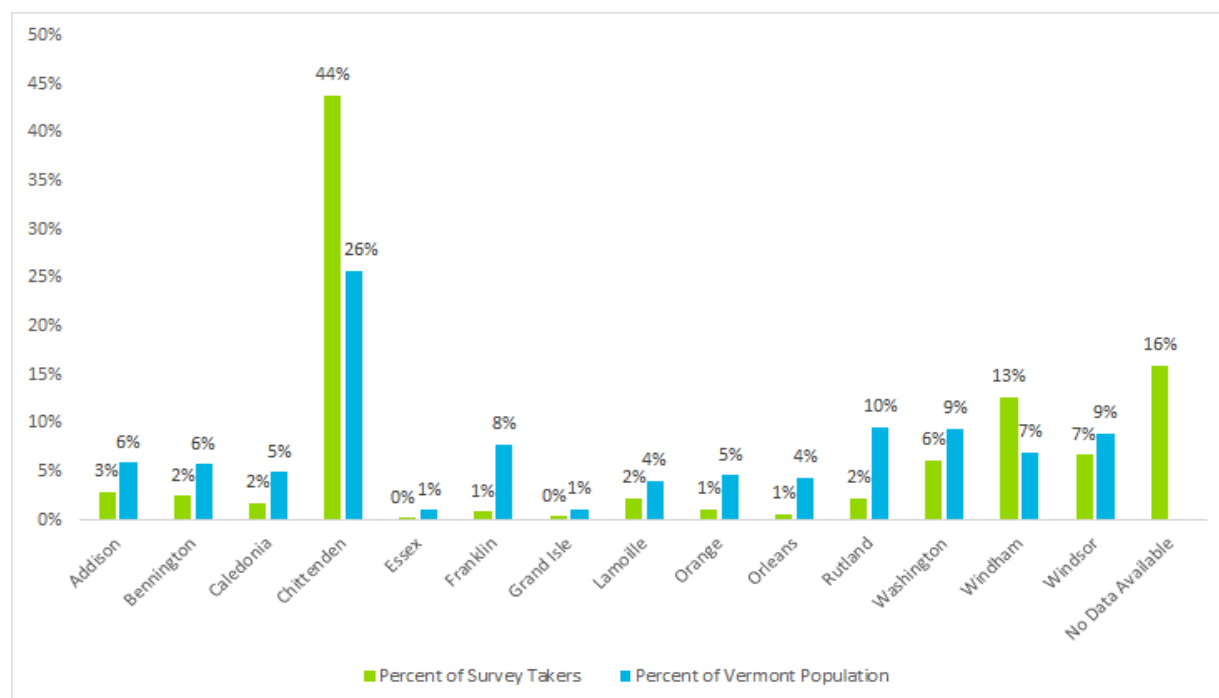
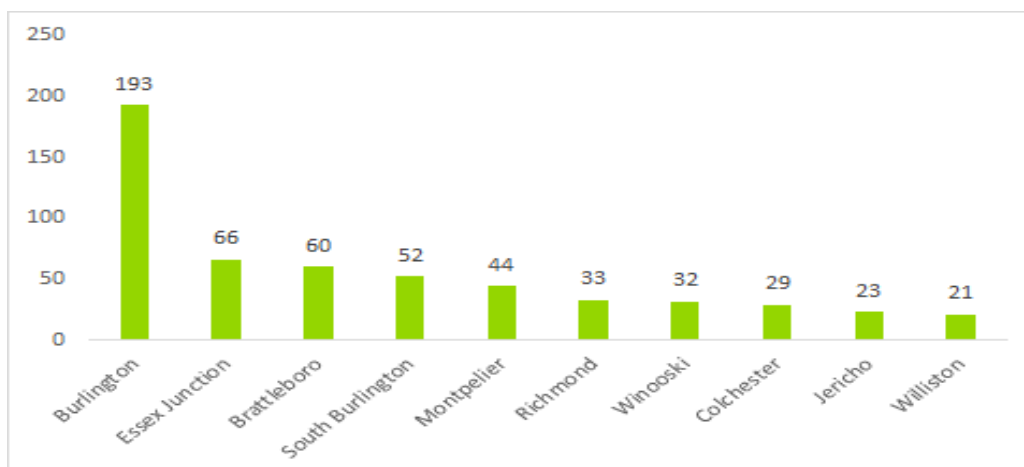


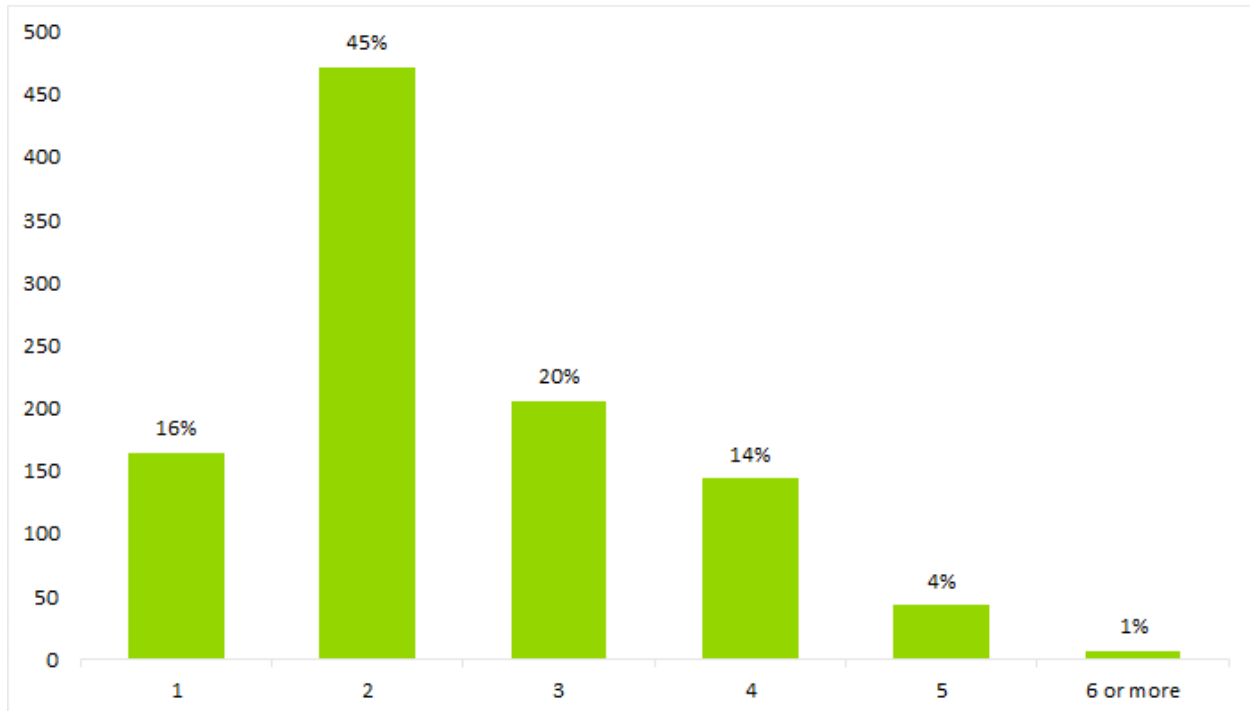
Figure 19 | Top Ten Towns for Survey Respondents



## Household Size

- A plurality of survey takers (46%) live with one other person, and another 20% live with two other people.
- Roughly one in six (16%) of respondents live alone
- Only 5% of respondents live with more than three other people.

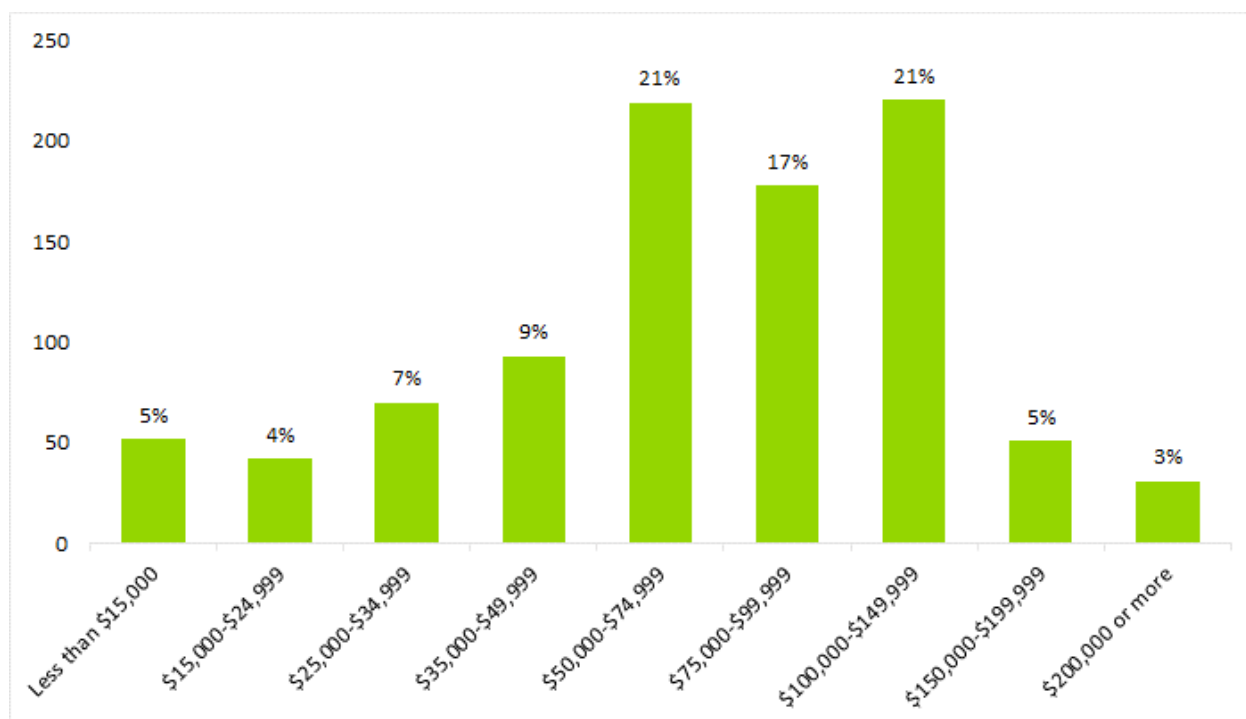
Figure 20 | Household Size of Survey Respondents



## Household Income

- 59% of survey respondents who provided an income listed an income between \$50,000 and \$150,000.
- 8% of survey respondents reported an income over \$150,000 per year, as compared to 9% reporting an income below \$25,000 per year
- The median income, among people who reported income in the survey, was about \$75,000. The median household income in Vermont for 2017 was \$76,560, so the survey is broadly representative of the population by income. However, at a finer level of detail some income groups are underrepresented while others are overrepresented.
- The lowest income categories are underrepresented in the survey (30% of the households in Vermont have incomes under \$35,000, but only 16% of survey respondents did), while the middle to upper-middle categories are overrepresented (47% of households have incomes from \$50,000 to \$150,000, but 59% of survey respondents did).

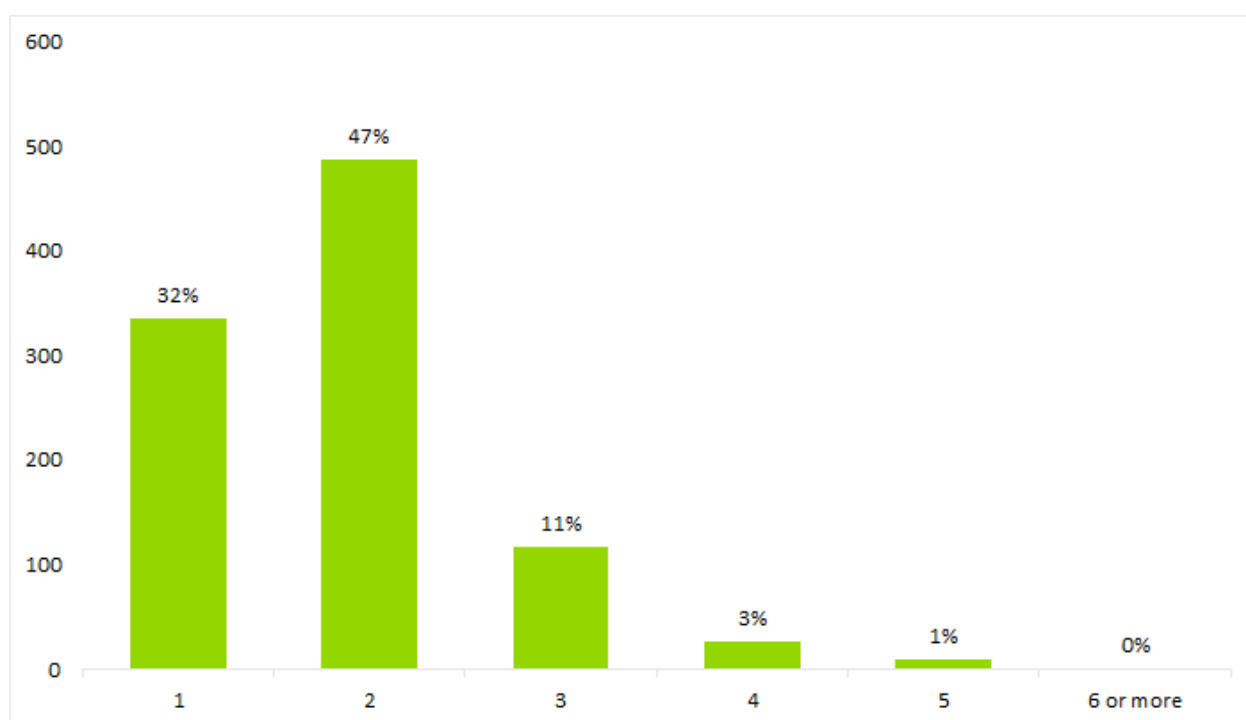
Figure 21 | Household Income of Survey Respondents



## Access to Vehicles

- A plurality of survey respondents (47%) live in two-car households.
- More respondents live in a one-car household (32%) than in a household with more than two vehicles (25%)
- Only 4% of survey respondents reported owning more than three cars.
- Zero cars was not an option in the survey, though 6% of respondents did not answer, and they may represent households with zero cars. Indeed, 7% of Vermont households had zero cars available in 2017, 35% had one car available and 40% had two cars available, so the survey is fairly representative of the Vermont population on this characteristic.

Figure 22 | Automobile Access of Survey Respondents



## Origin-Destination Data

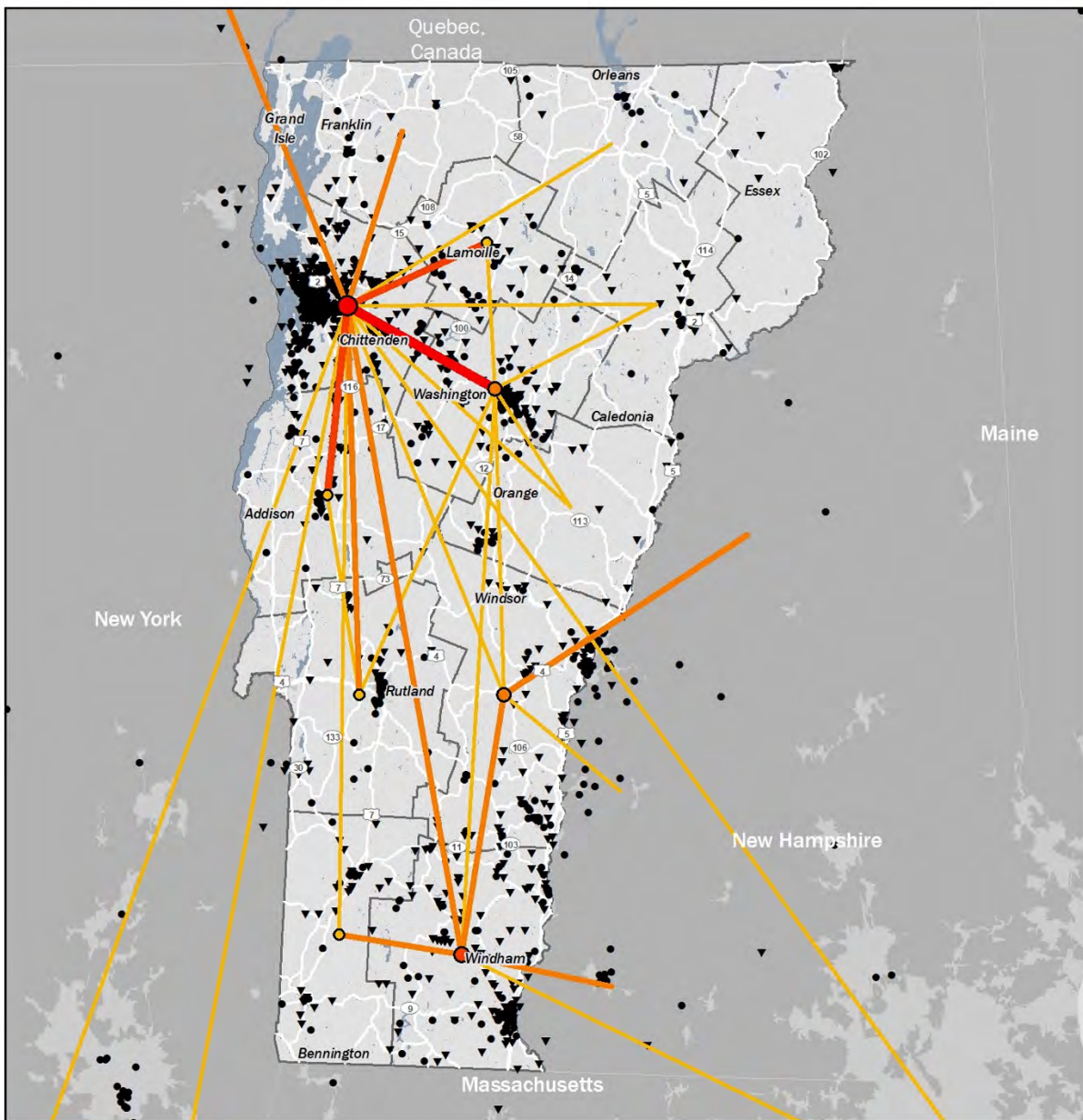
Respondents to the survey were asked to identify a trip they would like to make via public transit, but currently cannot, due to lack of service or infrequent/inconvenient service. They were instructed to drop pins on a map to show the starting and ending locations of that trip.

