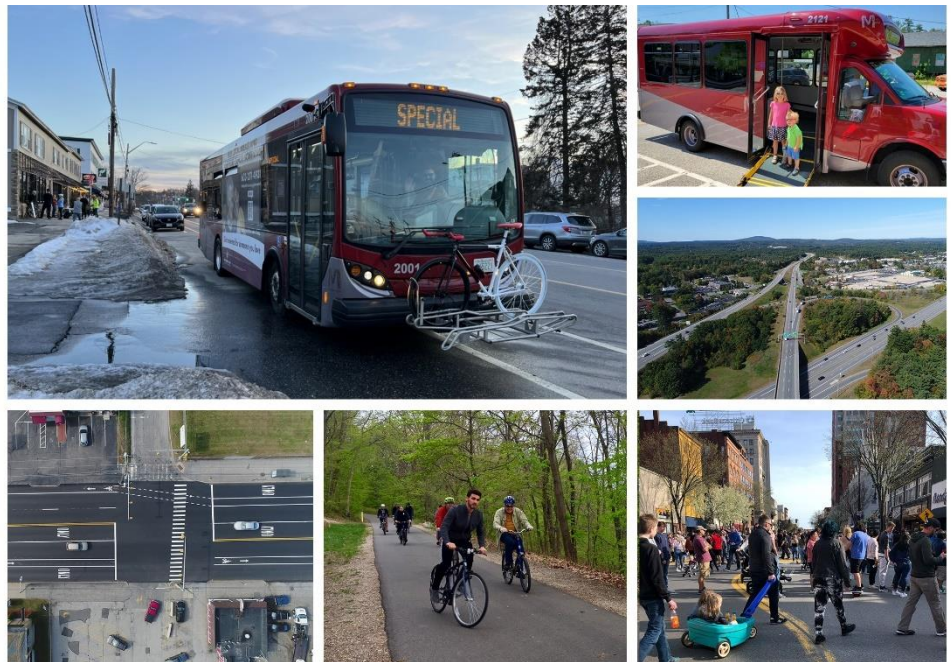


SOUTHERN NEW HAMPSHIRE PLANNING COMMISSION EQUITY ANALYSIS REPORT



August 2022

SNHPC MPO: Title VI/EJ Equity Analysis



Equity in Transportation...

facilitates opportunities by providing equal access to affordable and reliable transportation options based on the needs of the populations being served. This is particularly important for populations that are traditionally underserved, including low-income and minority individuals, elderly persons, people with limited English, households without a vehicle, and/or persons with disabilities.

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SECTION I – PURPOSE AND AUDIENCE

This equity analysis is designed to aid the Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) in effectively considering regional equity issues in long-range transportation planning and programming. The analysis contained within this report is designed to support SNHPC's MPO responsibilities relative to [Title VI of the 1964 Civil Rights Act](#) and to address Environmental Justice issues affecting Minority and Low-Income populations as defined in [Presidential Executive Order 12898](#). The equity analysis also details Limited English Proficient (LEP) populations in the SNHPC region relative to MPO responsibilities for improvements to access to LEP persons as defined in [Executive Order 13166](#).

The SNHPC MPO is responsible for long-term transportation planning and for programming certain federal transportation funds in the Southern New Hampshire Planning Commission region where more than 275,000 people reside. Every four years, the SNHPC MPO adopts a [Metropolitan Transportation Plan](#) (MTP) that outlines a 20-plus-year vision for the region's transportation system, accounting for all of the current and proposed transportation investments to be supported by anticipated federal and state funding sources. The MPO also participates in the statewide [Ten-Year Plan](#) (TYP) that lists and designates funding for all state and federal transportation projects to be advanced during the next 10-year period. This equity analysis explores how federally protected classes and other vulnerable populations are accessing federal transportation investments and if benefits are being distributed equitably to those communities of concern.

FEDERALLY PROTECTED CLASSES

RACIAL/ETHNIC MINORITIES

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in any program or activity that receives federal funds or other federal financial assistance. Programs operated by SNHPC receive federal funds, thus the Commission shall not distinguish among individuals on the basis of race, color, or national origin, either directly or indirectly, in the types, quantity, quality, or timeliness of program services, aids, or benefits that the Commission provides or the manner in which the Commission provides them. This prohibition applies to direct discrimination as well as to procedures, criteria or methods of administration that appear neutral but have a discriminatory effect on people of a given race, color, or national origin.

LOW-INCOME

Title VI does not address discrimination of individuals based on income. Protections for low-income populations are provided through federal actions to address Environmental Justice (EJ). EJ is defined as the fair treatment and meaningful involvement of all people, regardless of race, ethnicity, income, national origin, or educational level with respect to the development, implementation and enforcement of

environmental laws, regulations, and policies. Federal transportation policy outlines the goal of a fast, safe, efficient, accessible, and convenient transportation system for communities nationwide. In doing so, USDOT passes down a responsibility to MPOs to comprehensively incorporate EJ considerations into all of the Department's programs, policies, and activities. For this equity analysis, SNHPC is focused on identifying and addressing equity for populations living below the federal poverty threshold.

LIMITED ENGLISH PROFICIENCY

The SNHPC MPO also has a responsibility to serve the region's LEP population. LEP persons must be afforded a meaningful opportunity to participate in programs that receive federal funds. Policies and practices may not deny or have the effect of denying persons with limited English proficiency equal access to federally-funded programs for which such persons qualify.

MINORITY POPULATIONS

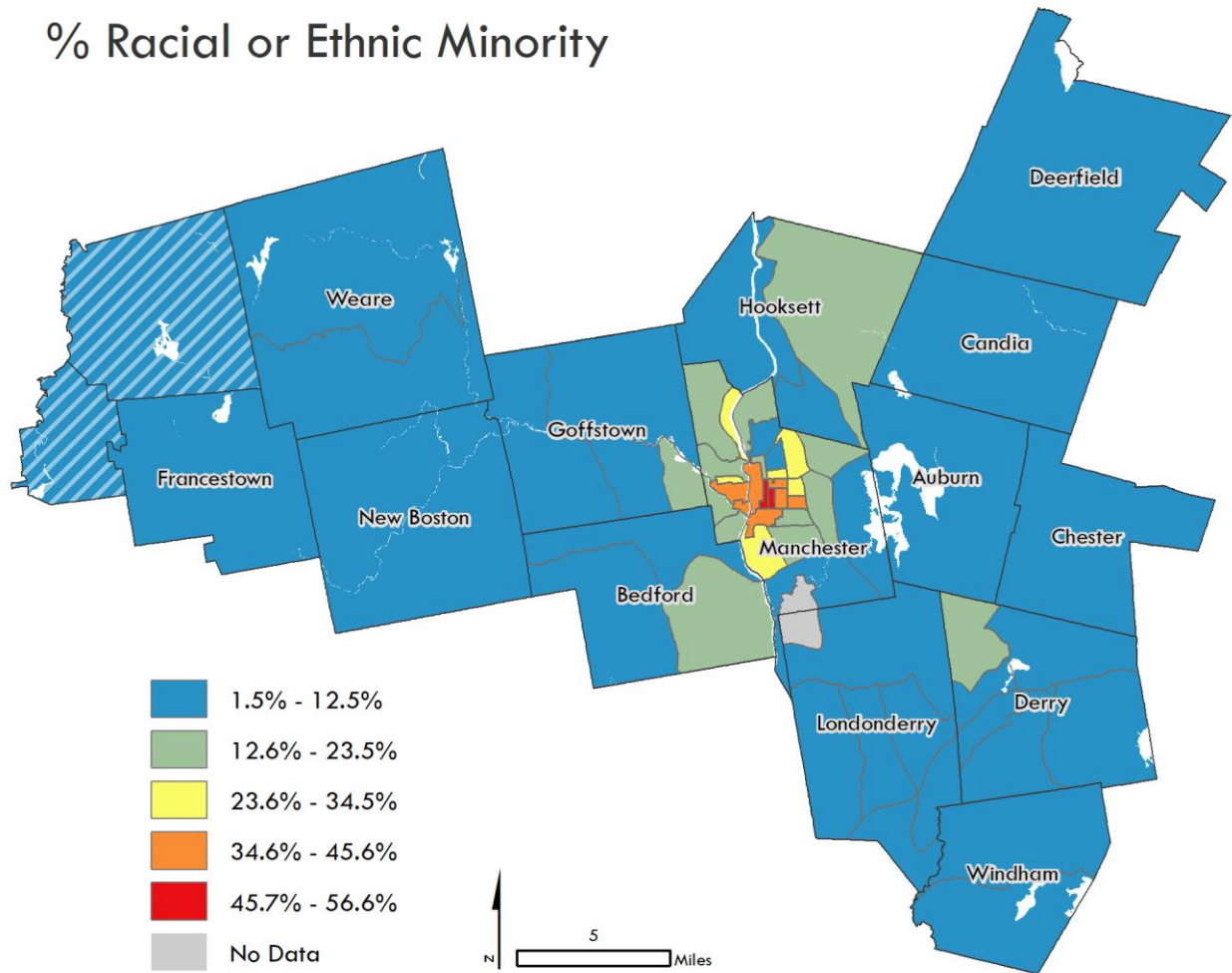
The US Census Bureau determines race and ethnicity following the OMB standards as set in 1997. The 2020 Census collected data on Hispanic or Latino origin and race in two separate questions. Race is broken into five categories: White; Black or African American; American Indian or Alaska Native; Asian; and Native Hawaiian or Other Pacific Islander. In addition, the 2020 Census also allowed people completing the survey to select an undefined "Other" as well as a "Two or More Races" categories. Ethnicity classifies individuals in one of two categories: "Hispanic or Latino" or "Not Hispanic or Latino." Race and Hispanic ethnicity are broken into separate categories because a person of Hispanic or Latino ethnicity can be of any race. In this report the term "Hispanic or Latino" is sometimes used interchangeably with the term "Hispanic" alone

Map 1-1 illustrates the regional concentration of minority populations. Minority rates are calculated for census tracts, which are the geographic unit that will underpin the core of this report's analyses. A high concentration of minority populations exists within the center of the City of Manchester with rates declining in suburban and rural areas of the region. The Town of Francestown shares a census tract with two other towns, Bennington and Deering. All figures and statistics in this report will include the entire tract even though much of it is outside the SNHPC region. The population for the tract, however, is relatively small and will have minimal impact on the results.

MINORITY RATES

MAP 1: MINORITY RATES BY CENSUS TRACT

% Racial or Ethnic Minority



Created by SNHPC, 2022. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey.

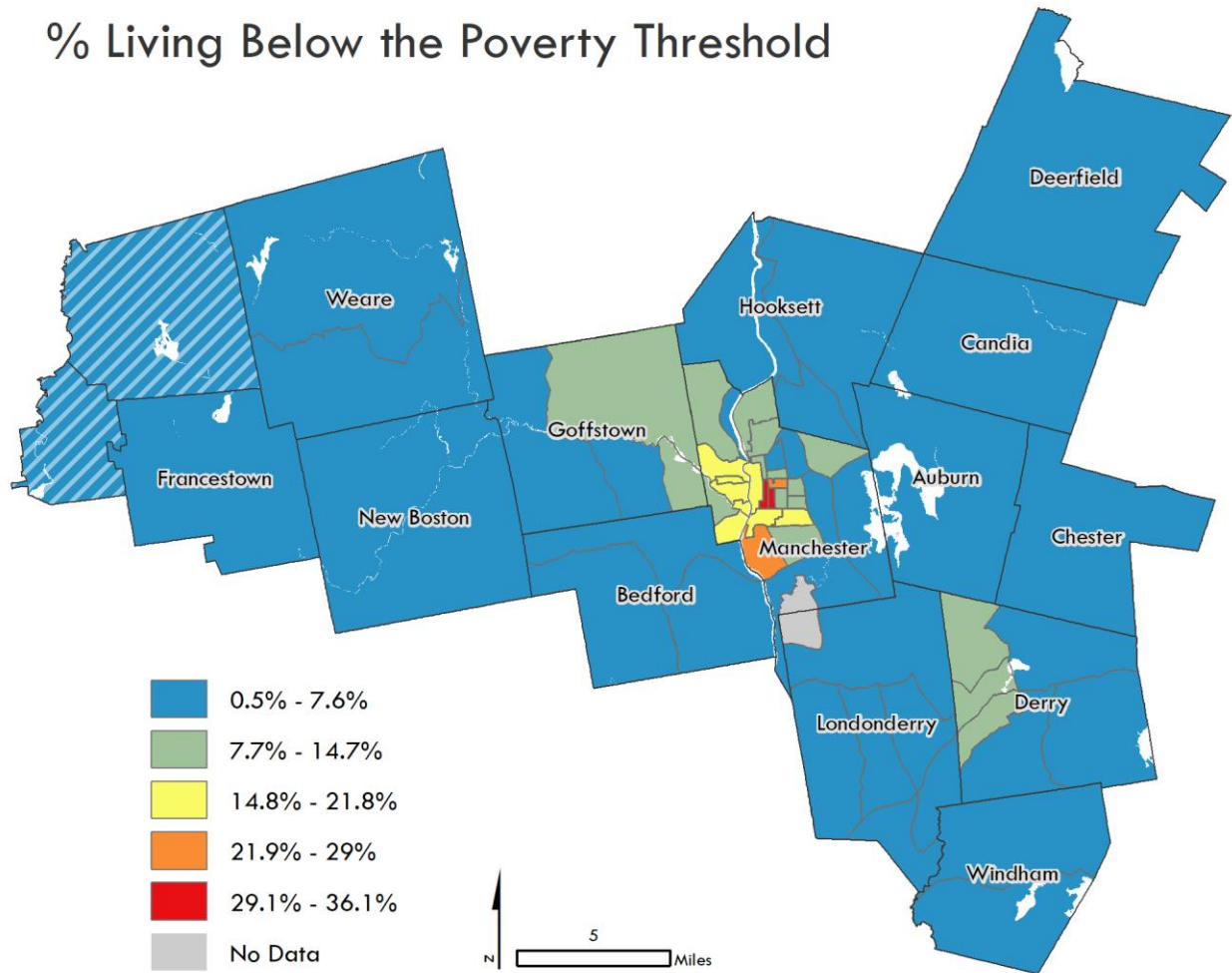
PEOPLE LIVING BELOW THE POVERTY LINE

The US Census Bureau uses a set of income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the federal family size threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using the Consumer Price Index (CPI-U). The official poverty definition uses income before taxes and does not include capital gains or non-cash benefits (such as public housing, Medicaid, and food stamps). The poverty threshold measure is intended to weigh household income against costs to determine the minimum amount necessary to afford basic living expenses. The 2020 Federal threshold for poverty is \$13,171 for an individual, \$16,733 for a family of two, and escalates based on family size to an upper limit of \$53,905 for a family of nine. The measure has some limitations as it does not adjust for differences in the cost of living between urban and rural areas. Poverty guidelines also do not capture other contributions to well-being, either. A family may have substantial assets, such as housing equity and capital gains, and still live below the poverty level. Similarly, families that receive food stamps, housing assistance, and tax credits may not qualify as income. Moreover, poverty status cannot be calculated for person living in prisons, nursing homes, college dormitories, military barracks, or who are homeless and not in a shelter. Poverty rates shown in Map 1-2 largely overlap with minority rates shown in Map 1-1.

