Minnesota GO
A Collaborative Vision for Transportation

20-Year State Highway Investment Plan

Appendix H

ENVIRONMENTAL JUSTICE ANALYSIS

ENIVRONMENTAL JUSTICE ANALYSIS

MnSHIP provides the framework for MnDOT decision-making and for prioritizing investments on Minnesota's highway system. This appendix provides an analysis of how investment priorities established in MnSHIP may positively or negatively impact the state's environmental justice populations. Similar to the Statewide Multimodal Transportation Plan, this environmental justice analysis is general and qualitative in nature. This is due to the fact that while MnSHIP identifies investment categories for implementation over the next 20 years, specific project details and associated details such as potential project limits and impacts have not yet been identified.

As protocol, MnDOT addresses environmental justice concerns for individual projects at the time of scoping and planning to analyze whether proposed activities may result in disproportionate impacts as the projects progress.

This appendix includes the following information:

- Environmental justice introduction
- Summary of environmental justice populations in Minnesota as presented in the Statewide Multimodal Transportation Plan
- MnSHIP's public involvement activities
- How MnSHIP investment direction and investment categories relate to environmental justice populations
- How Minnesota environmental justice populations may be affected by investments on the state highway system

ENVIRONMENTAL JUSTICE OVERVIEW

Presidential Executive Order 12898, issued in 1994, directed each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations."[1] The order builds on Title VI of the Civil Rights Act of 1964 which prohibits discrimination on the basis of race, color or national origin. The order also provides protection to low-income groups.

There are three fundamental principles of environmental justice:

- To avoid, minimize or mitigate disproportionately high and adverse human

1 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations

health and environmental effects, including social and economic effects, on minority and low-income populations

- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations

The Executive Order and subsequent orders by the U.S. Department of Transportation define minority and low-income populations as:

- Black – a person having origins in any of the black racial groups of Africa
- American Indian and Alaskan Native – a person having origins in any original people of North America and who maintains cultural identification through tribal affiliation or community recognition
- Asian – a person having origins in any of the original peoples of the Far East, Southeast Asia or the Indian subcontinent
- Native Hawaiian or Other Pacific Islander – a person having origins in any of the original peoples of Hawaii, Guam, Samoa and other Pacific Islands
- Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
- Low-income – a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines

While not specifically identified by Title VI or the Executive Order, MnDOT chose to expand its environmental justice analyses to include four additional population groups with unique transportation needs.

- Persons age 65 and older
- Persons age 17 and younger
- Households with limited English proficiency
- Households with zero vehicles

MINNESOTA'S ENVIRONMENTAL JUSTICE POPULATIONS

The following section provides a summary of environmental justice populations in Minnesota as defined in the Statewide Multimodal Transportation Plan. Based on the 2010-2014 American Community Survey, it is estimated that 5.38 million persons lived in Minnesota in 2014 (up from 5.30 million in 2010). Table H-1 shows Minnesota's 2014 estimated population based on race, ethnicity, age, limited English proficiency households, low-income individuals, and households with zero vehicles.

As noted in the Table H-1:

- 85.2 percent of Minnesota's population is white
- Minnesota's black population is the state's largest minority population (5.4 percent), closely followed by the Hispanic (4.9 percent) and Asian populations (4.3 percent)
- Persons age 65 and older account for 13.6 percent of the state's population, while those 17 and under account for 23.8 percent
- 11.5 percent of Minnesotans are below the poverty level
- 4.3 percent of Minnesotans speak English less than "very well"
- 7.3 percent of Minnesotan households do not own a vehicle

While Table H-1 provides a statewide overview, population is not evenly distributed across the state. Tables H-2 through H-7 provide a breakdown of populations based on Area Transportation Partnership boundaries shown in Figure H-1. While not exact, the ATP boundaries closely follow MnDOT district boundaries and the terms are used interchangeably. Each table is accompanied by a map (Figures H-2 through H-8) of areas with higher concentrations of the various EJ populations and their relation to the National Highway System. The NHS is the priority network for investment in MnSHIP. As a part of this EJ analysis, MnDOT also examined any positive or negative impacts from prioritizing the NHS.

From a population perspective, Metro ATP has the greatest number of different population groups compared to the other ATPs. However, from a percentage of total ATP population, it varies by group.

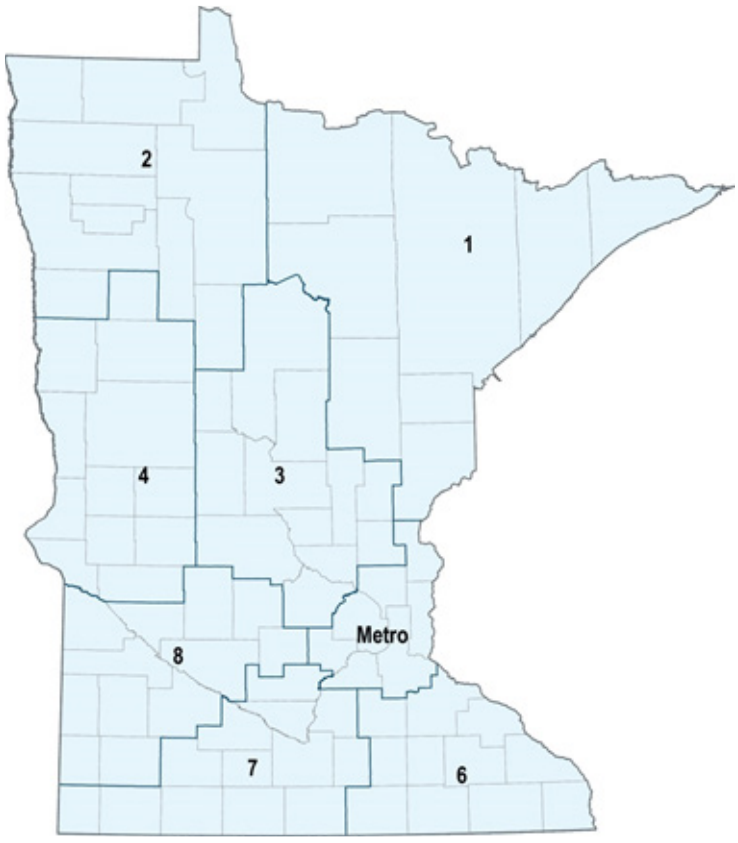
Table H-1: Minnesota's Demographics

POPULATION	2014 POPULATION	PERCENTAGE OF TOTAL MINNESOTA POPULATION
Total Population	5,383,661	100.0%
White Alone	4,585,781	85.2%
Black Alone	290,545	5.4%
American Indian and Alaska Native Alone	56,490	1.0%
Asian Alone	230,798	4.3%
Native Hawaiian or Other Pacific Islander Alone	2,166	<0.1%
Some Other Race Alone	78,863	1.5%
Two or More Races	139,018	2.6%
Hispanic	264,265	4.9%
Age 65 and older	730,382	13.6%
Age 17 and under	1,280,022	23.8%
Families below the poverty level[1]	605,761	11.5%
Limited English Speaking Households[1]	217,737	4.3%
Households with zero vehicles[1]	153,366	7.3%

1 Total estimated households in Minnesota was 2,115,337

Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

Figure H-1: Area Transportation Partnerships Boundaries



MINORITY AND HISPANIC

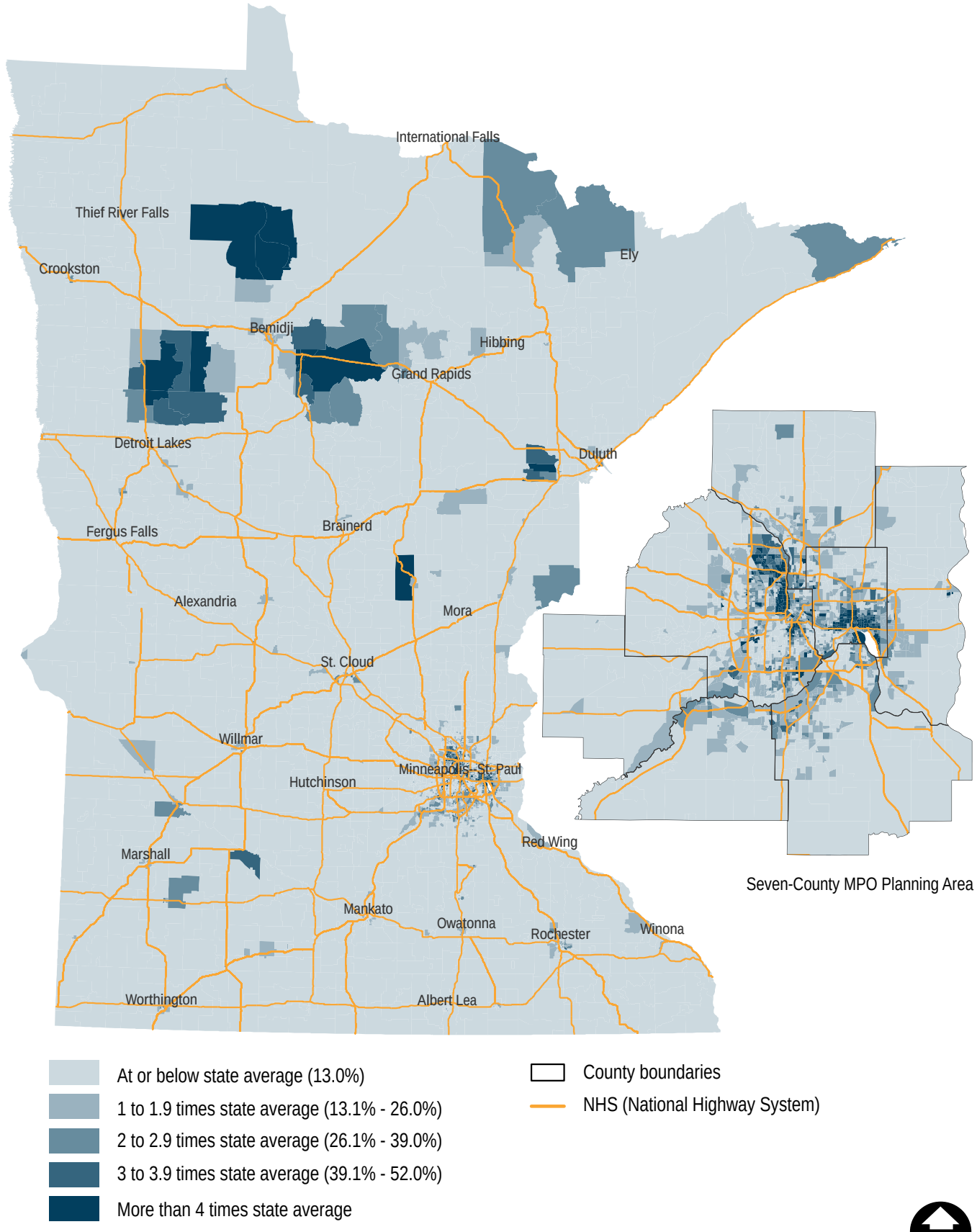
While Metro ATP has the state's largest American Indian population, ATP 2 follows closely. After Metro ATP, ATP 6 has the state's largest black, Asian and Hispanic populations. Statewide, populations that self-identify as part of a race, or multiple races, other than those five the U.S. Census Bureau tracks are estimated to make up 2.5 percent of the state's population. Figure H-2 shows the higher concentrations of minority populations in conjunction with the NHS system. Most census blocks are near a NHS route with a few exceptions, most notably the Red Lake Nation in ATP 2.