The maps on the following pages illustrate the results of that question. A statewide map is presented first, showing all origin and destination points, and connections between those points which cross regional or state borders, when there are more than four trips making the same town-to-town link. That map is followed by 11 regional maps showing internal linkages within those regions. Desired trips internal to a town are shown as a dot, and trips to other towns in the region are shown as lines. Trips to locations outside of the region are not shown on the regional maps. Some regional maps show very few desired trips; this could be because there were relatively few responses from that region (see page 19 above), or that many of the desired trips originating in that region had destinations in other regions. As mentioned earlier, those cross-regional trips would only show up on the statewide map if there were four or more respondents starting in the same town desiring to go to the same town in another region.

The regional maps are shown in alphabetical order by the regional planning council abbreviation:

- ACRC (Addison County)
- BCRC (Bennington County)
- CCRPC (Chittenden County)
- CVRPC (Central Vermont)
- LCPC (Lamoille County)
- NVDA (Northeast Kingdom)
- NWRPC (Northwest Vermont)
- RRPC (Rutland County)
- SWCRPC (Southern Windsor County)
- TRORC (Two Rivers-Ottauquechee)
- WRPC (Windham County)

## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by County)

#### Internal Trips

- 4 - 9
- 10 - 24
- 25 - 61
- 62 - 272

#### External Trips

- 4 - 9
- 10 - 24
- 25 - 61
- 62 - 272

#### All Responses

- ▼ Origin
- Destination

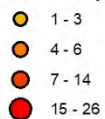


## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips



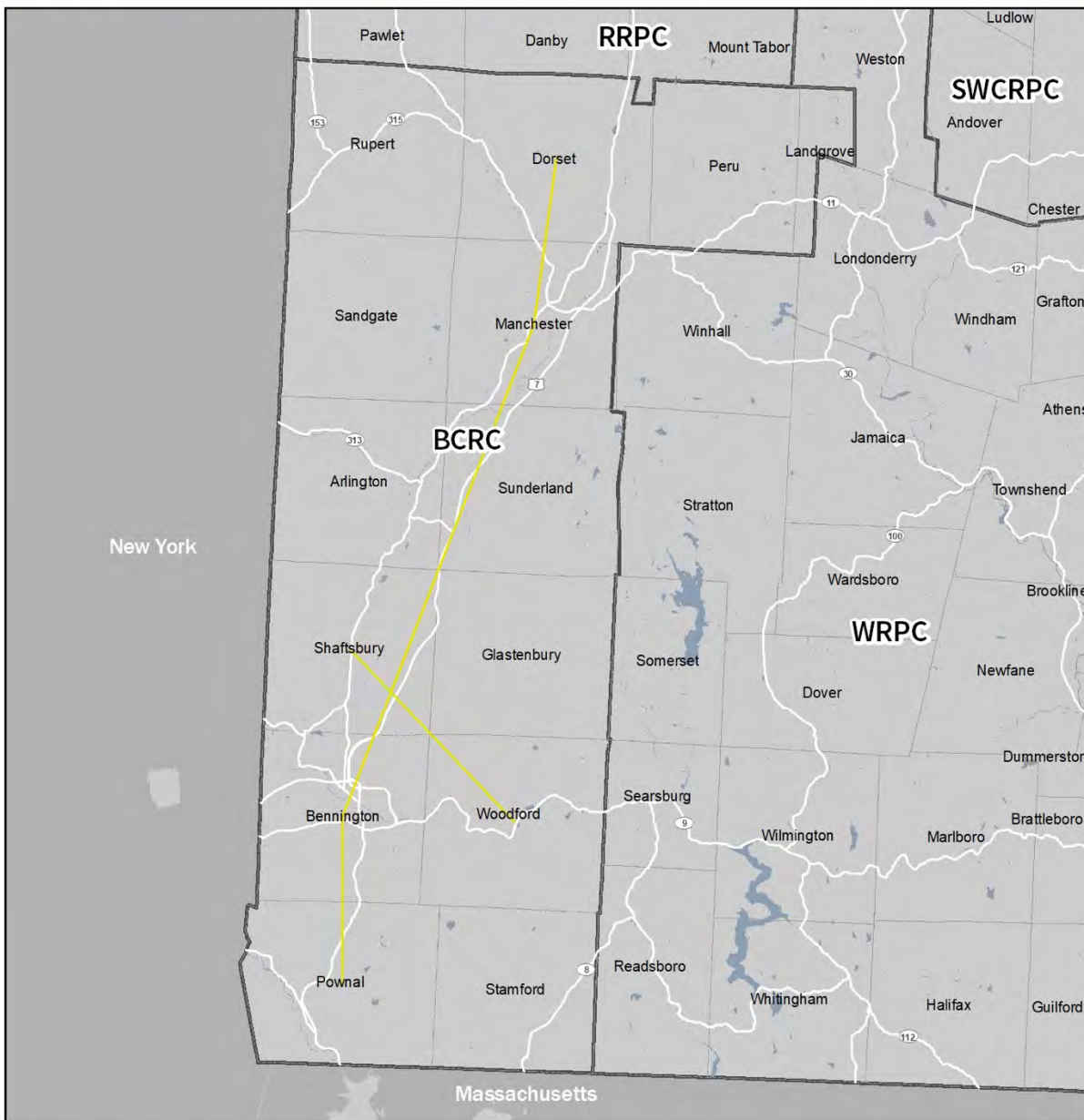
#### External Trips



Municipal Boundary  
RPC Boundary



## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips

- 1 - 3
- 4 - 6
- 7 - 14
- 15 - 26

#### External Trips

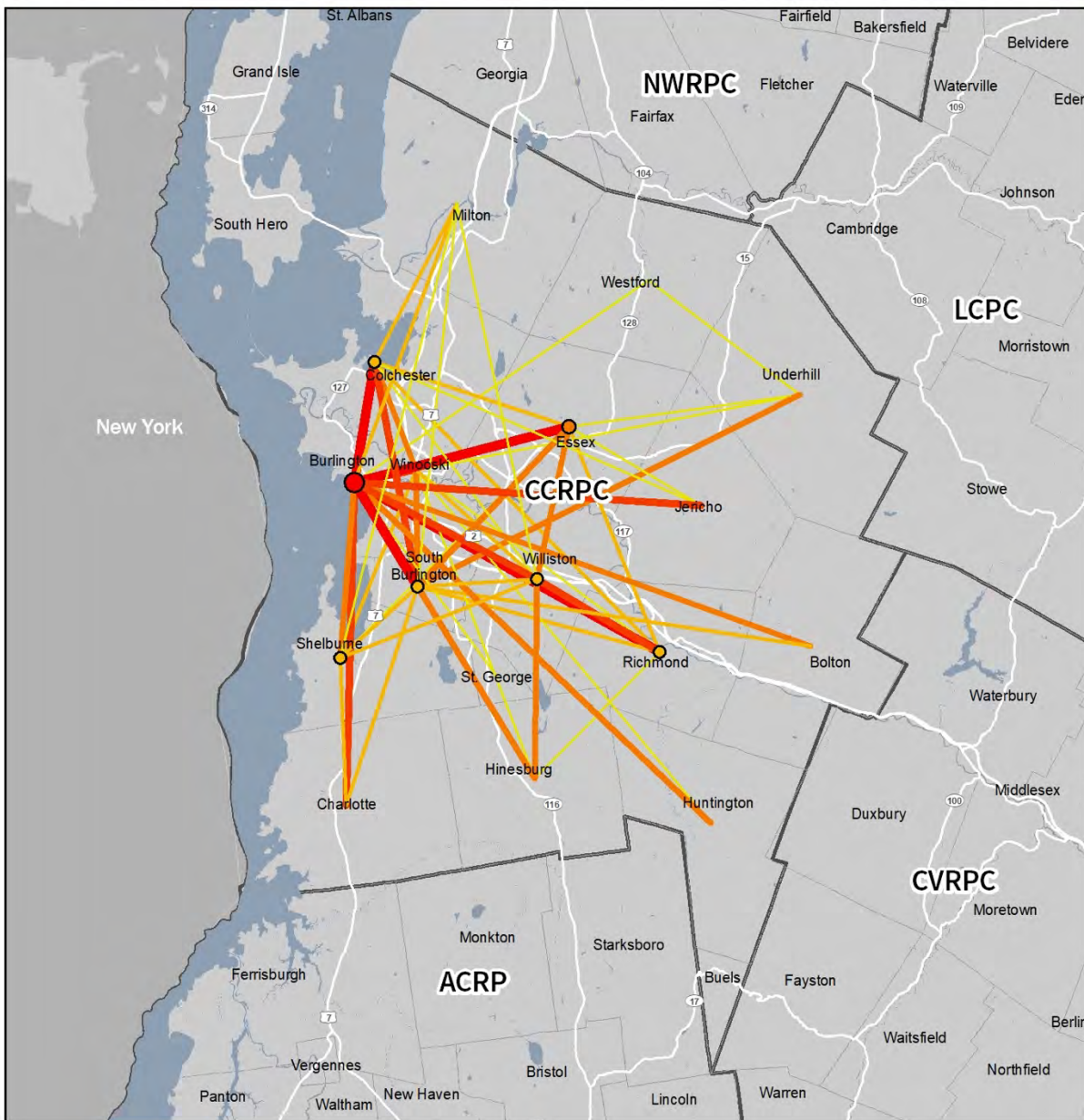
- 1
- 2 - 3
- 4 - 6
- 7 - 14
- 15 - 26

▬ Municipal Boundary

▬ RPC Boundary

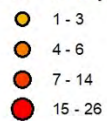


## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips



#### External Trips



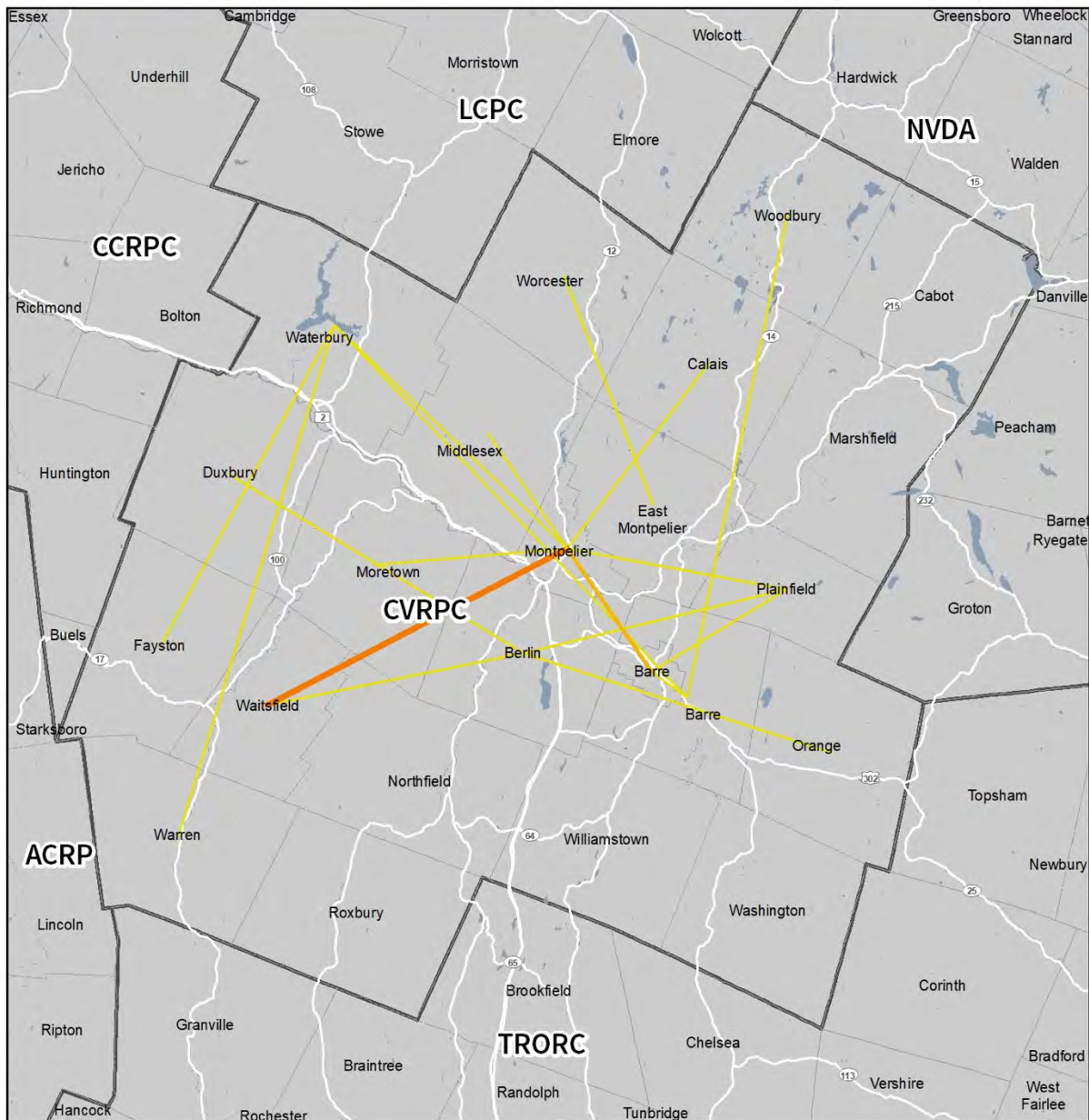
— Municipal Boundary

— RPC Boundary



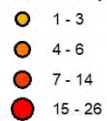


## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips



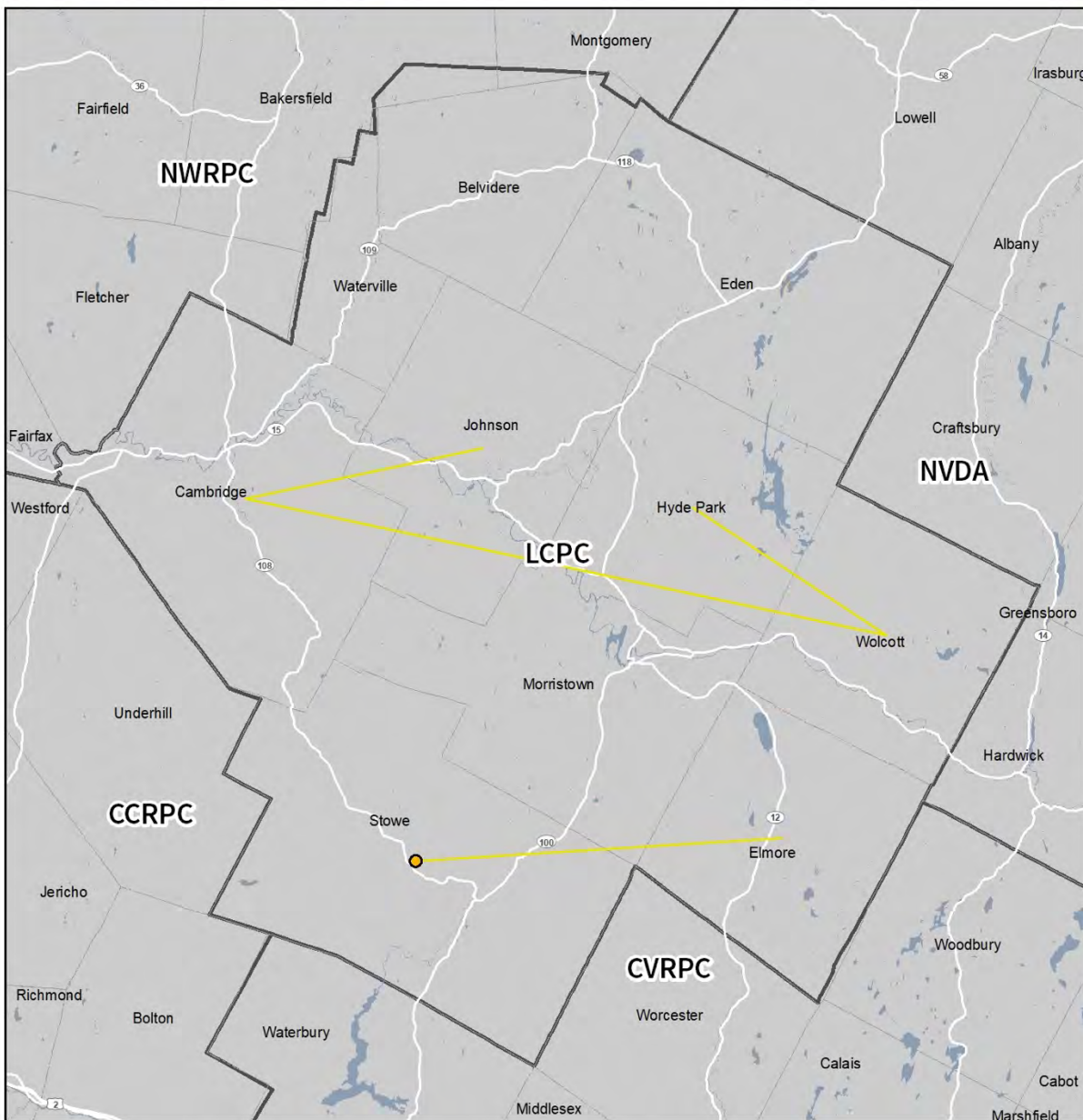
#### External Trips



Municipal Boundary  
 RPC Boundary

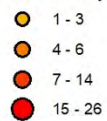


## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips



#### External Trips



— Municipal Boundary

— RPC Boundary



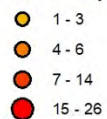


## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips



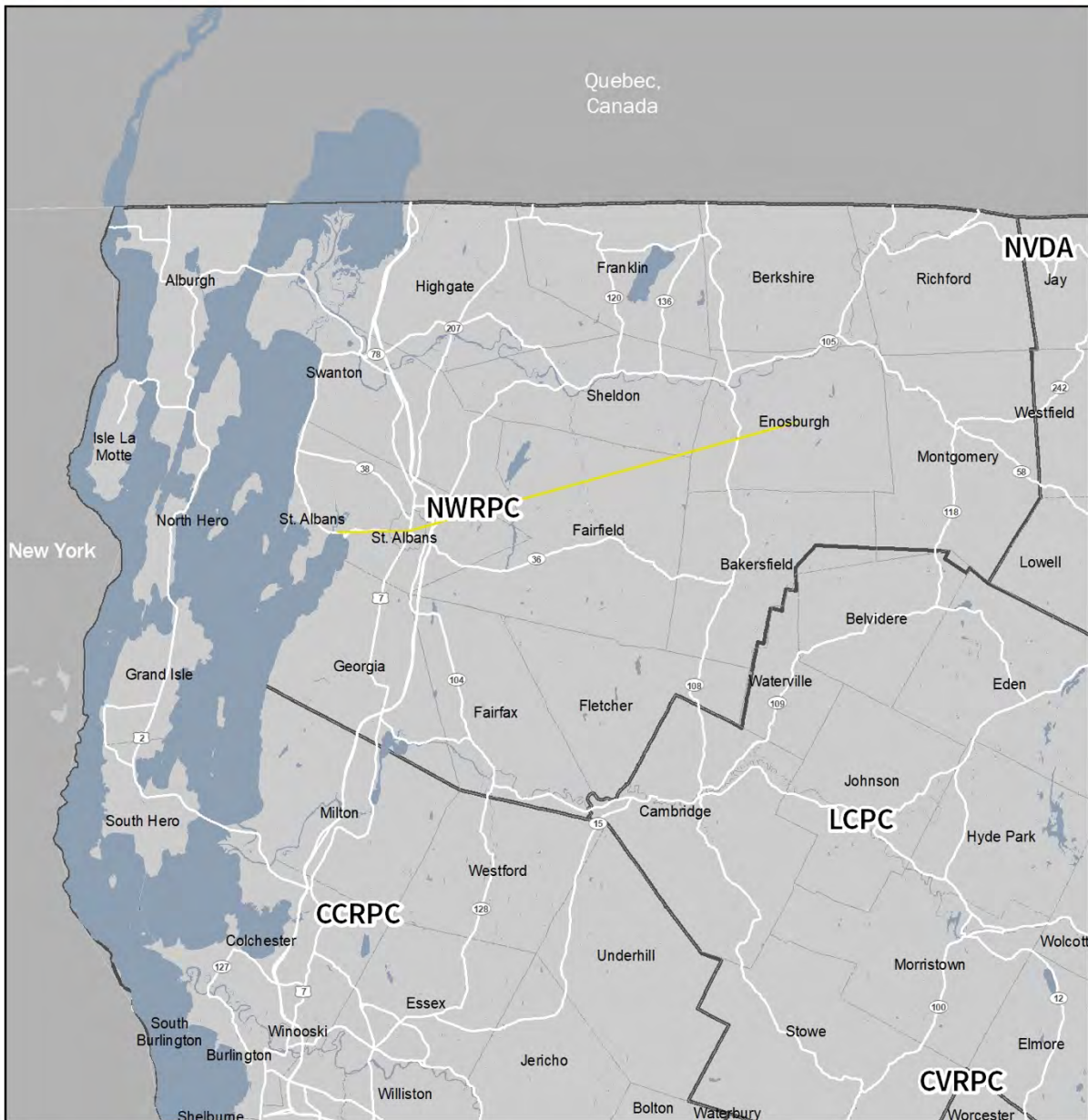
#### External Trips



Municipal Boundary  
 RPC Boundary



## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips

- 1 - 3
- 4 - 6
- 7 - 14
- 15 - 26

#### External Trips

- 1
- 2 - 3
- 4 - 6
- 7 - 14
- 15 - 26

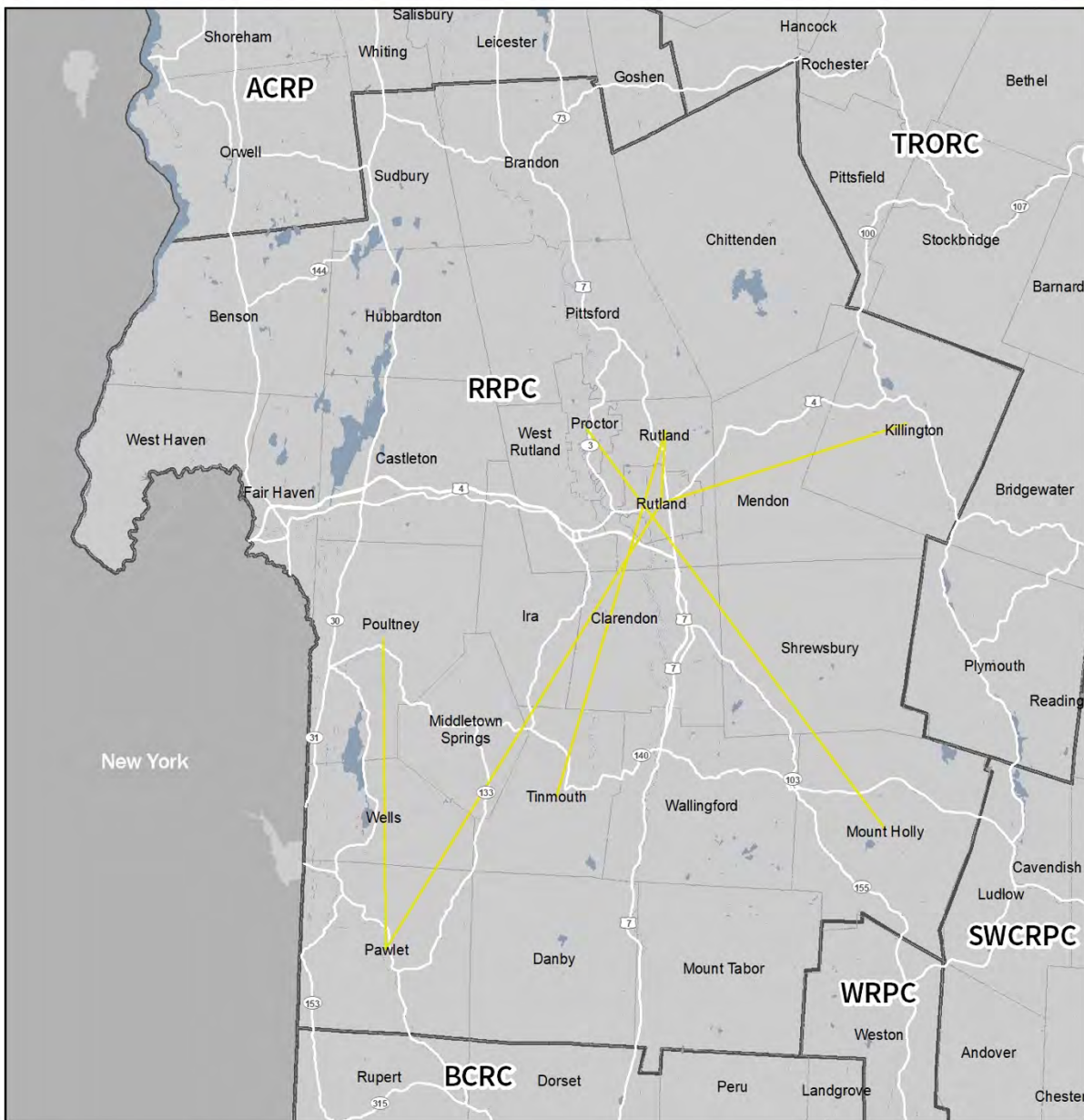
- ▭ Municipal Boundary
- ▭ RPC Boundary

0 10  
Miles



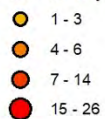


## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips



#### External Trips

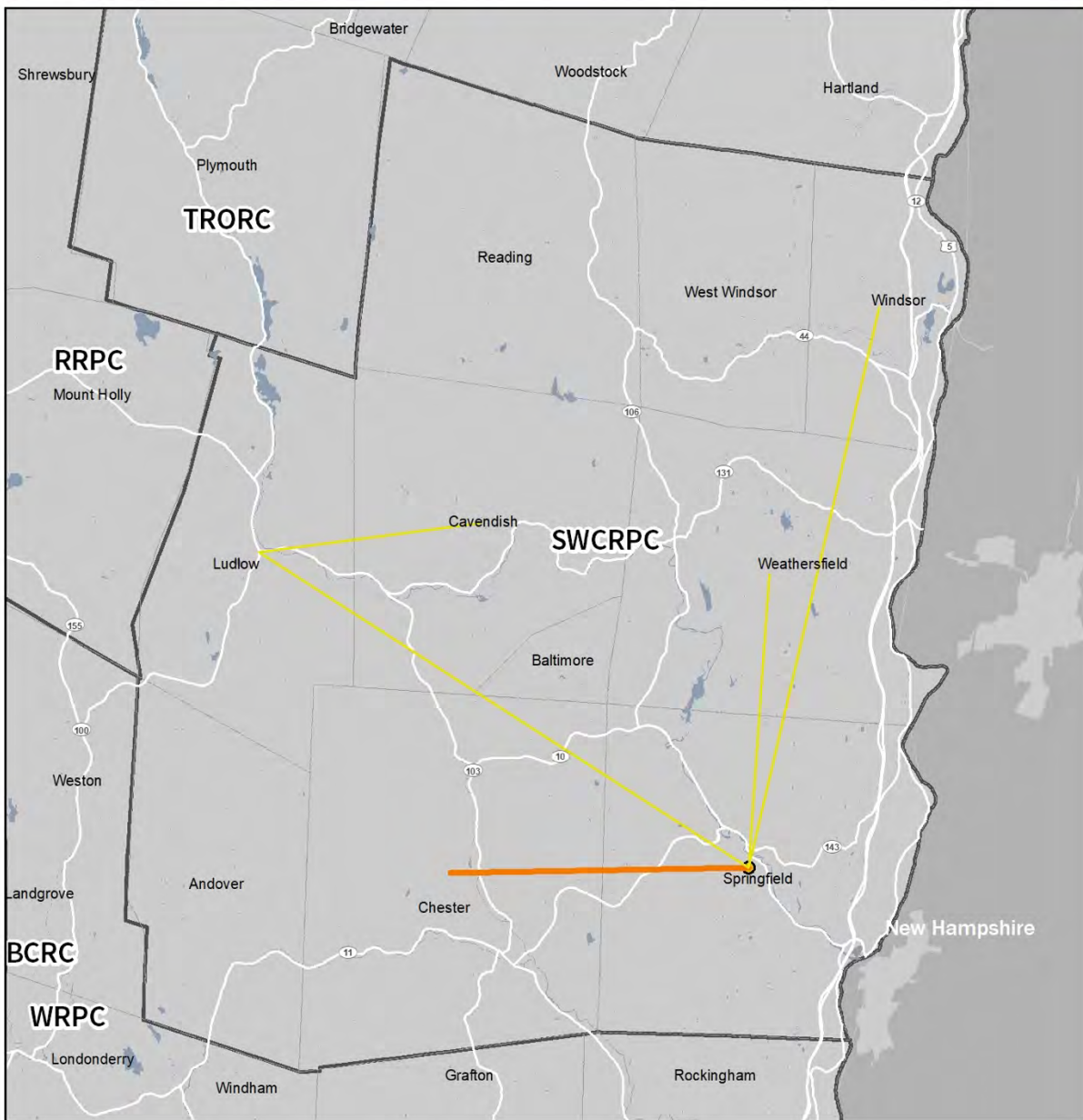


Municipal Boundary

RPC Boundary



## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips

- 1 - 3
- 4 - 6
- 7 - 14
- 15 - 26

#### External Trips

- 1
- 2 - 3
- 4 - 6
- 7 - 14
- 15 - 26

— Municipal Boundary

— RPC Boundary

0 5  
Miles

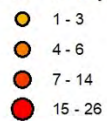


## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips



#### External Trips

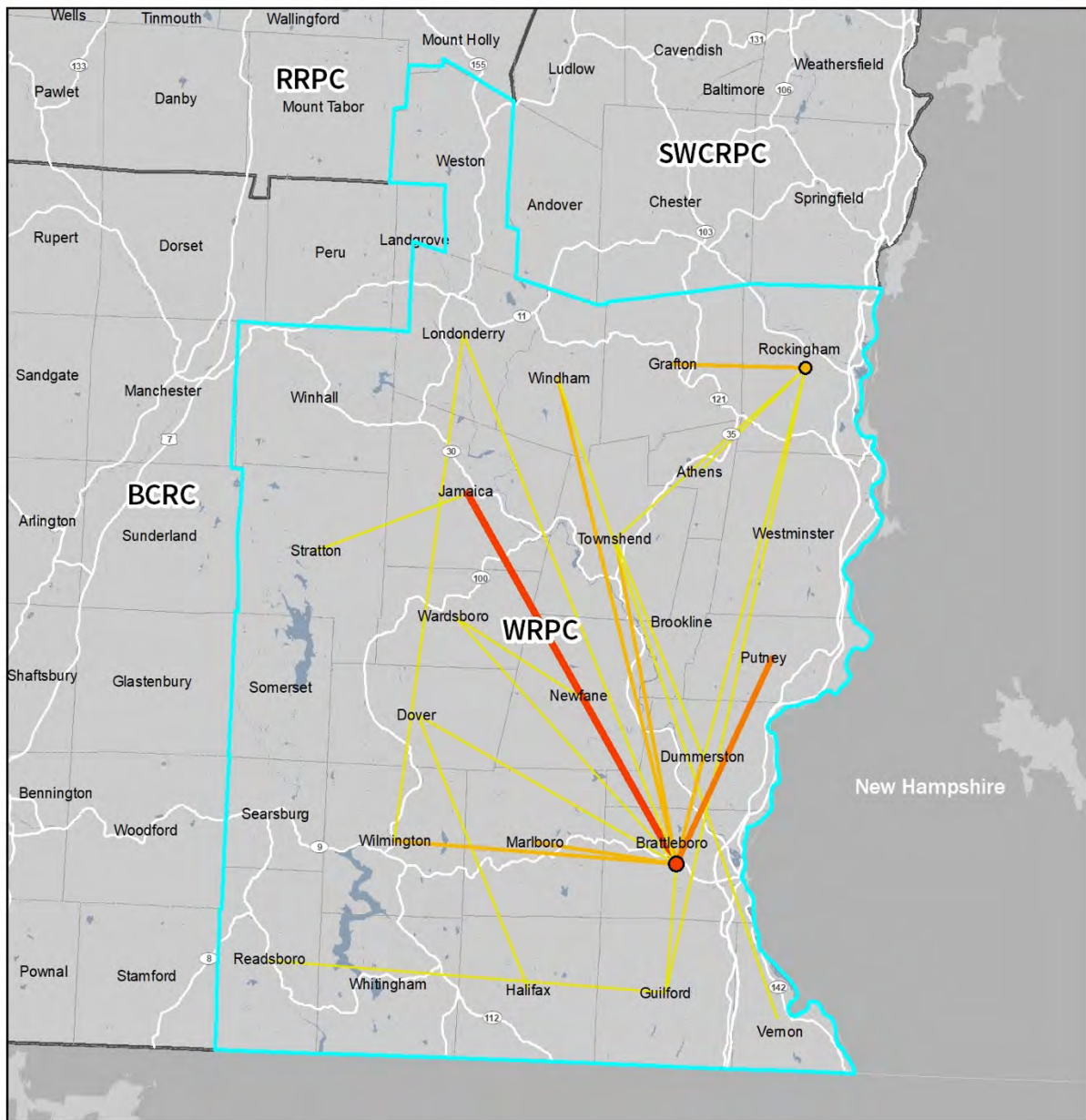


Municipal Boundary  
 RPC Boundary





## MetroQuest Survey Results



### Bidirectional Travel Lines (Summarized by Municipality)

#### Internal Trips

- 1 - 3
- 4 - 6
- 7 - 14
- 15 - 26

#### External Trips

- 1
- 2 - 3
- 4 - 6
- 7 - 14
- 15 - 26

- ▭ Municipal Boundary
- ▭ RPC Boundary

0 10  
Miles



## APPENDIX Q - METROQUEST RESULTS ROUND 2

### 1.1. Introduction

This technical memorandum summarizes the results of the Vermont Public Transit Policy Plan's (PTPP) second round of outreach via the Metroquest online survey platform. The survey solicited feedback on PTPP's recommendations and Vermonters' overall transit priorities. The survey was open to the public from July 16, 2019, to September 16, 2019. In that time, the survey received 2,213 responses, of which 147 were completed in print form, with the remainder completed online. Responses came from 193 different Vermont jurisdictions. The survey was promoted on the VTrans website, on Vermont Public Radio, and by email.