POVERTY RATES

MAP 2: MAP 1-2 POVERTY RATES BY CENSUS TRACT

% Living Below the Poverty Threshold



Created by SNHPC, 2022. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey.

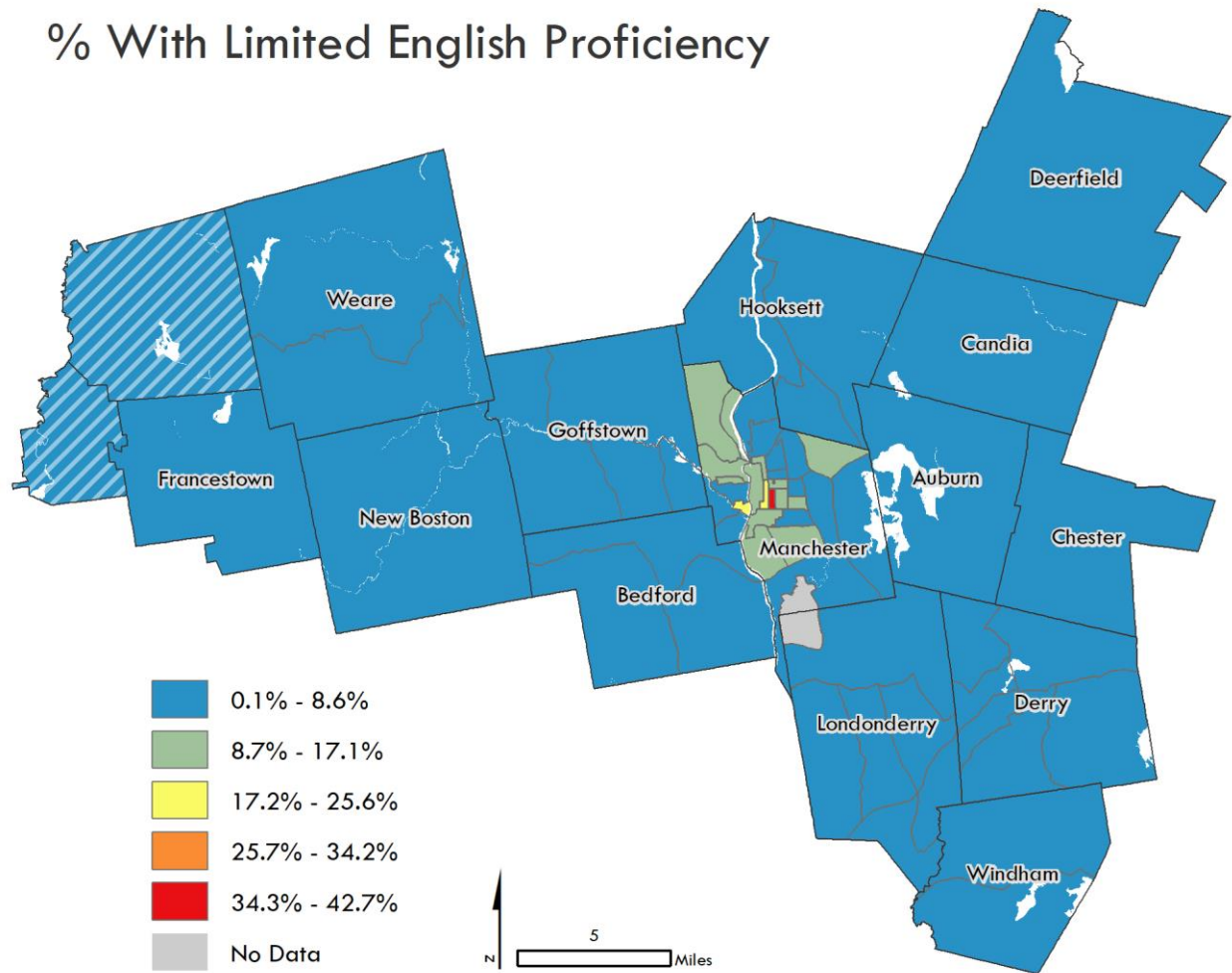
LIMITED ENGLISH PROFICIENT POPULATION

LEP populations are defined as individuals five years of age or older who speak English less than "very well" Detailed information data on LEP populations are downloadable from [LEP.gov Map Application](#) using the "Download State/County Level Data" buttons.

As English is not the primary language for this population, they may experience difficulty communicating in English and need an interpreter or document translation in order to have meaningful access to federally funded programs. Executive Order 13166 requires recipients of Federal financial assistance to take reasonable steps to make their programs, services, and activities accessible by eligible persons with limited English proficiency. The population of LEP individuals is smaller than that of low-income or minority populations but follows a similar pattern of concentration within the City of Manchester.

LIMITED ENGLISH PROFICIENT RATES

MAP 3: LIMITED ENGLISH PROFICIENT RATES BY CENSUS TRACT



Created by SNHPC, 2022. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey.

OTHER VULNERABLE GROUPS



The New Hampshire "Law Against Discrimination", as defined in RSA 354-4, provides civil protections to the additional classes of age, sex, gender identity, marital status, family status, and physical or mental disability. As the State's discrimination law has protections for public accommodations, considerations of age and disability were included in this equity analysis. Seniors, here defined as those 65 years or older, and residents with disabilities both have a higher likelihood of experiencing mobility challenges that impact their access to basic needs such as food and healthcare. The SNHPC plays an important role in the coordination of funding and services for community transportation through its lead agency designation for the Region 8 Coordinating Council (RCC). The RCCs utilize the [Federal Transit Administration's Section 5310](#) funds to provide mobility to seniors and individuals with disabilities.



Another community of concern, no-vehicle households, is included in this equity analysis. No-vehicle households are not provided specific protections under federal or state civil rights laws. However, no-vehicle households were identified by SNHPC as an important population that may not have the same access to the transportation system as households that own automobiles. No-vehicle households have significantly different mobility and housing needs when compared to households who own a private automobile. Households with no personal vehicle must live in locations where access to employment, housing, food, education, and services do not require owning and driving a car. Such arrangements can only be achieved where individuals can access public transit, commercial transportation services, walk, or bike. Where no-vehicle households overlap with other classifications, the compounding conditions could increase the chance of equity disparities. For example, having a physical disability cannot be used to refuse an individual from some forms of employment, but having a private automobile for transportation to and from work can be used as a requisite for employment.

SENIOR POPULATION

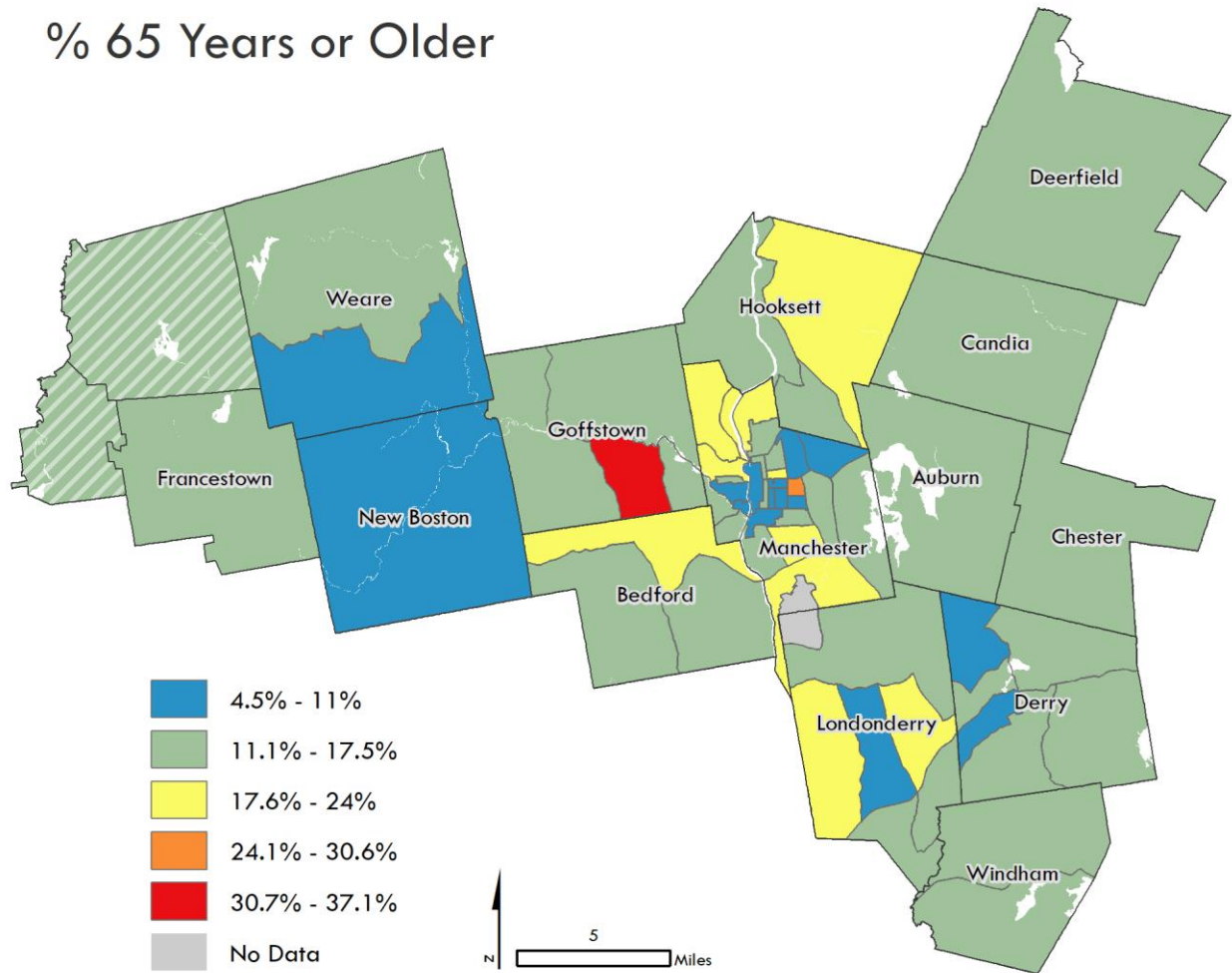
For the purpose of this analysis, senior population is defined by persons 65 years of age and older. Map 1-4 illustrates the distribution of the senior population in the SNHPC region. Seniors are found throughout the region with the center of Manchester having a lower proportion compared to other areas. One census tract in Goffstown is estimated to have approximately one third of its total population as seniors. The Hillsborough County Nursing Home, a 300-bed facility, is located within this census tract with a total population of around 1,850.

Accessible transportation services are needed for seniors to live independently. [According to AARP](#), nearly 90% of seniors choose to age in place within their homes and neighborhoods. Independent living for seniors requires access to medical and other essential services. Reduced access to medical services as well as social isolation from limited transportation options can affect physical and mental health outcomes.

SENIOR RATES

MAP 4: SENIOR RATES BY CENSUS TRACT

% 65 Years or Older



Created by SNHPC, 2022. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey.