Table H-2: Minnesota's Racial and Ethnic Populations by Area Transportation Partnership

ATP	TOTAL POP.	WHITE ALONE	BLACK ALONE	AMERICAN INDIAN OR ALASKAN NATIVE ALONE	ASIAN ALONE	NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER	SOME OTHER RACE ALONE	TWO OR MORE RACES	HISPANIC
1	355,733	329,585 92.6%	4,642 1.3%	9,609 2.7%	2,637 0.7%	114 <0.1%	934 0.3%	8,212 2.3%	4,969 1.4%
2	164,425	145,319 88.4%	1,353 0.8%	11,133 6.8%	1,377 0.8%	149 <0.1%	934 0.3%	4,082 2.5%	4,613 2.8%
3	650,824	610,556 93.8%	10,837 1.7%	7,515 1.2%	7,021 1.1%	126 <0.1%	4,413 0.7%	10,356 1.6%	15,116 2.3%
4	244,005	227,616 93.3%	2,240 0.9%	6,234 2.6%	1,527 0.6%	68 <0.1%	1,295 0.5%	5,025 2.1%	6,342 2.6%
Metro	2,974,435	2,351,185 79.0%	250,417 8.4%	17,556 0.6%	199,077 6.7%	1,299 <0.1%	58,594 2.0%	96,307 3.2%	176,448 5.9%
6	498,131	456,254 91.6%	13,514 2.7%	1,534 0.3%	12,754 2.6%	154 <0.1%	5,246 1.1%	8,675 1.7%	25,885 5.2%
7	284,211	266,733 93.9%	4,747 1.7%	953 0.3%	4,124 1.5%	86 <0.1%	3,769 1.3%	3,799 1.3%	18,450 6.5%
8	211,897	198,533 93.7%	2,795 1.3%	1,956 0.9%	2,281 1.1%	86 <0.1%	3,600 1.7%	3,799 1.3%	12,442 5.9%

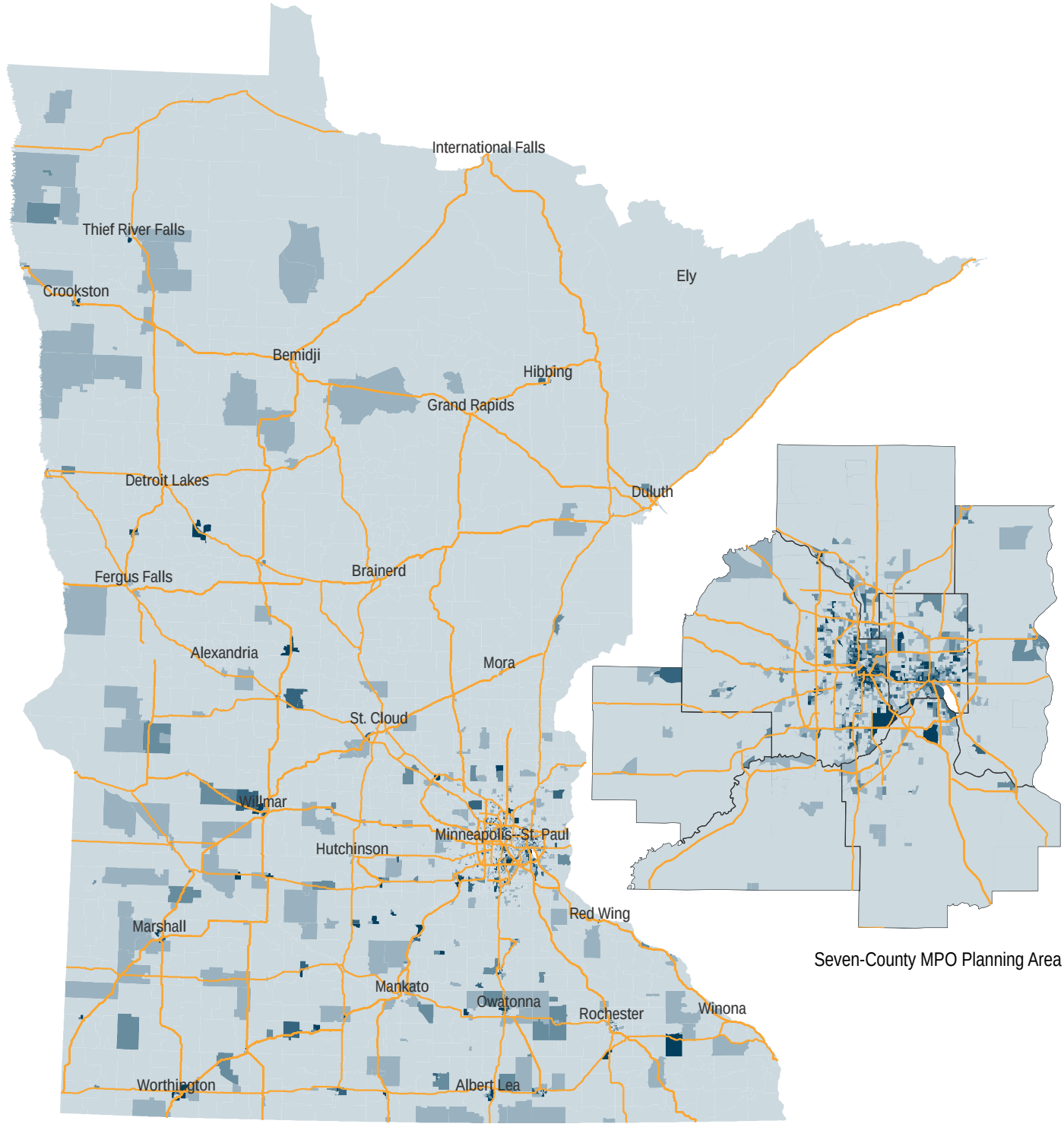
Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

Figure H-2: Locations of Higher Concentrations Racial Minorities in Minnesota



Source: 2014 American Community Survey

Figure H-3: Locations of Higher Concentrations Hispanics in Minnesota



Source: 2014 American Community Survey

Figure H-3 shows the relation of concentrations of Hispanic populations to the NHS system in the state. The highest concentrations of Hispanics are in urban areas and near the NHS system.

LOW INCOME

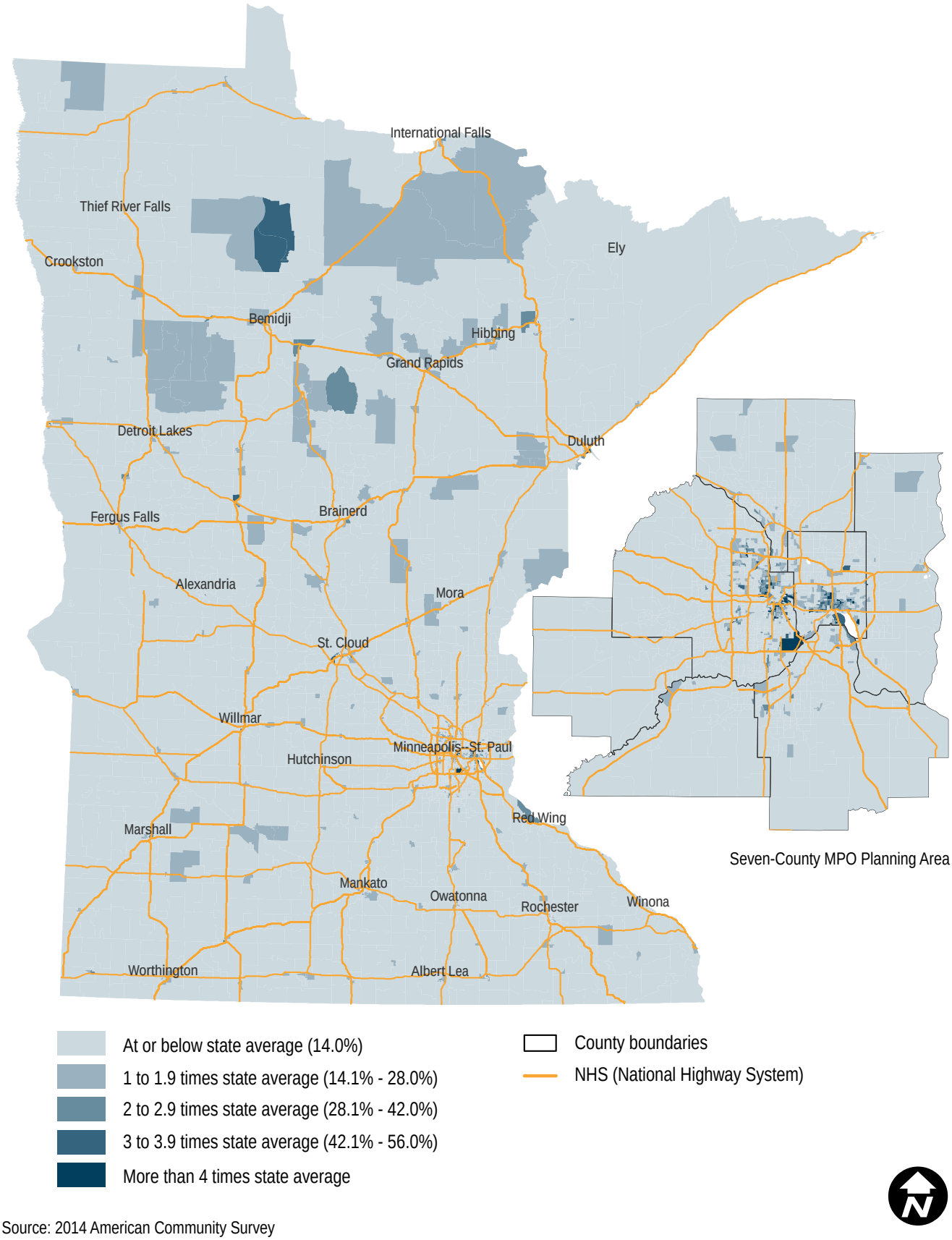
Table H-3 provides a summary of low-income populations within each ATP and as a percentage of the district's population. Low-income populations include all persons whose median household income is at or below the poverty guidelines set by the U.S. Department of Health and Human Services. Statewide, 11.5 percent of persons were below the poverty level. ATP 1 and 2 had the highest percentages of population below the poverty level, at 15.5 percent and 14.0 percent respectively. ATP 6 had the lowest, at 10.8 percent. As shown in, Figure H-4, most areas of higher concentrations of low-income population are located within the Twin Cities urban core communities and in northern Minnesota.