### 1.2. Demographics

#### 1.2.1. Key Takeaways from Demographic Questions

- Chittenden County residents were slightly overrepresented among survey respondents, as compared to their proportion of the state population (32 percent of responses compared to 26 percent of the state's population)
- Urban and rural dwellers made up roughly equal percentages of survey respondents
- The majority of survey respondents (54 percent) are 55 years old or above
- Roughly half of survey respondents live in households making between \$50,000 and \$150,000 annually
- Three-quarters of survey respondents either live alone or with one other person
- Three-quarters of survey respondents live in households with either one or two cars

#### 1.2.2. Place of Residence

This report, in addition to analyzing all survey responses, breaks down responses geographically in two different ways. It separates responses received from people who live in Chittenden County, Vermont's most populous county and home to Burlington, from respondents who reported living in other counties. 32 percent of all survey respondents reported living in Chittenden County, which, per the 2017 ACS, makes up 26 percent of Vermont's population.

**Table 1** lists the top ten towns in Vermont by survey responses. Burlington generated by far the most responses, more than double the responses of the town directly after it, Montpelier. Four of the top five and six of the top ten towns are located in Chittenden County, though Washington, Addison, and Rutland Counties are also represented on the list.

Table 1: Top Ten Vermont Jurisdictions by Number of Survey Responses

Town	County	Responses
Burlington	Chittenden	275
Montpelier	Washington	107
Essex Junction	Chittenden	86
South Burlington	Chittenden	73
Colchester	Chittenden	38
Barre	Washington	37
Middlebury	Addison	36
Milton	Chittenden	36
Winooski	Chittenden	35
Rutland	Rutland	33

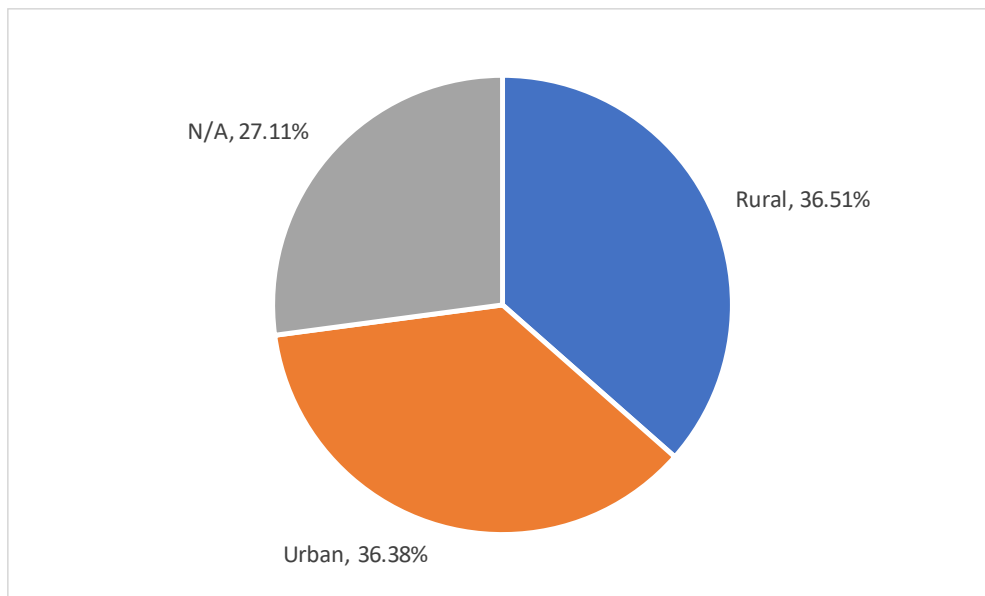
It also separates responses from urban Vermonters and rural Vermonters. For the purposes of this report, survey takers are urban if they reported a home zip code in one of the following Towns or Cities:

- Burlington
- South Burlington
- Winooski
- Essex Junction
- Montpelier
- Barre City
- Rutland City
- White River Junction
- Brattleboro
- Bennington
- Middlebury
- St. Albans City
- St. Johnsbury
- Lyndonville
- Morrisville

As shown in **Figure 1**, there was a roughly even split between survey responses from urban communities (36.4 percent of responses) and rural ones (36.5 percent of responses). The remaining 27.1 percent of responses either did not include zip code data or provided a zip code outside the state of Vermont and were therefore not classified as urban or rural.



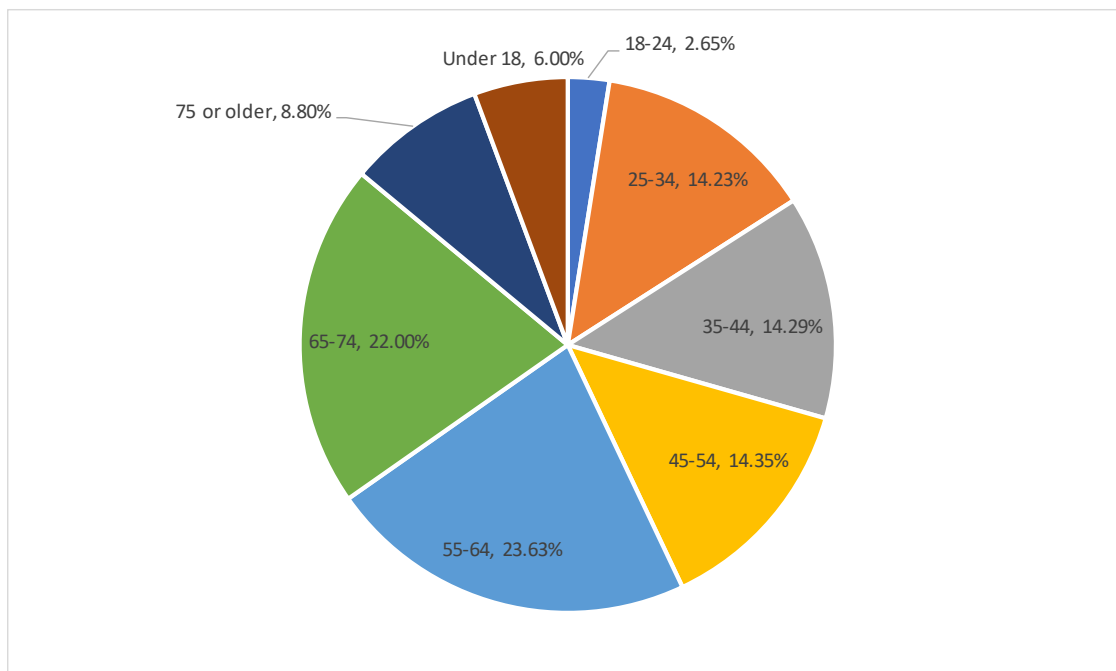
Figure 1: Urban/Rural Breakdown of Survey Respondents



### 1.2.3. Other Demographics

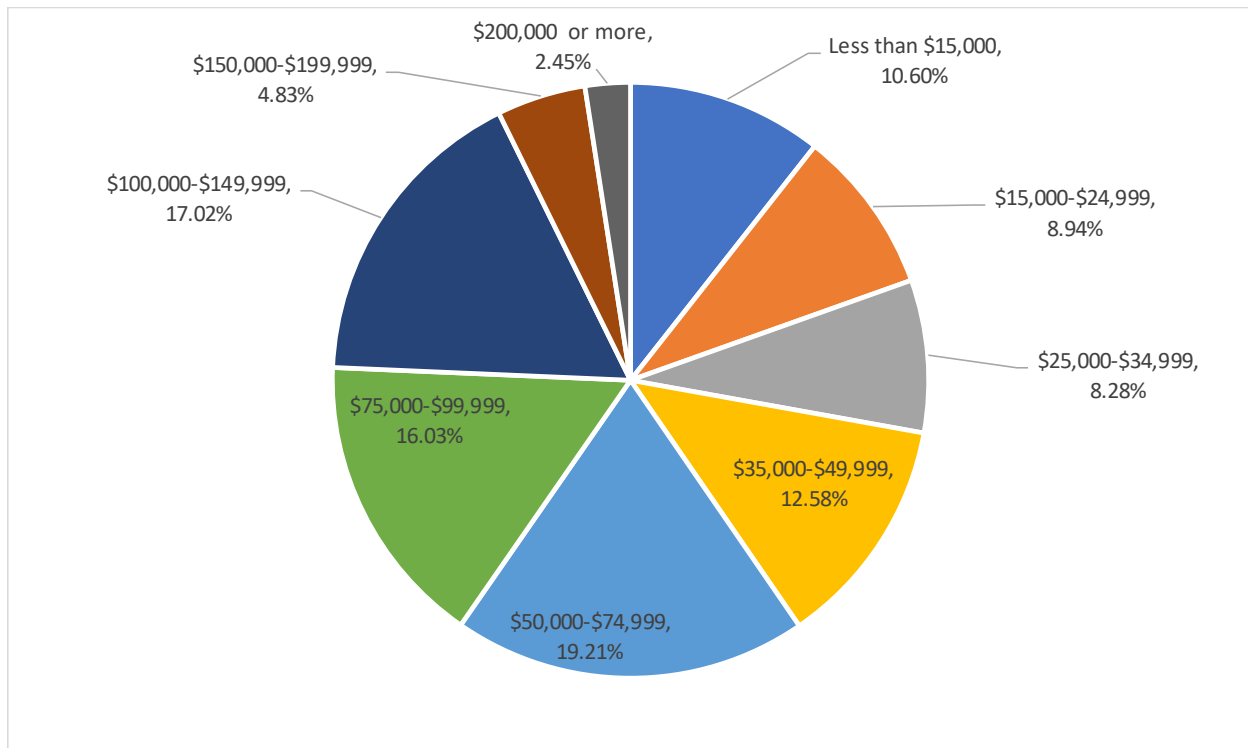
Survey respondents were also asked demographic questions about their age, income, household size, and the number of cars in their household. **Figure 2** shows the age breakdown of survey respondents. Nearly a third of all respondents were over the age of 65 (30.8 percent), while nearly two thirds (66.5 percent) were working-age, between the ages of 25 and 64. The remaining 8.7 percent of respondents were under the age of 25.

Figure 2: Age of Survey Respondents



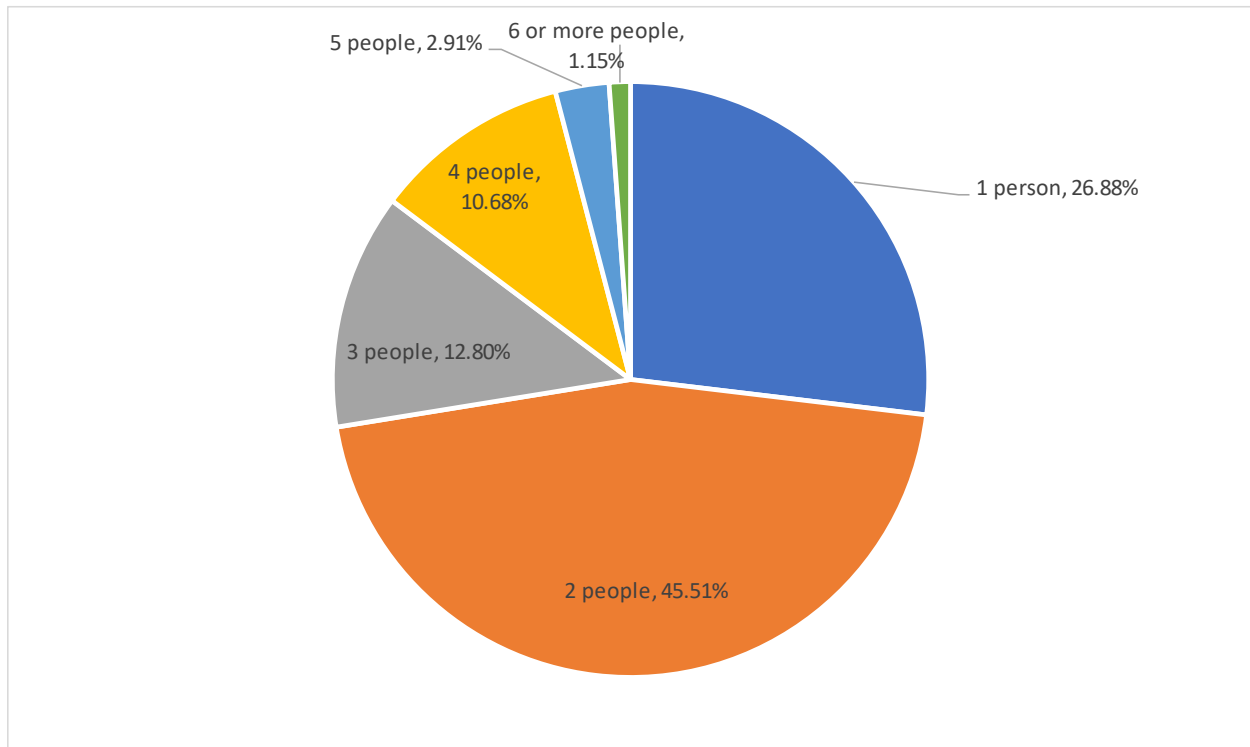
**Figure 3** shows the income distribution of survey respondents. Fifty-two percent of respondents make between \$50,000 and \$149,999 per year, while just over six percent of respondents make more than \$150,000 per year. Forty percent of survey respondents make less than \$50,000 per year. The median income bracket is \$50,000 to \$74,999.

Figure 3: Annual Household Income of Survey Respondents



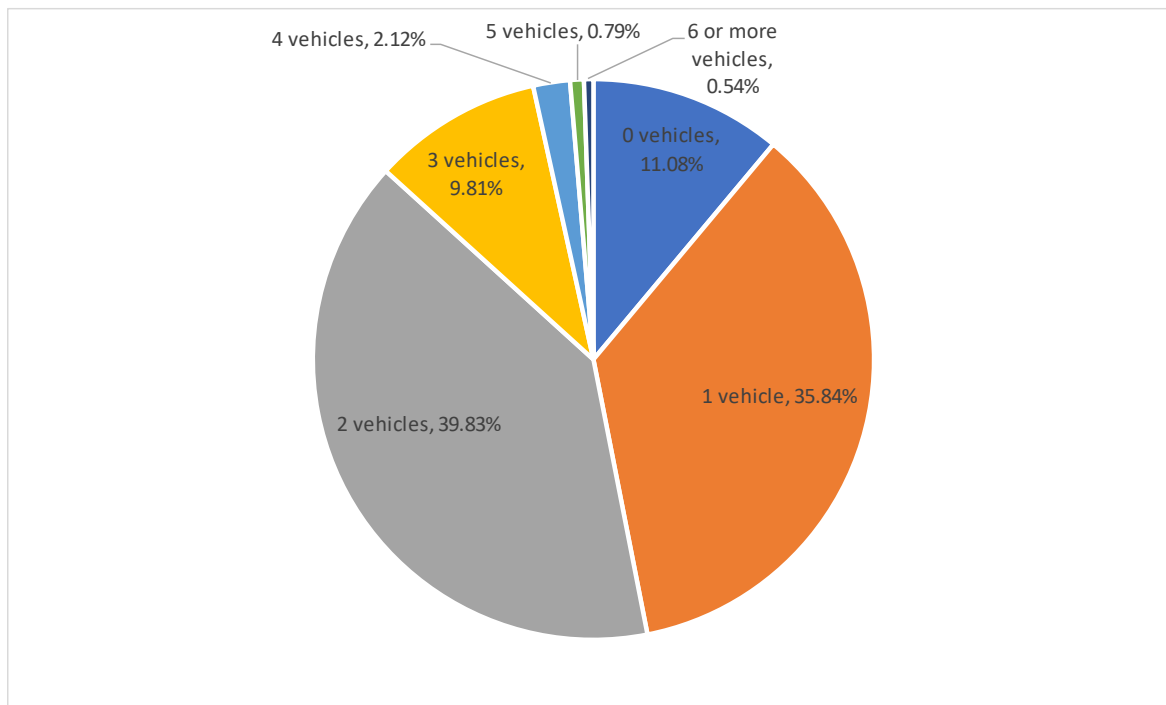
A large majority of survey respondents (72.4 percent) either live alone or with only one other person, as shown in **Figure 4**. A further 23 percent of survey respondents live in households of three or four people, while the remaining four percent live in households of five people or more.

Figure 4: Household Size of Survey Respondents



As shown in **Figure 5**, three quarters of survey respondents (75.7 percent) live in households with one or two cars. A further 11.1 percent live in zero-car households. Only 13.3 percent of survey respondents live in households with three cars or more.