PERSONS WITH A DISABILITY

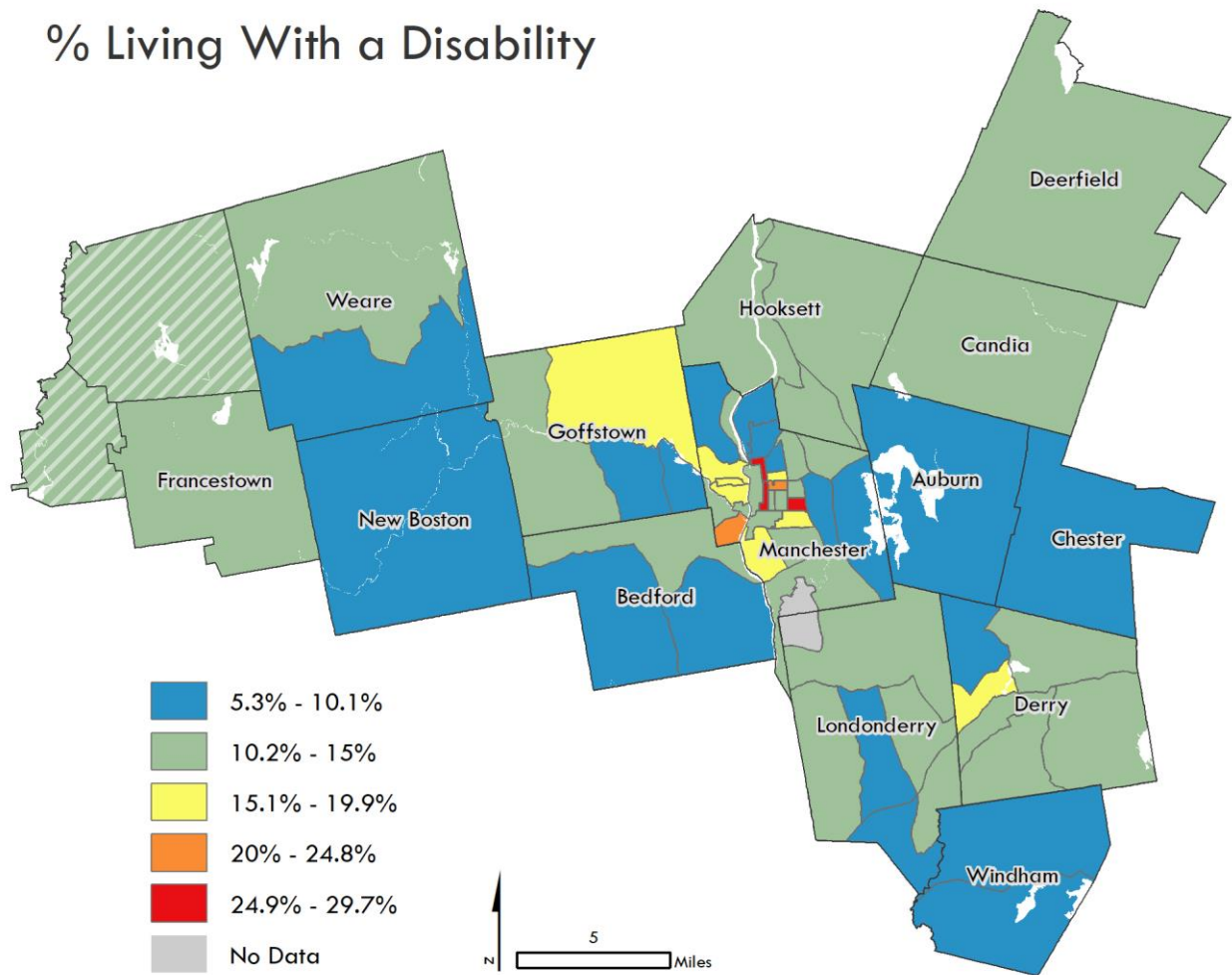
The Census Bureau collects information on hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty. Residents who report any one of these identified disability types are considered to meet the definition of a person with a disability.

Map 1-5 illustrates the distribution of the disabled population within the SNHPC region. The map illustrates some census tracts of high concentration within the center of the City of Manchester.

Transportation and mobility play key roles in providing equal opportunity to individuals with a disability. Access to transportation allows persons with disabilities opportunities to participate in education, employment, health care, housing, and community life. Thus, ensuring that disabled populations have access to mobility options is critical to enable meaningful participation in society as citizens, workers, and consumers.

DISABILITIES RATES

MAP 5: DISABILITY RATES BY CENSUS TRACT



Created by SNHPC, 2022. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey.

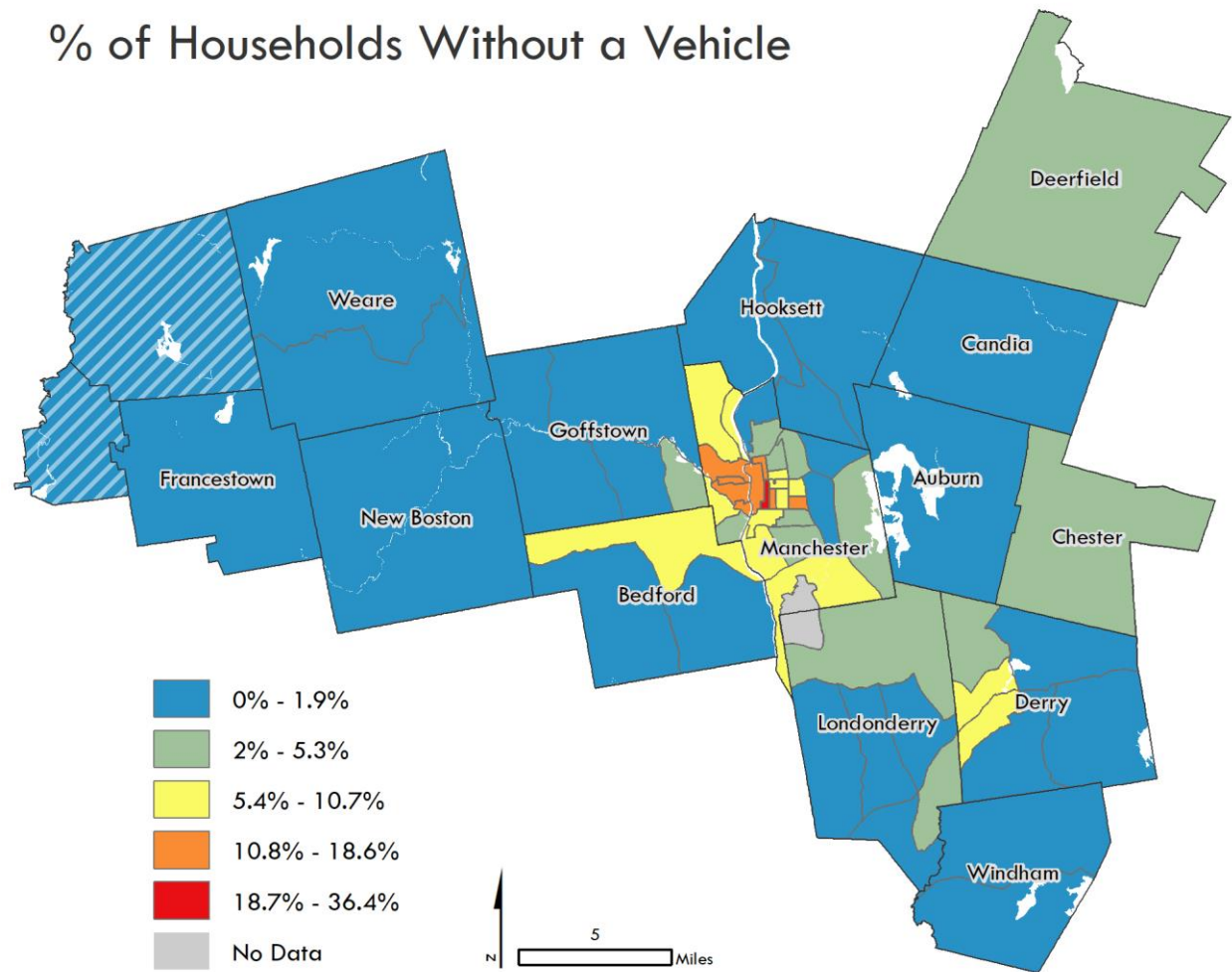
NO-VEHICLE HOUSEHOLDS

The Census Bureau defines [a vehicle](#) as an automobile such as a car or truck kept at home and available for household transportation needs. Under this definition, individuals without a vehicle living in group quarters are not considered. Zero-vehicle households are an important segment of the population to consider, as lacking access to a vehicle can severely limit the ability of a household to meet its daily needs. Changing demographics suggest a need for long-range planning of walkable and bikeable neighborhoods, employment centers, and increased access to public transportation. This is especially true within the SNHPC region which is mainly composed of suburban and rural communities where car ownership is a requisite to access employment and services.

Map 1-6 shows the regional distribution of No-Vehicle Households in the SNHPC region. The majority of the region's municipalities have a rate less than 2% while some census tracts in Manchester have zero-car household concentrations ranging between 10% and one-third of all households in the census tract.

NO VEHICLE HOUSEHOLD RATES

MAP 6: NO VEHICLE HOUSEHOLDS RATES BY CENSUS TRACT



Created by SNHPC, 2022. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey.

DEFINING AN EQUITY ANALYSIS AREA (HIGH-PRIORITY AREA)

Using the federally protected classes and other vulnerable populations defined above, SNHPC developed a scoring threshold and point assignment for defining an area within the SNHPC region for equity analysis. For all six defined groups, a scoring threshold of one standard deviation of census tracts valued above the regional rate was used. Given that the SNHPC has Title VI/EJ responsibilities for federal transportation planning, federally protected classes were given a higher weighting than the other vulnerable populations in defining an equity area. Table 1 shows a value of two points were assigned to the federally protected Title VI/EJ (low-income, minority, and LEP). The other groups were each assigned a value of one point.

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TABLE 1: SCORING THRESHOLD AND POINTS ASSIGNED BY COMMUNITY GROUP

Community Group	Scoring Threshold	Points Assigned
Minority Individuals	One Standard Deviation Above the SNHPC Regional Rate	2 Points (Title VI/EJ Class)
Individuals below the Poverty Threshold		2 Points (Title VI/EJ Class)
Limited English Proficient Individuals		2 Points (Title VI/EJ Class)
Individuals 65 or Older		1 Point (Vulnerable)
Individuals with a Disability		1 Point (Vulnerable)
No Vehicle Households		1 Point (Vulnerable)
Source: US Census Bureau, https://data.census.gov		

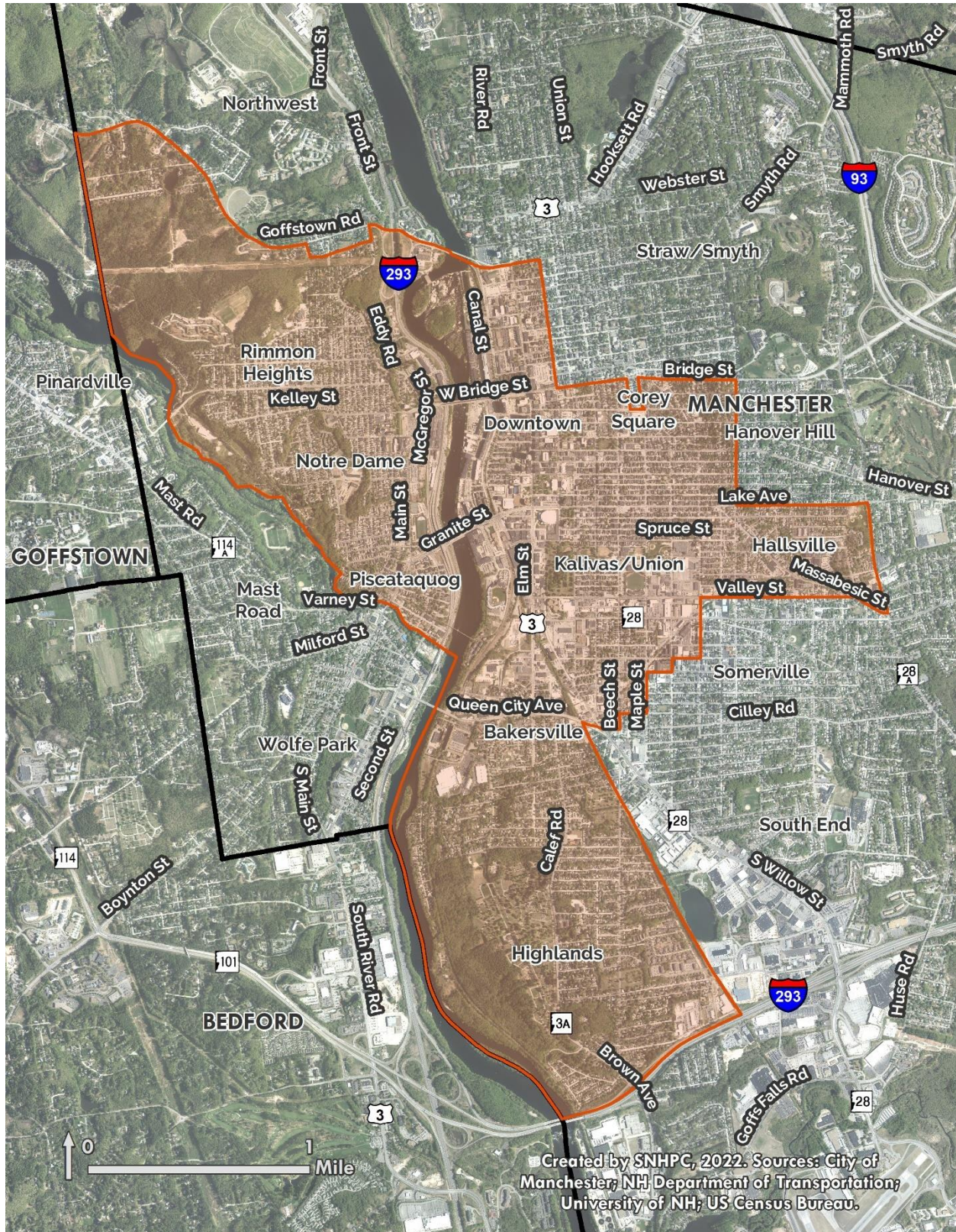
Table 2 shows the regional rate, the standard deviation, and threshold rate needed to be surpassed to score for each community of concern.

TABLE 2: REGIONAL RATES, STANDARD DEVIATIONS, AND THRESHOLD RATES BY COMMUNITY GROUP

Community Group	Regional Rate	Standard Deviation	Threshold Rate to Score
Minority	14.6%	12.9%	27.5%
Poverty	7.7%	7.7%	15.4%
LEP	4.5%	7.2%	11.6%
Senior	14.2%	5.0%	19.2%
Disability	12.0%	4.9%	16.9%
No Vehicle	4.7%	6.4%	11.1%
Source: US Census Bureau, https://data.census.gov			

The threshold to score was calculated for each population group at the census tract level within the SNHPC region. All census tracts with a total of 4 points or more comprise the geographic area for this report's equity analysis. Map 1-7 shows the Equity Analysis Area boundary. The equity area is approximately 6.8 square miles, while the rest of the region has an area of 569 square miles. The equity area constitutes 1% of the region's total land area.

MAP 7: SNHPC EQUITY ANALYSIS AREA BOUNDARY



Southern New Hampshire Regional Planning Commission

The SNHPC region contains 63 census tracts. 23 of the region's census tracts scored on one or more community of concern measures and 12 of the region's census tracts scored 4 or more points to be included in the Equity Analysis Area. Two census tracts around the Manchester-Boston Regional Airport have no population. Table 3 shows the breakdown of scoring for each census tract that scored on at least one measure. Among the census tracts with a total score of 1, all were for exceeding the concentration of seniors threshold. This was due to the disbursed nature of senior populations within the region. Of the census tracts with total scores of 7 or 8 points, each met the scoring threshold for all three federally protected classes.