Table H-3: Minnesota's Low Income Populations by Area Transportation Partnership

ATP	ESTIMATED ATP POPULATION	ESTIMATED ATP POPULATION BELOW POVERTY	ESTIMATED PERCENTAGE BELOW POVERTY
1	342,964	53,255	15.5%
2	159,674	22,375	14.0%
3	635,882	70,105	11.0%
4	236,067	28,564	12.1%
Metro	2,925,336	320,954	11.0%
6	479,558	51,736	10.8%
7	273,573	35,515	13.0%
8	207,297	23,257	11.2%

Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

H-4: Location of Higher Concentrations of Low Income Population in Minnesota



Source: 2014 American Community Survey

LIMITED-ENGLISH SPEAKING

A person's ability to speak English, at least moderately well, can be a barrier to participation in the transportation planning process. The American Community Survey estimates the number of individuals age 5 years and older who speak English "less than very well." Table H-4 provides a summary of limited English-speaking populations by MnDOT district and as a percentage of the total districts's population. Limited English speakers make up approximately 217,737 or 4.3 percent of Minnesota's population. The majority, 79 percent, live in the Metro ATP. ATP 2 has the fewest number of persons who speak English less than "very well." Table H-5 compares languages spoken at home and what percentage of each community speaks limited English.

Table H-4: Minnesota's Limited English Speaking Population by Area Transportation Partnership

ATP	ESTIMATED DISTRICT POPULATION	ESTIMATED PERSONS WHO SPEAK ENGLISH LESS THAN "VERY WELL"	ESTIMATED PERCENT OF ATP POPULATION
1	337,000	337,000	0.8%
2	154,364	154,364	1.1%
3	606,887	606,887	1.5%
4	228,914	228,914	1.3%
Metro	2,775,699	2,775,699	6.2%
6	466,428	466,428	3.4%
7	266,711	266,711	3.3%
8	198,479	198,479	2.7%

Table H-5: Languages Spoken in Minnesota as a Percentage of Total Population

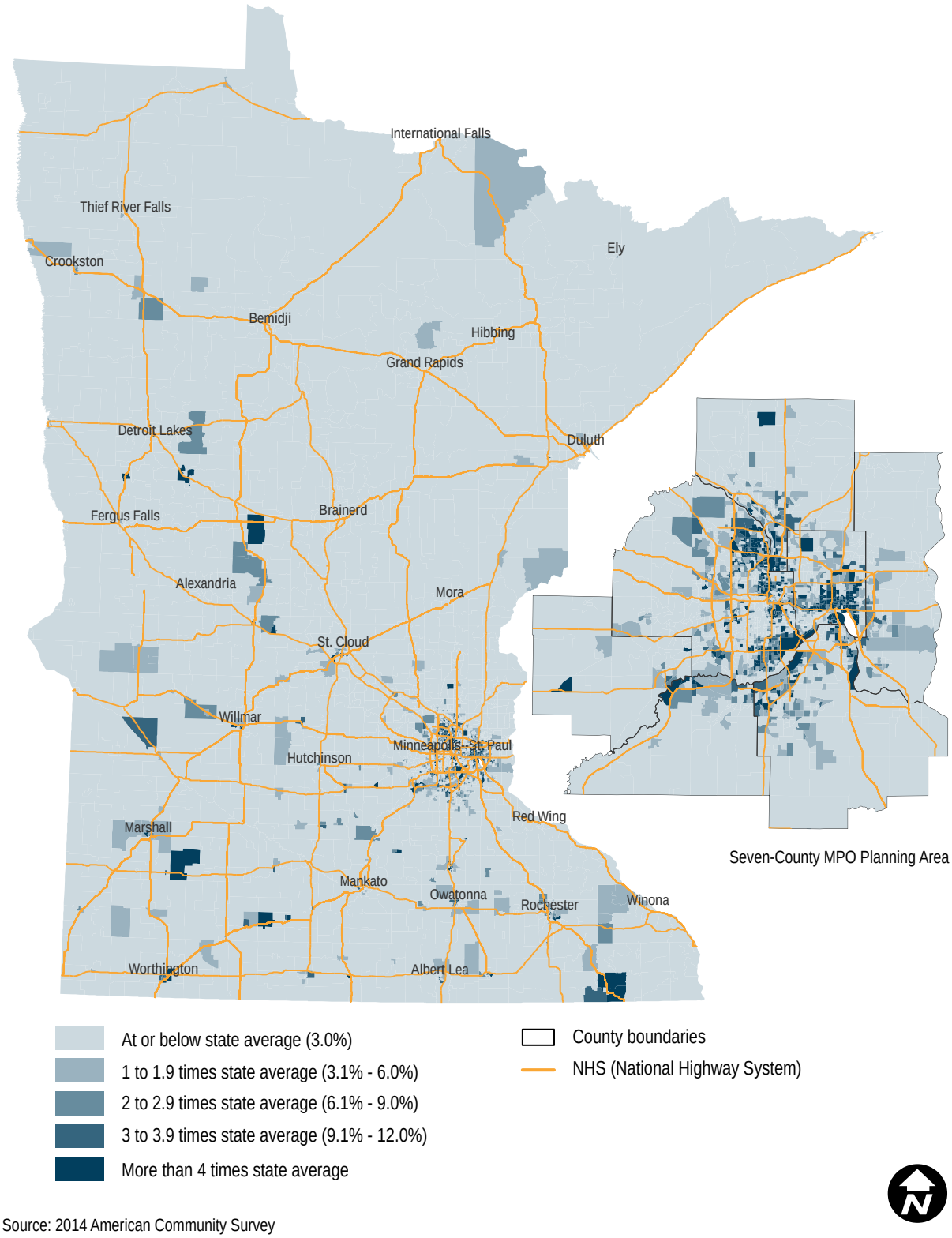
LANGUAGE SPOKEN AT HOME	POPULATION	PERCENT OF POP.	POP. THAT SPEAKS ENGLISH LESS THAN "VERY WELL"	PERCENTAGE THAT SPEAKS ENGLISH LESS THAN "VERY WELL"
Speak only English	4,485,551	89.11%	N/A	N/A
Spanish or Spanish Creole	193,111	3.84%	83,799	43.4%
African languages	69,415	1.38%	29,487	42.5%
Hmong	57,513	1.14%	24,584	42.7%
German	23,258	0.46%	4,032	17.3%
Chinese	22,266	0.44%	9,922	44.6%
Vietnamese	21,915	0.44%	13,241	60.4%
Other Asian languages	20476	0.41%	9426	46.0%
French (incl. Patois, Cajun)	15,072	0.30%	3,187	21.1%
Russian	14,106	0.28%	6,463	45.8%
Arabic	10,703	0.21%	3,251	30.4%
Other Languages	100,366	1.99%	30,345	30.2%

Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

The population of Spanish speakers is by far the highest, followed by Hmong and African languages (this category includes Swahili, Somali, Amharic, Ibo, Twi, Yoruba and Bantu, amongst others). Approximately half of Chinese, Vietnamese and Russian speakers are also limited in their English.

Figure H-5 shows a map of areas of higher concentration of limited English speaking populations by census block group. Most of the higher concentrations areas are within the Twin Cities area. There are additional higher concentrations in western and southern Minnesota. Most concentrations are around a NHS route.

Figure H-5: Location of Higher Concentrations of Limited English Speaking Population in Minnesota



Source: 2014 American Community Survey

YOUTH AND SENIOR

Table H-6 provides a summary of Minnesota senior and youth populations by MnDOT district. While not specifically required as part of the EJ analysis, it is important to consider how these populations use transportation and could be adversely affected by investments. Those 17 years old and under comprise 23.8 percent of Minnesota's population, while seniors make up 13.6 percent. Minnesota's youth and senior populations total 2,010,404 or 37 percent of the state. Senior populations in the state are estimated to increase significantly over the next 30 years and by 2035 there are projected to be more than 1.2 million seniors in Minnesota.

District 8 has the largest percentage (18.1 percent) of persons age 65 and older. The Metro District has the smallest percentage (11.5 percent) of those age 65 and older. District 3 has the highest percentage of those age 17 and younger (25.2 percent), while District 1 has the smallest percentage (20.1 percent) of those 17 and younger.