Figure 5: Household Auto Ownership of Survey Respondents



### 1.3. Issue Rating

After a welcome screen, the survey presented respondents with one-sentence summaries of some of the findings of the previous outreach process and asked them to rate the importance of addressing those findings in this plan. These findings were grouped into categories, as follows:

- Transit Service: findings about the availability of transit service and access to transit.
- Public Information: findings about the public's access to information about transit service
- Land Use and Transit: findings about the connection between land use and transit access
- Transit Funding: findings about the availability of funding to pay for transit service

#### 1.3.1. Key Takeaways from Issue Rating

- Survey respondents rated the highest the lack of awareness of Go Vermont and the lack of availability of affordable housing in town and village centers
- The lowest rated findings in this section of the survey included the difficulty of getting local funds to pay for transit and the separation between transit and popular walking and biking routes
- Where respondents lived appeared to have little impact on their responses, though rural Vermonters rated higher the lack of transit service in rural areas than their urban counterparts. They also rated higher the finding that not all Vermonters are aware of their transportation options

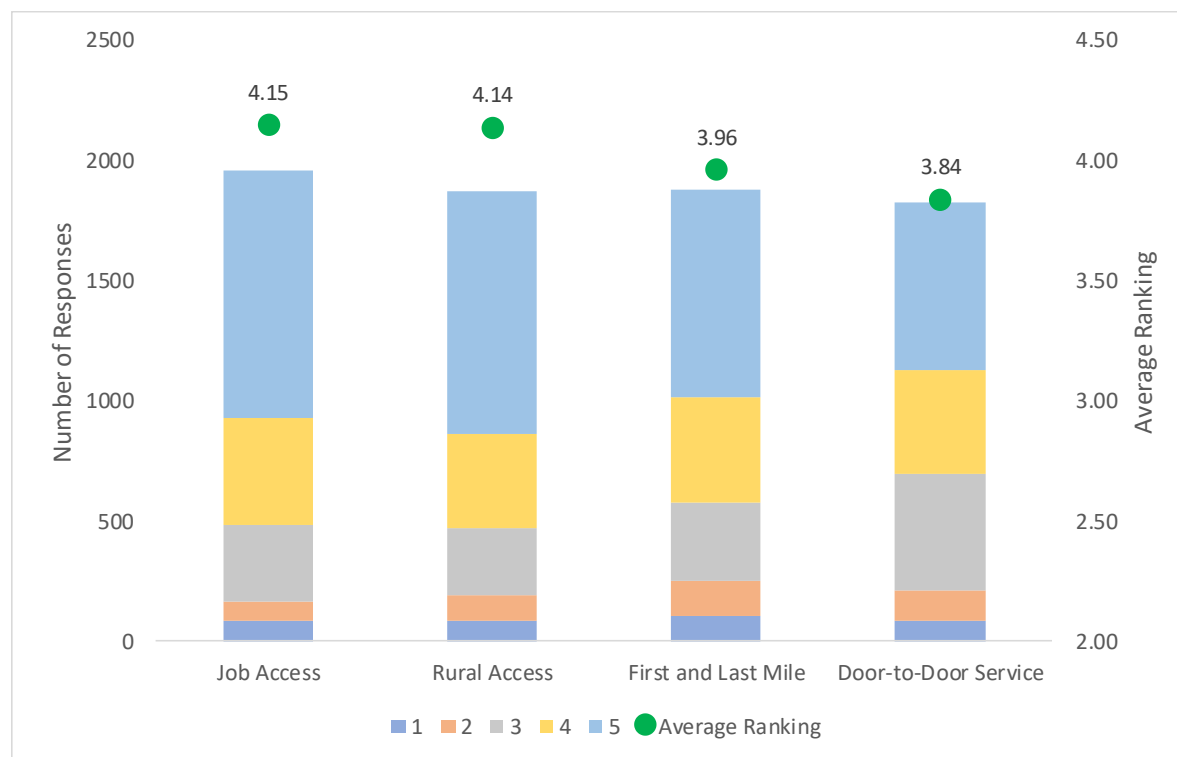
### 1.3.2. Transit Service

Four findings about the availability of transit service were presented, with respondents asked to rate the importance of addressing each one on a scale of one to five:

- Job Access: Transit service for those who don't work traditional 9-5 jobs is limited
- Door-to-Door Service: Transit service for older adults and persons with disabilities has caps on the number of trips and trip purposes
- Rural Access: Transit is not available for the long-distance trips that rural Vermonters need to take to access jobs and services
- First and Last Mile: Even Vermonters who live near transit often find bus stop access difficult, especially in the winter months

**Figure 6** shows the number of ratings each of these findings received, as well as the average rating across all respondents. Job Access and Rural Access were the two highest-rated priorities in this category, with average rankings of 4.15 and 4.14, respectively. First and Last Mile (3.96) and Door-to-Door Service (3.84) received slightly lower average rankings. Very few respondents rated any findings poorly: as can be seen in the graph, only a small share of respondents ranked any of the options a one or two out of five.

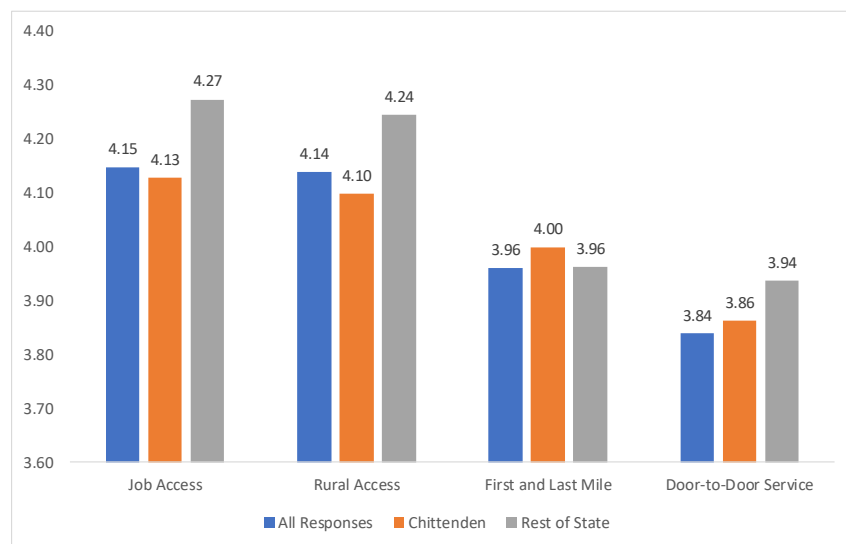
Figure 6: Transit Service Findings Average Rankings



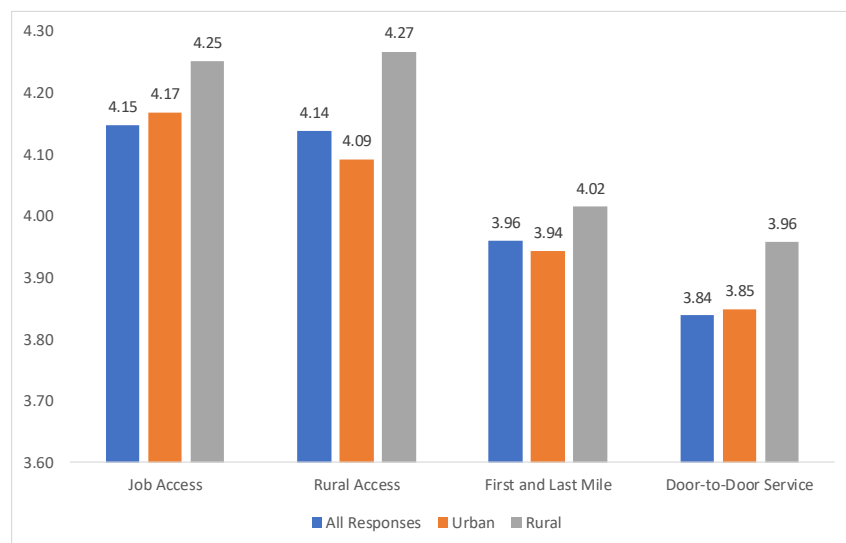
**Figure 7** and **Figure 8** show the breakdowns for these average ratings between Chittenden residents and residents of other Vermont counties, and between urban-dwelling and rural Vermonters.<sup>1</sup> There was no substantive difference in ratings between Chittenden respondents and the rest of the state, with the ranking of findings identical between the two groups and average ratings differing by no more than 0.14.

Rural residents also differed slightly from their urban counterparts in the order of their ratings, with Rural Access being a slightly higher priority for them than Job Access. Rural Access had the highest gap in ratings between urban and rural respondents, with .18 separating the two ratings.

*Figure 7: Transit Service Findings Average Rankings Breakdown by County*



*Figure 8: Transit Service Findings Average Rankings Urban/Rural Breakdown*



<sup>1</sup> Note that 27% of survey respondents are not included in either the urban/rural or Chittenden/rest of state breakdowns, as they either did not provide location data or provided a location outside Vermont. This explains why average rankings for all responses are sometimes lower or higher than all of the average rankings for these subcategories.



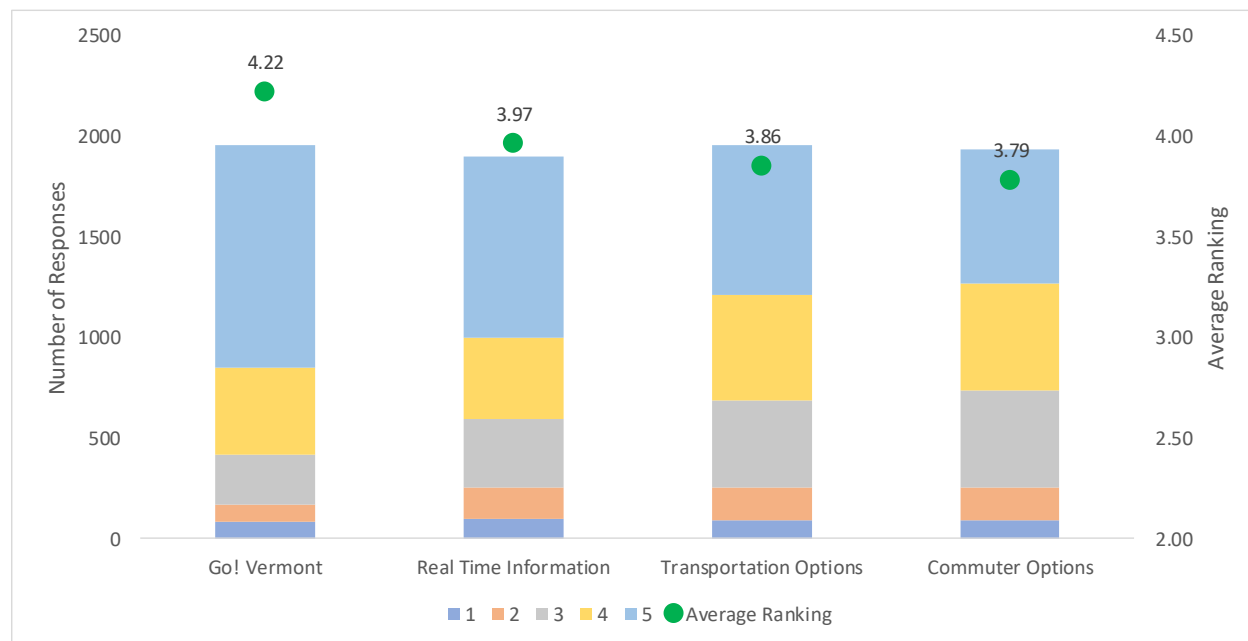
### 1.3.3. Public Information

Four findings about the availability of information about transit were presented, with respondents asked to rate the importance of addressing each one on a scale of one to five:

- Transportation Options: Many Vermonters don't have information about all their transportation options
- Commuter Options: Many commuters don't have information about their carpool, vanpool, or transit options
- Real Time Information: Limited broadband access in some parts of the state prevents use of transportation apps on mobile devices
- Go Vermont: Not all Vermonters are aware of the Go Vermont Transportation Information resources

**Figure 9** shows the number of respondents who rated each of these, as well as the average rating each received. Awareness of Go Vermont recorded both the most responses and the highest average rating, with Real Time Information's average ranking .25 lower. Transportation Options and Commuter Options received the lowest average ratings, at 3.86 and 3.79 respectively. As with the Transit Service category, few respondents felt any of these issues were unimportant: as can be seen in the graph, the major difference between the higher-ranked and lower-ranked priorities were driven by people choosing to give a middling ranking as opposed to a high one.

Figure 9: Public Information Findings Average Ratings



The breakdown of these rankings between Chittenden and other Vermont respondents can be found in **Figure 10**, while the urban/rural breakdown can be found in **Figure 11**. For Go Vermont, Real Time Information, and Commuter Options, there were minimal differences in average ranking between those who live in Chittenden County and those who live in the rest of the state. The only substantial difference between these two sets of Vermonters was in their rating of Transportation Options, which non-Chittenden Vermonters rated .14 higher, on average, than those who live in Chittenden.

Rural and urban Vermonters also responded similarly to Go Vermont and Commuter Options, while rural Vermonters gave both Transportation Options and Real Time Information ratings about .1 higher than their urban peers. Both groups had the same rankings of the priorities relative to each other: each group gave Go Vermont the highest rating, followed by Real Time Information, followed by Transportation Options, with Commuter Options rated lowest.

Figure 10: Public Information Findings Average Rankings County Breakdown

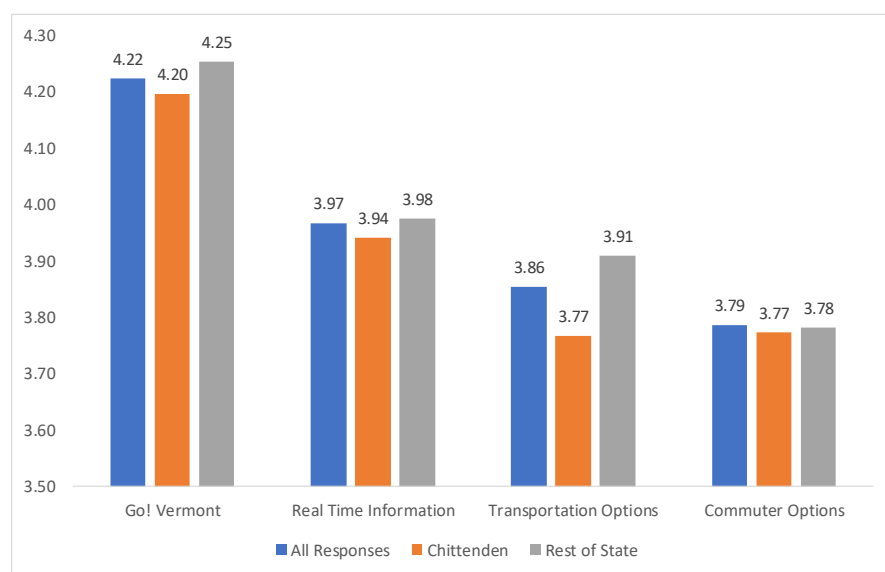
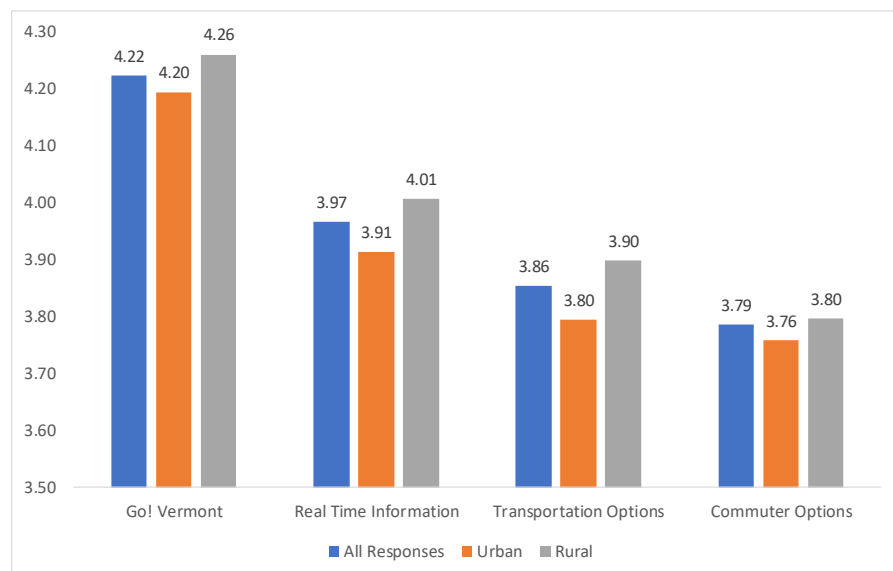


Figure 11: Public Information Findings Average Rankings Urban/Rural Breakdown



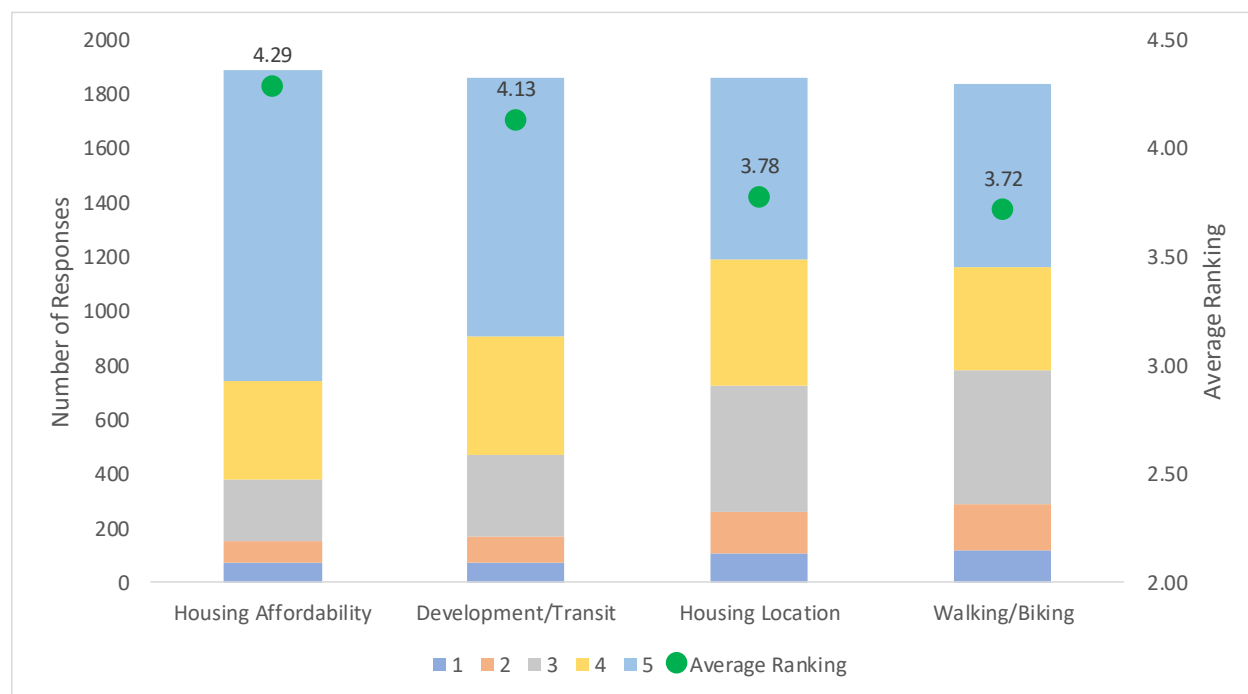
### 1.3.4. Land Use and Transit

Four findings about the relationship between Land Use and Transit were presented, with respondents asked to rate the importance of addressing each one on a scale of one to five:

- Housing Location: Housing is too far from town or village centers with access to jobs and services
- Housing Affordability: There's a lack of affordable housing available in town or village centers
- Development/Transit: Towns and villages don't consistently consider transit when planning for new development
- Walking/Biking: Transit is sometimes hard to use because it's not part of the walking and biking routes that people use

Survey respondents average rating of each of these priorities is shown in **Figure 12**, along with the number of respondents who gave each priority each rating. Housing Affordability garnered the highest average rating, at 4.29, while linking Development and Transit received an average rating of 4.13. Housing Location and Walking and Biking were both significantly less popular, receiving average ratings of 3.78 and 3.72, respectively. While survey respondents considered some of these findings higher priorities than others, they generally considered all of these priorities to be at least somewhat important, with the majority of respondents giving each a rating of four or five.