TABLE 3: COMMUNITY GROUP SCORING BY CENSUS TRACTS

Tract ID	Minority	Poverty	LEP	Senior	Disability	No Vehicle	Total Score
14	2	2	2	0	1	1	8
13	2	2	2	0	1	0	7
15	2	2	2	0	0	1	7
20	2	2	2	0	0	1	7
24	2	2	2	0	1	0	7
3	2	2	0	0	1	1	6
17	2	0	2	0	1	1	6
19	2	2	2	0	0	0	6
2004	2	2	0	0	0	1	5
2.02	0	2	0	0	1	1	4
16	2	0	2	0	0	0	4
21	2	0	0	0	1	1	4
Census Tracts Above Meet the Criteria for the Equity Analysis Area (Score of 4 or More)							
2.03	0	0	2	1	0	0	3
18	0	2	0	0	1	0	3
23	0	2	0	0	1	0	3
2.04	0	0	2	0	0	0	2
6	0	0	0	0	1	1	2
9.01	2	0	0	0	0	0	2
8	0	0	0	1	0	0	1
12	0	0	0	1	0	0	1
28.01	0	0	0	1	0	0	1
29.02	0	0	0	1	0	0	1
38.02	0	0	0	1	0	0	1

Note: Remaining 40 Census Tracts in the SNHPC Region Did Not Score on Any Criteria. Two of those tracts do not have any residents.
Source: US Census Bureau, <https://data.census.gov>

While the equity analysis area has a contiguous boundary and is concentrated within the central area of Manchester, there were no criteria requiring the equity analysis area boundary to be contiguous or located within a single municipality. The equity analysis area criteria and scoring could have resulted in a disbursed analysis area if the population groups had been scattered throughout the region. The resulting area is in part a reflection of unique existing conditions specific to the SNHPC region.

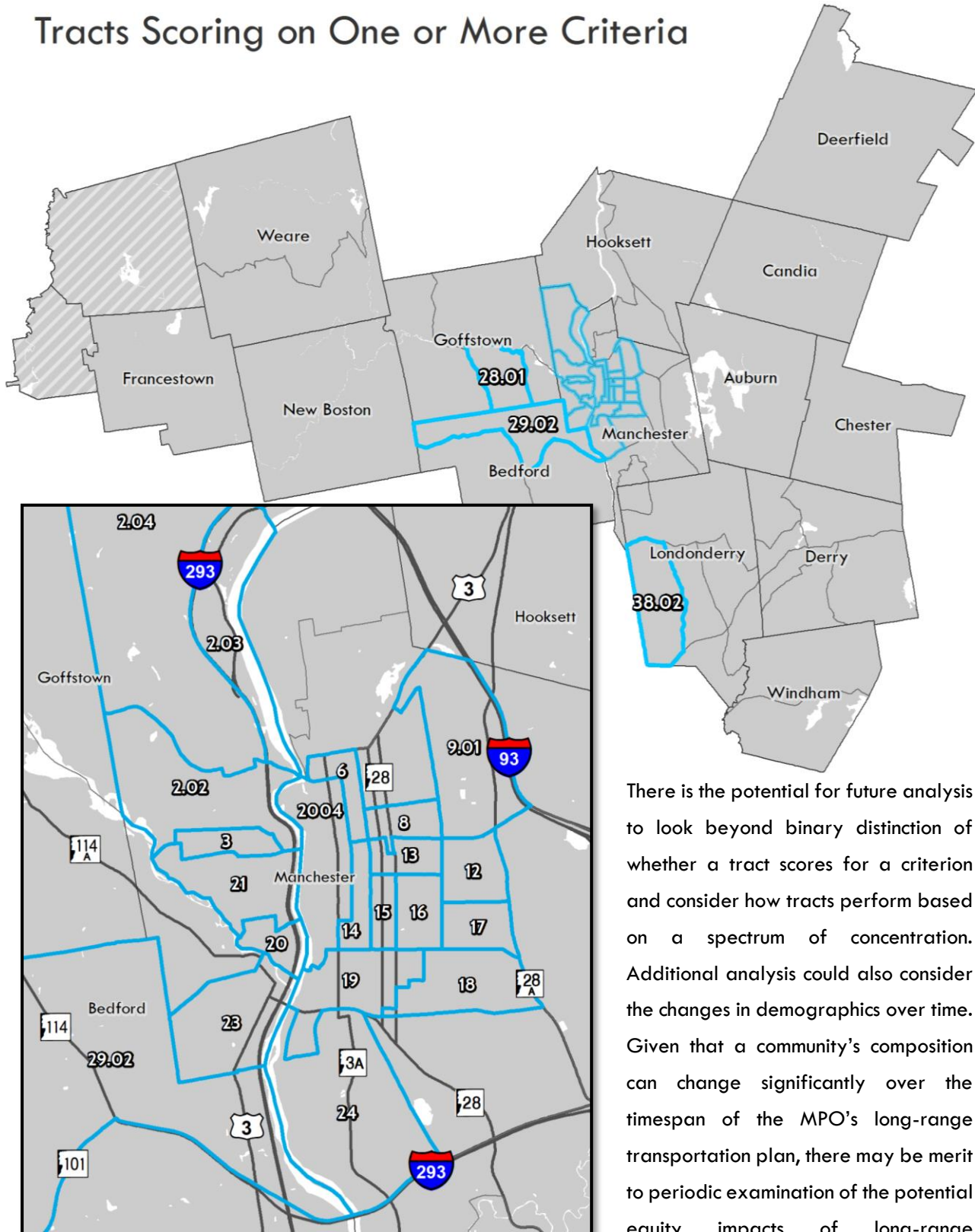
Table 4 shows the rate of communities of concern living in a given census tract for those tracts that scored for at least one measure. Rates exceeding one standard deviation above the regional rate are in bold. The concentration of each community of concern can vary significantly between tracts, even among those that scored for at least one measure. For example, census tract 28.01 has a minority population rate of 3.2% compared to tract 15 with a rate of 56.6%, the only minority majority tract in the region. Both tracts 9.01 and 15 have a minority rate greater than a standard deviation above the regional rate but are still separated by almost 28 percentage points. Substantial differences in demographics exist even within the equity area. Thus, individual places within the equity area will have differing priorities in achieving their mobility and transportation goals.

TABLE 4: COMMUNITIES OF CONCERN RATES BY CENSUS TRACT

Tract ID	Minority	Poverty	LEP	Senior	Disability	No Vehicle
14	46.5%	36.1%	20.6%	15.4%	24.8%	36.4%
13	35.7%	24.3%	11.8%	6.6%	21.6%	10.3%
15	56.6%	33.4%	42.7%	9.4%	14.1%	17.2%
20	36.7%	21.8%	19.6%	8.4%	12.1%	17.9%
24	30.5%	22.5%	12.3%	14.9%	17.1%	8.4%
3	32.8%	17.6%	11.3%	15.0%	18.5%	13.4%
17	38.9%	9.8%	15.8%	9.4%	26.0%	13.7%
19	36.3%	19.8%	15.7%	4.5%	12.4%	7.5%
2004	39.9%	19.0%	11.0%	8.3%	10.5%	15.5%
2.02	23.4%	16.2%	10.6%	17.7%	18.8%	11.9%
16	44.0%	13.2%	14.6%	7.4%	14.7%	6.7%
21	37.7%	14.8%	4.8%	6.2%	18.1%	12.2%
Census Tracts Above Are Within the Equity Analysis Area, Tracts Below Are Not						
2.03	23.5%	4.8%	12.3%	19.9%	14.6%	9.2%
18	19.0%	15.4%	7.1%	12.8%	17.1%	3.5%
23	12.8%	16.3%	5.0%	12.5%	24.2%	4.5%
2.04	22.6%	12.1%	12.5%	17.9%	10.1%	9.7%
6	13.0%	11.9%	9.6%	13.3%	29.7%	18.6%
9.01	28.9%	7.0%	4.7%	9.0%	10.4%	4.3%
8	26.4%	11.3%	2.4%	22.2%	16.4%	7.3%
12	23.9%	8.4%	6.9%	24.1%	11.1%	5.9%
28.01	3.2%	2.0%	0.4%	37.1%	8.2%	0.0%
29.02	10.5%	3.2%	2.1%	23.3%	10.7%	9.1%
38.02	4.4%	2.8%	0.1%	19.8%	11.7%	0.0%
Note: Bold Values Exceed the Regional Average by One Standard Deviation. Source: US Census Bureau, https://data.census.gov						

Map 1-8 identifies the location of each of the census tracts listed in Table 4. Census tracts from Table 4 are outlined in blue and labeled with their tract ID.

Tracts Scoring on One or More Criteria



There is the potential for future analysis to look beyond binary distinction of whether a tract scores for a criterion and consider how tracts perform based on a spectrum of concentration. Additional analysis could also consider the changes in demographics over time. Given that a community's composition can change significantly over the timespan of the MPO's long-range transportation plan, there may be merit to periodic examination of the potential equity impacts of long-range

SOURCES: NH DEPARTMENT OF TRANSPORTATION; US CENSUS BUREAU; US GEOLOGICAL SURVEY.

transportation plan investments and outcomes.

SYNOPSIS OF DEMOGRAPHICS AND THE EQUITY AREA

The SNHPC region is a demographically diverse area of New Hampshire, containing concentrations of both affluence and poverty. The region is racially and ethnically dynamic, with people of many races and national origins calling Southern New Hampshire home. The region is also home to thousands of LEP residents and the City of Manchester is a “[Safe Harbor](#)” community for both Spanish and French as defined by LEP.gov. The region’s demographics also point to a clear trend of an aging population where a growing proportion of the population is reaching senior age and have an elevated risk of experiencing isolation and reduced access to services because of limited mobility choices. This is especially true in suburban and rural areas of the region.

The region has approximately 1 in 10 people living with some form of a physical or mental disability. Persons living with a disability often experience challenges in accessing public facilities which can leave them excluded from participation in a multitude of social activities, services, and employment. The SNHPC region’s population is largely automobile-reliant for accessing goods, services, and employment. Because of this, not owning a car can have a dramatic impact on an individual’s or a family’s ability to access opportunity, especially for housing and employment choices.

When reviewed collectively, the concentration of federally protected classes and other vulnerable groups define an “equity area” (shown in Map 1-7) for analysis. The population within this area can then be compared to the rest of the region. These differences are often significant. Within the equity area, 38% of the population is identified as a racial or ethnic minority, compared to 11% in the remainder of the region. That’s a notable 27% difference between the two populations and the largest discrepancy among the demographics considered. Among the other communities of concern, differences between populations inside and outside the equity area are 15%, 12%, 5%, 6%, and 10% for poverty, LEP, senior, disability, and no vehicle respectively. Only in the case of individuals 65 years or older is there a higher concentration outside the equity area. However, the equity area is still home to a sizeable senior population with 4,250 people over 65 living in the equity area who would benefit from transportation projects that serve that demographic.

Southern New Hampshire Regional Planning Commission

TABLE 5: SNHPC REGION COMPARISON TO EQUITY ANALYSIS AREA

		Minority	Poverty	LEP	Senior	Disability	No Vehicle
%	Equity Area	38%	20%	15%	10%	17%	13%
	Remainder of the SNHPC Region	11%	5%	3%	15%	11%	3%
Density (per acre)	Equity Area	3.99	2.11	1.48	1.07	1.77	0.57
	Remainder of the SNHPC Region	0.07	0.04	0.02	0.10	0.07	0.01
Difference	%	27%	15%	12%	-5%	6%	10%
	Density (per acre)	3.92	2.07	1.46	0.97	1.7	0.56
Source: US Census Bureau, https://data.census.gov							

SECTION II – IDENTIFY NEEDS AND CONCERNS

Agencies can make informed decisions about how to improve equity only if they first understand the perceived and actual inequities that are unique to underserved individuals of their region. This section of the analysis will examine and compare equity area conditions to conditions for the remainder of the region. The elements of analysis include identification and prioritization of needs and concerns through input, assessment of health and safety conditions, measurement of gaps in access and mobility, validation of findings with equity area stakeholders, and documentation of the process. Analysis of whether differences in conditions arise to the level of [disparate impacts](#) or [disproportionately high and adverse effects \(DHAE\)](#), and what role MPO projects and policies have in influencing those conditions, will be discussed in later sections.

In alignment with MPO responsibilities, the SNHPC sought to identify transportation needs and concerns for the following categories:

1. Needs identified through survey engagement with entities serving relevant groups;
2. Potential adverse effects to environmental health and safety; and
3. Potential delays or reductions in the receipt of transportation benefits such as access and mobility.

NEEDS IDENTIFIED THROUGH SURVEY ENGAGEMENT

While direct engagement of underserved persons is the best method for identifying the most pressing issues, constraints on time and resources required SNHPC to focus on outreach and engagement with stakeholders who work with or primarily serve the identified underserved groups. SNHPC developed a short survey asking respondents to select the population group(s) they primarily work with, share their observations on transportation challenges, select a high priority transportation barrier, and provide input on of the transportation improvements needed to improve mobility for the people they serve.

SURVEY PURPOSE AND METHODOLOGY

The main purpose of the assessment is to help the region identify gaps, barriers, and needs in the transportation system for traditionally underserved populations. For purposes of this needs assessment, the traditionally underserved population groups identified include low-income, minority, limited-English proficient (LEP), persons with disabilities, seniors, and zero-car households. These groups align with demographic groups identified in this Equity Analysis.

SNHPC used a website link to an online survey, via [surveymonkey.com](#) as the sampling method for this survey. The survey link was distributed electronically to a list of 70 contacts from organizations within the region which were known to provide services to the identified groups or community organizers. The email communication found in *Appendix A: Survey Results* was sent out by Commission staff on May 24, 2022. A

follow-up communication was sent on May 31, 2022. A total of 36 responses were received. The survey contained six questions, with two questions allowing open-ended responses.