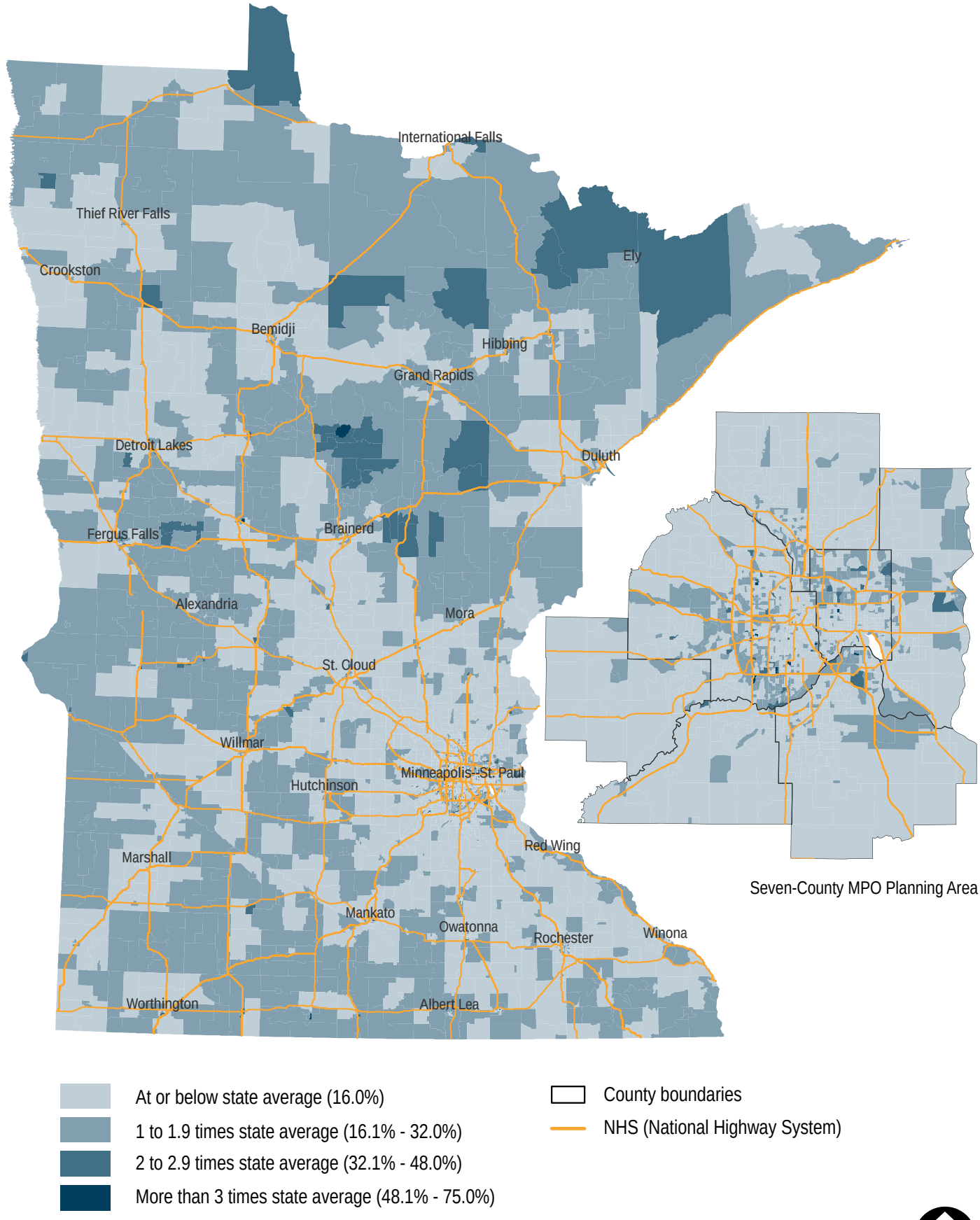
Table H-6: Minnesotans Age 17 and Under and Age 65 and Older by Area Transportation Partnership

ATP	TOTAL DISTRICT POP.	AGE 65 AND OLDER ESTIMATED POPULATION	AGE 65 AND OLDER ESTIMATED PERCENTAGE OF DISTRICT POPULATION	AGE 17 AND UNDER ESTIMATED POPULATION	AGE 17 AND UNDER ESTIMATED PERCENTAGE OF DISTRICT POPULATION
1	355,733	63,765	17.9%	71,527	20.1%
2	164,425	28,046	17.1%	39,157	23.8%
3	650,824	89,804	13.8%	164,139	25.2%
4	244,005	45,022	18.5%	54,880	22.5%
Metro	2,974,435	342,773	11.5%	718,198	24.1%
6	498,131	76,292	15.3%	117,640	23.6%
7	284,211	46,319	16.3%	64,101	22.6%
8	211,897	38,361	18.1%	50,385	23.8%

Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

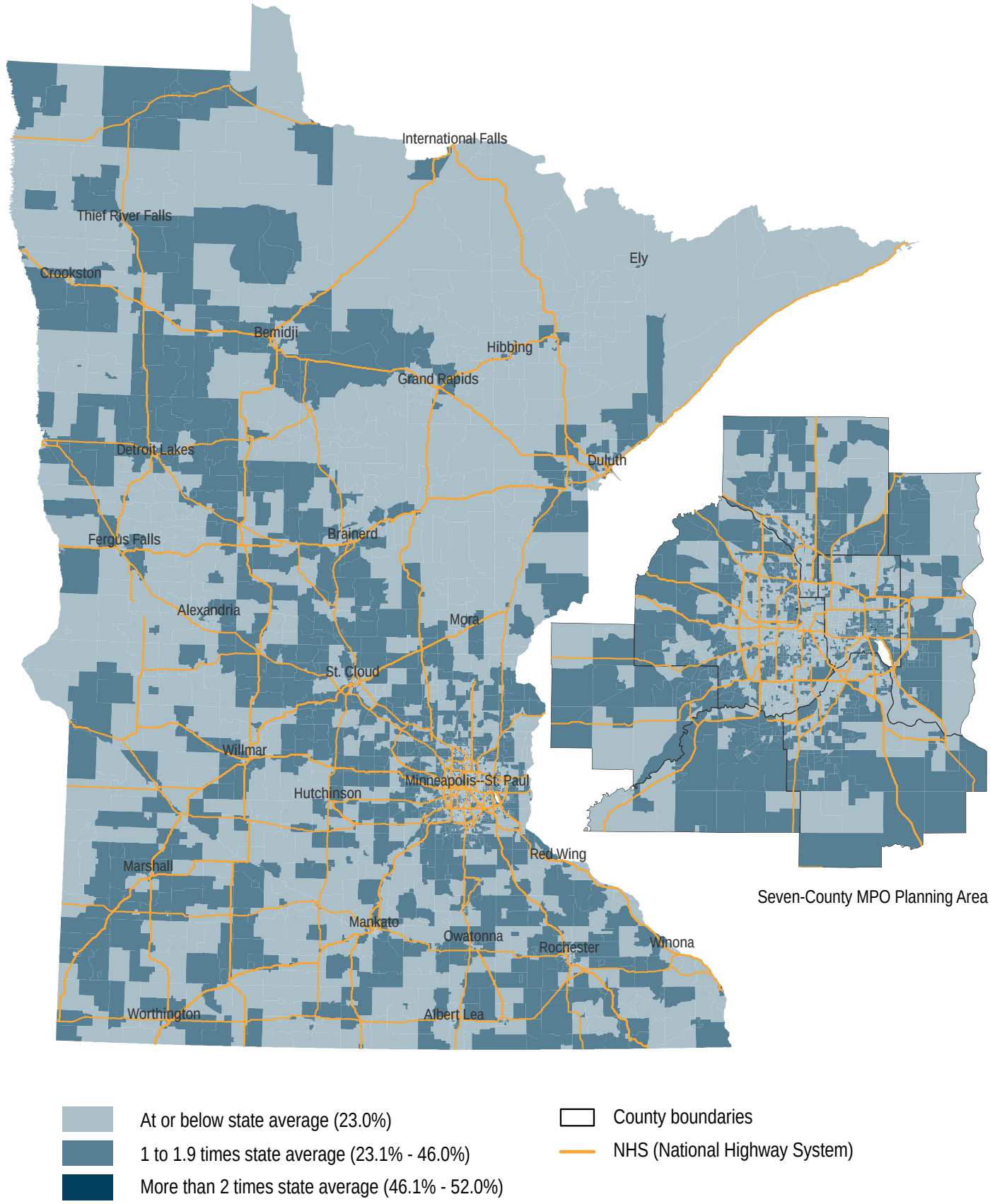
Figure H-6 shows a map of senior population by census block group. Figure H-7 shows a map of youth population by census block group. Senior population is spread out across the state with slightly higher concentration of seniors in northern Minnesota and the Twin Cities suburbs. Likewise, Minnesota's youth population is spread out across the state without many areas of high concentration.

Figure H-6: Location of Higher Concentrations of Populations Age 65 and Older in Minnesota



Source: 2014 American Community Survey

Figure H-7: Location of Higher Concentrations of Populations Age 17 and Under in Minnesota



Source: 2014 American Community Survey

ZERO-VEHICLE HOUSEHOLDS

Households with zero vehicles may have a greater reliance on transit and non-motorized transportation. Zero vehicle households tend to use the transportation system differently by relying more on transit, biking, walking, taxis and more recently car-sharing and ride-sharing services (e.g. Uber). Table H-7 shows the estimated number of Minnesota households with zero vehicles. The American Community Survey estimated that 7.3 percent, or approximately 153,366 Minnesota households, do not have a vehicle. Figure H-8 shows a map of households without vehicles. Most of the higher concentrations of zero vehicle households are within the urban core of the Twin Cities area. There are also concentrations of zero vehicle households in northern Minnesota, which seem to correlate with the location of tribal nations.