Figure 12: Land Use and Transit Findings Average Ratings



**Figure 13** shows the breakdown of these figures by county, while **Figure 14** shows the breakdown of these ratings between urban and rural Vermonters. Chittenden residents and other Vermonters placed very similar values on Housing Affordability and the link between Development and Transit. Non-Chittenden residents rated Housing Location to be a higher priority than Chittenden residents did, differing in their average ratings of this element by .15, while Chittenden residents rated Walking and Biking access more highly than their non-Chittenden peers by .17.

Urban Vermonters rated each element higher, on average, than their rural-dwelling peers, generally with an average rating .1 to .15 higher than rural respondents. The sole exception to this was Housing Location, which rural respondents gave an average rating less than .1 higher than urban ones. Urban Vermonters, like Chittenden residents, but unlike rural Vermonters and unlike survey respondents as a whole, gave Walking and Biking a higher average rating than Housing Location.

Figure 13: Land Use and Transit Findings Average Ratings Breakdown by County

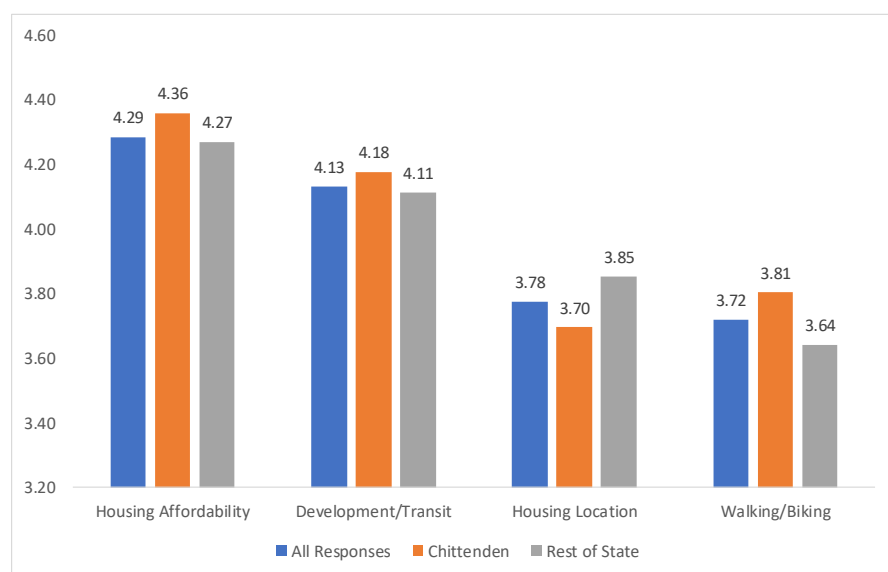
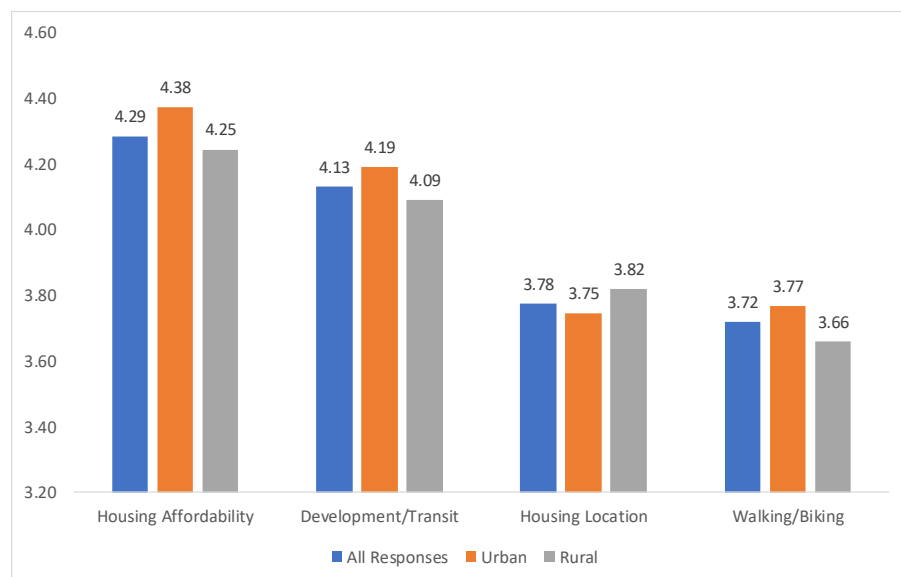


Figure 14: Land Use and Transit Findings Average Ratings Urban/Rural Breakdown



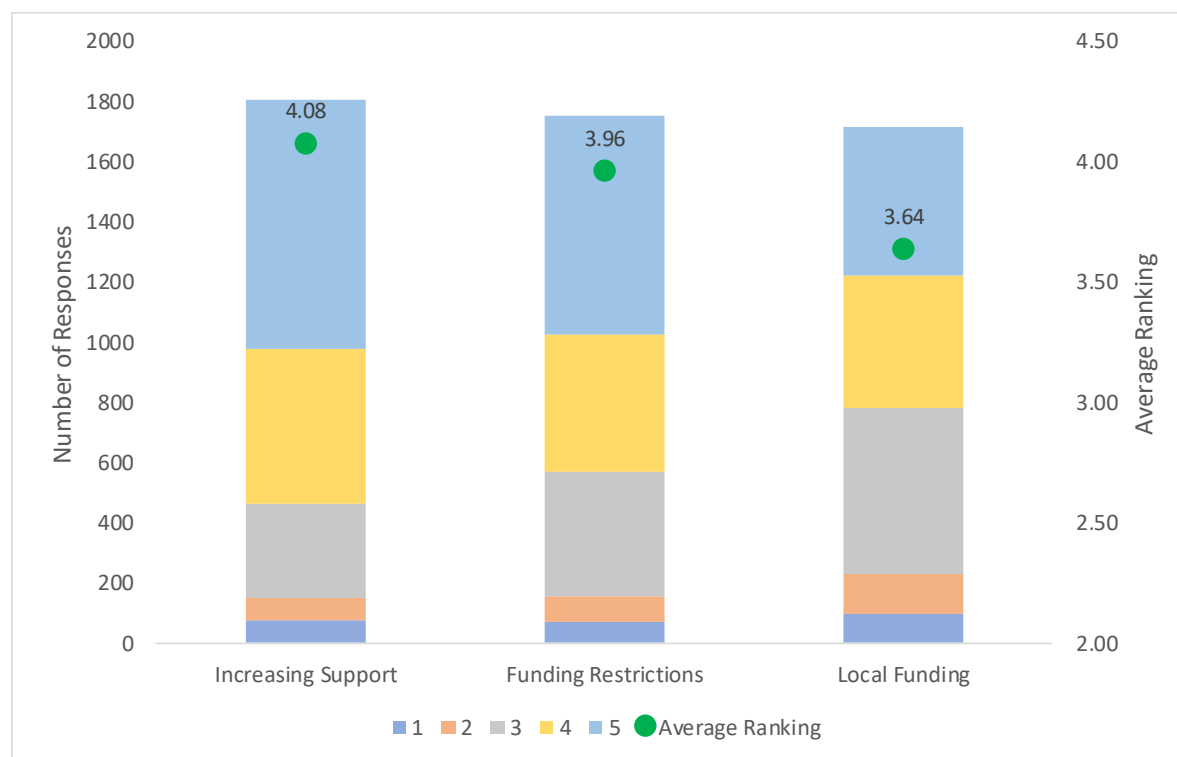
### 1.3.5. Transit Funding

Three findings about the availability of transit funding were presented, with respondents asked to rate the importance of addressing each one on a scale of one to five:

- Local Funding: At Town Meeting, it's difficult for transit projects to get local matching funds
- Funding Restrictions: Funding for elder and disabled trips mainly covers medical trips, not social or wellness trips
- Increasing Support: Many people don't understand the costs associated with operating transit service and therefore don't support spending more

**Figure 15** shows the number of respondents who rated each of these, as well as the average rating each received. The most highly-rated finding was Increasing Support, with an average rating of 4.08, while lifting Funding Restrictions on senior/disabled transit service received an average rating of 3.96. The difficulty of receiving Local Funding received a significantly lower average rating, at 3.64. That said, every recommendation was rated a four or higher (out of five) by the majority of respondents.

Figure 15: Transit Funding Findings Average Ratings



**Figure 16** shows the breakdown of these results between Chittenden residents and other Vermonters, while **Figure 17** shows the breakdown of these results between urban and rural Vermonters. Differences on all three elements between Chittenden residents and other Vermonters were minimal—non-Chittenden residents gave each a slightly higher average rating, though the differences were below .1 in average rating in all cases.

Urban and rural survey takers had very similar views of Increasing Support, though rural respondents were more emphatic both about the importance of lifting Funding Restrictions and the difficulty of getting Local Funding—rural survey takers gave the former an average rating .15 higher than their urban peers, while they gave the latter an average rating .11 higher than their urban peers. That said, both groups agreed on the relative ranking of the three: both groups gave Increasing Support the highest average rating, followed by Funding Restrictions, and then Local Funding.

Figure 16: Transit Funding Findings Average Ratings Breakdown by County

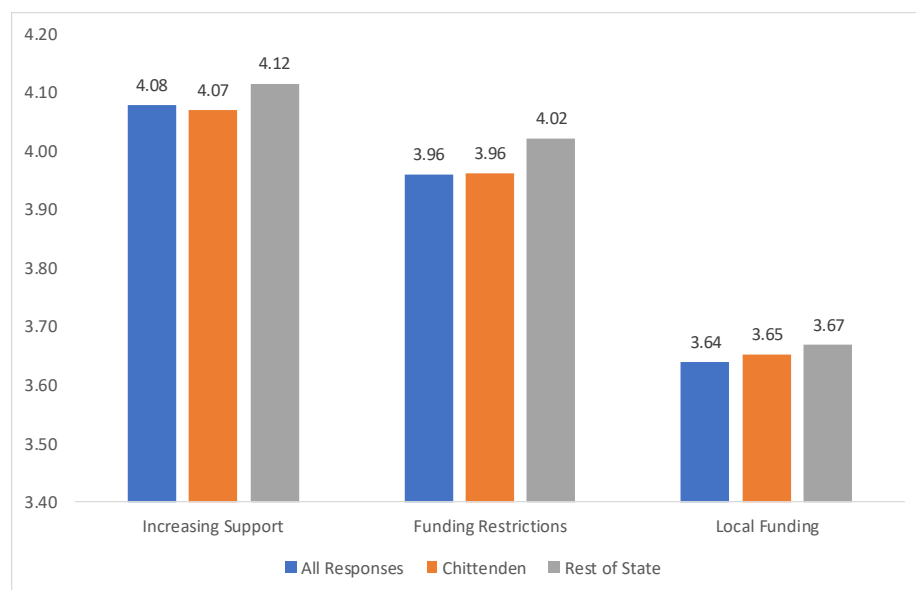
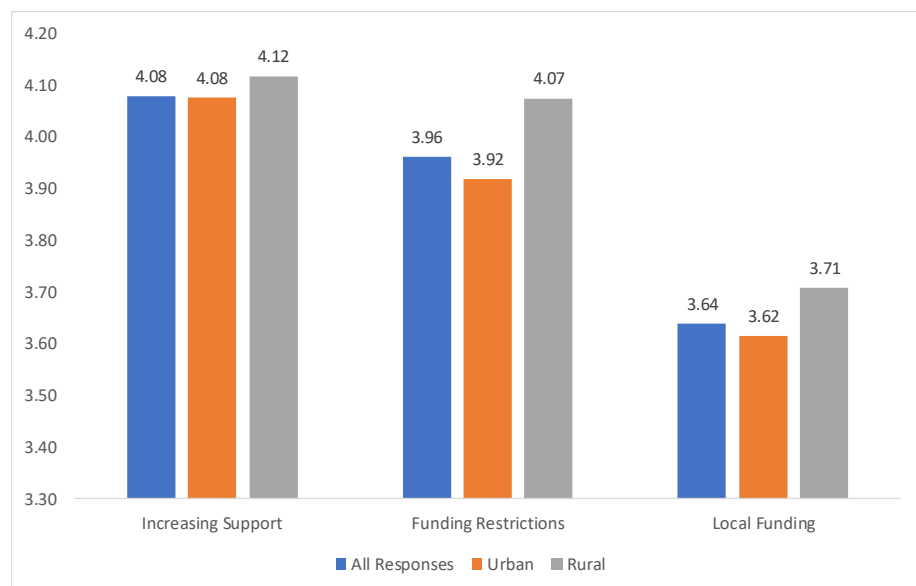


Figure 17: Transit Funding Findings Average Ratings Urban/Rural Breakdown



## 1.4. Strategy Rating

The survey then presented respondents with one-sentence summaries of some of recommendations that grew out of the findings from the previous survey, and asked participants to either approve or disapprove. These recommendations were grouped into categories as follows:

- Transit Service: recommendations to improve the quality of existing transit service and to provide new service
- Public Information: recommendations to make Vermonters more aware of transit services available to them
- Town and Village Planning: recommendations to improve links between development and transit service
- Transit Funding: recommendations about how to pay for improvements to transit service

### 1.4.1. Key Takeaways from Strategy Rating

- Coordinating development with transit improvements and working with employers to improve transit access were almost universally popular, receiving approval from more than 95 percent of survey takers
- The least popular recommendations across all categories were about making it easier to register as a volunteer driver and expending more local funding on transit service, though both recommendations received approval from more than 75 percent of survey takers
- There were few significant differences on these recommendations between Vermonters based on their place of residence, though increased local funding for transit was noticeably more popular among urban Vermonters than their rural counterparts.



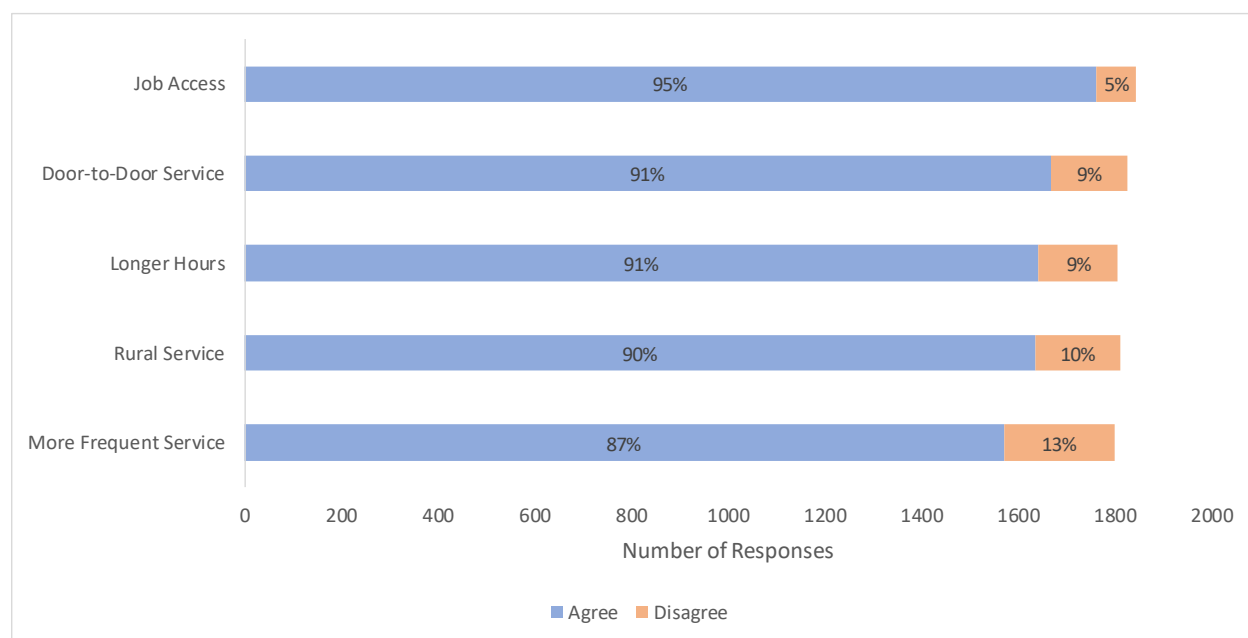
### 1.4.2. Transit Service

Five recommendations about the availability of transit service were presented, with respondents asked to indicate agreement or disagreement with each one:

- Job Access: More transit options for workers outside of 9-5 commuting hours
- Door-to-Door Service: Remove trip limits and expand hours for senior and disability transit services
- Rural Service: More options in rural areas, including first and last mile connections to transit
- Longer Hours: Extended hours of operation on existing transit services
- More Frequent Service: More frequent service on existing transit routes

**Figure 18** shows the number and percentage of respondents who agreed and disagreed with each recommendation. All of the recommendations gained the support of more than 8 in 10 of survey respondents. The most popular recommendation was Job Access, which was supported by 95 percent of respondents. Each of the other recommendations received support from 87 percent to 95 percent of respondents.