Q1: WHICH GROUPS DO STAKEHOLDERS WORK WITH?

In Question 1, respondents were given the seven answer choices, as shown in Figure 3. More than one answer could be selected. 35 of the 36 respondents completed this question. Within the selection set was an option for *None of the Above*, meaning the respondent did not work with a target demographic. By selecting this option, the survey ended for respondents. Over three quarters of respondents selected working with low-income populations and over half reported working with minority populations.

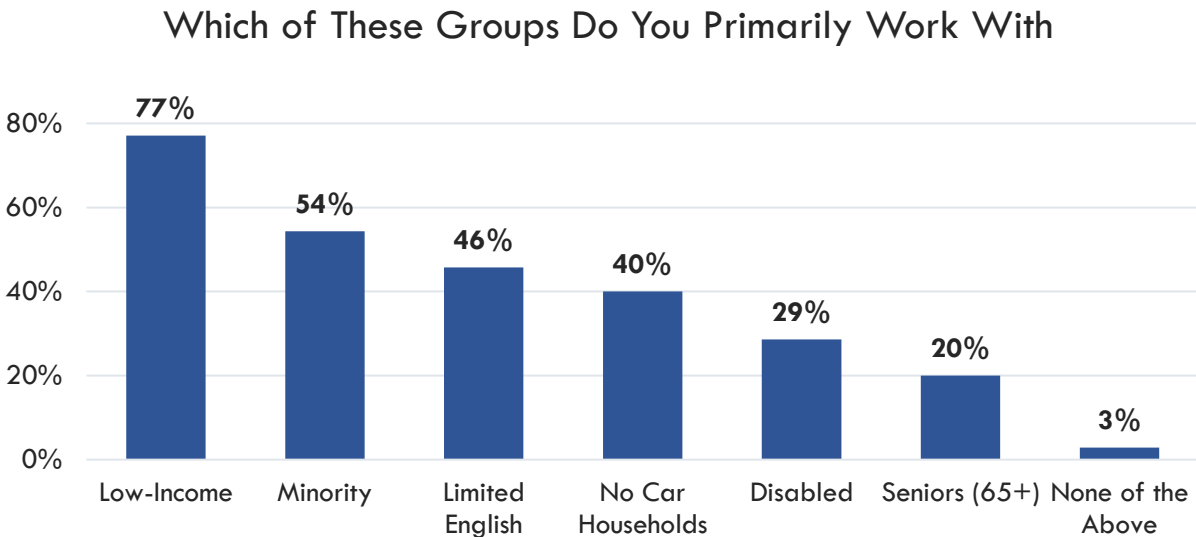


FIGURE 1: SURVEY QUESTION ONE RESULTS

Q2: BIGGEST TRANSPORTATION CHALLENGES

Question 2 was an open-ended question with respondents writing in their own answers. In order to quantify the responses, answers were coded into twelve categories by Commission staff. Where more than one challenge was identified by the respondent statement, each themed element of the response was tagged to the corresponding category. 35 survey respondents answered this question. Of the responses provided, *Insufficient Public Transit* was most frequently identified as a challenge, representing 45% of all responses. The *Insufficient Public Transit* category encompassed multiple transit access challenges, including route frequency, route length, route design, and accessibility. Other frequently cited challenges included *Cost of Transportation* at 37% and *Auto-dependent Development* at 34%. Respondents typically noted target populations are not able reach destinations without a car due to nature of land use, service, and infrastructure in the area.

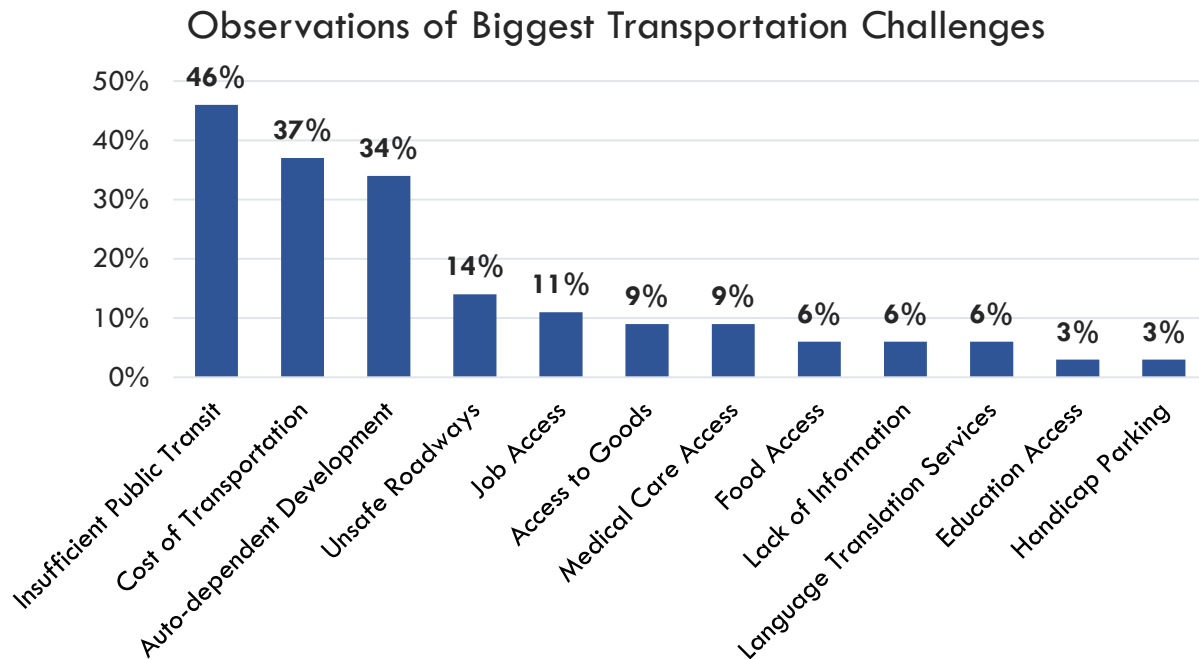


FIGURE 2: SURVEY QUESTION TWO RESULTS

Q3: MOST COMMON TRANSPORTATION CHALLENGES

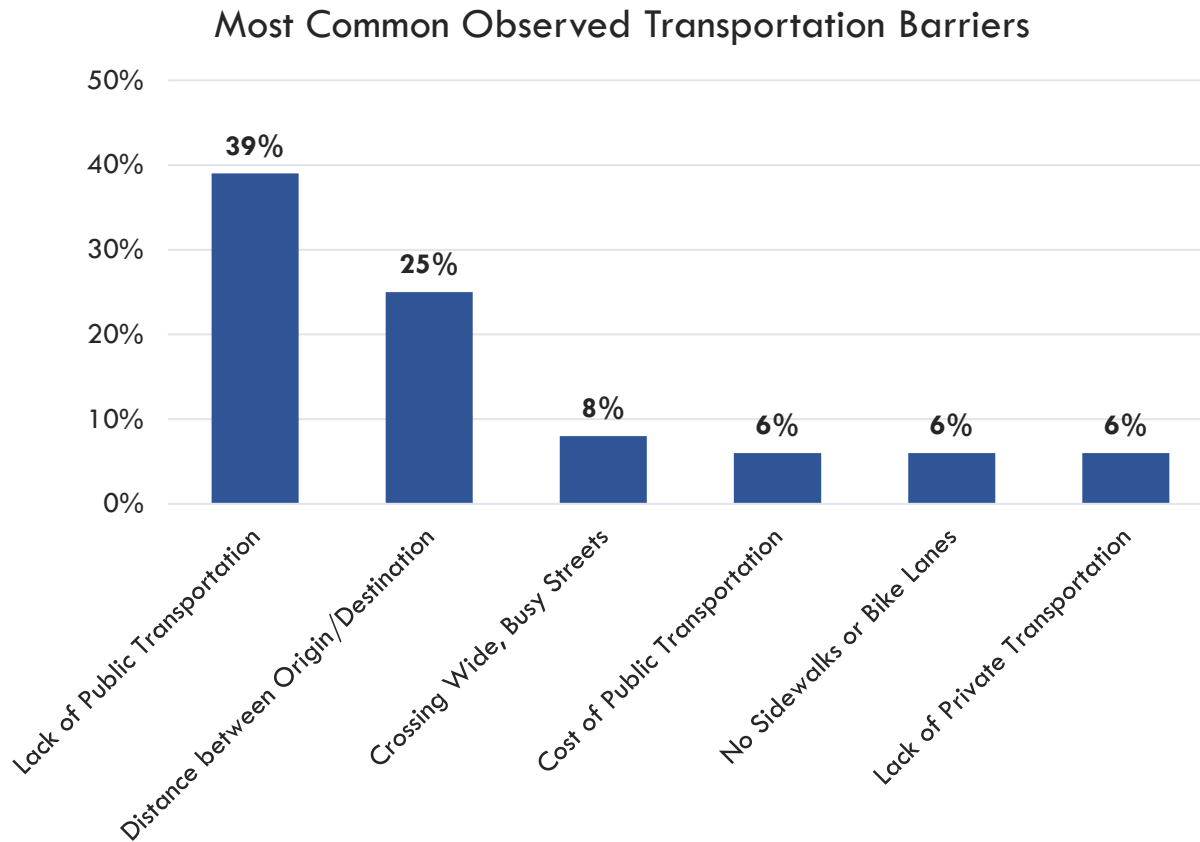


FIGURE 3: SURVEY QUESTION THREE RESULTS

Question 3 is similar to Question 2, but the responses were defined for the respondent to select from. The respondents could only select one answer for this question. The bar chart above shows the frequency of answers selected. 35 respondents answered this question. Of the responses, *Lack of Public Transportation* was the most selected at 39% of responses while *Distance Between Affordable Housing and Services/Employment/Shopping* was the second most frequently selected option at 25%. In addition to the predefined responses, there were also options for *None of the Above* and *Other* which prompted the survey taker to leave a written response. One respondent selected *None of the Above* and three respondents selected *Other*. Of the written responses, two were cost-of-transportation related and one was parking access-related. The responses were provided as follows:

- “Lack of accessible parking spots.”
- “Lack of AFFORDABLE transportation options.”
- “It comes down to *lack of funding*. If we/they had unlimited funding, we could address all of these transportation barriers”

Q4: DESIRED TRANSPORTATION IMPROVEMENTS

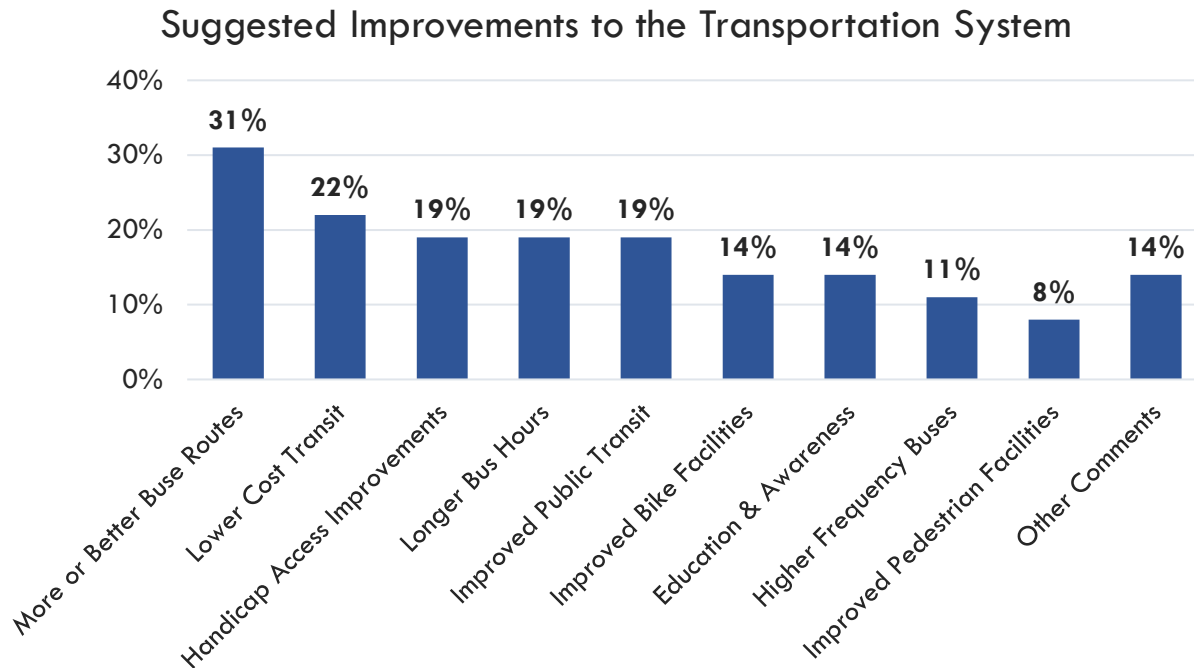


FIGURE 4: SURVEY QUESTION FOUR RESULTS

Question 4 was open-ended with respondents writing in their own answers. In order to quantify the responses, the answer categories as shown above were developed based on individual elements found in the written responses. More than one answer category was often mentioned in individual responses. 36 survey respondents answered this question. Responses fell into one of ten categories with *More or Better Bus Routes* being the most common response. 31% of respondents included some form of reference to the need for “More or Better Bus Routes”. Of the responses provided, several categories included some form of reference to public transit improvements. SNHPC categorized transit-related responses as follows:

More or Better Bus Routes, Lower Cost Transit, Handicap Access Improvements, Longer Bus Hours, Improved Public Transit (a general category for responses with limited details), Education and Awareness (of transit options), and Higher Frequency Buses.

Beyond the *More or Better Bus Routes* response, the next most suggested improvement to the transportation system was *Lower Cost Transit* (22%), while *Handicap Access Improvements, Longer Bus Hours* and *Improved Public Transit* were tied (19%) as the third most common responses. One response did not provide enough information for it to be categorized in a manner relevant to the question.