Table H-7: Minnesota Households with Zero Vehicles by Area Transportation Partnership

ATP	ESTIMATED HOUSEHOLDS	ESTIMATED HOUSEHOLDS WITH ZERO VEHICLES	PERCENT OF ESTIMATED HOUSEHOLDS WITH ZERO VEHICLES
1	150,292	12,316	8.2%
2	66,073	4,082	6.2%
3	246,738	13,174	5.3%
4	99,755	6,132	6.1%
Metro	1,159,372	94,135	8.1%
6	193,754	12,616	6.5%
7	112,973	6,348	5.6%
8	86,380	4,563	5.3%

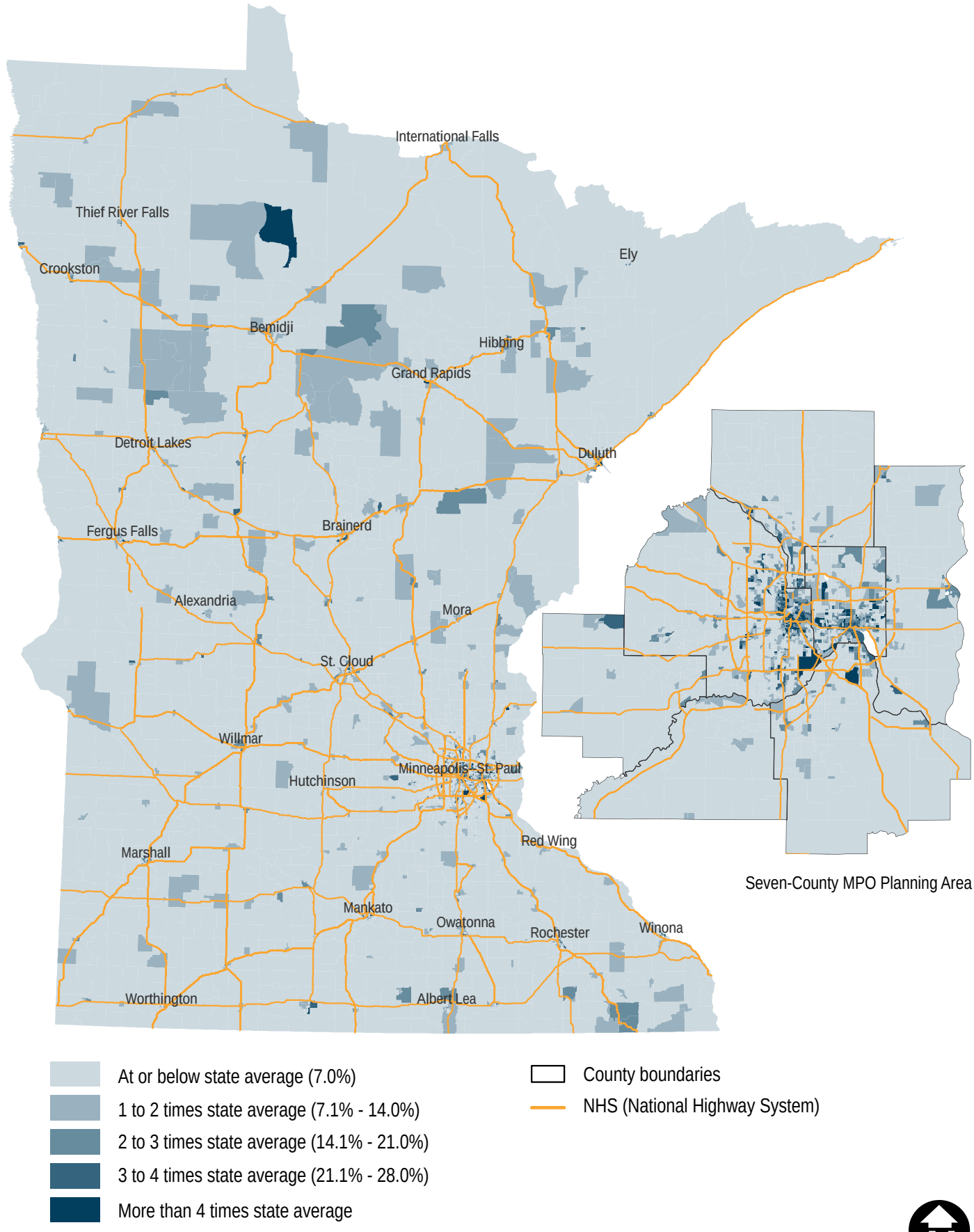
Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

User safety with these forms of transportation can have a disproportionate impact on all EJ populations. In general, poor neighborhoods have higher per-capita pedestrian deaths and injuries than other areas. Between 2008 and 2012 pedestrian death rates in low-income census tracts were roughly double that of rates in middle to high income tracts.

Older adults also suffer disproportionately from pedestrian deaths nationally. People 65 and older make up 13 percent of the population but account for a disproportionate number of pedestrian deaths (20 percent in 2012), and sustain more severe injuries in nonfatal (crashes).[2] In Minnesota, 12.4 percent of the population age 65 and older account for 25.7 percent of pedestrian fatalities across the state from 2003-2010. People 75 years and older account for 6.2 percent of Minnesota's population and 17.5 percent of pedestrian fatalities.

2 Minnesota Walks: Current and Future Steps Towards A Walkable Minnesota. Minnesota Department of Transportation. May 2015.

Figure H-8: Location of Higher Concentrations of Households with Zero Vehicles in Minnesota

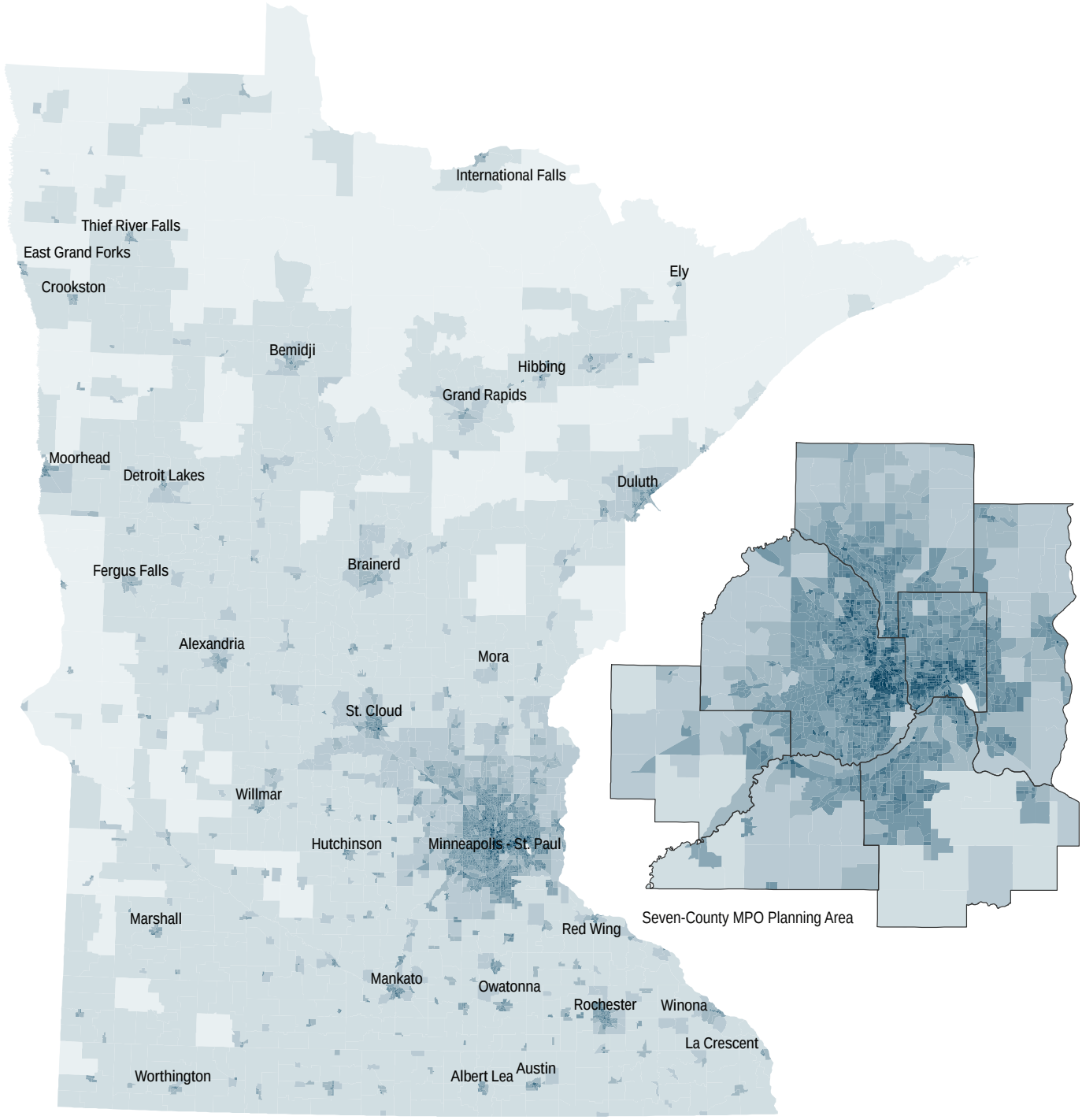


Source: 2014 American Community Survey

EJ POPULATION DENSITY

Figure H-9 shows the density of population in Minnesota, while Figure H-10 shows the concentrations of various EJ populations. The darker the blue, the more EJ population concentrations found in the census block. Some of the most concentrated areas with multiple EJ populations are located in northern Minnesota.