Figure 18: Transit Service Recommendations Results



**Figure 19** shows the breakdown of these results by county of residence, while **Figure 20** shows the breakdown of these recommendations between urban and rural Vermonters. Differences between Chittenden residents and other Vermonters on these recommendations were minimal—the percent of each group approving of each recommendation differed by two percent or less across all recommendations, though in each case, the non-Chittenden residents were more likely to approve of the recommendation than Chittenden residents.

Similarly, there were minimal differences in the reactions to these recommendations between urban and rural Vermonters. The percent of survey takers approving of each recommendation differed between urban and rural populations by one percent or less. Rural survey takers approved of Door-to-Door service at a slightly higher rate than urban ones, and approved of Rural Service and Job Access at slightly lower rates than their urban peers.

Figure 19: Transit Service Recommendations Results Breakdown by County

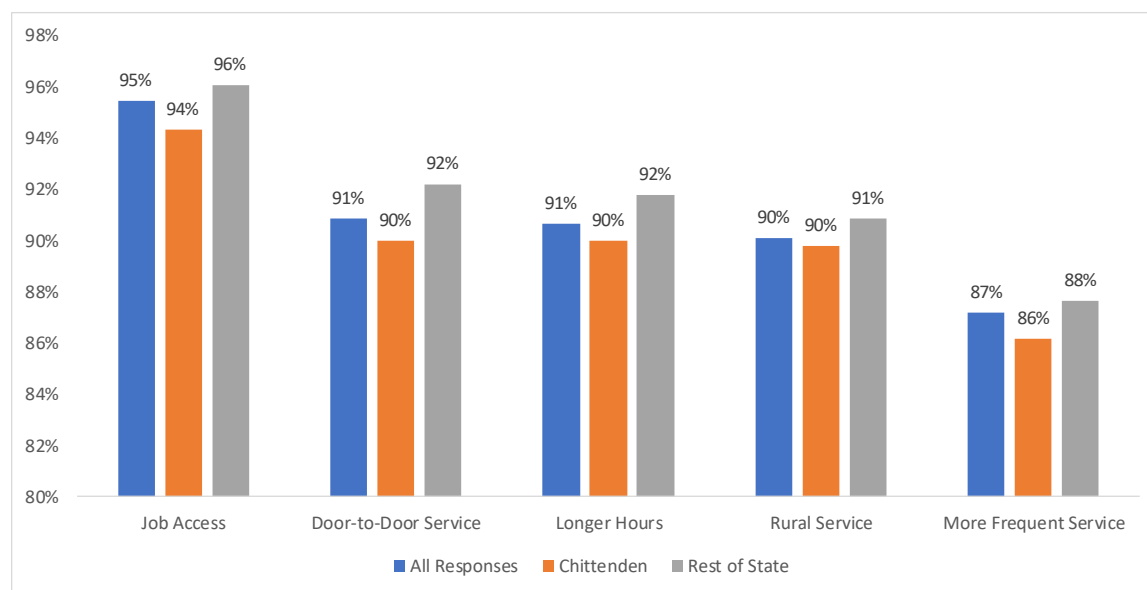
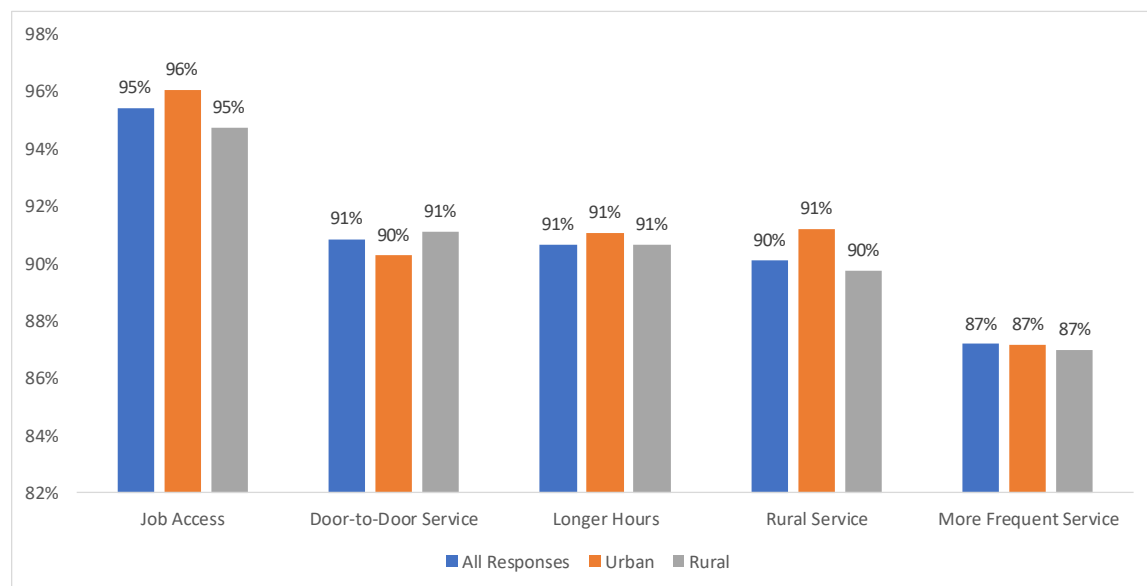


Figure 20: Transit Service Recommendations Results Urban/Rural Breakdown



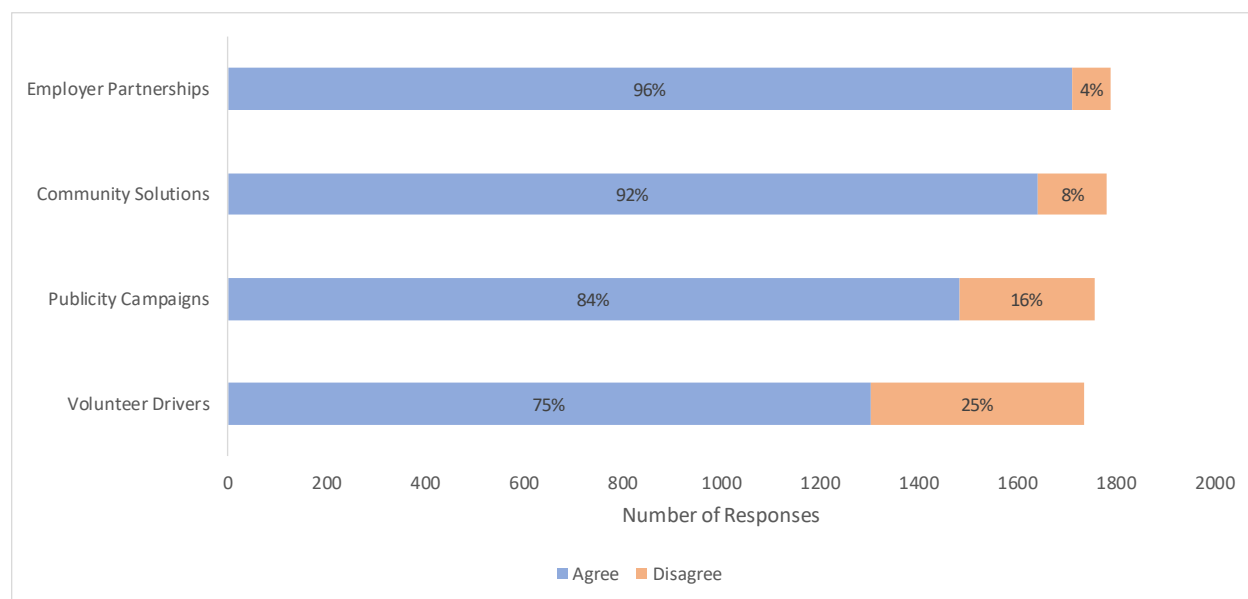
### 1.4.3. Public Information

Four recommendations about the availability of transit service were presented, with respondents asked to indicate agreement or disagreement with each one:

- **Publicity Campaign:** Conduct public outreach via TV and radio to let people know about transit options in Vermont
- **Employer Partnerships:** Work with employers to increase job access transportation and employee awareness of those options
- **Community Solutions:** Increase state and local grant funding for promoting transportation options.
- **Volunteer Drivers:** Add a volunteer driver sign up box on vehicle registration forms

The number and percentage of survey takers approving of each of these recommendations can be seen in **Figure 21** below. Employer Partnerships was the most popular recommendation, approved of by 96 percent of survey takers. Community Solutions was approved of by 92 percent of survey takers. Publicity Campaigns received the approval of 84 percent of respondents, while Volunteer Drivers was the least popular recommendation, with one-quarter of survey takers disapproving.

Figure 21: Public Information Recommendations Results



**Figure 22** shows the breakdown of these results between those who live in Chittenden County and those who live elsewhere in Vermont, while **Figure 23** breaks down the results between urban and rural residents. Chittenden County residents and other Vermonters approved of the Employer Partnerships and Community Solutions recommendations at identical rates. Both Publicity Campaigns and Volunteer Drivers were less popular among Chittenden residents, by four and five percent, respectively.

The differences between urban and rural survey takers on these recommendations were minimal. The difference in approval between urban and rural respondents was three percent or less for each recommendation. Rural respondents were slightly less positive on Employer Partnerships and Community Solutions (two percent lower in each case) and were slightly more positive on Publicity Campaigns and Volunteer Drivers (by three percent and one percent, respectively).

Figure 22: Public Information Recommendations Results Breakdown by County

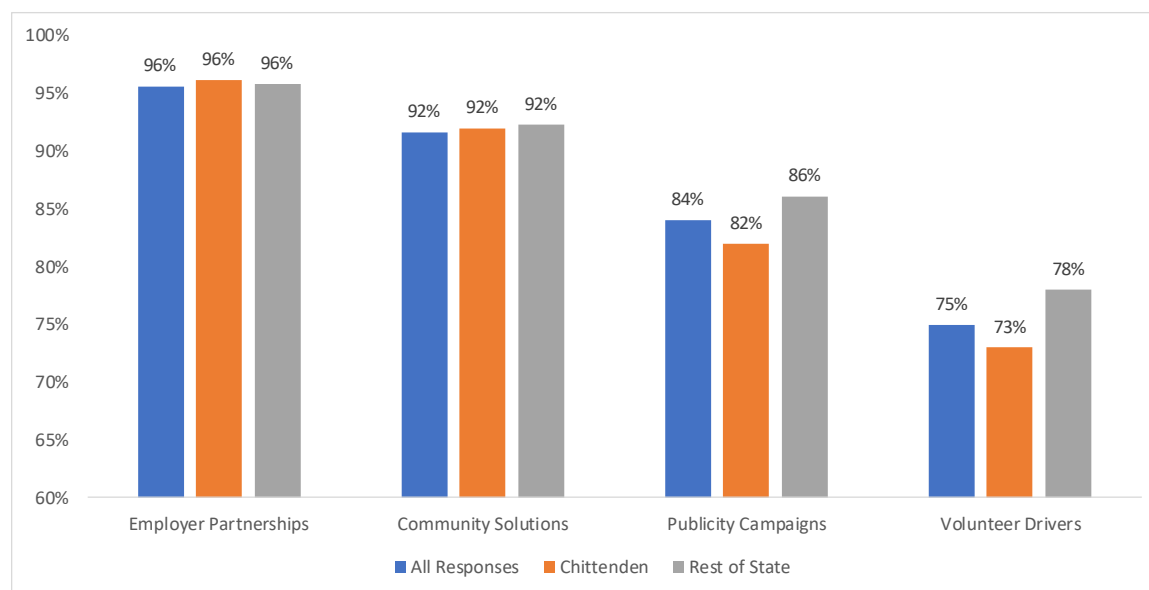
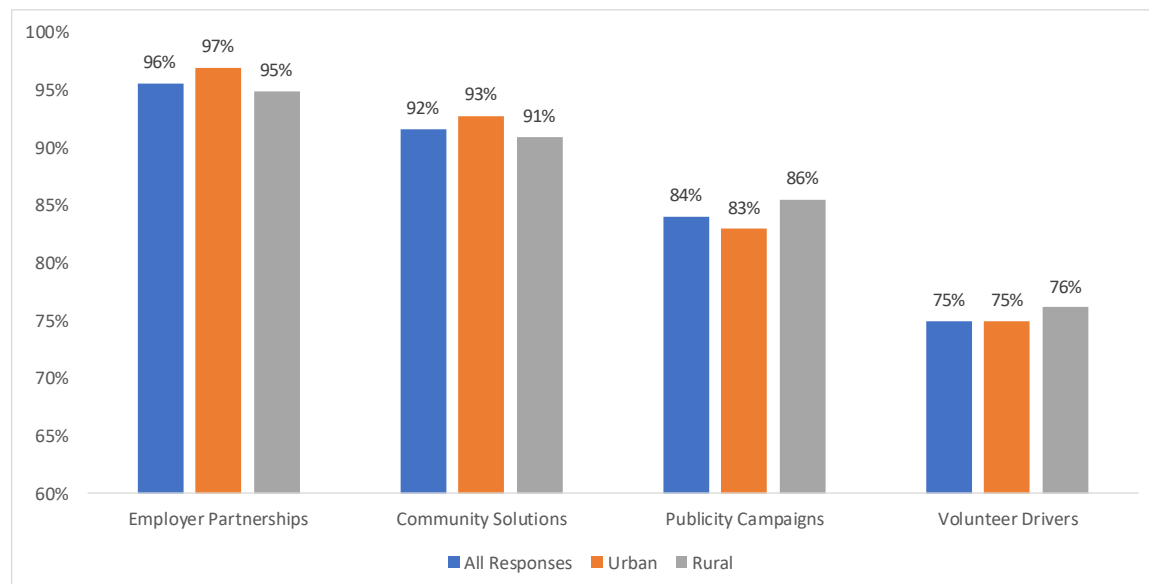


Figure 23: Public Information Recommendations Results Urban/Rural Breakdown



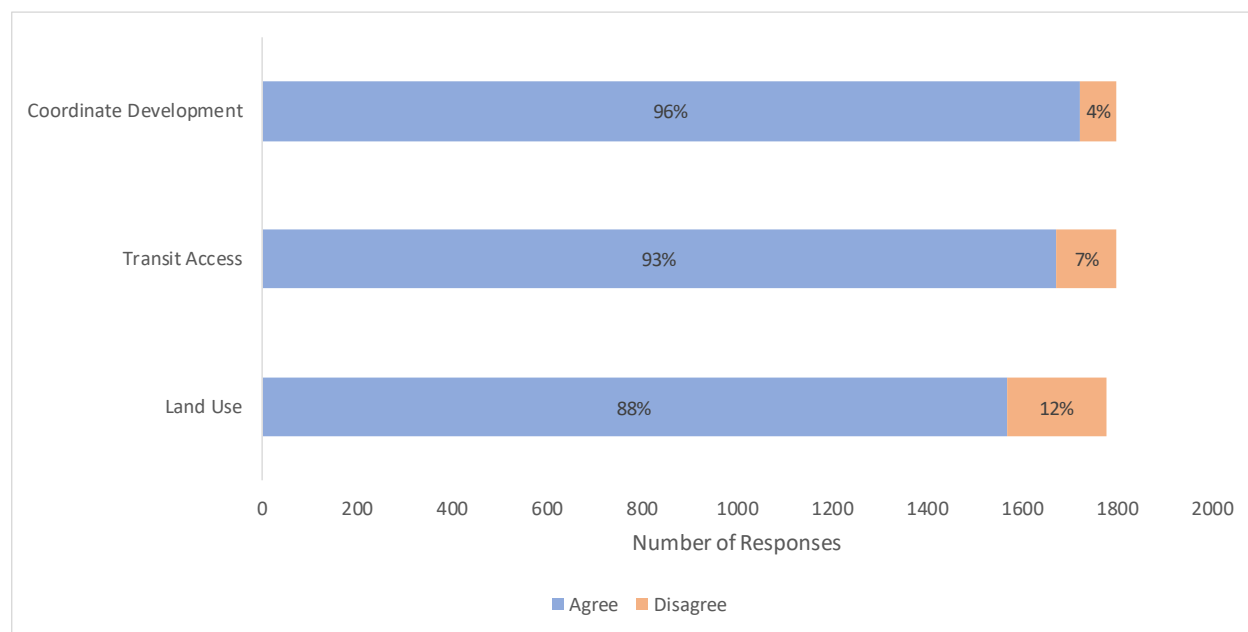
### 1.4.4. Town and Village Planning

Three recommendations about the availability of transit service were presented, with respondents asked to indicate agreement or disagreement with each one:

- Transit Access: Support projects that make it easier to walk or bike to transit stops
- Coordinate Development: Coordinate transit in villages and towns with new public and private development
- Land Use: Support more housing near village and town centers and the infrastructure to support it.

**Figure 24** shows the number and percentage of respondents approving and disapproving of each of these recommendations. Coordinating Development was the most popular recommendation, with 96 percent of respondents approving of this recommendation. Transit Access received the approval of 93 percent of respondents, while Land Use was approved of by 88 percent of all respondents.

Figure 24: Town and Village Planning Recommendations Results



The breakdown of these results between Chittenden residents and other Vermonters can be seen in **Figure 25**, while **Figure 26** shows the breakdown of these results between urban and rural Vermonters. Differences between Chittenden residents and other Vermonters on these recommendations were minimal. Chittenden residents were slightly more positive than other Vermonters about the Coordinate Development and Transit Access recommendations, giving each a one percent higher approval rating, while they were slightly less positive about the Land Use recommendation, approving of that at a two percent lower rate.

Differences were somewhat larger between urban and rural-dwelling Vermonters. Rural Vermonters gave the Coordinate Development recommendation a 95 percent approval rating, as opposed to 98 percent for urban Vermonters. Urban Vermonters were also more likely to approve of the Transit Access and Land Use recommendations, by two and four percentage points, respectively.