TRANSPORTATION NEEDS SURVEY FINDINGS

The key findings of the Transportation Needs Survey are as follows:

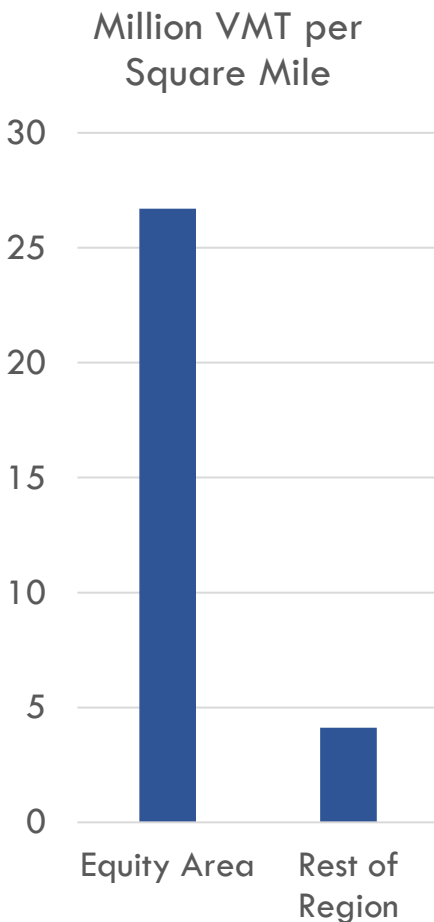
- More than three-quarters of the survey respondents (77%) identified as working with low-income individuals. This includes low-income populations of any age. Over half of survey respondents (54%) identified that they worked with minorities and nearly half of survey respondents (45%) identified working with limited English proficient individuals.
- Overall, lack of public transportation, followed by the distance of affordable housing to services, shopping, and jobs, were stated to be the most common barriers for target populations.
- The lack of public transit service to existing employment, education, and residential areas was the most frequently (39%) stated transportation challenge. Lack of public transit was followed by the distance between the origin and destination of trips (25%). Written responses also cited the cost of transportation as a significant challenge. Respondents noted many families could not afford a private automobile, and when they did have a car, unexpected repairs and other costs created financial risks.
- Survey respondents (31%) indicated that the most beneficial improvement to the transportation system would be additional transit service through more buses. Respondents also expressed a preference for lower-cost transit (22%), longer hours for transit services (19%), improvements to handicap access (19%), and generally improved transit.

Complete results and analysis of the survey is available in *Appendix A* of this report.

ENVIRONMENTAL HEALTH, SAFETY, AND TRANSPORTATION CONDITIONS

SNHPC staff reviewed multiple environmental and health conditions with direct or indirect relationships to the region's transportation network. Each measure compared the equity area to the rest of the region with the goal of identifying differences in conditions between the two areas. Various aspects of the transportation system and access to it were also examined.

TRAFFIC VOLUME

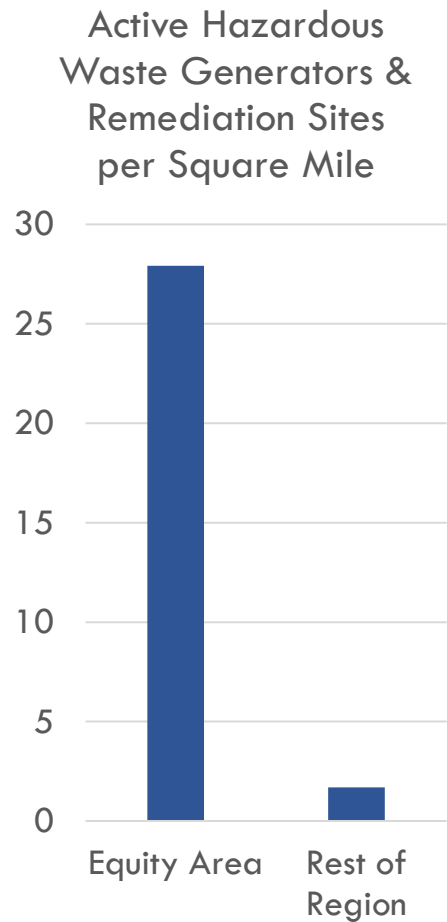


Vehicle miles traveled (VMT) is a common indicator used in transportation planning and engineering to measure the amount of driving in a given area. VMT is calculated by multiplying the total traffic volume on a segment of road by the segment's length. Higher rates of VMT for a certain geography or population indicate a higher impact of vehicular traffic. Research has shown that vehicular emissions have an [association with respiratory health](#), and that [risks rise sharply](#) for populations living on highly-traveled roads. In addition, children, seniors, and people with heart and lung conditions are considered particularly sensitive to effects of air pollution. Within the equity area, there is an annual rate of 26.7 million VMT per square mile, while the rest of the region sees an annual rate of 4.2 million VMT per square mile. As such, equity area residents experience a level of traffic intensity approximately 6 ½ times higher than those outside the region while being 4 times as likely to not own a car and 3 times as likely to have fewer vehicles available per household than workers.

FIGURE 5: VMT COMPARISON

SOURCE: NH DEPARTMENT OF
TRANSPORTATION

HAZARDOUS WASTE



Sites with toxic or dangerous materials can degrade the environment and pose health risks to humans. Activities associated with industry activity such as trucking facilities, auto repair and paint shops, as well as coatings and electronics manufacturing can release chemicals into the air. Similarly, industrial activities using products such as solvents, petroleum, and chromium have the potential to release such products into the ground, contaminating soils and sub-surface water. Contaminated groundwater may then pollute wells or waterways. Within the equity area, there is an average of 27.9 active hazardous waste generators and remediation sites per square mile. The rest of the region has an average of 1.7 sites per square mile.

FIGURE 6: HAZARDOUS WASTE PER SQ. MI.

SOURCE: NH DEPARTMENT OF ENVIRONMENTAL SERVICES

TREE CANOPY COVER

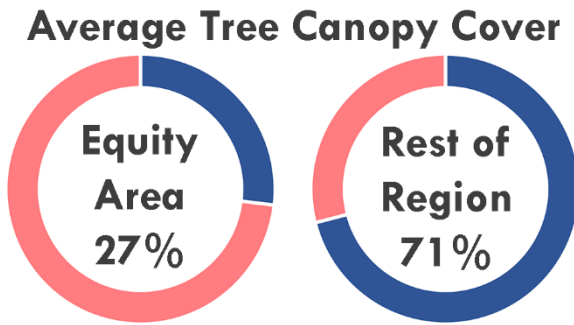


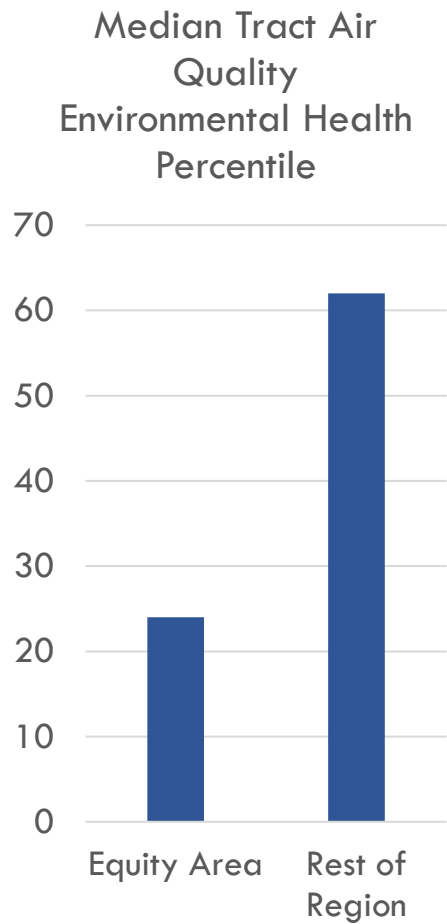
FIGURE 7: TREE COVER COMPARISON

SOURCE: NATIONAL OCEANIC & ATMOSPHERIC
ADMINISTRATION

Urban tree canopy cover can have multiple benefits for humans. There is [mounting evidence](#) that trees and green infrastructure play a role in [overall health outcomes](#), mitigating urban heat islands, and increasing social cohesion. [A 2020 study](#) of 108 urban areas found 94% displayed higher surface temperatures in formerly redlined neighborhoods compared to nearby non-redlined ones. [A study the following year](#) of 37 US cities observed a correlation between redlining and the percentage of tree coverage in a neighborhood.

The equity area has 27% tree canopy coverage while the rest of the region has 71% coverage. The recently passed Infrastructure Investment and Jobs Act (IIJA)/Bipartisan Infrastructure Law (BIL) includes a [Healthy Streets](#) program which will fund urban forestry projects aimed at tackling climate change and EJ issues through green infrastructure. Such programs may become part of the MPO's TIP in future years and help address EJ inequities in street design.

AIR QUALITY



Pollutants such as nitrogen dioxide are produced by transport vehicles and are tied to a higher prevalence of asthma in children. [Studies](#) have already shown a strong link between vehicle emissions and childhood asthma and that pollution causes damaging inflammation. The prevalence of asthma among adults is 17% higher for the median tract in the equity area compared to the median tracts outside. Asthma prevalence varies significantly within the equity area (rates of childhood asthma are not tracked as part of the Centers for Disease Control and Prevention's (CDC) Behavioral Risk Factor Surveillance System (BRFSS)). Of particular note are tracts 14, 15, and 20. All three are centrally located in the City of Manchester and have rates which puts their population in the top 5% nationally for asthma prevalence. These high asthma rates indicate there are localized sources, of which transportation may be a contributing factor.

FIGURE 8: MEDIAN AIR QUALITY

HIGHER PERCENTILES REFLECT HIGHER AIR QUALITY. SOURCE: US DEPARTMENT OF HOUSING & URBAN DEVELOPMENT

IMPERVIOUS LAND COVERAGE

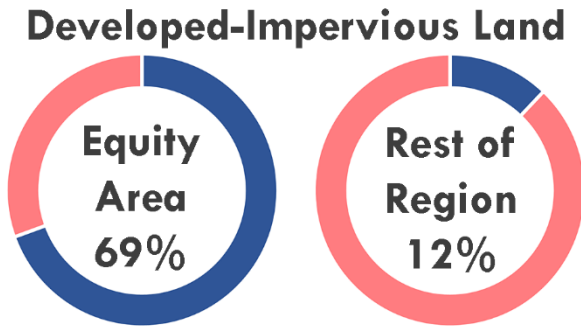


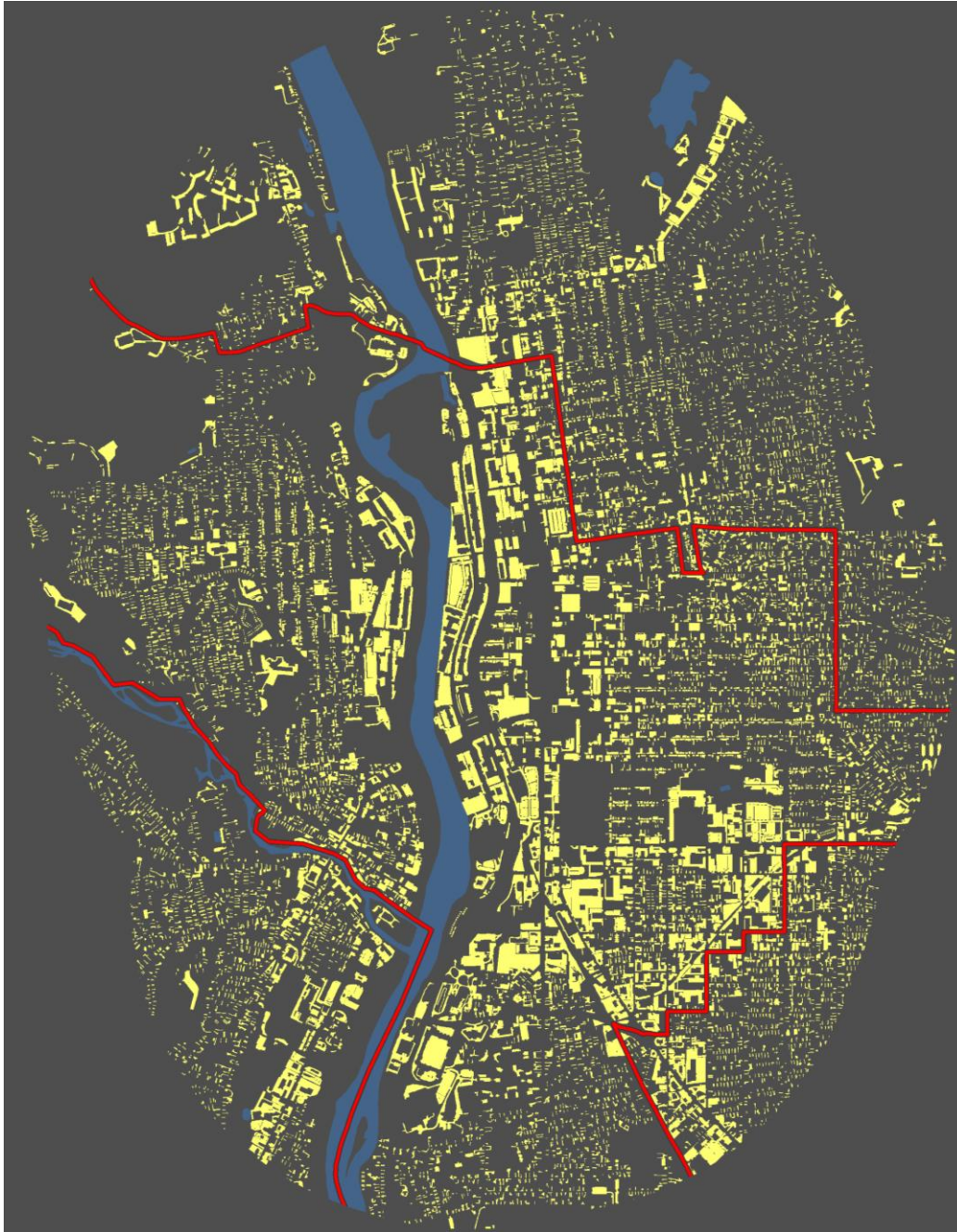
FIGURE 9: DEVELOPED-IMPERVIOUS COMPARISON

SOURCE: NH FISH & GAME DEPARTMENT

Impervious land coverage is tied to both land use and the overall transportation network. It is expected that impervious coverage in urbanized areas is going to be higher than rural areas due to the density of impervious coverage of building rooftops, a tighter street grid, and demand for off-street parking. Transportation can play a significant role in the impervious land coverage of an area. Each private automobile trip requires parking and off-street parking makes up a significant portion of the impervious land cover within the equity area.