Figure H-9: Minnesota Population Density by Census Block Group



Legend

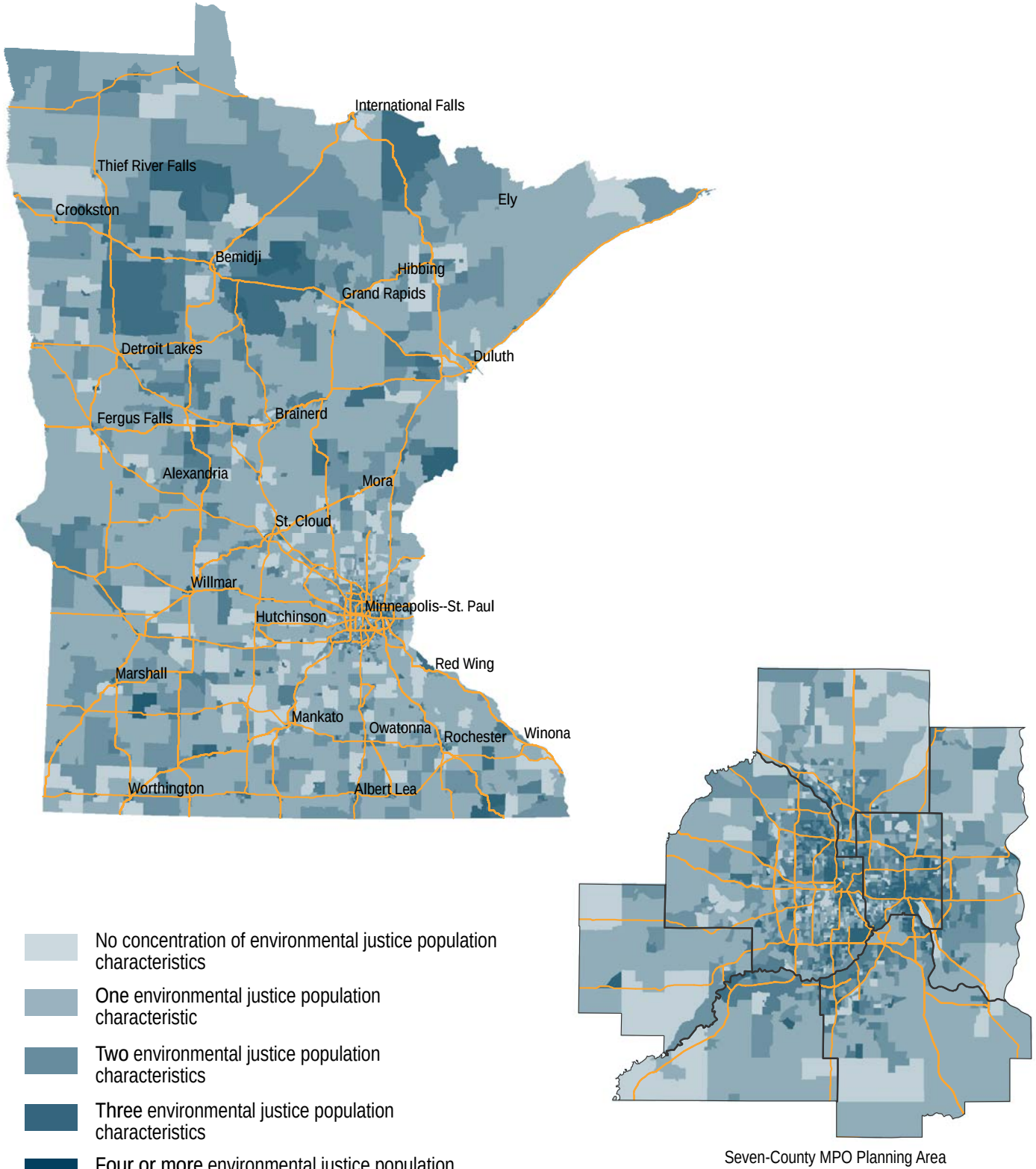
District boundaries (state map)
County boundaries (metro map)

Population Density (ppl/sqmi)

5 200 3,000 9,000 109,100

Source: 2014 American Community Survey

Figure H-10: Minnesota EJ Population Density by Census Block Group



Source: 2014 American Community Survey

AREAS OF CONCENTRATED POVERTY

Another way of analyzing transportation impacts on EJ populations is by looking more closely at predominately low-income neighborhoods, especially in the Twin Cities metro area, since75 percent of people of color in Minnesota live in the seven-countyTwin Cities area, this section takes a closer look at the racial disparities in the Twin Cities and implications of poverty on transportation options and needs. Low-income populations are used as a proxy for communities of color in this portion of the study as they are more likely to be low-income than the general and white populations in the Twin Cities.

People of color are over-represented in the Twin Cities' Areas of Concentrated Poverty – census tracts where at least 40 percent of residents are considered low-income. According to the most recent American Community Survey data from 2009-2013, 82 of 112 ACPs in the seven-county region are majority people of color. Only 6 percent of the Twin Cities area's white population lives in ACPs compared to 40 percent of the region's black population and 34% of the region's Latino population. The data also shows that the low-income population does not entirely reside in the Twin Cities core. Currently, the suburban and rural areas within the seven-county Twin Cities area have more low-income residents than Minneapolis and St. Paul combined. For a more detailed survey of racial inequality in the Twin Cities, refer to the Metropolitan Council's 2014 report Choice, Place, and Opportunity, a comprehensive study of racial inequality in the region. Areas of concentrated poverty are the focus of increased planning efforts by the Metropolitan Council.

TRANSPORTATION BEHAVIOR, HEALTH AND SAFETY IN AREAS OF CONCENTRATED POVERTY

The Metropolitan Council analyzed differences in mode use and travel behavior between people living within ACPs and those living outside of ACPs. The results of this analysis found that people in ACPs rely more heavily on transit, bicycling and walking to get around. More than one-quarter of all trips made by people living in ACPs with incomes less than $30,000 are taken via transit.[3] Increased rates of travel via transit, walking and biking are not limited to only people with low incomes – even people making more than $75,000 who live in ACPs rely more heavily on biking and walking to get around than those making similar amounts outside of ACPs.[4]

According to MnDOT research, some of the most dangerous intersections for pedestrians and bicyclists are also located in ACPs.[5]

3 Metropolitan Council, 2015.
4 Ibid.
5 Krizek K, Poindexter G, El-Geneidy A, et al. The Safety of Pedestrian and Bicycle Travel in Minnesota: Inventory, Analysis and Prospectus. January 2007.

Additionally, highways and the resulting congestion have negative impacts on the health of all users. Congestion can increase a person's exposure to pollution, specifically fine particulate matter. Negative effects on air quality are measurable within 600 feet of major highways. Examination of asthma rates and the locations of major highways in the Twin Cities area shows that individuals living next to major highways are much more likely to be hospitalized for asthma-related reasons. The highest rates of asthma hospitalizations follow the path of Interstate 94 through North Minneapolis, past downtown Minneapolis, and through the heart of St. Paul. This coincides with the Minnesota Department of Health's findings that people of color, many of whom live in these communities, are more vulnerable to air pollution than other racial and ethnic groups in Minnesota.

Research concluded that the health impacts of traffic congestion in at least some urban areas may be significant enough to warrant future evaluation on how well policies mitigate congestion.[6]

Noise pollution can also have health effects. It is widely reported that cognitive development, including learning, reading and problem solving are impaired when homes and schools are located near transportation corridors like highways.[7, 8] Also, noise can cause heightened sympathetic arousal and elevated blood pressure in children, which in turn negatively affects social and behavioral development.[9] While the Federal Highway Administation (FHWA) and MnDOT analyze the impacts noise can have on communities nearby, it is still important to consider these impacts throughout a project or during the planning process.

HOW MNSHIP RELATES TO ENVIRONMENTAL JUSTICE POPULATIONS

MnSHIP is part of a coordinated, ongoing planning and outreach process that connects policy direction to improvements made on the state highway system. MnDOT's Family of Plans includes three tiers of planning. The first two tiers are the Minnesota GO Vision and the Statewide Multimodal Transportation Plan. The third tier consists of system investment plans, which use the principles, objectives and strategies from the Minnesota GO Vision and Statewide Multimodal Transportation Plan to guide investment decisions. The policies established in the Minnesota GO Vision and Statewide Multimodal Transportation Plan are the result of extensive stakeholder and public input.

6 Levy J, Buonocore J, and von Stackelberg K. Evaluation of the public health impacts of traffic congestion: a health risk assessment. National Institutes of Health. October 2010.

7 Lee CSY, Fleming GG. General Health Effects of Transportation Noise. U.S. Department of Transportation. dts-34-RR297-LR2. Washington, DC, 2002.

8 Suter AH. Noise and its Effects. Administrative Conference of the United States, 1991.

9 Stansfeld SA, Berglund B, Clark C, et al. Aircraft and road traffic noise and children's cognition and health: a cross national study.

The Minnesota GO Vision, adopted in 2011, established eight guiding principles to serve as a compass to move toward a multimodal transportation system that maximizes the health of the people, the environment, and the economy:

- Leverage public investments to achieve multiple purposes
- Ensure accessibility
- Build to a maintainable scale
- Ensure regional connections
- Integrate safety
- Emphasize reliable and predicable options
- Strategically fix the system
- Use partnerships

The Minnesota GO Vision Guiding Principles recognize Minnesota's aging and increasingly diverse population as a challenge and an opportunity for Minnesota over the next 50 years. This demographic shift will increase the urgency to improve accessibility of the transportation system for all users.

The Minnesota GO Vision also acknowledges the importance of the state's transportation system in maintaining the state's economic competitiveness. Economic competitiveness can be defined as simply as jobs or as broadly as building a solid educational system as the foundation to provide an educated work force.

Finally, the Minnesota GO Vision notes that transportation influences the health of people and the environment. The transportation system should be designed so it is compatible with natural systems and minimizes resource use and pollution. Transportation decisions directly and indirectly influence air quality, water quality, and noise. Land use and transportation conducive to active living can also influence Minnesotans' health. By seeking ways to avoid, minimize, and mitigate transportation's impact on the environment, Minnesotans' quality of life will improve.

The Statewide Multimodal Transportation Plan builds on the foundation provided by the Minnesota GO Vision. The objectives and strategies are written to make progress towards the Minnesota GO Vision, follow the guiding principles and address the challenges and opportunities identified during the visioning process.

The Statewide Multimodal Transportation Plan identifies five policy objectives:

- Open Decision Making

- Transportation Safety
- Healthy Communities
- Critical Connections
- System Stewardship

Each of these objectives includes a series of strategies to achieve the stated objective. At a statewide system-level, pursuing the five objectives and their related strategies have a positive impact on minority, age 65 and older, age 17 and younger, limited English proficiency, low-income, zero-vehicle household populations and other Minnesotans. The potential benefits for each objective are highlighted in the Statewide Multimodal Transportation Plan document.