Figure 25: Town and Village Planning Recommendations Results Breakdown by County

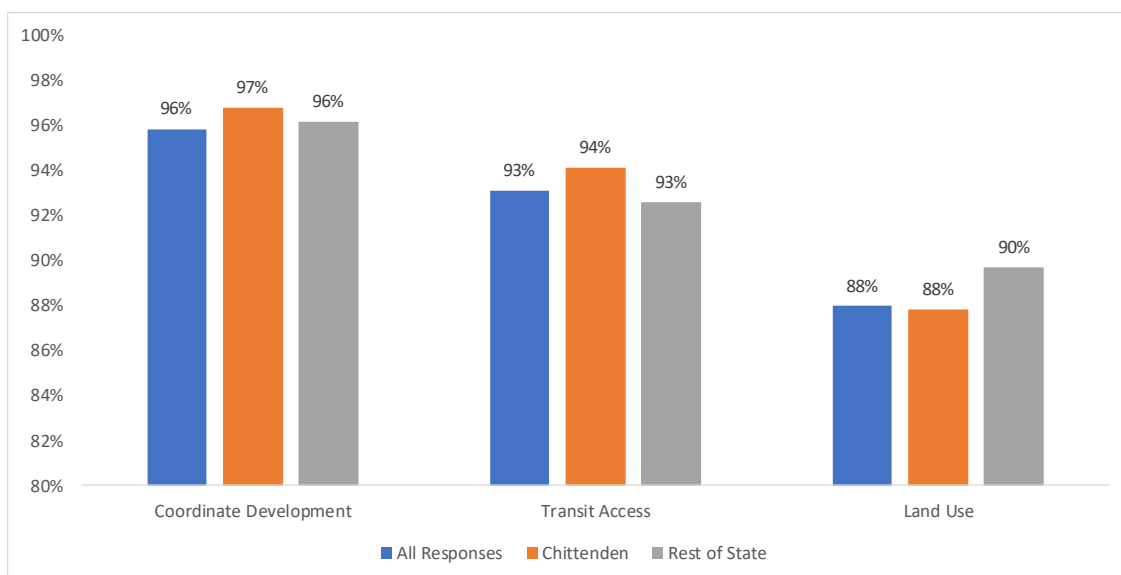
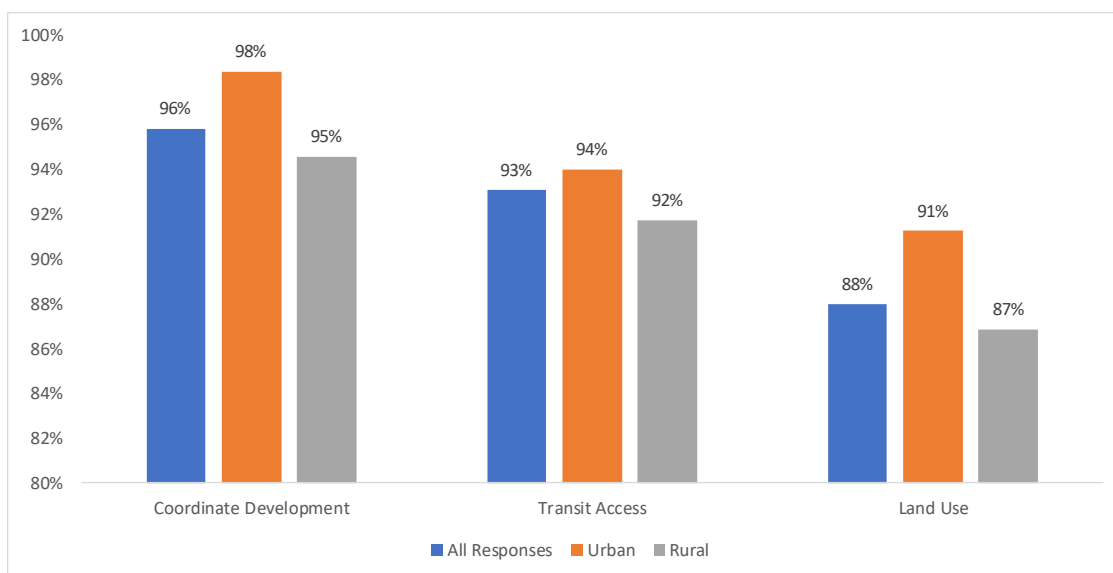


Figure 26: Town and Village Planning Recommendations Results Urban/Rural Breakdown



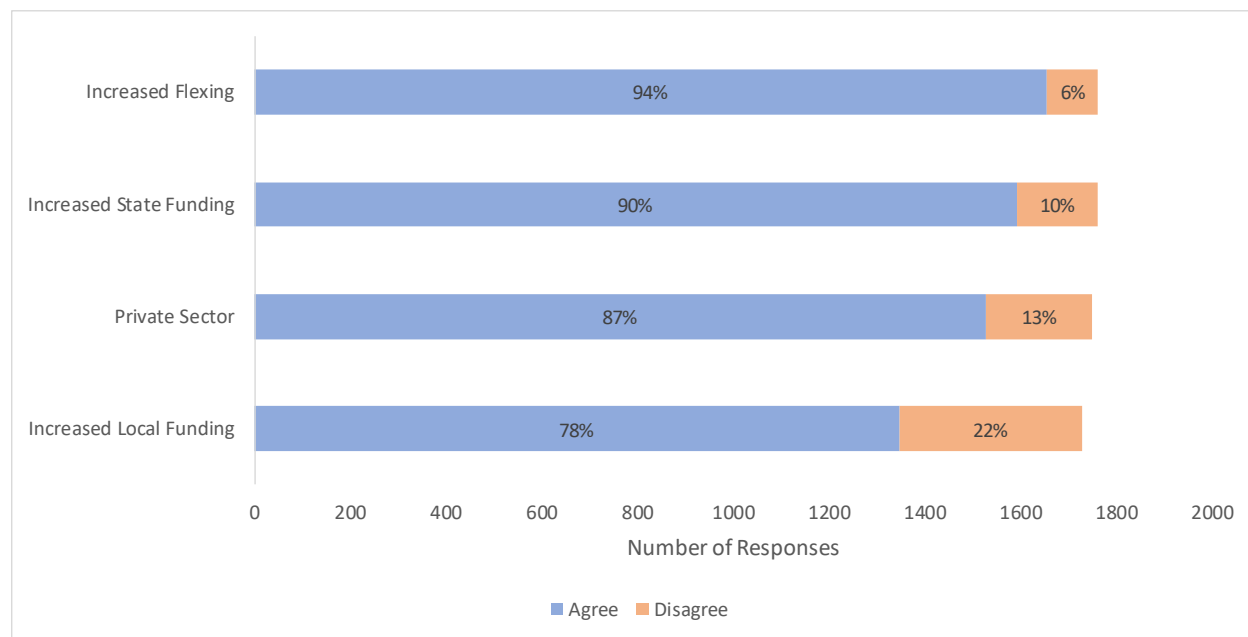
### 1.4.5. Transit Funding

Four recommendations about the availability of transit funding were presented, with respondents asked to indicate agreement or disagreement with each one:

- Increased Local Funding: Allocate more money at Town Meeting to pay for transit service from local residents
- Increased State Funding: Allocate more state dollars from the transportation or general funds to pay for transit service
- Increased Flexing: Increased use of funds from all federal sources to support expanded transit
- Private Sector: Through partnerships or fees, involve the private sector more in transit funding

**Figure 27** shows the number and percentage of all survey respondents agreeing and disagreeing with each of these recommendations. Increased Flexing was the most popular of these recommendations, receiving approval from 94 percent of survey respondents, while Increased State Funding was approved of by 90 percent of survey respondents. Private Sector funding was approved of by 87 percent of respondents, while 78 percent of survey takers approved of Increased Local Funding to pay for transit.

Figure 27: Transit Funding Recommendations Results





The breakdown of these results between Chittenden residents and other Vermonters can be seen in **Figure 28**, while **Figure 29** shows the breakdown of these results between urban and rural Vermonters. Vermonters living outside Chittenden County were more positive by relatively small margins (between one and four percentage points) about all the recommendations except Increased Local Funding, which received an approval rating of 81 percent from Chittenden residents and 76 percent from all other Vermonters. Urban and rural residents of Vermont were equally likely to approve of Increased Flexing and more Private Sector involvement in transit funding. Urban dwellers were somewhat more likely to approve of Increased State Funding (by four percentage points), and significantly more likely to approve of Increased Local Funding, by 12 percentage points.

Figure 28: Transit Funding Recommendations Results Breakdown by County

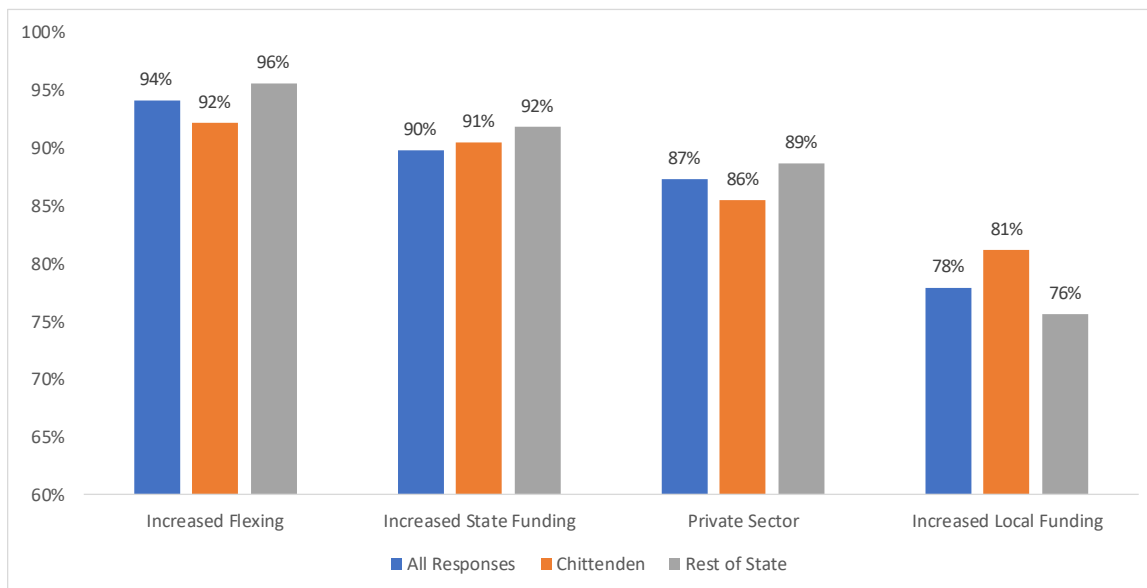
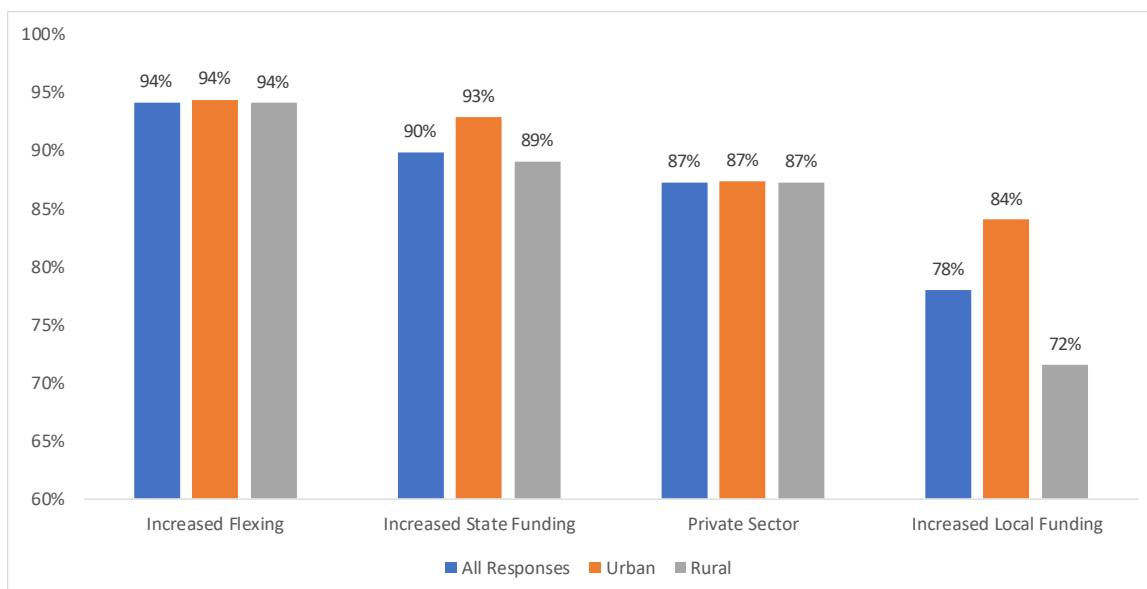


Figure 29: Transit Funding Recommendations Results Urban/Rural Breakdown



## 1.5. Budgeting Exercise

After providing approval or disapproval of each proposed solution, survey-takers then did an exercise in which they were given 40 coins and asked to distribute those coins over eight different categories, to illustrate their funding priorities. The eight categories were as follows:

- Frequency of Service: More frequent service on existing routes
- Hours of Service: Longer hours of service on existing routes
- Job Access: New routes to serve shift change times in cooperation with employers
- Information: Technology and awareness to increase knowledge of transit and ease of use
- Capital: New vehicles and facilities to make ridership more comfortable
- Mobility: More door-to-door service for seniors and persons with disabilities
- Rural Service: Expanding service in rural areas, including expansion of the volunteer driver program
- Village Focus: More service to connect towns and villages to promote economic development

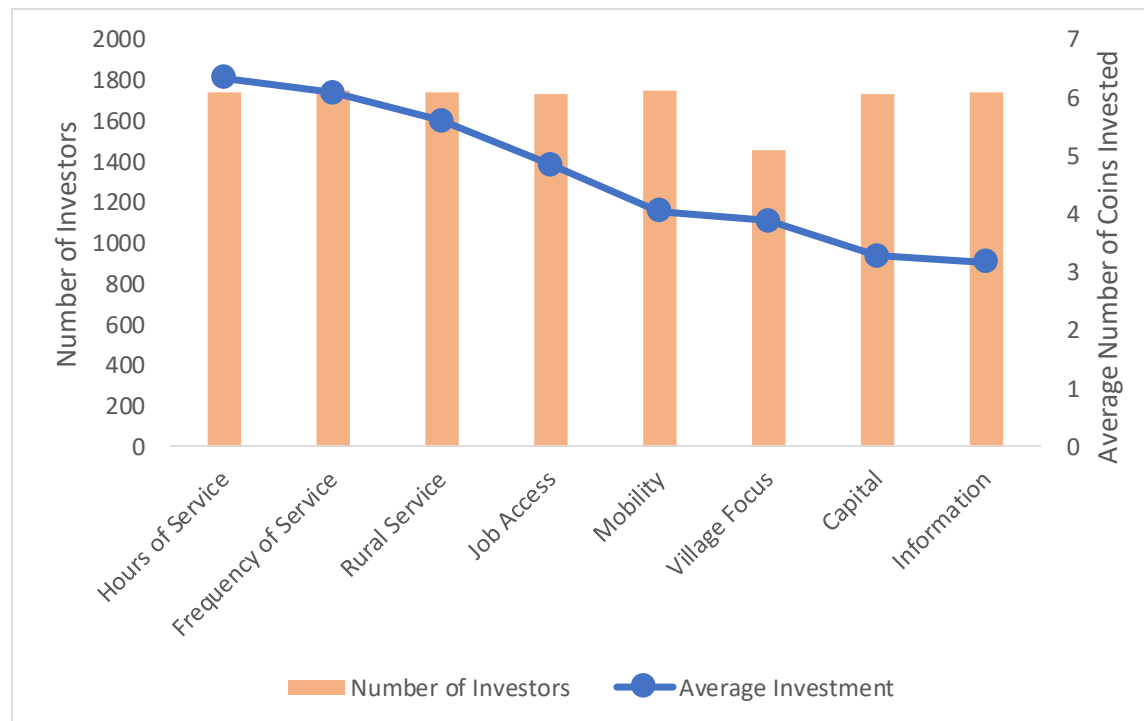
### 1.5.1. Key Takeaways from Budgeting Exercise

- Survey takers prioritized investments in more frequent service and more hours of service on existing routes.
- The lowest priorities for survey takers were investments in new vehicles and facilities, and investments in information about transit availability.
- Rural service was the only category in which there were significant differences based on the survey-taker's location: Rural residents and those living outside Chittenden County prioritized this much more highly than their urban and Chittenden-dwelling counterparts.

### 1.5.2. Budgeting Exercise Results

**Figure 30** shows the results of the budgeting exercise, including the number of respondents investing in each one and the average amount invested in each category. Each category was invested in by a similar number of respondents: the lowest number of respondents invested in Capital (a total of 1732 respondents), while the largest number invested in Mobility (1754 respondents), with every other category in between those two. The largest average investments were into Hours of Service and Frequency of Service for existing services, with an average investment of 6.4 and 6.1, respectively. The smallest average investments were into Capital and Information, with average investments of 3.3 and 3.2, respectively.

Figure 30: Budgeting Exercise Results



**Figure 31** shows the breakdown of the average amount invested by county of residence and whether they are urban or rural. Chittenden residents and urban-dwelling Vermonters generally invested more of the available coins than their counterparts in other parts of the state and in rural areas. This difference was small: 80 percent of urban Vermonters and Chittenden residents used all the coins allotted to them, while the same was true of 79 percent of rural Vermonters and people who live outside Chittenden County.

Each group invested similar proportions of their budget into each category, with the sole exception of Rural Services, which received a much higher average investment from rural Vermonters than their urban peers. Rural Vermonters, on average, invested 6.9 coins into this category, while urban residents invested 4.4 coins into it. The gap was similarly large between Chittenden residents and people living in other Vermont counties: Chittenden residents invested an average of 4.9 coins into Rural Service, while those living in other parts of the state invested an average of 6.3 coins.

Figure 31: Average Amount Budgeted Breakdown by Location and Urban/Rural Breakdown