Map 1-10 illustrates the landcover within one mile of downtown Manchester dedicated to off-street parking. This area largely overlaps with the equity analysis area. In total, 550 acres of the equity area is used solely for off-street parking or 14% of the land area. Complete parking facility data do not exist for the entire SNHPC region, but a [US Geological Survey study](#) estimates the percentage of land used for parking is 7 times higher in the equity area than the rest of the region. Within the equity analysis area, 69% of all the land is impervious or developed. For the rest of the region, 12% of all land is impervious.

MAP 9: OFF-STREET PARKING IN DOWNTOWN MANCHESTER



Within one mile of downtown Manchester, 820 acres (1.2 square miles) are used exclusively for off-street parking and driveways. The equity area boundary is in red, parking in yellow, and water bodies are shown in blue.

SOURCES: CITY OF MANCHESTER; ESRI; GOOGLE MAPS; US GEOLOGICAL SURVEY.

TRANSPORTATION NOISE

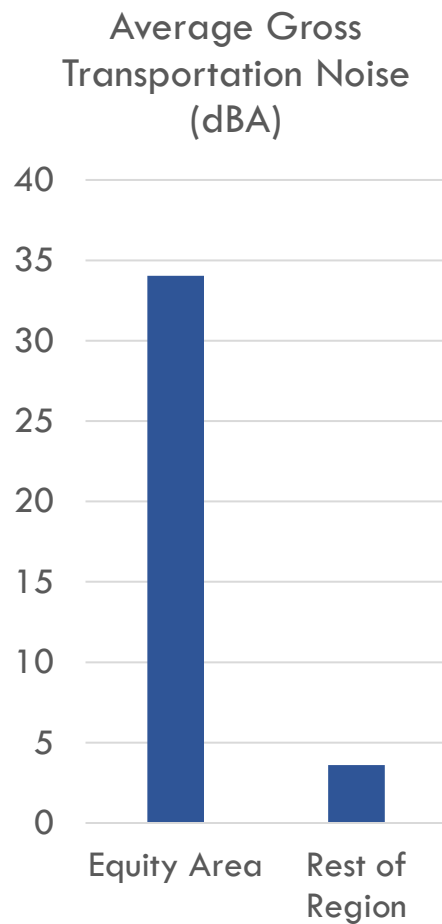


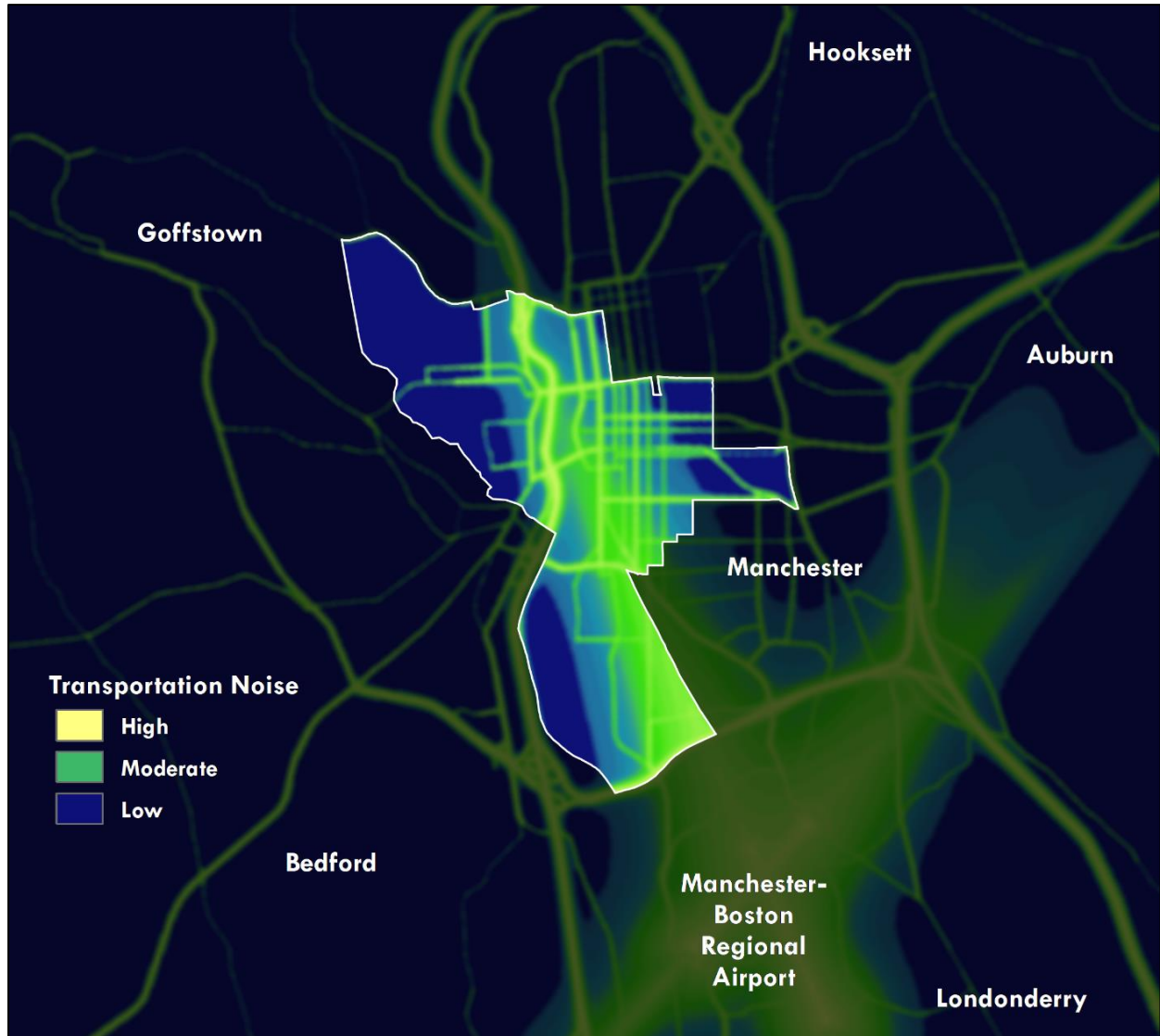
FIGURE 10: TRANSPORTATION NOISE

SOURCE: BUREAU OF TRANSPORTATION
STATISTICS

[Documented studies](#) on transportation noise have linked noise exposure to adverse health effects, including [heart disease](#) and diabetes. Noise creates chronic stress, which translates into physical responses that affect the cardiovascular and other body systems' health. [Studies](#) have also found that noise disproportionately affects low-income and minority neighborhoods. The Bureau of Transportation Statistics models the level of noise associated with the transportation network by travel mode. Map 2-2 is a stylized illustration of the noise associated with roadways, rail, and aviation for Manchester and the surrounding communities. The equity area is bound and highlighted within the map. The equity analysis area has a gross transportation noise level of 34 A-weighted decibels (dBA), while the rest of the region has a gross transportation noise level of 3.6 dBA. A-weighted or adjusted decibels differs from regular decibels in that they adjust for how sounds are perceived by the human ear. However, A-weighted decibels also follow a logarithmic scale so the rate of growth of the intensity magnifies as decibels increase. It is important to note that this model only predicts gross noise produced by the transportation system, that is, prior to any mitigation efforts. The effects of solutions such as noise barriers are not considered. Figures also reflect an average, ambient noise level over a 24-hour period.

While the Manchester Airport and limited access expressways play major roles in the region's noisescapes, smaller arterial roads also contribute significantly to transportation noise. Roadway noise is also more limited than airport noise. Those living directly along a road experience much more intense noise than those just a little farther away. Mitigation solutions that are designed for divided highways will have limited effect on these smaller arterials. For example, the typical gross level of noise caused by transportation in the equity area is more than 9 times that of the rest of the region. When areas within 500 feet of the road centerlines of Tier I roads (statewide divided highways) are removed, the relationship grows to more than 11 times. Even areas within the equity area near Tier I roads experience more noise, though at a considerably smaller rate of 1.2 times. The vast disparity in transportation noise experienced by the two geographies is not caused by limited-access expressways. As such, mitigations that focus on these facilities, such as sound walls, will have very marginal effects on reducing this disparity.

MAP 10: TRANSPORTATION NOISE



SOURCES: BUREAU OF TRANSPORTATION
STATISTICS

COMMUTING MODES:

TABLE 6: COMMUTE DESTINATIONS

A Supermajority of Equity Area Residents Work in Just Eight Municipalities	
Manchester	37.4%
Nashua	5.8%
Bedford	5.6%
Londonderry	5.3%
Concord	4.5%
Hooksett	3.6%
Merrimack	2.7%
Salem	2.3%

Source: US Census Bureau,
onthemap.ces.census.gov

The SNHPC maintains a travel demand model to simulate traffic on the region's network of roadways. The SNHPC uses this model to better understand how roadways are currently functioning and to compare those roadways to projected future conditions with and without improvements. This process aids in determining how and where transportation improvements are needed, which informs the development of the program of projects presented in the MPO's Metropolitan Transportation Plan and Transportation Improvement Plan. The SNHPC travel demand model does not currently include a "mode split" component for walking, biking, or transit ridership, as these modes are estimated to account for less than five percent of total commutes in the region. More information on the Travel Demand Model can be found

in [SNHPC's Metropolitan Transportation Plan](#) in section 4.1 *The Regional Travel Demand Model*.

While region-wide public or active transportation commuting is limited, trips conducted by modes other than by single occupancy vehicle (SOV) make up a larger percentage of overall trips within the equity area and the populations within the equity area have distinct transportation needs compared to the rest of the region. Table 7 shows a higher percentage of people within the equity area carpool, walk, bike, or take transit to work compared to the rest of the region. At the same time, a higher percentage of people outside the equity area drive alone to work or work from home. This information, complemented by the transportation needs survey included in this report, point to a need and preference for alternatives to SOV commuting within the equity area.

TABLE 7: COMMUTING MODES

	Drive Alone to Work	Carpool to Work	Walk, Bike, or Transit	Work from Home
Equity Area	75.8%	11.8%	6.0%	4.4%
Rest of Region	80.2%	7.3%	2.6%	9.1%

Source: US Census Bureau, <https://data.census.gov>

Title VI/EJ classes are much more likely to commute by a mode other than SOV compared to the general population. Using the entire

City of Manchester as an example, minority, low-income, and limited English proficiency workers are all less likely to drive alone and between 1.5 to 4 times as likely to carpool. A similar usage disparity also exists when considering public transportation. Most notably, workers living below the poverty line are ten times more likely to take transit than the general public.

TABLE 7: MEANS OF TRANSPORT TO WORK COMPARISON

Manchester, NH: Means of Transportation to Work by Title VI/EJ Classes			
Comparison to the general population	Minority	Poverty	LEP
times as likely to commute by driving alone	0.91	0.79	0.8
times as likely to commute by carpooling	1.64	3.69	4.03
times as likely to commute by public transportation	1.36	10.03	2.68
Source: US Census Bureau, https://data.census.gov			

Transit usage in the City of Manchester can also be compared to similar-sized cities in New England. Below are a sample of the small-to-medium-size cities in Maine and New Hampshire and those in Massachusetts outside the I-95/Route 128 corridor. Table 9 shows the commuting modes for the general population and those living below the poverty line. Takeaways include Manchester having a higher percentage of low-income workers driving alone to work—only Lawrence and Nashua have higher rates—and the highest percentage carpooling to work. Moreover, the number of workers in the general public and below the poverty threshold taking public transportation are significantly lower than peer cities. The low use of transit in Manchester partly reflects that its system is less integrated into larger transit systems than its peers (e.g., Brockton Area Transit Authority with the Massachusetts Bay Transportation Authority). However, a large portion of the difference is also due to the way in which the Manchester Transit Authority (MTA) has been operated for decades. MTA provides service to nearly every neighborhood the City of Manchester. However, MTA services have limited frequency (generally 60 minutes) that may be inconvenient for commuters. Thus, the MTA's services are structured as a safety net for those who cannot drive or cannot afford to drive. While the fact that Manchester has a fixed-route public transportation system at all puts it and the equity area far ahead of the rest of the region, its organization means it less efficiently serves commuters than other small to moderate size cities' systems. Hour-long headways and circuitous routes mean everyone is served, but the frequency of service limits ridership. Low-income workers and choice riders would logically select an alternative mode, even if it may not be in their financial interest to do so.