The purpose of MnSHIP is to translate the policy objectives identified in the Statewide Multimodal Transportation Plan into actual improvements to the state highway system. Investment priorities in MnSHIP categorize improvements into 14 categories, enabling MnDOT to better select projects that make progress towards the Minnesota GO Vision and ensure that the public is getting high return-on-investment for the improvements being made. The 14 investment categories include:

- Pavement Condition
- Bridge Condition
- Roadside Infrastructure
- Jurisdictional Transfer
- Facilities
- Traveler Safety
- Twin Cities Mobility
- Greater Minnesota Mobility
- Freight
- Bicycle Infrastructure
- Accessible Pedestrian Infrastructure
- Regional and Community Improvement Priorities
- Project Delivery
- Small Programs

MnDOT is committed to delivering a multimodal state highway system that accounts for and addresses statewide transportation needs. MnDOT uses an

extensive performance-based and risk-based planning process to establish investment priorities for available resources, integrating federal and state laws, policy goals and objectives, technical information on system conditions, performance management, revenue projections and input from the public, MnDOT districts, specialty offices, and other transportation partners.

MNSHIP'S PUBLIC OUTREACH ACTIVITIES

With the 2017 update to MnSHIP, the project team set six specific goals to increase and improve public involvement. The following items are the overall goals:

- Create opportunities for public involvement early and often, focusing on going to the public and stakeholder groups where they are.
- Use innovative engagement methods to reach more individuals statewide and pilot new tools to reach communities typically underserved in the statewide planning engagement efforts.
- Offer a variety of platforms to provide input, including online and in-person coordination opportunities.
- Guide the development of policy objectives and strategies for transportation in Minnesota and specific investment direction for the state highway network.
- Convey complex, technical information using plain language and graphics.
- Comply with federal and state requirements.

MnDOT provided specific outreach opportunities for traditionally underserved populations by piloting new engagement tools and techniques. These targeted populations include ethnic or racial minority groups, low wage earners, non-English speakers, elderly, youth, persons with disabilities and zero motor vehicle households. Stakeholder groups associated with these targeted populations will be identified in the project stakeholder list.

It is understood that not every audience shares the same level of interest or commitment to the planning process. As a result, it was important to offer opportunities for different levels of involvement for different audiences. The project team identified a range of in-person and online engagement tools to customize based on the level of engagement, time available, and the audience.

In-Person Engagement

- Individual Stakeholder and Partner Meetings

- Advisory Stakeholder Briefings
- Stakeholder and Partner Forums
- Workplace-based Outreach
- Community Events
    - General Public Outreach
    - Traditionally Underserved Community Outreach
- Public Comment Period and Hearing

Online Engagement

- Project Website
- Social Media
- Targeted Facebook Ads
- Stakeholder Email Updates
- MetroQuest Surveys

Tribal Outreach

MnSHIP used several different strategies to seek input from Minnesota's tribal communities and consult with the tribal governments. The project team used various platforms for input including making presentations and seeking feedback at regularly scheduled meetings of the Advocacy Council for Tribal Transportation, conducting surveys at events such as the Tribes and Transportation Conference and the Bois Forte State of the Band, and asking tribal staff to promote the online survey in their communities. Staff also met with interested tribal government staff and officials to discuss transportation issues and trends facing the tribe.

Traditionally Underserved Community Outreach

The project team partnered with Twin Cities Public Television / Emergency, Community, Health, Outreach to conduct engagement within traditionally underserved communities, specifically the Spanish, Hmong and Somali communities in Minnesota. ECHO staff translated the iPad surveys into Spanish, Hmong, and Somali. ECHO staff identified locations to conduct outreach including ethnic markets, community centers and religious institutions. ECHO outreach was from February to March 2015.

The project team used Facebook ads to target traditionally underserved communities to increase participation and balance participation numbers to better reflect the demographic breakdown of Minnesota's population. Some ads focused on increasing participation from women, African Americans, Asian Americans and Spanish speakers. By collecting optional demographic data, the project team was able to review the results of the targeted ads, identify successes and make any adjustments based on lessons learned for future targeted ads.

Outreach Results

Shown in Table H-8, the demographics of the responses received mirror the demographic breakdown of Minnesota's population. More information can be found on the public engagement process in Chapter 4 and Appendix D.

Table H-8: Percent Breakdown of Participant Demographics by Tactic

TACTIC	20 AND BELOW	21-35	36-50	51-65	66+	MALE	FEMALE	WHITE	BLACK OR AFRICAN AMERICAN	AMERICAN INDIAN OR ALASKA NATIVE	ASIAN	NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER	MULTIPLE	HISPANIC
MnSHIP	3%	24%	26%	35%	13%	53%	47%	89%	4%	1%	6%	0%	1%	5%
Community Event	9%	34%	28%	24%	5%	42%	58%	61%	17%	1%	20%	0%	0%	16%
Social Media Survey	2%	20%	21%	41%	15%	34%	66%	93%	4%	0%	1%	0%	1%	6%
Stakeholder Briefing	0%	19%	26%	41%	14%	73%	27%	95%	0%	1%	2%	0%	1%	0%
Website Survey	2%	20%	26%	38%	14%	59%	41%	97%	1%	0%	2%	0%	0%	1%
Workplace	0%	34%	30%	23%	14%	57%	43%	94%	0%	0%	6%	0%	0%	1%
Minnesota	27%	21%	20%	20%	12%	50%	50%	86%	6%	1%	5%	<1%	1%	5%

MNSHIP INVESTMENT DIRECTION AND CATEGORIES

MnDOT established an investment direction for the next 20-year period of MnSHIP focusing on the maintenance of existing infrastructure with limited investment in mobility. This approach differs from previous plan updates that had different investment priorities for the first 10 years of MnSHIP than the second 10 years. The first 10 years of the 2013 investment direction took a balanced approach between investing in preserving existing infrastructure and investing in mobility and regional and local priorities. The second 10-year period shifted to focus on maintaining the existing highway system and eliminating investment in mobility and regional and local priorities.

To assess the impact of MnSHIP on environmental justice populations, it is necessary to identify the potential impacts of the types of highway investments recommended in the plan with regard to minority, age 65 and older, age 17 and younger, limited English proficiency, low-income, or zero-vehicle household populations.

The analysis presented in this appendix is at the system level and is only one step in MnDOT's commitment to ensuring that its planning efforts and project-specific decisions do not result in disproportionately high and adverse human health or environmental effects, particularly on environmental justice populations. Additional environmental justice analyses will occur at the project level to analyze whether proposed activities may result in disproportionate impacts.

It is important to consider typical projects and how they can generally impact EJ populations. These types of projects might include bridge repair, road resurfacing, road reconstructions or road capacity projects (two lanes to four lanes). Less common projects could include road shoulder widening, intersection improvements (roundabouts, accessible curb ramps, etc.), or interchange construction.

Generally, highway capacity projects are types of projects that are associated with greater impacts. These types of projects could have one or more of the following effects:

- Require the acquisitino of right of way land next to state highways, which could result in the displacement of households or businesses
- Change noise levels, which can impact nearby residents
- Change the visual aesthetics, which can cause less comfortable environments for pedestrians, bicyclists and transit riders
- Change access to the highway system which could result in altered land use or development patterns
- Change access to the highway system which could increase the travel time between destinations
- Change amount or pattern of traffic, which could decrease safety or reduce transit efficiency
- Increase appeal of highway, leading to more trips and more pollution
- Decrease travel time

The following sections describe how investing in each investment category and how these types of projects might result in disproportionately high and adverse human health or environmental effects, if at all.

Pavement Condition, Bridge Condition, and Roadside Infrastructure

MnDOT preserves the integrity and condition of its assets through investments in pavements, bridges, and roadside infrastructure. Investments made in these categories are selected on statewide and regional levels.

Projects that qualify as Pavement Condition improvements include overlays, mill and overlays, full-depth reclamation, and reconstruction of existing highways. Bridge Condition investments include replacements, rehabilitation, and painting of existing bridges. Roadside Infrastructure investments include the repair and replacement of existing drainage and culverts, traffic signals, signs, lighting, retaining walls, fencing, noise walls, guardrails, overhead structures, rest areas, Intelligent Transportation Systems, and pavement markings. The types of improvements associated with these investment categories are focused on maintaining existing infrastructure. This is a benefit for all highway system users.

These types of improvements may have short-term construction impacts; however; in most cases, minimal long-term impacts are expected.

Improved ride quality or smoother pavement surfaces could also have benefits to EJ populations that drive single occupancy vehicles. Poor roads can increase wear and tear on vehicles and low-income populations who drive would spend a larger proportion of their income on transportation including maintenance, ride quality could have a larger impact on them.[10]

Jurisdictional Transfer

Jurisdictional Transfer makes steps toward ensuring that Minnesota roads are maintained and operated at the right jurisdictional level (i.e. by the right agency) be it the state, county or municipal level. This allows roadways to be better managed to meet the expectations of customers. Whether a road is owned and managed by MnDOT or a local jurisdiction can impact minority and disadvantaged populations. For example, a particular road might be a low priority for MnDOT and so maintenance is delayed; but if the road was a locally managed road, maintaining it would be a high priority. If road maintenance is delayed, safety and ride quality may decrease, which could cause vehicle damage resulting in high cost and more frequent repairs affecting

10 Data is from U.S. Department of Housing and Urban Development's Location Affordability Index, which tracks the affordability of transportation and housing by measuring relevant spending for median income households and low-income households. Lower-income single-parent families", known as "single-parent families" in the Location Affordability Index, are defined as 1-person households with 1 worker and income equivalent to 50% of median income for the geography. Information can be found here: http://www.mncompass.org/transportation/transportation-expenses#1-12157-g

all populations, but having a disproportionate impact on EJ populations. Additionally, pedestrian and bicycle infrastructure investments could be delayed depending on the priority a road is given by an agency.

Facilities

The Facilities investment category includes investments in all 52 MnDOT rest areas and 10 weight enforcement buildings with weigh scales. While these facilities promote tourism and increase the safety of road users, investments in this category have limited impacts on EJ populations.

Traveler Safety

Traveler Safety projects include proactive lower cost, high-benefit strategies, and treatments at sustained crash locations. Investments made in traveler safety are selected on statewide and regional levels. Traveler Safety improvements benefit all system users, including minority and disadvantaged populations. Because minority populations typically suffer pedestrian death rates higher than whites, projects that improve non-motorized safety on the state highway network could benefit EJ populations. [11]

Freight

Investment in freight can include improvement of pavements, bridges or roadside infrastructure along freight routes, facilities such as rest areas and weigh stations, new safety improvements and freight mobility improvements. As such, impacts to EJ populations from freight investments closely mirror the impacts listed in Pavement Condition, Bridge Condition, Roadside Infrastructure, Facilities, Traveler Safety, Twin Cities Mobility and Greater Minnesota Mobility.

Twin Cities Mobility

Twin Cities Mobility investments aim to increase mobility in the metro area, increase trip reliability, and enhance travel options. The types of improvements in this investment category include Active Traffic Management, spot mobility improvements, priced managed lanes (i.e. MnPASS express lanes) and strategic capacity enhancements. These types of investments help manage congestion and improve quality of life, safety and air quality for all system users. While priced managed lanes offer benefits for single occupancy vehicles willing to pay, the lanes are used by many buses which improve transit reliability and travel times. These benefit everyone by adding capacity; but, the benefits are especially high for those who depend on transit, including, many minority and disadvantaged populations, and zero-vehicle households that rely on transit as a primary mode of transportation. Approximately 13-20

11 Krizek K, Poindexter G, El-Geneidy A, et al. Jan. 2007.

percent of EJ households do not own a car.[12] However, lane expansion could have negative benefits on EJ populations by creating barriers to pedestrian and bicycle networks, and increasing pollution and associated health risks to those living near state highways. The Statewide Multimodal Transportation Plan's Environmental Justice Analysis discusses the potential that individuals living next to major highways are more likely to be hospitalized for asthma-related reasons. These findings are supported by the US EPA and other research.[13]

Greater Minnesota Mobility

The goal of Greater Minnesota Mobility investment is to enhance the movement of people and freight in Greater Minnesota. The Greater Minnesota Mobility investment category focuses on improving movement of people and freight on the National Highway System, the priority network for MnSHIP. Under this investment direction, Greater Minnesota Mobility would receive limited funding. Investments could include operational improvements such as signal timing or turn lanes along corridors. Projects would likely have little impact on EJ population.

Bicycle Infrastructure

MnDOT typically constructs bicycle improvements as part of larger pavement and bridge projects, but also implements some stand-alone projects in urban areas or areas with high volumes of bicycle traffic. Investing in bicycle infrastructure makes progress on key multimodal objectives and outcomes. This may be a benefit for minority and disadvantaged populations, particularly low income and zero-vehicle households that may rely on bicycling as a primary mode of transportation. As a result of the Statewide Bicycle System Plan both urban and separated bicycle facilities are a priority.

Accessible Pedestrian Infrastructure

Most pedestrian and 1990 Americans with Disabilities Act improvements are implemented as part of a larger pavement or bridge project. Standalone projects, especially ADA improvements, are implemented where needed because each MnDOT district has varying pedestrian and ADA infrastructure needs, ADA needs and different high risk pedestrian areas. Investment in this category is a benefit for all system users, particularly those who rely on alternate modes of transportation, users with limited mobility and zero-vehicle households. Typically, Accessible Pedestrian Infrastructure investments, such as sidewalks, are constructed in urban areas. A majority of Minnesota's EJ populations lives within an urban area, so pedestrian infrastructure provides benefits for a significant portion of these populations. Furthermore, transit

12 American Community Survey 2011-2014. United States Census Bureau. 2015

13 Examples: Near Roadway Air Pollution and Heath: Frequently Asked Questions, US EPA, EPA-420-F-14-044, August 2014; National Patterns in Environmental Justice and Inequality: Outdoor NO2 Air Pollution in the United States, Clark et al, PLOS ONE, April 2014.; Quantifying Traffic Exposure. Pratt et al, Journal of Exposure Science and Environmental Epidemiology, May/June 2014.

riders rely on pedestrian infrastructure for safe connections to and from transit and other transportation networks.

Regional and Community Improvement Priorities

Regional and Community Improvement Priorities are investments that respond to regional concerns and collaboration opportunities beyond system performance needs to support economic competitiveness and quality of life in Minnesota. There are a variety of projects that are eligible under the category of RCIPs, including:

- Main street improvements that enhance the quality of life when state highways serve as main streets
- State highway improvements made as part of projects initiated by local agencies
- Intersection improvements that increase traffic flow and/or facilitate efficient freight movement
- Mobility enhancements, such as bypass or turning lanes
- Capacity expansion that advances economic competitiveness and quality of life
- Landscape improvements after major construction projects
- Flood mitigation projects to help manage water in the events of heavy precipitation

Project Delivery

Project Delivery includes components of projects that are critical to ensure the timely and efficient delivery of highway projects. These components include right-of-way costs, consultant services, supplemental agreements, and construction incentives associated with projects and do not have a direct impact on EJ populations.

Small Programs

The Small Programs investment category includes funding for short-term, unforeseen issues and one-time specialty program needs as they arise. In the past, investments included a noise wall program and the Transportation Economic Development solicitations. Small Programs also includes historical properties within MnDOT right-of-way. Investments made in Small Programs have limited impacts on EJ populations.

IMPACT OF

PRIORITIZATION OF NHS

With the decision to prioritize the NHS for investment, MnDOT examined whether impacts of that decision adversely affect an EJ population. To accomplish this, MnDOT identified the percentage of the population within a one-quarter mile of a state highway, a NHS route, a non-NHS and then calculated the statewide average.

Table H-9 shows that most of the EJ populations are no more concentrated on the NHS system compared to the non-NHS system or compared to statewide. The only exception is the state's minority population. According to the analysis, 17.9 percent of the population within one-quarter mile of the NHS system is a minority population compared with the non-NHS system (10.7 percent) and statewide (12.8 percent).

Table H-9: EJ populations near State Highway system

POPULATION	1/4 MILE OF STATE HIGHWAY	1/4 MILE OF NHS	1/4 OF NON-NHS	STATEWIDE
Total minority population	17.0%	17.9%	10.7%	12.8%
Persons below the poverty level	7.8%	7.9%	7.5%	13.8%
Age 65 and older	14.2%	13.9%	15.0%	16.1%
Age 17 and under	23.7%	23.6%	23.8%	23.3%
Persons who speak English less than "very well"	2.5%	2.7%	1.8%	3.1%
Households with zero vehicles	7.6%	8.0%	6.8%	7.3%

Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

Table H-10 shows, however, that no single minority group is closer to the NHS system individually. Minority groups in general have a slightly higher concentration near the NHS system compared to the non-NHS system. By prioritizing investment on the NHS, minority populations receive the positive benefits, such as access to roadways with potentially more transportation amenities; however, minority populations may receive equally negative effects, such as noise and pollution impacts.

Table H-10: Minority populations near State Highway system

POPULATION	1/4 MILE OF STATE HIGHWAY	1/4 MILE OF NHS	1/4 OF NON-NHS	STATEWIDE
White Alone	86.1%	85.1%	89.3%	85.2%
Black Alone	4.9%	5.4%	3.2%	5.4%
American Indian and Alaska Native Alone	1.2%	1.1%	1.2%	1.0%
Asian Alone	3.9%	4.2%	2.9%	4.3%
Native Hawaiian or Other Pacific Islander Alone	0.0%	0.0%	0.0%	0.0%
Some Other Race Alone	1.5%	1.6%	1.2%	1.5%
Two or More Races	2.5%	2.6%	2.2%	2.6%
Hispanic	4.9%	5.0%	4.4%	4.9%

Source: U.S. Census, 2010-2014 American Community Survey 5-year Estimates

CONCLUSION

The environmental justice analysis presented in this appendix is a qualitative evaluation of MnSHIP investment effects on minority, age 65 and older, age 17 and younger, limited English proficiency, low-income and zero-vehicle household populations. As summarized in the previous sections, there may be some disproportionately high and adverse human health or environmental effects expected due to the investment direction and policy implications outlined in MnSHIP on minority populations because they are slightly more concentrated near the NHS system compared to the non-NHS system.

MnSHIP identifies the NHS as the priority network for investment in MnSHIP. With the investment direction set in this MnSHIP update, there will be more focus on the NHS system with the likelihood that there will be an increase in the number of construction projects on the NHS. Minority populations may experience negative effects from the increased investment such as more noise and air pollution. In addition, the NHS system will receive investments to improve mobility in Greater Minnesota and the Twin Cities metro area. These improvements could increase the amount of traffic along the NHS bringing more cars to travel through these corridors near minority populations.

However, much of the investment in mobility in MnSHIP will be used to construct two MnPASS corridors in the Twin Cities metro area. Mobility improvements in Greater Minnesota will address localized areas of congestions to improve travel flow. The MnPASS system adds new high occupancy toll lanes, not new general purpose lanes. Expansion of the MnPASS system also provides benefits to transit users in the highway corridor by allowing transit vehicles to operate in the high occupancy toll lanes, avoiding congestion and making transit a more appealing transportation option. Minority populations and low-income populations tend to use transit at a higher rate than the general population and may benefit from these infrastructure improvements. Therefore, it is difficult to conclude whether the prioritization of investment in the NHS system will have a net positive or net negative impact on minority populations. These impacts are better analyzed at the project level.

As projects progress into project development phases, MnDOT will continue to evaluate the potential impacts transportation projects on the state highway system have on the environment and environmental justice population. MnDOT is also investigating completing EJ analysis in conjunction with the 10-Year Capital Highway Investment Plan and analyzing whether selected projects fall within disproportionately high locations of EJ populations.

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