TABLE 8: COMMUTE MODE MULTI-CITY COMPARISON

	Driving Alone, % of all workers	Driving Alone, % worker poverty	Carpool, % of all workers	Carpool, % of workers poverty	Public Transit, % of all workers	Public Transit, % worker poverty
Manchester, NH	79.3%	62.5%	9.5%	21.9%	0.6%	1.3%
Nashua, NH	79.4%	70.6%	8.7%	7.0%	2.2%	6.6%
Portland, ME	62.3%	53.1%	8.0%	7.6%	2.5%	4.7%
Brockton, MA	74.5%	57.9%	11.5%	19.1%	6.5%	13.5%
Lawrence, MA	70.3%	64.0%	15.6%	13.9%	3.7%	6.3%
Lowell, MA	76.8%	52.6%	9.2%	12.9%	3.1%	6.4%
Springfield, MA	76.6%	59.0%	9.4%	16.4%	4.4%	9.5%
Worcester, MA	71.2%	44.4%	11.2%	16.5%	3.1%	8.6%
Source: US Census Bureau, https://data.census.gov						

ACCESS TO TRANSIT:

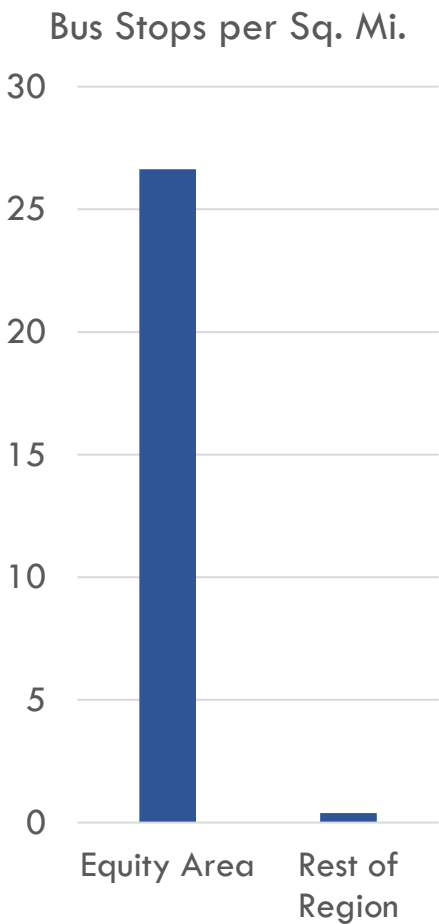


FIGURE 11: BUS STOPS PER SQ. MI.

SOURCE: MANCHESTER TRANSIT AUTHORITY

the highest frequency of bus trips with over 100 buses per day on average. However, bus frequencies quickly drop as routes extend out beyond downtown. The large majority of the population within the equity area live within 1/8 mile of a route that provides between 4 and 28 bus trips per day on average. Approximately 67% of the minority population, 66% of the low-income population, and 68% of the LEP population in the equity area live within 1/8 mile of transit, compared to just 16%, 18%, and 23% of the population respectively in the rest of the region.

MTA provides fixed-route and paratransit service to Manchester and parts of Bedford, Hooksett, and Londonderry. MTA also offers a commuter service to the nearby cities of Concord and Nashua, connecting with Concord Area Transit and Nashua Transit respectively. MTA also operates the free Green DASH service in downtown Manchester and regional demand response service in Chester, Derry, Hampstead, Londonderry, and Salem under the branding of CART (Cooperative Alliance for Regional Transportation). The equity area overlaps with Manchester's city center and has high access to MTA's existing fixed-route bus services which operate morning to evening on weekdays with limited service on Saturdays. MTA's fixed routes use a pulse schedule which brings multiple routes into Veteran's Park in downtown Manchester at the same time. This system allows riders to transfer between many bus routes with limited frequency.

Map 1-12 illustrates local bus frequency within the equity area. The central business district has

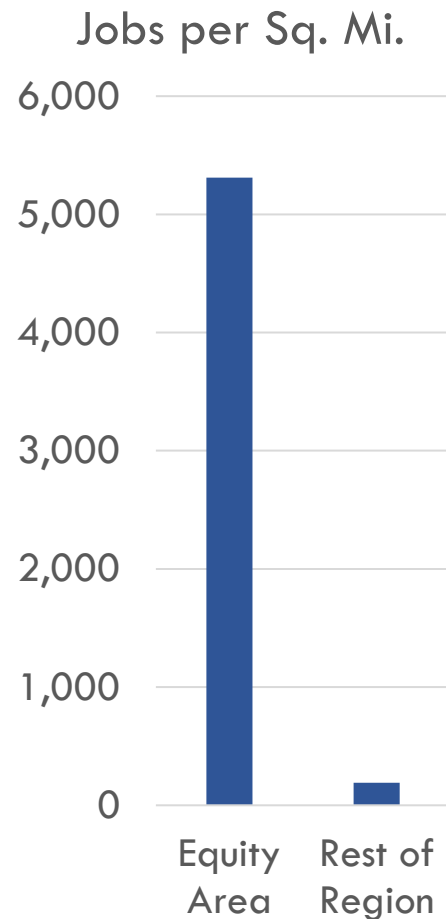
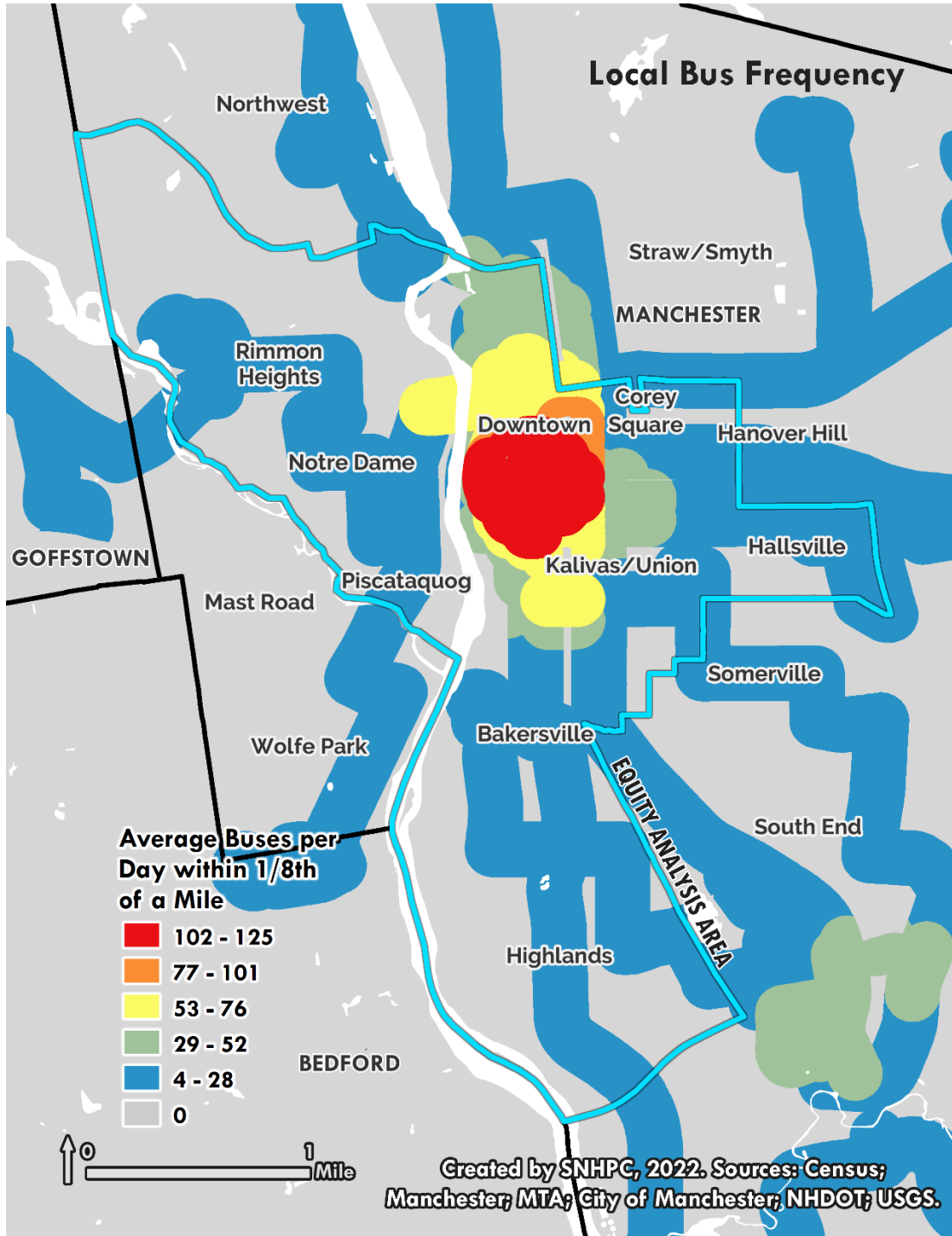


FIGURE 12: JOBS PER SQ. MI.

SOURCE: US CENSUS BUREAU

MAP 11: LOCAL BUS FREQUENCY



BICYCLE AND PEDESTRIAN INFRASTRUCTURE

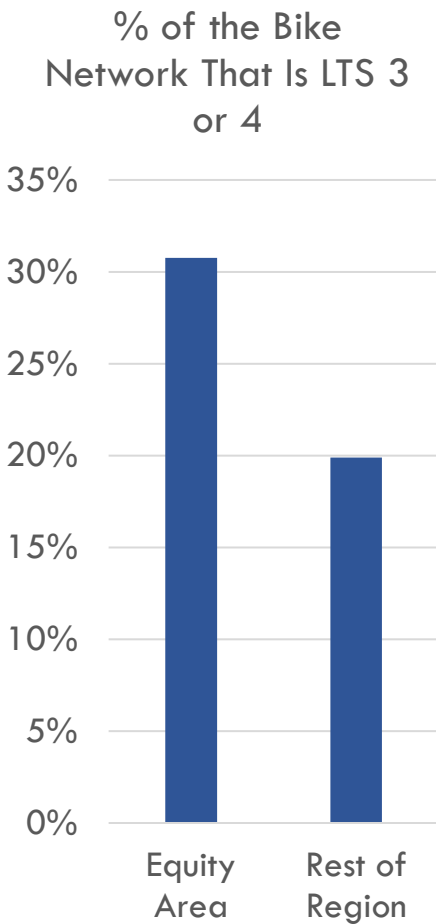


FIGURE 13: HIGH STRESS BIKE NETWORK
SOURCE: SOUTHERN NEW HAMPSHIRE PLANNING COMMISSION

Bike level of traffic stress, or LTS, is a common measure used to gauge how difficult it is to ride on a particular stretch of road. The scale ranges from level 1 for low stress streets and multi-use paths accessible to all users to level 4 roads with high traffic speeds and volumes and multiple lanes which a rider must be very experienced to feel comfortable riding. Therefore, LTS 3 and 4 can be understood as more stressful roads. More than 30% of the equity area's bikeable network, including offroad trails, score as an LTS 3 or 4 compared to around 20% for the rest of the region. This is noteworthy given the higher prevalence of separated bike trails in the area and the many low stress neighborhood alleys that exist. Also, 77% more of the bike network outside the equity area scores as an LTS 1 compared to that within the equity area. If we consider those bikeable trips between homes and points of interest less than two miles in length, there are almost 23 times as many taking place on LTS 4 segments inside the equity area than outside it.

Significant bicycle and pedestrian projects have been completed or programmed in the equity area in recent years. Of particular note are the remaining uncompleted sections of the South Manchester Rail Trail and the successful 2021 RAISE grant, which will see the conversion of the former Manchester-Lawrence rail

corridor into a multi-use path. However, these projects often serve recreational or regional needs while local barriers still exist. For example, four Manchester bridges crossing the Merrimack River remain among the most challenging segments for walkers and bicyclists because there are few options to cross the river and remain among the highest priority routes.

Sidewalk infrastructure is limited outside of Manchester to a few downtowns and village centers. While specific regional data are limited, the predominance of the existing infrastructure in Manchester, primarily the city center, means that the equity area is better served by sidewalks than the remainder of the region. As such, walking is less stressful and dangerous for equity area residents.

ROAD INFRASTRUCTURE

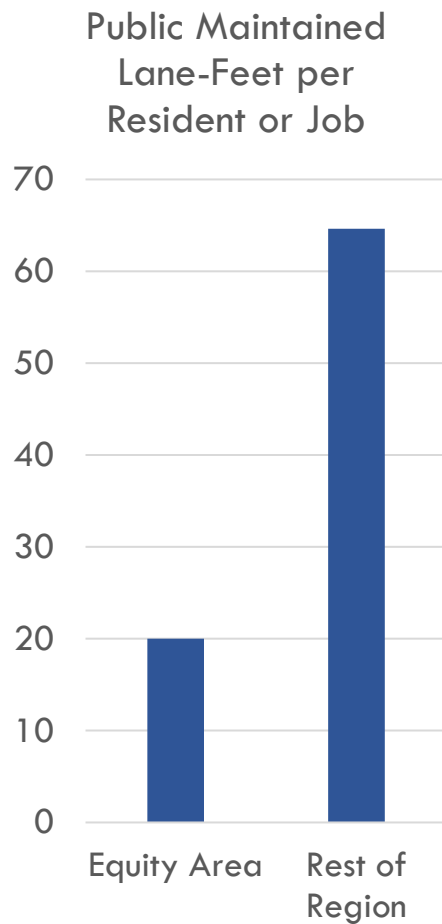


FIGURE 14: PUBLIC LANE-FT

SOURCE: NH DEPARTMENT OF
TRANSPORTATION

The street system of the equity area differs significantly from the rest of the region. Much of the vehicular traffic is concentrated on an urban interstate, I-293, or one of many arterials moving commuters from the expressway to the city center. The remainder of the road network is city neighborhood side streets and back alleys. Ultimately, the road network is far more efficient in serving its population than that outside the equity area. There is only 20 public lane-feet of road for each resident or job in the equity area compared to more than 60 lane-feet in the rest of the region. That is, each resident or commuter makes do with less than one third as many lane-feet compared to those outside the region. It is in this way that equity area residents and workers more effectively utilize construction and maintenance expenditures and subsidize those outside the area.

Despite these greater efficiencies, area residents experience distinct infrastructure forms. For example, while the equity area includes many narrow alleys with lanes less than 10 feet wide, roadways within the area on average are still 14% wider than those outside the region and 18% wider if limited access expressways are excluded.

Funding mechanisms for the road network also differ.

Approximately 28% of the public maintained lane-miles outside the equity area are eligible for federal aid compared to just 17% within the equity area.

NEXT STEPS

As an additional phase of work in the future, the SNHPC will utilize the analysis detailed in this report to examine the impacts of the SNHPC MPO's transportation planning activities (plans, programs, or projects) in the identified equity area. This process will include identification of relevant indicators to measure the impacts, benefits, and burdens of the SNHPC MPO's actions. Principal among these measures will be current and projected future spending on transportation projects within and outside the equity area. Finally, any recognized impacts will be reviewed to determine whether they are disparate or have Disproportionately High or Adverse Effect (DHAE). If disparate impacts or DHAE are found, strategies to avoid or mitigate inequities will be identified.